PREP BATCH REPORT

Prep Code: **PRP-3010** Technician: **Amanda E. McDaniels** Prep Start Date: **12/28/2021 8:58:59 A**

Prep Batch **162518** Prep Temp: **92 °C** Batch Units: **ML** Prep End Date: **12/28/2021 4:08:00 P**

Sample ID	Matrix	pH	Initial Samp Amt	Sol Added	Sol Recovered	Final Vol (mL)	Factor	Balance	Prep Start Date	Prep End Date
MB-162518 Temp cell C4			50	0	0	50	1		12/28/2021	12/28/2021
LCS4-162518			50	0	0	50	1		12/28/2021	12/28/2021
B21121977-001B	Ground Water		50	0	0	50	1		12/28/2021	12/28/2021
B21121977-002B	Ground Water		50	0	0	50	1		12/28/2021	12/28/2021
B21121979-001B bottle 1/2	Ground Water		50	0	0	50	1		12/28/2021	12/28/2021
B21121979-003B	Ground Water		50	0	0	50	1		12/28/2021	12/28/2021
B21121981-001B	Aqueous		50	0	0	50	1		12/28/2021	12/28/2021
B21121981-001BMS4	Aqueous		50	0	0	50	1		12/28/2021	12/28/2021
B21121981-001BMSD4	Aqueous		50	0	0	50	1		12/28/2021	12/28/2021
B21121981-003B	Aqueous		50	0	0	50	1		12/28/2021	12/28/2021
B21121981-004B	Aqueous		50	0	0	50	1		12/28/2021	12/28/2021

Number	Reagent Name	Exp Date	A
14344	Hydrochloric Acid, 36.5-38.0% 0000285454	5/10/2026	1 mL
14601	Nitric Acid Instra Analyzed,0000280251	3/17/2026	6 mL
14614	50mL DigiTubes J526127-2104	12/10/2022	

Spk ID	Spike Name	SampType	AmtAdd	Exp Date
ME211124 EL-M	EL-MSICV-2	LCS4/MS4	0.05 ml	11/24/2022
ME211202 EL200	EL-200.2MS	LCS4/MS4	0.05 mL	12/2/2022
ME211222 AUDI	AUDIGSPK	LCS4/MS4	0.05 ml	10/25/2022

Energy Laboratories Inc

ANALYTICAL RUN Summary

22-Jan-22

Run ID ICPMS207-B_211229A

Run Start Date: 12/29/2021 12:31:55
Analyst: Cindy Rohrer
Ical: 0
Column ID:
Comments:

Instrument ID	Description
04F07114	Metals 5-50 uL Adjustable Pipette
340760037	Metals 100-1000 uL Adjustable Pipette
340760040	Metals 100-1000 uL Adjustable Pipette
440780018	Metals 1-5 mL Adjustable Pipette
440780025	Metals 1-5 mL Adjustable Pipette
841980007	1000-5000uL Pipette
841980009	1000-5000uL Pipette

Std ID	Std Name	Std Amount	Std Units	Samp Amount	Samp Units	SampType	Expiration Date
ME210901 0.025 PPB STAND	0.025 ppb Standard						1/4/2022
ME210901 0.05 PPB STANDA	0.05 ppb Standard						1/4/2022
ME210901 0.1 PPB STANDAR	0.1 ppb Standard						1/4/2022
ME210901 0.5 PPB STANDAR	0.5 ppb Standard						1/4/2022
ME210901 1 PPB STANDARD	1 PPB STANDARD						1/4/2022
ME210901 10 PPB STANDAR	10 ppb Standard						1/4/2022
ME210901 100 PPB STANDAR	100 ppb Standard						1/4/2022
ME210901 1000 PPB STANDA	1000 PPB Standard						1/4/2022
ME210901 CCV STANDARD	CCV for ICPMS standards						1/5/2022
ME210901 ICSA	ICSA						9/1/2022
ME210901 ICSAB	ICSAB						9/1/2022
ME211006 SS1	SS1 ICPMS Spiking Solution						1/5/2022
ME211117A INTERNAL STAN	Internal Standards 2 mg/L						1/4/2022
ME211206 ICV STANDARD	ICV for ICPMS Standards						4/30/2022
ME211207 2008TS	200.8 Tune Solution						12/7/2022

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14955723	Rinse	ICPMS-6020-W-	SAMP		12/29/2021 12:3	1	R372516		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14955724	Rinse	ICPMS-6020-W-	SAMP		12/29/2021 12:3	1	R372516		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14955725	Cal Blk	ICPMS-6020-W-	SAMP		12/29/2021 12:4	1	R372516		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0	0		0	0	0	0.00086	0.001	1	0%	0	0	0%	
Antimony	A	mg/L	0	0		0	0	0	0.00042	0.001	0.1	0%	0	0	0%	
Arsenic	A	mg/L	0	0		0	0	0	0.00019	0.001	1	0%	0	0	0%	
Barium	A	mg/L	0	0		0	0	0	0.000042	0.001	1	0%	0	0	0%	
Beryllium	A	mg/L	0	0		0	0	0	0.00012	0.001	1	0%	0	0	0%	
Cadmium	A	mg/L	0	0		0	0	0	0.000025	0.001	1	0%	0	0	0%	
Cerium	A	mg/L	0	0		0	0	0	0.000012	0.001	0.1	0%	0	0	0%	
Chromium	A	mg/L	0	0		0	0	0	0.00018	0.001	1	0%	0	0	0%	
Cobalt	A	mg/L	0	0		0	0	0	0.000042	0.001	1	0%	0	0	0%	
Copper	A	mg/L	0	0		0	0	0	0.00027	0.001	1	0%	0	0	0%	
Lanthanum	A	mg/L	0	0		0	0	0	0.000011	0.001	0.1	0%	0	0	0%	
Manganese	A	mg/L	0	0		0	0	0	0.000095	0.001	1	0%	0	0	0%	
Mercury	A	mg/L	0	0		0	0	0	0.00016	0.001	0.002	0%	0	0	0%	
Molybdenum	A	mg/L	0	0		0	0	0	0.00005	0.001	0.1	0%	0	0	0%	
Nickel	A	mg/L	0	0		0	0	0	0.00063	0.001	1	0%	0	0	0%	
Selenium	A	mg/L	0	0		0	0	0	0.00033	0.001	1	0%	0	0	0%	
Silicon	A	mg/L	0	0		0	0	0	0.01223	0.1	0.4	0%	0	0	0%	
Silver	A	mg/L	0	0		0	0	0	0.00002	0.001	0.04	0%	0	0	0%	
Strontium	A	mg/L	0	0		0	0	0	0.00014	0.001	1	0%	0	0	0%	
Thallium	A	mg/L	0	0		0	0	0	0.000041	0.001	1	0%	0	0	0%	
Thorium	A	mg/L	0	0		0	0	0	0.00061	0.001	1	0%	0	0	0%	
Titanium	A	mg/L	0	0		0	0	0	0.000094	0.001	1	0%	0	0	0%	
Uranium	A	mg/L	0	0		0	0	0	0.000052	0.0003	1	0%	0	0	0%	
Boron	B	mg/L	0	0		0	0	0	0.00561	0.00561	1	0%	0	0	0%	L
Calcium	B	mg/L	0	0		0	0	0	0.02092	0.02092	50	0%	0	0	0%	L
Iron	B	mg/L	0	0		0	0	0	0.00119	0.00119	5	0%	0	0	0%	
Iron, Ferrous	B	mg/L	0	0		0	0	0	0.00119	0.00119	5	0%	0	0	0%	
Potassium	B	mg/L	0	0		0	0	0	0.08139	0.08139	50	0%	0	0	0%	L
Sodium	B	mg/L	0	0		0	0	0	0.02171	0.02171	50	0%	0	0	0%	L
Tin	B	mg/L	0	0		0	0	0	0.00132	0.00132	0.1	0%	0	0	0%	
Vanadium	B	mg/L	0	0		0	0	0	0.0013	0.0013	1	0%	0	0	0%	
Zinc	B	mg/L	0	0		0	0	0	0.00273	0.00273	1	0%	0	0	0%	L

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14955726	0.025 ppb STD	ICPMS-6020B-C	Cal1		12/29/2021 12:5	1	R372516		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.00008155	0.00008155		0	0	0		0.01		0%			0%	
Antimony	A	mg/L	0.00003179	0.00003179		0	0	0		0.001		0%			0%	
Arsenic	A	mg/L	0.00009611	0.00009611		0.000025	0	0		0.001		384%	80	120	0%	S
Barium	A	mg/L	0.0000391	0.0000391		0.000025	0	0		0.0003		156%	80	120	0%	S
Beryllium	A	mg/L	0.0000301	0.0000301		0.000025	0	0		0.001		120%	80	120	0%	
Boron	A	mg/L	-1.306E-05	-1.306E-05		0	0	0		0.1		0%			0%	
Cadmium	A	mg/L	0.00002981	0.00002981		0.000025	0	0		0.001		119%	80	120	0%	
Calcium	A	mg/L	0.01291	0.01291		0	0	0		1		0%			0%	
Cerium	A	mg/L	0.00003461	0.00003461		0.000025	0	0		0.001		138%	80	120	0%	S
Chromium	A	mg/L	0.00005846	0.00005846		0.000025	0	0		0.001		234%	80	120	0%	S
Cobalt	A	mg/L	0.00004148	0.00004148		0.000025	0	0		0.001		166%	80	120	0%	S
Copper	A	mg/L	0.00007018	0.00007018		0	0	0		0.005		0%			0%	
Iron	A	mg/L	0.001136	0.001136		0	0	0		0.01		0%			0%	
Lanthanum	A	mg/L	0.00003386	0.00003386		0.000025	0	0		0.001		135%	80	120	0%	S
Lithium	A	mg/L	0.000502	0.000502		0.0003125	0	0		1		161%	80	120	0%	S
Magnesium	A	mg/L	0.009625	0.009625		0	0	0		1		0%			0%	
Manganese	A	mg/L	0.0000385	0.0000385		0	0	0		0.001		0%			0%	
Mercury	A	mg/L	8.703E-07	8.703E-07		0	0	0		0.001		0%			0%	
Molybdenum	A	mg/L	0.00002728	0.00002728		0	0	0		0.001		0%			0%	
Nickel	A	mg/L	0.0001071	0.0001071		0	0	0		0.005		0%			0%	
Potassium	A	mg/L	0.01021	0.01021		0.00625	0	0		1		163%	80	120	0%	S
Selenium	A	mg/L	0.00003287	0.00003287		0.000025	0	0		0.005		131%	80	120	0%	S
Silicon	A	mg/L	0.0005652	0.0005652		0	0	0		0.1		0%			0%	
Silver	A	mg/L	0.00001495	0.00001495		0	0	0		0.001		0%			0%	
Sodium	A	mg/L	0.01048	0.01048		0.00625	0	0		1		168%	80	120	0%	S
Strontium	A	mg/L	0.00003333	0.00003333		0	0	0		0.001		0%	80	120	0%	
Thallium	A	mg/L	0.00002625	0.00002625		0	0	0		0.001		0%			0%	
Thorium	A	mg/L	0.00001545	0.00001545		0	0	0		0.05		0%			0%	
Tin	A	mg/L	0.0002506	0.0002506		0	0	0		0.001		0%			0%	
Titanium	A	mg/L	0.00005773	0.00005773		0	0	0		0.001		0%			0%	
Uranium	A	mg/L	0.00002905	0.00002905		0.000025	0	0		0.001		116%	80	120	0%	
Vanadium	A	mg/L	0.0005071	0.0005071		0	0	0		0.005		0%			0%	
Zinc	A	mg/L	0.0001468	0.0001468		0	0	0		0.01		0%			0%	
Iron, Ferrous	C	mg/L	0.001136	0.001136		0.000025	0	0		0.01	5	4544%	80	120	0%	S
Silicon as SiO2	C	mg/L	0.00120953	0.00120953		0.0000535	0	0		0.214	0.9	2261%	80	120	0%	S

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist				
14955727	0.05 ppb STD	ICPMS-6020B-C	Cal2		12/29/2021 12:5	1	R372516		0	0					

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.0001289	0.0001289		0	0	0		0.01		0%			0%	
Antimony	A	mg/L	0.00006654	0.00006654		0.00005	0	0		0.001		133%	80	120	0%	S
Arsenic	A	mg/L	0.0001604	0.0001604		0.00005	0	0		0.001		321%	80	120	0%	S
Barium	A	mg/L	0.00007374	0.00007374		0.00005	0	0		0.0003		147%	80	120	0%	S
Beryllium	A	mg/L	0.00006432	0.00006432		0.00005	0	0		0.001		129%	80	120	0%	S
Boron	A	mg/L	-5.089E-05	-5.089E-05		0	0	0		0.1		0%			0%	
Cadmium	A	mg/L	0.00006808	0.00006808		0.00005	0	0		0.001		136%	80	120	0%	S
Calcium	A	mg/L	0.02368	0.02368		0.0125	0	0		1		189%	80	120	0%	S
Cerium	A	mg/L	0.00007464	0.00007464		0.00005	0	0		0.001		149%	80	120	0%	S
Chromium	A	mg/L	0.000107	0.000107		0.00005	0	0		0.001		214%	80	120	0%	S
Cobalt	A	mg/L	0.00007645	0.00007645		0	0	0		0.001		0%			0%	
Copper	A	mg/L	0.000096	0.000096		0.00005	0	0		0.005		192%	80	120	0%	S
Iron	A	mg/L	0.002313	0.002313		0.00125	0	0		0.01		185%	80	120	0%	S
Lanthanum	A	mg/L	0.00007731	0.00007731		0.00005	0	0		0.001		155%	80	120	0%	S
Lithium	A	mg/L	0.001084	0.001084		0.000625	0	0		1		173%	80	120	0%	S
Magnesium	A	mg/L	0.02056	0.02056		0.0125	0	0		1		164%	80	120	0%	S
Manganese	A	mg/L	0.00007406	0.00007406		0.00005	0	0		0.001		148%	80	120	0%	S
Mercury	A	mg/L	2.151E-06	2.151E-06		0	0	0		0.001		0%			0%	
Molybdenum	A	mg/L	0.00006815	0.00006815		0.00005	0	0		0.001		136%	80	120	0%	S
Nickel	A	mg/L	0.0001013	0.0001013		0	0	0		0.005		0%			0%	
Potassium	A	mg/L	0.02051	0.02051		0.0125	0	0		1		164%	80	120	0%	S
Selenium	A	mg/L	0.00008623	0.00008623		0.00005	0	0		0.005		172%	80	120	0%	S
Silicon	A	mg/L	0.00088	0.00088		0	0	0		0.1		0%			0%	
Silver	A	mg/L	0.00003109	0.00003109		0.00002	0	0		0.001		155%	80	120	0%	S
Sodium	A	mg/L	0.02091	0.02091		0.0125	0	0		1		167%	80	120	0%	S
Strontium	A	mg/L	0.00008026	0.00008026		0.00005	0	0		0.001		161%	80	120	0%	S
Thallium	A	mg/L	0.00006585	0.00006585		0	0	0		0.001		0%			0%	
Thorium	A	mg/L	0.00003784	0.00003784		0	0	0		0.05		0%			0%	
Tin	A	mg/L	0.0003851	0.0003851		0	0	0		0.001		0%			0%	
Titanium	A	mg/L	0.0001681	0.0001681		0	0	0		0.001		0%			0%	
Uranium	A	mg/L	0.00006776	0.00006776		0.00005	0	0		0.001		136%	80	120	0%	S
Vanadium	A	mg/L	0.0008818	0.0008818		0	0	0		0.005		0%			0%	
Zinc	A	mg/L	0.0001566	0.0001566		0	0	0		0.01		0%			0%	
Iron, Ferrous	C	mg/L	0.002313	0.002313		0.00005	0	0		0.01	5	4626%	80	120	0%	S
Silicon as SiO2	C	mg/L	0.0018832	0.0018832		0.00428	0	0		0.214	0.9	44%	80	120	0%	S

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist				
14955728	0.10 ppb STD	ICPMS-6020B-C	Cal3		12/29/2021 1:04:	1	R372516		0	0					

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.0002531	0.0002531		0.0001	0	0		0.01		253%	80	120	0%	S
Antimony	A	mg/L	0.0001625	0.0001625		0.0001	0	0		0.001		163%	80	120	0%	S
Arsenic	A	mg/L	0.0002384	0.0002384		0.0001	0	0		0.001		238%	80	120	0%	S
Barium	A	mg/L	0.0001751	0.0001751		0.0001	0	0		0.0003		175%	80	120	0%	S
Beryllium	A	mg/L	0.0003509	0.0003509		0.0001	0	0		0.001		351%	80	120	0%	S
Boron	A	mg/L	0.001639	0.001639		0	0	0		0.1		0%			0%	
Cadmium	A	mg/L	0.0001684	0.0001684		0.0001	0	0		0.001		168%	80	120	0%	S
Calcium	A	mg/L	0.05528	0.05528		0.025	0	0		1		221%	80	120	0%	S
Cerium	A	mg/L	0.0001767	0.0001767		0.0001	0	0		0.001		177%	80	120	0%	S
Chromium	A	mg/L	0.0002391	0.0002391		0.0001	0	0		0.001		239%	80	120	0%	S
Cobalt	A	mg/L	0.0003076	0.0003076		0.0001	0	0		0.001		308%	80	120	0%	S
Copper	A	mg/L	0.0002072	0.0002072		0.0001	0	0		0.005		207%	80	120	0%	S
Iron	A	mg/L	0.01605	0.01605		0.0025	0	0		0.01		642%	80	120	0%	S
Lanthanum	A	mg/L	0.0001763	0.0001763		0.0001	0	0		0.001		176%	80	120	0%	S
Lithium	A	mg/L	0.002163	0.002163		0.00125	0	0		1		173%	80	120	0%	S
Magnesium	A	mg/L	0.1395	0.1395		0.025	0	0		1		558%	80	120	0%	S
Manganese	A	mg/L	0.0005285	0.0005285		0.0001	0	0		0.001		529%	80	120	0%	S
Mercury	A	mg/L	4.382E-06	4.382E-06		0.000002	0	0		0.001		219%	80	120	0%	S
Molybdenum	A	mg/L	0.0001878	0.0001878		0.0001	0	0		0.001		188%	80	120	0%	S
Nickel	A	mg/L	0.005599	0.005599		0.0001	0	0		0.005		5599%	80	120	0%	S
Potassium	A	mg/L	0.04077	0.04077		0.025	0	0		1		163%	80	120	0%	S
Selenium	A	mg/L	0.0001826	0.0001826		0.0001	0	0		0.005		183%	80	120	0%	S
Silicon	A	mg/L	0.001408	0.001408		0.0004	0	0		0.1		352%	80	120	0%	S
Silver	A	mg/L	0.000065	0.000065		0.00004	0	0		0.001		163%	80	120	0%	S
Sodium	A	mg/L	0.04335	0.04335		0.025	0	0		1		173%	80	120	0%	S
Strontium	A	mg/L	0.0001861	0.0001861		0.0001	0	0		0.001		186%	80	120	0%	S
Thallium	A	mg/L	0.0001633	0.0001633		0.0001	0	0		0.001		163%	80	120	0%	S
Thorium	A	mg/L	0.0001011	0.0001011		0.0001	0	0		0.05		101%	80	120	0%	
Tin	A	mg/L	0.0005002	0.0005002		0.0001	0	0		0.001		500%	80	120	0%	S
Titanium	A	mg/L	0.0002139	0.0002139		0.0001	0	0		0.001		214%	80	120	0%	S
Uranium	A	mg/L	0.0001651	0.0001651		0.0001	0	0		0.001		165%	80	120	0%	S
Vanadium	A	mg/L	0.0005439	0.0005439		0.0001	0	0		0.005		544%	80	120	0%	S
Zinc	A	mg/L	0.0002867	0.0002867		0.0001	0	0		0.01		287%	80	120	0%	S
Iron, Ferrous	C	mg/L	0.01605	0.01605		0.0001	0	0		0.01	5	16050%	80	120	0%	S
Silicon as SiO2	C	mg/L	0.00301312	0.00301312		0.00856	0	0		0.214	0.9	35%	80	120	0%	S

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist				
14955729	0.5 ppb STD	ICPMS-6020B-C	Cal4		12/29/2021 1:10:	1	R372516		0	0					

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.0007551	0.0007551		0.0005	0	0		0.01		151%	80	120	0%	S
Antimony	A	mg/L	0.0006152	0.0006152		0.0005	0	0		0.001		123%	80	120	0%	S
Arsenic	A	mg/L	0.000708	0.000708		0.0005	0	0		0.001		142%	80	120	0%	S
Barium	A	mg/L	0.001291	0.001291		0.0005	0	0		0.0003		258%	80	120	0%	S
Beryllium	A	mg/L	0.0006974	0.0006974		0.0005	0	0		0.001		139%	80	120	0%	S
Boron	A	mg/L	0.0006564	0.0006564		0.0005	0	0		0.1		131%	80	120	0%	S
Cadmium	A	mg/L	0.0006089	0.0006089		0.0005	0	0		0.001		122%	80	120	0%	S
Calcium	A	mg/L	0.2191	0.2191		0.125	0	0		1		175%	80	120	0%	S
Cerium	A	mg/L	0.000646	0.000646		0.0005	0	0		0.001		129%	80	120	0%	S
Chromium	A	mg/L	0.0007155	0.0007155		0.0005	0	0		0.001		143%	80	120	0%	S
Cobalt	A	mg/L	0.000697	0.000697		0.0005	0	0		0.001		139%	80	120	0%	S
Copper	A	mg/L	0.0007323	0.0007323		0.0005	0	0		0.005		146%	80	120	0%	S
Iron	A	mg/L	0.02691	0.02691		0.0125	0	0		0.01		215%	80	120	0%	S
Lanthanum	A	mg/L	0.0006579	0.0006579		0.0005	0	0		0.001		132%	80	120	0%	S
Lithium	A	mg/L	0.008428	0.008428		0.00625	0	0		1		135%	80	120	0%	S
Magnesium	A	mg/L	0.2188	0.2188		0.125	0	0		1		175%	80	120	0%	S
Manganese	A	mg/L	0.0007864	0.0007864		0.0005	0	0		0.001		157%	80	120	0%	S
Mercury	A	mg/L	0.00001212	0.00001212		0.00001	0	0		0.001		121%	80	120	0%	S
Molybdenum	A	mg/L	0.0006236	0.0006236		0.0005	0	0		0.001		125%	80	120	0%	S
Nickel	A	mg/L	0.00262	0.00262		0.0005	0	0		0.005		524%	80	120	0%	S
Potassium	A	mg/L	0.1774	0.1774		0.125	0	0		1		142%	80	120	0%	S
Selenium	A	mg/L	0.0008034	0.0008034		0.0005	0	0		0.005		161%	80	120	0%	S
Silicon	A	mg/L	0.004135	0.004135		0.002	0	0		0.1		207%	80	120	0%	S
Silver	A	mg/L	0.0002568	0.0002568		0.0002	0	0		0.001		128%	80	120	0%	S
Sodium	A	mg/L	0.1705	0.1705		0.125	0	0		1		136%	80	120	0%	S
Strontium	A	mg/L	0.0006973	0.0006973		0.0005	0	0		0.001		139%	80	120	0%	S
Thallium	A	mg/L	0.000634	0.000634		0.0005	0	0		0.001		127%	80	120	0%	S
Thorium	A	mg/L	0.000493	0.000493		0.0005	0	0		0.05		99%	80	120	0%	
Tin	A	mg/L	0.000853	0.000853		0.0005	0	0		0.001		171%	80	120	0%	S
Titanium	A	mg/L	0.0007046	0.0007046		0.0005	0	0		0.001		141%	80	120	0%	S
Uranium	A	mg/L	0.000617	0.000617		0.0005	0	0		0.001		123%	80	120	0%	S
Vanadium	A	mg/L	0.0008466	0.0008466		0.0005	0	0		0.005		169%	80	120	0%	S
Zinc	A	mg/L	0.000746	0.000746		0.0005	0	0		0.01		149%	80	120	0%	S
Iron, Ferrous	C	mg/L	0.02691	0.02691		0.0005	0	0		0.01	5	5382%	80	120	0%	S
Silicon as SiO2	C	mg/L	0.0088489	0.0088489		0.0428	0	0		0.214	0.9	21%	80	120	0%	S

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist				
14955730	1 ppb STD	ICPMS-6020B-C	Cal5		12/29/2021 1:17:	1	R372516		0	0					

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.001681	0.001681		0.001	0	0		0.01		168%	80	120	0%	S
Antimony	A	mg/L	0.001473	0.001473		0.001	0	0		0.001		147%	80	120	0%	S
Arsenic	A	mg/L	0.001546	0.001546		0.001	0	0		0.001		155%	80	120	0%	S
Barium	A	mg/L	0.001512	0.001512		0.001	0	0		0.0003		151%	80	120	0%	S
Beryllium	A	mg/L	0.001484	0.001484		0.001	0	0		0.001		148%	80	120	0%	S
Boron	A	mg/L	0.001267	0.001267		0.001	0	0		0.1		127%	80	120	0%	S
Cadmium	A	mg/L	0.001481	0.001481		0.001	0	0		0.001		148%	80	120	0%	S
Calcium	A	mg/L	0.4199	0.4199		0.25	0	0		1		168%	80	120	0%	S
Cerium	A	mg/L	0.001501	0.001501		0.001	0	0		0.001		150%	80	120	0%	S
Chromium	A	mg/L	0.001651	0.001651		0.001	0	0		0.001		165%	80	120	0%	S
Cobalt	A	mg/L	0.001591	0.001591		0.001	0	0		0.001		159%	80	120	0%	S
Copper	A	mg/L	0.001664	0.001664		0.001	0	0		0.005		166%	80	120	0%	S
Iron	A	mg/L	0.04578	0.04578		0.025	0	0		0.01		183%	80	120	0%	S
Lanthanum	A	mg/L	0.001503	0.001503		0.001	0	0		0.001		150%	80	120	0%	S
Lithium	A	mg/L	0.01995	0.01995		0.0125	0	0		1		160%	80	120	0%	S
Magnesium	A	mg/L	0.4373	0.4373		0.25	0	0		1		175%	80	120	0%	S
Manganese	A	mg/L	0.001617	0.001617		0.001	0	0		0.001		162%	80	120	0%	S
Mercury	A	mg/L	0.00003193	0.00003193		0.00002	0	0		0.001		160%	80	120	0%	S
Molybdenum	A	mg/L	0.001508	0.001508		0.001	0	0		0.001		151%	80	120	0%	S
Nickel	A	mg/L	0.003175	0.003175		0.001	0	0		0.005		317%	80	120	0%	S
Potassium	A	mg/L	0.4101	0.4101		0.25	0	0		1		164%	80	120	0%	S
Selenium	A	mg/L	0.001558	0.001558		0.001	0	0		0.005		156%	80	120	0%	S
Silicon	A	mg/L	0.006617	0.006617		0.004	0	0		0.1		165%	80	120	0%	S
Silver	A	mg/L	0.0006104	0.0006104		0.0004	0	0		0.001		153%	80	120	0%	S
Sodium	A	mg/L	0.4116	0.4116		0.25	0	0		1		165%	80	120	0%	S
Strontium	A	mg/L	0.001572	0.001572		0.001	0	0		0.001		157%	80	120	0%	S
Thallium	A	mg/L	0.001423	0.001423		0.001	0	0		0.001		142%	80	120	0%	S
Thorium	A	mg/L	0.001273	0.001273		0.001	0	0		0.05		127%	80	120	0%	S
Tin	A	mg/L	0.001827	0.001827		0.001	0	0		0.001		183%	80	120	0%	S
Titanium	A	mg/L	0.001599	0.001599		0.001	0	0		0.001		160%	80	120	0%	S
Uranium	A	mg/L	0.001446	0.001446		0.001	0	0		0.001		145%	80	120	0%	S
Vanadium	A	mg/L	0.001853	0.001853		0.001	0	0		0.005		185%	80	120	0%	S
Zinc	A	mg/L	0.001667	0.001667		0.001	0	0		0.01		167%	80	120	0%	S
Iron, Ferrous	C	mg/L	0.04578	0.04578		0.001	0	0		0.01	5	4578%	80	120	0%	S
Silicon as SiO2	C	mg/L	0.01416038	0.01416038		0.0856	0	0		0.214	0.9	17%	80	120	0%	S

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist				
14955731	10 ppb STD	ICPMS-6020B-C	Cal6		12/29/2021 1:24:	1	R372516		0	0					

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.01241	0.01241		0.01	0	0		0.01		124%	90	110	0%	S
Antimony	A	mg/L	0.01157	0.01157		0.01	0	0		0.001		116%	90	110	0%	S
Arsenic	A	mg/L	0.01188	0.01188		0.01	0	0		0.001		119%	90	110	0%	S
Barium	A	mg/L	0.01226	0.01226		0.01	0	0		0.0003		123%	90	110	0%	S
Beryllium	A	mg/L	0.0118	0.0118		0.01	0	0		0.001		118%	90	110	0%	S
Boron	A	mg/L	0.01116	0.01116		0.01	0	0		0.1		112%	90	110	0%	S
Cadmium	A	mg/L	0.01157	0.01157		0.01	0	0		0.001		116%	90	110	0%	S
Calcium	A	mg/L	3.13	3.13		2.5	0	0		1		125%	90	110	0%	S
Cerium	A	mg/L	0.01186	0.01186		0.01	0	0		0.001		119%	90	110	0%	S
Chromium	A	mg/L	0.01222	0.01222		0.01	0	0		0.001		122%	90	110	0%	S
Cobalt	A	mg/L	0.01228	0.01228		0.01	0	0		0.001		123%	90	110	0%	S
Copper	A	mg/L	0.01265	0.01265		0.01	0	0		0.005		126%	90	110	0%	S
Iron	A	mg/L	0.3281	0.3281		0.25	0	0		0.01		131%	90	110	0%	S
Lanthanum	A	mg/L	0.01183	0.01183		0.01	0	0		0.001		118%	90	110	0%	S
Lithium	A	mg/L	0.1581	0.1581		0.125	0	0		1		126%	90	110	0%	S
Magnesium	A	mg/L	3.217	3.217		2.5	0	0		1		129%	90	110	0%	S
Manganese	A	mg/L	0.01228	0.01228		0.01	0	0		0.001		123%	90	110	0%	S
Mercury	A	mg/L	0.0002475	0.0002475		0.0002	0	0		0.001		124%	90	110	0%	S
Molybdenum	A	mg/L	0.01147	0.01147		0.01	0	0		0.001		115%	90	110	0%	S
Nickel	A	mg/L	0.0135	0.0135		0.01	0	0		0.005		135%	90	110	0%	S
Potassium	A	mg/L	3.191	3.191		2.5	0	0		1		128%	90	110	0%	S
Selenium	A	mg/L	0.01211	0.01211		0.01	0	0		0.005		121%	90	110	0%	S
Silicon	A	mg/L	0.04812	0.04812		0.04	0	0		0.1		120%	90	110	0%	S
Silver	A	mg/L	0.004664	0.004664		0.004	0	0		0.001		117%	90	110	0%	S
Sodium	A	mg/L	3.208	3.208		2.5	0	0		1		128%	90	110	0%	S
Strontium	A	mg/L	0.01243	0.01243		0.01	0	0		0.001		124%	90	110	0%	S
Thallium	A	mg/L	0.01169	0.01169		0.01	0	0		0.001		117%	90	110	0%	S
Thorium	A	mg/L	0.01149	0.01149		0.01	0	0		0.05		115%	90	110	0%	S
Tin	A	mg/L	0.01166	0.01166		0.01	0	0		0.001		117%	90	110	0%	S
Titanium	A	mg/L	0.01203	0.01203		0.01	0	0		0.001		120%	90	110	0%	S
Uranium	A	mg/L	0.01168	0.01168		0.01	0	0		0.001		117%	90	110	0%	S
Vanadium	A	mg/L	0.01175	0.01175		0.01	0	0		0.005		118%	90	110	0%	S
Zinc	A	mg/L	0.01194	0.01194		0.01	0	0		0.01		119%	90	110	0%	S
Iron, Ferrous	C	mg/L	0.3281	0.3281		0.01	0	0		0.01	5	3281%	90	110	0%	S
Silicon as SiO2	C	mg/L	0.1029768	0.1029768		0.856	0	0		0.214	0.9	12%	90	110	0%	S

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14955732	50 ppb STD	ICPMS-6020B-C	Cal7		12/29/2021 1:30:	1	R372516		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.04817	0.04817		0.05	0	0		0.01		96%	90	110	0%	
Antimony	A	mg/L	0.04775	0.04775		0.05	0	0		0.001		95%	90	110	0%	
Arsenic	A	mg/L	0.04744	0.04744		0.05	0	0		0.001		95%	90	110	0%	
Barium	A	mg/L	0.04947	0.04947		0.05	0	0		0.0003		99%	90	110	0%	
Beryllium	A	mg/L	0.04657	0.04657		0.05	0	0		0.001		93%	90	110	0%	
Boron	A	mg/L	0.04564	0.04564		0.05	0	0		0.1		91%	90	110	0%	
Cadmium	A	mg/L	0.04731	0.04731		0.05	0	0		0.001		95%	90	110	0%	
Calcium	A	mg/L	12.1	12.1		12.5	0	0		1		97%	90	110	0%	
Cerium	A	mg/L	0.04758	0.04758		0.05	0	0		0.001		95%	90	110	0%	
Chromium	A	mg/L	0.04794	0.04794		0.05	0	0		0.001		96%	90	110	0%	
Cobalt	A	mg/L	0.04671	0.04671		0.05	0	0		0.001		93%	90	110	0%	
Copper	A	mg/L	0.04929	0.04929		0.05	0	0		0.005		99%	90	110	0%	
Iron	A	mg/L	1.264	1.264		1.25	0	0		0.01		101%	90	110	0%	
Lanthanum	A	mg/L	0.04785	0.04785		0.05	0	0		0.001		96%	90	110	0%	
Lithium	A	mg/L	0.6092	0.6092		0.625	0	0		1		97%	90	110	0%	
Magnesium	A	mg/L	12.12	12.12		12.5	0	0		1		97%	90	110	0%	
Manganese	A	mg/L	0.04832	0.04832		0.05	0	0		0.001		97%	90	110	0%	
Mercury	A	mg/L	0.0009381	0.0009381		0.001	0	0		0.001		94%	90	110	0%	
Molybdenum	A	mg/L	0.04746	0.04746		0.05	0	0		0.001		95%	90	110	0%	
Nickel	A	mg/L	0.0489	0.0489		0.05	0	0		0.005		98%	90	110	0%	
Potassium	A	mg/L	12.39	12.39		12.5	0	0		1		99%	90	110	0%	
Selenium	A	mg/L	0.04824	0.04824		0.05	0	0		0.005		96%	90	110	0%	
Silicon	A	mg/L	0.1918	0.1918		0.2	0	0		0.1		96%	90	110	0%	
Silver	A	mg/L	0.01892	0.01892		0.02	0	0		0.001		95%	90	110	0%	
Sodium	A	mg/L	12.14	12.14		12.5	0	0		1		97%	90	110	0%	
Strontium	A	mg/L	0.04916	0.04916		0.05	0	0		0.001		98%	90	110	0%	
Thallium	A	mg/L	0.04636	0.04636		0.05	0	0		0.001		93%	90	110	0%	
Thorium	A	mg/L	0.04727	0.04727		0.05	0	0		0.05		95%	90	110	0%	
Tin	A	mg/L	0.0479	0.0479		0.05	0	0		0.001		96%	90	110	0%	
Titanium	A	mg/L	0.04767	0.04767		0.05	0	0		0.001		95%	90	110	0%	
Uranium	A	mg/L	0.04683	0.04683		0.05	0	0		0.001		94%	90	110	0%	
Vanadium	A	mg/L	0.04684	0.04684		0.05	0	0		0.005		94%	90	110	0%	
Zinc	A	mg/L	0.04758	0.04758		0.05	0	0		0.01		95%	90	110	0%	
Iron, Ferrous	C	mg/L	1.264	1.264		0.05	0	0		0.01	5	2528%	90	110	0%	S
Silicon as SiO2	C	mg/L	0.410452	0.410452		4.28	0	0		0.214	0.9	10%	90	110	0%	S

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14955733	100 ppb STD	ICPMS-6020B-C	Cal8		12/29/2021 1:37:	1	R372516		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.1013	0.1013		0.1	0	0		0.01		101%	90	110	0%	
Antimony	A	mg/L	0.101	0.101		0.1	0	0		0.001		101%	90	110	0%	
Arsenic	A	mg/L	0.09909	0.09909		0.1	0	0		0.001		99%	90	110	0%	
Barium	A	mg/L	0.1074	0.1074		0.1	0	0		0.0003		107%	90	110	0%	
Beryllium	A	mg/L	0.09892	0.09892		0.1	0	0		0.001		99%	90	110	0%	
Boron	A	mg/L	0.09684	0.09684		0.1	0	0		0.1		97%	90	110	0%	
Cadmium	A	mg/L	0.101	0.101		0.1	0	0		0.001		101%	90	110	0%	
Calcium	A	mg/L	24.9	24.9		25	0	0		1		100%	90	110	0%	
Cerium	A	mg/L	0.101	0.101		0.1	0	0		0.001		101%	90	110	0%	
Chromium	A	mg/L	0.1001	0.1001		0.1	0	0		0.001		100%	90	110	0%	
Cobalt	A	mg/L	0.09589	0.09589		0.1	0	0		0.001		96%	90	110	0%	
Copper	A	mg/L	0.1013	0.1013		0.1	0	0		0.005		101%	90	110	0%	
Iron	A	mg/L	2.656	2.656		2.5	0	0		0.01		106%	90	110	0%	
Lanthanum	A	mg/L	0.1009	0.1009		0.1	0	0		0.001		101%	90	110	0%	
Lithium	A	mg/L	1.263	1.263		1.25	0	0		1		101%	90	110	0%	
Magnesium	A	mg/L	24.85	24.85		25	0	0		1		99%	90	110	0%	
Manganese	A	mg/L	0.1004	0.1004		0.1	0	0		0.001		100%	90	110	0%	
Mercury	A	mg/L	0.002026	0.002026		0.002	0	0		0.001		101%	90	110	0%	
Molybdenum	A	mg/L	0.1011	0.1011		0.1	0	0		0.001		101%	90	110	0%	
Nickel	A	mg/L	0.1002	0.1002		0.1	0	0		0.005		100%	90	110	0%	
Potassium	A	mg/L	25.46	25.46		25	0	0		1		102%	90	110	0%	
Selenium	A	mg/L	0.1002	0.1002		0.1	0	0		0.005		100%	90	110	0%	
Silicon	A	mg/L	0.4032	0.4032		0.4	0	0		0.1		101%	90	110	0%	
Silver	A	mg/L	0.04047	0.04047		0.04	0	0		0.001		101%	90	110	0%	
Sodium	A	mg/L	25.19	25.19		25	0	0		1		101%	90	110	0%	
Strontium	A	mg/L	0.1015	0.1015		0.1	0	0		0.001		101%	90	110	0%	
Thallium	A	mg/L	0.09985	0.09985		0.1	0	0		0.001		100%	90	110	0%	
Thorium	A	mg/L	0.1012	0.1012		0.1	0	0		0.05		101%	90	110	0%	
Tin	A	mg/L	0.1009	0.1009		0.1	0	0		0.001		101%	90	110	0%	
Titanium	A	mg/L	0.101	0.101		0.1	0	0		0.001		101%	90	110	0%	
Uranium	A	mg/L	0.1008	0.1008		0.1	0	0		0.001		101%	90	110	0%	
Vanadium	A	mg/L	0.09879	0.09879		0.1	0	0		0.005		99%	90	110	0%	
Zinc	A	mg/L	0.0977	0.0977		0.1	0	0		0.01		98%	90	110	0%	
Iron, Ferrous	C	mg/L	2.656	2.656		0.1	0	0		0.01	5	2656%	90	110	0%	S
Silicon as SiO2	C	mg/L	0.862848	0.862848		8.56	0	0		0.214	0.9	10%	90	110	0%	S

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14955734	1000 ppb STD	ICPMS-6020B-C	Cal10		12/29/2021 1:43:	1	R372516		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.9999	0.9999		1	0	0		0.01		100%	90	110	0%	
Antimony	A	mg/L	0.0001746	0.0001746		0	0	0		0.001		0%			0%	
Arsenic	A	mg/L	1	1		1	0	0		0.001		100%	90	110	0%	
Barium	A	mg/L	0.9993	0.9993		1	0	0		0.0003		100%	90	110	0%	
Beryllium	A	mg/L	1	1		1	0	0		0.001		100%	90	110	0%	
Boron	A	mg/L	1.001	1.001		1	0	0		0.1		100%	90	110	0%	
Cadmium	A	mg/L	1	1		1	0	0		0.001		100%	90	110	0%	
Calcium	A	mg/L	50.12	50.12		50	0	0		1		100%	90	110	0%	
Cerium	A	mg/L	0.1046	0.1046		0	0	0		0.001		0%			0%	
Chromium	A	mg/L	1	1		1	0	0		0.001		100%	90	110	0%	
Cobalt	A	mg/L	1.001	1.001		1	0	0		0.001		100%	90	110	0%	
Copper	A	mg/L	0.9999	0.9999		1	0	0		0.005		100%	90	110	0%	
Iron	A	mg/L	5.98	5.98		6	0	0		0.01		100%	90	110	0%	
Lanthanum	A	mg/L	0.1031	0.1031		0	0	0		0.001		0%			0%	
Lithium	A	mg/L	2.496	2.496		2.5	0	0		1		100%	90	110	0%	
Magnesium	A	mg/L	50.13	50.13		50	0	0		1		100%	90	110	0%	
Manganese	A	mg/L	1	1		1	0	0		0.001		100%	90		0%	
Mercury	A	mg/L	0.00001191	0.00001191		0	0	0		0.001		0%			0%	
Molybdenum	A	mg/L	0.0001067	0.0001067		0	0	0		0.001		0%			0%	
Nickel	A	mg/L	1	1		1	0	0		0.005		100%	90	110	0%	
Potassium	A	mg/L	49.76	49.76		50	0	0		1		100%	90	110	0%	
Selenium	A	mg/L	1	1		1	0	0		0.005		100%	90	110	0%	
Silicon	A	mg/L	0.002119	0.002119		0	0	0		0.1		0%			0%	
Silver	A	mg/L	0.2688	0.2688		0	0	0		0.001		0%			0%	
Sodium	A	mg/L	49.96	49.96		50	0	0		1		100%	90	110	0%	
Strontium	A	mg/L	0.9999	0.9999		1	0	0		0.001		100%	90	110	0%	
Thallium	A	mg/L	1	1		1	0	0		0.001		100%	90	110	0%	
Thorium	A	mg/L	1.02	1.02		1	0	0		0.05		102%	90	110	0%	
Tin	A	mg/L	0.0001597	0.0001597		0	0	0		0.001		0%			0%	
Titanium	A	mg/L	0.006781	0.006781		1	0	0		0.001		1%	90	110	0%	S
Uranium	A	mg/L	1	1		1	0	0		0.001		100%	90	110	0%	
Vanadium	A	mg/L	1	1		1	0	0		0.005		100%	90	110	0%	
Zinc	A	mg/L	1	1		1	0	0		0.01		100%	90	110	0%	
Iron, Ferrous	C	mg/L	5.98	5.98		0	0	0		0.01	5	0%			0%	
Silicon as SiO2	C	mg/L	0.00453466	0.00453466		0	0	0		0.214	0.9	0%			0%	

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14955735	100 ppb Br STD	ICPMS-6020-W-	SAMP		12/29/2021 1:49:	1	R372516		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.0001184	0		0	0	0	0.00086	0.001	1	0%	0	0	0%	
Antimony	A	mg/L	0.00004162	0		0	0	0	0.00042	0.001	0.1	0%	0	0	0%	
Arsenic	A	mg/L	0.00009533	0		0	0	0	0.00019	0.001	1	0%	0	0	0%	
Barium	A	mg/L	0.00003015	0		0	0	0	0.000042	0.001	1	0%	0	0	0%	
Beryllium	A	mg/L	0.0008638	0.0008638		0	0	0	0.00012	0.001	1	0%	0	0	0%	J
Cadmium	A	mg/L	0.00003379	0.00003379		0	0	0	0.000025	0.001	1	0%	0	0	0%	J
Cerium	A	mg/L	6.282E-06	0		0	0	0	0.000012	0.001	0.1	0%	0	0	0%	
Chromium	A	mg/L	0.00008108	0		0	0	0	0.00018	0.001	1	0%	0	0	0%	
Cobalt	A	mg/L	0.0001345	0.0001345		0	0	0	0.000042	0.001	1	0%	0	0	0%	J
Copper	A	mg/L	0.00007218	0		0	0	0	0.00027	0.001	1	0%	0	0	0%	
Lanthanum	A	mg/L	2.081E-06	0		0	0	0	0.000011	0.001	0.1	0%	0	0	0%	
Manganese	A	mg/L	-8.412E-06	0		0	0	0	0.000095	0.001	1	0%	0	0	0%	
Mercury	A	mg/L	2.267E-06	0		0	0	0	0.00016	0.001	0.002	0%	0	0	0%	
Molybdenum	A	mg/L	0.0000106	0		0	0	0	0.00005	0.001	0.1	0%	0	0	0%	
Nickel	A	mg/L	0.000421	0		0	0	0	0.00063	0.001	1	0%	0	0	0%	
Selenium	A	mg/L	0.0001735	0		0	0	0	0.00033	0.001	1	0%	0	0	0%	
Silicon	A	mg/L	0.001053	0		0	0	0	0.01223	0.1	0.4	0%	0	0	0%	
Silver	A	mg/L	0.0002371	0.0002371		0	0	0	0.00002	0.001	0.04	0%	0	0	0%	J
Strontium	A	mg/L	0.00003575	0		0	0	0	0.00014	0.001	1	0%	0	0	0%	
Thallium	A	mg/L	0.0002857	0.0002857		0	0	0	0.000041	0.001	1	0%	0	0	0%	J
Thorium	A	mg/L	0.0001148	0		0	0	0	0.00061	0.001	1	0%	0	0	0%	
Titanium	A	mg/L	0.0001448	0.0001448		0	0	0	0.000094	0.001	1	0%	0	0	0%	J
Uranium	A	mg/L	7.499E-06	0		0	0	0	0.000052	0.0003	1	0%	0	0	0%	
Boron	B	mg/L	0.007042	0.007042		0	0	0	0.00561	0.00561	1	0%	0	0	0%	D
Calcium	B	mg/L	0.0063	0		0	0	0	0.02092	0.02092	50	0%	0	0	0%	L
Iron	B	mg/L	0.001186	0		0	0	0	0.00119	0.00119	5	0%	0	0	0%	
Iron, Ferrous	B	mg/L	0.001186	0		0	0	0	0.00119	0.00119	5	0%	0	0	0%	
Potassium	B	mg/L	0.001274	0		0	0	0	0.08139	0.08139	50	0%	0	0	0%	L
Sodium	B	mg/L	-0.005155	0		0	0	0	0.02171	0.02171	50	0%	0	0	0%	L
Tin	B	mg/L	0.0002899	0		0	0	0	0.00132	0.00132	0.1	0%	0	0	0%	
Vanadium	B	mg/L	-0.0009135	0		0	0	0	0.0013	0.0013	1	0%	0	0	0%	
Zinc	B	mg/L	0.0002025	0		0	0	0	0.00273	0.00273	1	0%	0	0	0%	L

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14955736	Rinse	ICPMS-6020-W-	SAMP		12/29/2021 2:33:	1	R372516		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	-2.847E-05	0		0	0	0	0.00086	0.001	1	0%	0	0	0%	
Antimony	A	mg/L	-2.027E-05	0		0	0	0	0.00042	0.001	0.1	0%	0	0	0%	
Arsenic	A	mg/L	-0.0000947	0		0	0	0	0.00019	0.001	1	0%	0	0	0%	
Barium	A	mg/L	-2.536E-06	0		0	0	0	0.000042	0.001	1	0%	0	0	0%	
Beryllium	A	mg/L	0.00008005	0		0	0	0	0.00012	0.001	1	0%	0	0	0%	
Cadmium	A	mg/L	-1.74E-07	0		0	0	0	0.000025	0.001	1	0%	0	0	0%	
Cerium	A	mg/L	1.089E-07	0		0	0	0	0.000012	0.001	0.1	0%	0	0	0%	
Chromium	A	mg/L	-1.816E-05	0		0	0	0	0.00018	0.001	1	0%	0	0	0%	
Cobalt	A	mg/L	0.00002206	0		0	0	0	0.000042	0.001	1	0%	0	0	0%	
Copper	A	mg/L	-3.118E-05	0		0	0	0	0.00027	0.001	1	0%	0	0	0%	
Lanthanum	A	mg/L	-3.143E-07	0		0	0	0	0.000011	0.001	0.1	0%	0	0	0%	
Lead	A	mg/L	0.00001204	0		0	0	0	0.000056	0.001	1	0%	0	0	0%	
Manganese	A	mg/L	-0.0001792	0		0	0	0	0.000095	0.001	1	0%	0	0	0%	
Mercury	A	mg/L	-1.988E-06	0		0	0	0	0.00016	0.001	0.002	0%	0	0	0%	
Molybdenum	A	mg/L	-3.962E-06	0		0	0	0	0.00005	0.001	0.1	0%	0	0	0%	
Nickel	A	mg/L	0.00009942	0		0	0	0	0.00063	0.001	1	0%	0	0	0%	
Selenium	A	mg/L	1.606E-06	0		0	0	0	0.00033	0.001	1	0%	0	0	0%	
Silicon	A	mg/L	0.0004602	0		0	0	0	0.01223	0.1	0.4	0%	0	0	0%	
Silver	A	mg/L	3.438E-07	0		0	0	0	0.00002	0.001	0.04	0%	0	0	0%	
Strontium	A	mg/L	-4.588E-06	0		0	0	0	0.00014	0.001	1	0%	0	0	0%	
Thallium	A	mg/L	-1.824E-06	0		0	0	0	0.000041	0.001	1	0%	0	0	0%	
Thorium	A	mg/L	-4.127E-07	0		0	0	0	0.00061	0.001	1	0%	0	0	0%	
Titanium	A	mg/L	-2.584E-05	0		0	0	0	0.000094	0.001	1	0%	0	0	0%	
Uranium	A	mg/L	-1.962E-06	0		0	0	0	0.000052	0.0003	1	0%	0	0	0%	
Boron	B	mg/L	0.0001265	0		0	0	0	0.00561	0.00561	1	0%	0	0	0%	L
Calcium	B	mg/L	0.002235	0		0	0	0	0.02092	0.02092	50	0%	0	0	0%	L
Iron	B	mg/L	0.000379	0		0	0	0	0.00119	0.00119	5	0%	0	0	0%	
Iron, Ferrous	B	mg/L	0.000379	0		0	0	0	0.00119	0.00119	5	0%	0	0	0%	
Potassium	B	mg/L	-0.01548	0		0	0	0	0.08139	0.08139	50	0%	0	0	0%	L
Sodium	B	mg/L	-0.03179	0		0	0	0	0.02171	0.02171	50	0%	0	0	0%	L
Tin	B	mg/L	-1.105E-05	0		0	0	0	0.00132	0.00132	0.1	0%	0	0	0%	
Vanadium	B	mg/L	-0.0008972	0		0	0	0	0.0013	0.0013	1	0%	0	0	0%	
Zinc	B	mg/L	-3.056E-05	0		0	0	0	0.00273	0.00273	1	0%	0	0	0%	L

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14955737	Cal Blk	ICPMS-6020-W-	SAMP		12/29/2021 2:39:	1	R372516		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0	0		0	0	0	0.00086	0.001	1	0%	0	0	0%	
Antimony	A	mg/L	0	0		0	0	0	0.00042	0.001	0.1	0%	0	0	0%	
Arsenic	A	mg/L	0	0		0	0	0	0.00019	0.001	1	0%	0	0	0%	
Barium	A	mg/L	0	0		0	0	0	0.000042	0.001	1	0%	0	0	0%	
Beryllium	A	mg/L	0	0		0	0	0	0.00012	0.001	1	0%	0	0	0%	
Cadmium	A	mg/L	0	0		0	0	0	0.000025	0.001	1	0%	0	0	0%	
Cerium	A	mg/L	0	0		0	0	0	0.000012	0.001	0.1	0%	0	0	0%	
Chromium	A	mg/L	0	0		0	0	0	0.00018	0.001	1	0%	0	0	0%	
Cobalt	A	mg/L	0	0		0	0	0	0.000042	0.001	1	0%	0	0	0%	
Copper	A	mg/L	0	0		0	0	0	0.00027	0.001	1	0%	0	0	0%	
Lanthanum	A	mg/L	0	0		0	0	0	0.000011	0.001	0.1	0%	0	0	0%	
Manganese	A	mg/L	0	0		0	0	0	0.000095	0.001	1	0%	0	0	0%	
Mercury	A	mg/L	0	0		0	0	0	0.00016	0.001	0.002	0%	0	0	0%	
Molybdenum	A	mg/L	0	0		0	0	0	0.00005	0.001	0.1	0%	0	0	0%	
Nickel	A	mg/L	0	0		0	0	0	0.00063	0.001	1	0%	0	0	0%	
Selenium	A	mg/L	0	0		0	0	0	0.00033	0.001	1	0%	0	0	0%	
Silicon	A	mg/L	0	0		0	0	0	0.01223	0.1	0.4	0%	0	0	0%	
Silver	A	mg/L	0	0		0	0	0	0.00002	0.001	0.04	0%	0	0	0%	
Strontium	A	mg/L	0	0		0	0	0	0.00014	0.001	1	0%	0	0	0%	
Thallium	A	mg/L	0	0		0	0	0	0.000041	0.001	1	0%	0	0	0%	
Thorium	A	mg/L	0	0		0	0	0	0.00061	0.001	1	0%	0	0	0%	
Titanium	A	mg/L	0	0		0	0	0	0.000094	0.001	1	0%	0	0	0%	
Uranium	A	mg/L	0	0		0	0	0	0.000052	0.0003	1	0%	0	0	0%	
Boron	B	mg/L	0	0		0	0	0	0.00561	0.00561	1	0%	0	0	0%	L
Calcium	B	mg/L	0	0		0	0	0	0.02092	0.02092	50	0%	0	0	0%	L
Iron	B	mg/L	0	0		0	0	0	0.00119	0.00119	5	0%	0	0	0%	
Iron, Ferrous	B	mg/L	0	0		0	0	0	0.00119	0.00119	5	0%	0	0	0%	
Potassium	B	mg/L	0	0		0	0	0	0.08139	0.08139	50	0%	0	0	0%	L
Sodium	B	mg/L	0	0		0	0	0	0.02171	0.02171	50	0%	0	0	0%	L
Tin	B	mg/L	0	0		0	0	0	0.00132	0.00132	0.1	0%	0	0	0%	
Vanadium	B	mg/L	0	0		0	0	0	0.0013	0.0013	1	0%	0	0	0%	
Zinc	B	mg/L	0	0		0	0	0	0.00273	0.00273	1	0%	0	0	0%	L

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14955738	0.025 ppb STD	ICPMS-6020B-C	Cal1		12/29/2021 2:46:	1	R372516		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	-5.404E-06	-5.404E-06		0	0	0		0.01		0%			0%	
Antimony	A	mg/L	0.00002192	0.00002192		0	0	0		0.001		0%			0%	
Arsenic	A	mg/L	0.00004776	0.00004776		0.000025	0	0		0.001		191%	80	120	0%	S
Barium	A	mg/L	0.00002574	0.00002574		0.000025	0	0		0.0003		103%	80	120	0%	
Beryllium	A	mg/L	0.00001711	0.00001711		0.000025	0	0		0.001		68%	80	120	0%	S
Boron	A	mg/L	-4.397E-05	-4.397E-05		0	0	0		0.1		0%			0%	
Cadmium	A	mg/L	0.00002189	0.00002189		0.000025	0	0		0.001		88%	80	120	0%	
Calcium	A	mg/L	0.008492	0.008492		0	0	0		1		0%			0%	
Cerium	A	mg/L	0.0000266	0.0000266		0.000025	0	0		0.001		106%	80	120	0%	
Chromium	A	mg/L	-2.266E-05	-2.266E-05		0.000025	0	0		0.001		-91%	80	120	0%	S
Cobalt	A	mg/L	0.00002556	0.00002556		0.000025	0	0		0.001		102%	80	120	0%	
Iron	A	mg/L	0.0006838	0.0006838		0	0	0		0.01		0%			0%	
Lanthanum	A	mg/L	0.00002227	0.00002227		0.000025	0	0		0.001		89%	80	120	0%	
Lead	A	mg/L	0.00002662	0.00002662		0.000025	0	0		0.001		106%	80	120	0%	
Lithium	A	mg/L	0.0002745	0.0002745		0.0003125	0	0		1		88%	80	120	0%	
Magnesium	A	mg/L	0.007259	0.007259		0	0	0		1		0%			0%	
Manganese	A	mg/L	0.00002208	0.00002208		0	0	0		0.001		0%			0%	
Mercury	A	mg/L	-2.246E-06	-2.246E-06		0	0	0		0.001		0%			0%	
Molybdenum	A	mg/L	0.00002161	0.00002161		0	0	0		0.001		0%			0%	
Nickel	A	mg/L	0.00006009	0.00006009		0	0	0		0.005		0%			0%	
Potassium	A	mg/L	0.01304	0.01304		0.00625	0	0		1		209%	80	120	0%	S
Selenium	A	mg/L	0.00002662	0.00002662		0.000025	0	0		0.005		106%	80	120	0%	
Silicon	A	mg/L	0.0002041	0.0002041		0	0	0		0.1		0%			0%	
Silver	A	mg/L	0.00001643	0.00001643		0	0	0		0.001		0%			0%	
Sodium	A	mg/L	0.008176	0.008176		0.00625	0	0		1		131%	80	120	0%	S
Strontium	A	mg/L	0.00002908	0.00002908		0	0	0		0.001		0%	80	120	0%	
Thallium	A	mg/L	0.00002338	0.00002338		0	0	0		0.001		0%			0%	
Thorium	A	mg/L	0.00001214	0.00001214		0	0	0		0.05		0%			0%	
Tin	A	mg/L	0.00002773	0.00002773		0	0	0		0.001		0%			0%	
Titanium	A	mg/L	0.0000464	0.0000464		0	0	0		0.001		0%			0%	
Uranium	A	mg/L	0.00002499	0.00002499		0.000025	0	0		0.001		100%	80	120	0%	
Vanadium	A	mg/L	0.00005449	0.00005449		0	0	0		0.005		0%			0%	
Zinc	A	mg/L	0.0000542	0.0000542		0	0	0		0.01		0%			0%	
Iron, Ferrous	C	mg/L	0.0006838	0.0006838		0.000025	0	0		0.01	5	2735%	80	120	0%	S
Silicon as SiO2	C	mg/L	0.00043677	0.00043677		0.0000535	0	0		0.214	0.9	816%	80	120	0%	S

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14955739	Rinse	ICPMS-6020-W-	SAMP		12/29/2021 2:52:	1	R372516		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	-9.208E-05	0		0	0	0	0.00086	0.001	1	0%	0	0	0%	
Antimony	A	mg/L	5.078E-07	0		0	0	0	0.00042	0.001	0.1	0%	0	0	0%	
Arsenic	A	mg/L	-4.746E-06	0		0	0	0	0.00019	0.001	1	0%	0	0	0%	
Barium	A	mg/L	-1.114E-07	0		0	0	0	0.000042	0.001	1	0%	0	0	0%	
Beryllium	A	mg/L	0.00008708	0		0	0	0	0.00012	0.001	1	0%	0	0	0%	
Cadmium	A	mg/L	0.00000191	0		0	0	0	0.000025	0.001	1	0%	0	0	0%	
Cerium	A	mg/L	3.375E-07	0		0	0	0	0.000012	0.001	0.1	0%	0	0	0%	
Chromium	A	mg/L	-0.0000418	0		0	0	0	0.00018	0.001	1	0%	0	0	0%	
Cobalt	A	mg/L	0.00002399	0		0	0	0	0.000042	0.001	1	0%	0	0	0%	
Copper	A	mg/L	-1.179E-05	0		0	0	0	0.00027	0.001	1	0%	0	0	0%	
Lanthanum	A	mg/L	1.164E-07	0		0	0	0	0.000011	0.001	0.1	0%	0	0	0%	
Lead	A	mg/L	-2.666E-06	0		0	0	0	0.000056	0.001	1	0%	0	0	0%	
Manganese	A	mg/L	0.00005515	0		0	0	0	0.000095	0.001	1	0%	0	0	0%	
Mercury	A	mg/L	-1.596E-06	0		0	0	0	0.00016	0.001	0.002	0%	0	0	0%	
Molybdenum	A	mg/L	2.234E-06	0		0	0	0	0.00005	0.001	0.1	0%	0	0	0%	
Nickel	A	mg/L	0.0007703	0.0007703		0	0	0	0.00063	0.001	1	0%	0	0	0%	J
Selenium	A	mg/L	-4.71E-06	0		0	0	0	0.00033	0.001	1	0%	0	0	0%	
Silicon	A	mg/L	-0.0002159	0		0	0	0	0.01223	0.1	0.4	0%	0	0	0%	
Silver	A	mg/L	-1.245E-07	0		0	0	0	0.00002	0.001	0.04	0%	0	0	0%	
Strontium	A	mg/L	8.922E-07	0		0	0	0	0.00014	0.001	1	0%	0	0	0%	
Thallium	A	mg/L	-2.748E-06	0		0	0	0	0.000041	0.001	1	0%	0	0	0%	
Thorium	A	mg/L	-3.704E-06	0		0	0	0	0.00061	0.001	1	0%	0	0	0%	
Titanium	A	mg/L	0.00000181	0		0	0	0	0.000094	0.001	1	0%	0	0	0%	
Uranium	A	mg/L	6.331E-07	0		0	0	0	0.000052	0.0003	1	0%	0	0	0%	
Boron	B	mg/L	0.0007913	0		0	0	0	0.00561	0.00561	1	0%	0	0	0%	L
Calcium	B	mg/L	0.0001934	0		0	0	0	0.02092	0.02092	50	0%	0	0	0%	L
Iron	B	mg/L	0.002549	0.002549		0	0	0	0.00119	0.00119	5	0%	0	0	0%	
Iron, Ferrous	B	mg/L	0.002549	0.002549		0	0	0	0.00119	0.00119	5	0%	0	0	0%	
Potassium	B	mg/L	0.002135	0		0	0	0	0.08139	0.08139	50	0%	0	0	0%	L
Sodium	B	mg/L	-0.001262	0		0	0	0	0.02171	0.02171	50	0%	0	0	0%	L
Tin	B	mg/L	0.0002213	0		0	0	0	0.00132	0.00132	0.1	0%	0	0	0%	
Vanadium	B	mg/L	-0.0001518	0		0	0	0	0.0013	0.0013	1	0%	0	0	0%	
Zinc	B	mg/L	-2.742E-05	0		0	0	0	0.00273	0.00273	1	0%	0	0	0%	L

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14955740	Cal Blk	ICPMS-6020-W-	SAMP		12/29/2021 2:58:	1	R372516		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0	0		0	0	0	0.00086	0.001	1	0%	0	0	0%	
Antimony	A	mg/L	0	0		0	0	0	0.00042	0.001	0.1	0%	0	0	0%	
Arsenic	A	mg/L	0	0		0	0	0	0.00019	0.001	1	0%	0	0	0%	
Barium	A	mg/L	0	0		0	0	0	0.000042	0.001	1	0%	0	0	0%	
Beryllium	A	mg/L	0	0		0	0	0	0.00012	0.001	1	0%	0	0	0%	
Cadmium	A	mg/L	0	0		0	0	0	0.000025	0.001	1	0%	0	0	0%	
Cerium	A	mg/L	0	0		0	0	0	0.000012	0.001	0.1	0%	0	0	0%	
Chromium	A	mg/L	0	0		0	0	0	0.00018	0.001	1	0%	0	0	0%	
Cobalt	A	mg/L	0	0		0	0	0	0.000042	0.001	1	0%	0	0	0%	
Copper	A	mg/L	0	0		0	0	0	0.00027	0.001	1	0%	0	0	0%	
Lanthanum	A	mg/L	0	0		0	0	0	0.000011	0.001	0.1	0%	0	0	0%	
Lead	A	mg/L	0	0		0	0	0	0.000056	0.001	1	0%	0	0	0%	
Manganese	A	mg/L	0	0		0	0	0	0.000095	0.001	1	0%	0	0	0%	
Mercury	A	mg/L	0	0		0	0	0	0.00016	0.001	0.002	0%	0	0	0%	
Molybdenum	A	mg/L	0	0		0	0	0	0.00005	0.001	0.1	0%	0	0	0%	
Nickel	A	mg/L	0	0		0	0	0	0.00063	0.001	1	0%	0	0	0%	
Selenium	A	mg/L	0	0		0	0	0	0.00033	0.001	1	0%	0	0	0%	
Silicon	A	mg/L	0	0		0	0	0	0.01223	0.1	0.4	0%	0	0	0%	
Silver	A	mg/L	0	0		0	0	0	0.00002	0.001	0.04	0%	0	0	0%	
Strontium	A	mg/L	0	0		0	0	0	0.00014	0.001	1	0%	0	0	0%	
Thallium	A	mg/L	0	0		0	0	0	0.000041	0.001	1	0%	0	0	0%	
Thorium	A	mg/L	0	0		0	0	0	0.00061	0.001	1	0%	0	0	0%	
Titanium	A	mg/L	0	0		0	0	0	0.000094	0.001	1	0%	0	0	0%	
Uranium	A	mg/L	0	0		0	0	0	0.000052	0.0003	1	0%	0	0	0%	
Boron	B	mg/L	0	0		0	0	0	0.00561	0.00561	1	0%	0	0	0%	L
Calcium	B	mg/L	0	0		0	0	0	0.02092	0.02092	50	0%	0	0	0%	L
Iron	B	mg/L	0	0		0	0	0	0.00119	0.00119	5	0%	0	0	0%	
Iron, Ferrous	B	mg/L	0	0		0	0	0	0.00119	0.00119	5	0%	0	0	0%	
Potassium	B	mg/L	0	0		0	0	0	0.08139	0.08139	50	0%	0	0	0%	L
Sodium	B	mg/L	0	0		0	0	0	0.02171	0.02171	50	0%	0	0	0%	L
Tin	B	mg/L	0	0		0	0	0	0.00132	0.00132	0.1	0%	0	0	0%	
Vanadium	B	mg/L	0	0		0	0	0	0.0013	0.0013	1	0%	0	0	0%	
Zinc	B	mg/L	0	0		0	0	0	0.00273	0.00273	1	0%	0	0	0%	L

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist				
14955741	0.025 ppb STD	ICPMS-6020B-C	Cal1		12/29/2021 3:05:	1	R372516		0	0					

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.00009345	0.00009345		0	0	0		0.01		0%			0%	
Antimony	A	mg/L	0.00002372	0.00002372		0	0	0		0.001		0%			0%	
Arsenic	A	mg/L	0.0000542	0.0000542		0.000025	0	0		0.001		217%	80	120	0%	S
Barium	A	mg/L	0.00003702	0.00003702		0.000025	0	0		0.0003		148%	80	120	0%	S
Beryllium	A	mg/L	-5.614E-06	-5.614E-06		0.000025	0	0		0.001		-22%	80	120	0%	S
Boron	A	mg/L	0.00004798	0.00004798		0	0	0		0.1		0%			0%	
Cadmium	A	mg/L	0.00002503	0.00002503		0.000025	0	0		0.001		100%	80	120	0%	
Calcium	A	mg/L	0.01359	0.01359		0	0	0		1		0%			0%	
Cerium	A	mg/L	0.00002728	0.00002728		0.000025	0	0		0.001		109%	80	120	0%	
Chromium	A	mg/L	0.00004079	0.00004079		0.000025	0	0		0.001		163%	80	120	0%	S
Cobalt	A	mg/L	0.00002888	0.00002888		0.000025	0	0		0.001		116%	80	120	0%	
Copper	A	mg/L	0.00003888	0.00003888		0	0	0		0.005		0%			0%	
Iron	A	mg/L	0.0006233	0.0006233		0	0	0		0.01		0%			0%	
Lanthanum	A	mg/L	0.00002552	0.00002552		0.000025	0	0		0.001		102%	80	120	0%	
Lead	A	mg/L	0.00002778	0.00002778		0.000025	0	0		0.001		111%	80	120	0%	
Lithium	A	mg/L	0.0004183	0.0004183		0.0003125	0	0		1		134%	80	120	0%	S
Magnesium	A	mg/L	0.004388	0.004388		0	0	0		1		0%			0%	
Manganese	A	mg/L	0.00001816	0.00001816		0	0	0		0.001		0%			0%	
Mercury	A	mg/L	1.805E-06	1.805E-06		0	0	0		0.001		0%			0%	
Molybdenum	A	mg/L	0.00002744	0.00002744		0	0	0		0.001		0%			0%	
Nickel	A	mg/L	-9.001E-05	-9.001E-05		0	0	0		0.005		0%			0%	
Potassium	A	mg/L	0.01156	0.01156		0.00625	0	0		1		185%	80	120	0%	S
Selenium	A	mg/L	0.00002756	0.00002756		0.000025	0	0		0.005		110%	80	120	0%	
Silicon	A	mg/L	0.02446	0.02446		0	0	0		0.1		0%			0%	
Silver	A	mg/L	0.00001657	0.00001657		0	0	0		0.001		0%			0%	
Sodium	A	mg/L	0.008513	0.008513		0.00625	0	0		1		136%	80	120	0%	S
Strontium	A	mg/L	0.00003299	0.00003299		0	0	0		0.001		0%	80	120	0%	
Thallium	A	mg/L	0.00003013	0.00003013		0	0	0		0.001		0%			0%	
Thorium	A	mg/L	0.00001274	0.00001274		0	0	0		0.05		0%			0%	
Tin	A	mg/L	-0.0002074	-0.0002074		0	0	0		0.001		0%			0%	
Titanium	A	mg/L	0.00005976	0.00005976		0	0	0		0.001		0%			0%	
Uranium	A	mg/L	0.00002625	0.00002625		0.000025	0	0		0.001		105%	80	120	0%	
Vanadium	A	mg/L	0.0002747	0.0002747		0	0	0		0.005		0%			0%	
Zinc	A	mg/L	0.0001244	0.0001244		0	0	0		0.01		0%			0%	
Iron, Ferrous	C	mg/L	0.0006233	0.0006233		0.000025	0	0		0.01	5	2493%	80	120	0%	S

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14955741	0.025 ppb STD	ICPMS-6020B-C	Cal1		12/29/2021 3:05:	1	R372516		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Silicon as SiO2	C	mg/L	0.0523444	0.0523444		0.0000535	0	0		0.214	0.9	97840%	80	120	0%	S

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14955742	0.05 ppb STD	ICPMS-6020B-C	Cal2		12/29/2021 3:11:	1	R372516		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.0004424	0.0004424		0	0	0		0.01		0%			0%	
Antimony	A	mg/L	0.00005137	0.00005137		0.00005	0	0		0.001		103%	80	120	0%	
Arsenic	A	mg/L	0.00007277	0.00007277		0.00005	0	0		0.001		146%	80	120	0%	S
Barium	A	mg/L	0.00006543	0.00006543		0.00005	0	0		0.0003		131%	80	120	0%	S
Beryllium	A	mg/L	5.735E-06	5.735E-06		0.00005	0	0		0.001		11%	80	120	0%	S
Boron	A	mg/L	-0.000163	-0.000163		0	0	0		0.1		0%			0%	
Cadmium	A	mg/L	0.00005294	0.00005294		0.00005	0	0		0.001		106%	80	120	0%	
Calcium	A	mg/L	0.01638	0.01638		0.0125	0	0		1		131%	80	120	0%	S
Cerium	A	mg/L	0.00005281	0.00005281		0.00005	0	0		0.001		106%	80	120	0%	
Chromium	A	mg/L	0.00006548	0.00006548		0.00005	0	0		0.001		131%	80	120	0%	S
Cobalt	A	mg/L	0.0000519	0.0000519		0	0	0		0.001		0%			0%	
Copper	A	mg/L	0.0000913	0.0000913		0.00005	0	0		0.005		183%	80	120	0%	S
Iron	A	mg/L	0.001264	0.001264		0.00125	0	0		0.01		101%	80	120	0%	
Lanthanum	A	mg/L	0.00005452	0.00005452		0.00005	0	0		0.001		109%	80	120	0%	
Lead	A	mg/L	0.00004974	0.00004974		0.00005	0	0		0.001		99%	80	120	0%	
Lithium	A	mg/L	0.0007409	0.0007409		0.000625	0	0		1		119%	80	120	0%	
Magnesium	A	mg/L	0.006383	0.006383		0.0125	0	0		1		51%	80	120	0%	S
Manganese	A	mg/L	0.00005256	0.00005256		0.00005	0	0		0.001		105%	80	120	0%	
Mercury	A	mg/L	3.619E-06	3.619E-06		0	0	0		0.001		0%			0%	
Molybdenum	A	mg/L	0.00005263	0.00005263		0.00005	0	0		0.001		105%	80	120	0%	
Nickel	A	mg/L	-0.000131	-0.000131		0	0	0		0.005		0%			0%	
Potassium	A	mg/L	0.0154	0.0154		0.0125	0	0		1		123%	80	120	0%	S
Selenium	A	mg/L	0.00005856	0.00005856		0.00005	0	0		0.005		117%	80	120	0%	
Silicon	A	mg/L	0.0006805	0.0006805		0	0	0		0.1		0%			0%	
Silver	A	mg/L	0.00002584	0.00002584		0.00002	0	0		0.001		129%	80	120	0%	S
Sodium	A	mg/L	0.01522	0.01522		0.0125	0	0		1		122%	80	120	0%	S
Strontium	A	mg/L	0.0000752	0.0000752		0.00005	0	0		0.001		150%	80	120	0%	S
Thallium	A	mg/L	0.00005	0.00005		0	0	0		0.001		0%			0%	
Thorium	A	mg/L	0.00003084	0.00003084		0	0	0		0.05		0%			0%	

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14955742	0.05 ppb STD	ICPMS-6020B-C	Cal2		12/29/2021 3:11:	1	R372516		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Tin	A	mg/L	-0.0001786	-0.0001786		0	0	0		0.001		0%			0%	
Titanium	A	mg/L	0.0001048	0.0001048		0	0	0		0.001		0%			0%	
Uranium	A	mg/L	0.0000516	0.0000516		0.00005	0	0		0.001		103%	80	120	0%	
Vanadium	A	mg/L	0.0004066	0.0004066		0	0	0		0.005		0%			0%	
Zinc	A	mg/L	0.0001293	0.0001293		0	0	0		0.01		0%			0%	
Iron, Ferrous	C	mg/L	0.001264	0.001264		0.00005	0	0		0.01	5	2528%	80	120	0%	S
Silicon as SiO2	C	mg/L	0.00145627	0.00145627		0.00428	0	0		0.214	0.9	34%	80	120	0%	S

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14955743	0.10 ppb STD	ICPMS-6020B-C	Cal3		12/29/2021 3:17:	1	R372516		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.000194	0.000194		0.0001	0	0		0.01		194%	80	120	0%	S
Antimony	A	mg/L	0.0001142	0.0001142		0.0001	0	0		0.001		114%	80	120	0%	
Arsenic	A	mg/L	0.0001528	0.0001528		0.0001	0	0		0.001		153%	80	120	0%	S
Barium	A	mg/L	0.0001239	0.0001239		0.0001	0	0		0.0003		124%	80	120	0%	S
Beryllium	A	mg/L	0.00005837	0.00005837		0.0001	0	0		0.001		58%	80	120	0%	S
Boron	A	mg/L	-0.0002317	-0.0002317		0	0	0		0.1		0%			0%	
Cadmium	A	mg/L	0.0001163	0.0001163		0.0001	0	0		0.001		116%	80	120	0%	
Calcium	A	mg/L	0.03583	0.03583		0.025	0	0		1		143%	80	120	0%	S
Cerium	A	mg/L	0.0001302	0.0001302		0.0001	0	0		0.001		130%	80	120	0%	S
Chromium	A	mg/L	0.0001372	0.0001372		0.0001	0	0		0.001		137%	80	120	0%	S
Cobalt	A	mg/L	0.0001359	0.0001359		0.0001	0	0		0.001		136%	80	120	0%	S
Copper	A	mg/L	0.0001518	0.0001518		0.0001	0	0		0.005		152%	80	120	0%	S
Iron	A	mg/L	0.003273	0.003273		0.0025	0	0		0.01		131%	80	120	0%	S
Lanthanum	A	mg/L	0.0001284	0.0001284		0.0001	0	0		0.001		128%	80	120	0%	S
Lead	A	mg/L	0.0001191	0.0001191		0.0001	0	0		0.001		119%	80	120	0%	
Lithium	A	mg/L	0.001615	0.001615		0.00125	0	0		1		129%	80	120	0%	S
Magnesium	A	mg/L	0.02363	0.02363		0.025	0	0		1		95%	80	120	0%	
Manganese	A	mg/L	0.0001242	0.0001242		0.0001	0	0		0.001		124%	80	120	0%	S
Mercury	A	mg/L	5.082E-06	5.082E-06		0.000002	0	0		0.001		254%	80	120	0%	S
Molybdenum	A	mg/L	0.0001251	0.0001251		0.0001	0	0		0.001		125%	80	120	0%	S
Nickel	A	mg/L	-2.728E-05	-2.728E-05		0.0001	0	0		0.005		-27%	80	120	0%	S
Potassium	A	mg/L	0.03459	0.03459		0.025	0	0		1		138%	80	120	0%	S
Selenium	A	mg/L	0.000116	0.000116		0.0001	0	0		0.005		116%	80	120	0%	

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14955743	0.10 ppb STD	ICPMS-6020B-C	Cal3		12/29/2021 3:17:	1	R372516		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Silicon	A	mg/L	0.001116	0.001116		0.0004	0	0		0.1		279%	80	120	0%	S
Silver	A	mg/L	0.00005527	0.00005527		0.00004	0	0		0.001		138%	80	120	0%	S
Sodium	A	mg/L	0.03526	0.03526		0.025	0	0		1		141%	80	120	0%	S
Strontium	A	mg/L	0.0001349	0.0001349		0.0001	0	0		0.001		135%	80	120	0%	S
Thallium	A	mg/L	0.0001152	0.0001152		0.0001	0	0		0.001		115%	80	120	0%	
Thorium	A	mg/L	0.00008269	0.00008269		0.0001	0	0		0.05		83%	80	120	0%	
Tin	A	mg/L	-0.0001096	-0.0001096		0.0001	0	0		0.001		-110%	80	120	0%	S
Titanium	A	mg/L	0.0001754	0.0001754		0.0001	0	0		0.001		175%	80	120	0%	S
Uranium	A	mg/L	0.0001208	0.0001208		0.0001	0	0		0.001		121%	80	120	0%	S
Vanadium	A	mg/L	0.000447	0.000447		0.0001	0	0		0.005		447%	80	120	0%	S
Zinc	A	mg/L	0.0001902	0.0001902		0.0001	0	0		0.01		190%	80	120	0%	S
Iron, Ferrous	C	mg/L	0.003273	0.003273		0.0001	0	0		0.01	5	3273%	80	120	0%	S
Silicon as SiO2	C	mg/L	0.00238824	0.00238824		0.00856	0	0		0.214	0.9	28%	80	120	0%	S

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14955744	0.5 ppb STD	ICPMS-6020B-C	Cal4		12/29/2021 3:24:	1	R372516		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.0006278	0.0006278		0.0005	0	0		0.01		126%	80	120	0%	S
Antimony	A	mg/L	0.000505	0.000505		0.0005	0	0		0.001		101%	80	120	0%	
Arsenic	A	mg/L	0.0005716	0.0005716		0.0005	0	0		0.001		114%	80	120	0%	
Barium	A	mg/L	0.0005398	0.0005398		0.0005	0	0		0.0003		108%	80	120	0%	
Beryllium	A	mg/L	0.0004627	0.0004627		0.0005	0	0		0.001		93%	80	120	0%	
Boron	A	mg/L	-2.636E-05	-2.636E-05		0.0005	0	0		0.1		-5%	80	120	0%	S
Cadmium	A	mg/L	0.0005321	0.0005321		0.0005	0	0		0.001		106%	80	120	0%	
Calcium	A	mg/L	0.1416	0.1416		0.125	0	0		1		113%	80	120	0%	
Cerium	A	mg/L	0.0005398	0.0005398		0.0005	0	0		0.001		108%	80	120	0%	
Chromium	A	mg/L	0.0005726	0.0005726		0.0005	0	0		0.001		115%	80	120	0%	
Cobalt	A	mg/L	0.0005789	0.0005789		0.0005	0	0		0.001		116%	80	120	0%	
Copper	A	mg/L	0.0006044	0.0006044		0.0005	0	0		0.005		121%	80	120	0%	S
Iron	A	mg/L	0.01422	0.01422		0.0125	0	0		0.01		114%	80	120	0%	
Lanthanum	A	mg/L	0.0005292	0.0005292		0.0005	0	0		0.001		106%	80	120	0%	
Lead	A	mg/L	0.0005168	0.0005168		0.0005	0	0		0.001		103%	80	120	0%	
Lithium	A	mg/L	0.006946	0.006946		0.00625	0	0		1		111%	80	120	0%	
Magnesium	A	mg/L	0.1399	0.1399		0.125	0	0		1		112%	80	120	0%	

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14955744	0.5 ppb STD	ICPMS-6020B-C	Cal4		12/29/2021 3:24:	1	R372516		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Manganese	A	mg/L	0.0005886	0.0005886		0.0005	0	0		0.001		118%	80	120	0%	
Mercury	A	mg/L	9.979E-06	9.979E-06		0.00001	0	0		0.001		100%	80	120	0%	
Molybdenum	A	mg/L	0.0005051	0.0005051		0.0005	0	0		0.001		101%	80	120	0%	
Nickel	A	mg/L	0.0003938	0.0003938		0.0005	0	0		0.005		79%	80	120	0%	S
Potassium	A	mg/L	0.1501	0.1501		0.125	0	0		1		120%	80	120	0%	
Selenium	A	mg/L	0.0005227	0.0005227		0.0005	0	0		0.005		105%	80	120	0%	
Silicon	A	mg/L	0.009139	0.009139		0.002	0	0		0.1		457%	80	120	0%	S
Silver	A	mg/L	0.000219	0.000219		0.0002	0	0		0.001		110%	80	120	0%	
Sodium	A	mg/L	0.1471	0.1471		0.125	0	0		1		118%	80	120	0%	
Strontium	A	mg/L	0.0005859	0.0005859		0.0005	0	0		0.001		117%	80	120	0%	
Thallium	A	mg/L	0.000515	0.000515		0.0005	0	0		0.001		103%	80	120	0%	
Thorium	A	mg/L	0.0004227	0.0004227		0.0005	0	0		0.05		85%	80	120	0%	
Tin	A	mg/L	0.0002611	0.0002611		0.0005	0	0		0.001		52%	80	120	0%	S
Titanium	A	mg/L	0.0005848	0.0005848		0.0005	0	0		0.001		117%	80	120	0%	
Uranium	A	mg/L	0.0005137	0.0005137		0.0005	0	0		0.001		103%	80	120	0%	
Vanadium	A	mg/L	0.0008892	0.0008892		0.0005	0	0		0.005		178%	80	120	0%	S
Zinc	A	mg/L	0.0006638	0.0006638		0.0005	0	0		0.01		133%	80	120	0%	S
Iron, Ferrous	C	mg/L	0.01422	0.01422		0.0005	0	0		0.01	5	2844%	80	120	0%	S
Silicon as SiO2	C	mg/L	0.01955746	0.01955746		0.0428	0	0		0.214	0.9	46%	80	120	0%	S

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14955745	1 ppb STD	ICPMS-6020B-C	Cal5		12/29/2021 3:30:	1	R372516		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.001296	0.001296		0.001	0	0		0.01		130%	80	120	0%	S
Antimony	A	mg/L	0.001087	0.001087		0.001	0	0		0.001		109%	80	120	0%	
Arsenic	A	mg/L	0.001213	0.001213		0.001	0	0		0.001		121%	80	120	0%	S
Barium	A	mg/L	0.001144	0.001144		0.001	0	0		0.0003		114%	80	120	0%	
Beryllium	A	mg/L	0.001075	0.001075		0.001	0	0		0.001		107%	80	120	0%	
Boron	A	mg/L	0.0005276	0.0005276		0.001	0	0		0.1		53%	80	120	0%	S
Cadmium	A	mg/L	0.001141	0.001141		0.001	0	0		0.001		114%	80	120	0%	
Calcium	A	mg/L	0.3179	0.3179		0.25	0	0		1		127%	80	120	0%	S
Cerium	A	mg/L	0.001135	0.001135		0.001	0	0		0.001		114%	80	120	0%	
Chromium	A	mg/L	0.001221	0.001221		0.001	0	0		0.001		122%	80	120	0%	S
Cobalt	A	mg/L	0.001287	0.001287		0.001	0	0		0.001		129%	80	120	0%	S

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14955745	1 ppb STD	ICPMS-6020B-C	Cal5		12/29/2021 3:30:	1	R372516		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Copper	A	mg/L	0.001337	0.001337		0.001	0	0		0.005		134%	80	120	0%	S
Iron	A	mg/L	0.03279	0.03279		0.025	0	0		0.01		131%	80	120	0%	S
Lanthanum	A	mg/L	0.001133	0.001133		0.001	0	0		0.001		113%	80	120	0%	
Lead	A	mg/L	0.001103	0.001103		0.001	0	0		0.001		110%	80	120	0%	
Lithium	A	mg/L	0.01539	0.01539		0.0125	0	0		1		123%	80	120	0%	S
Magnesium	A	mg/L	0.3163	0.3163		0.25	0	0		1		127%	80	120	0%	S
Manganese	A	mg/L	0.001216	0.001216		0.001	0	0		0.001		122%	80	120	0%	S
Mercury	A	mg/L	0.00002301	0.00002301		0.00002	0	0		0.001		115%	80	120	0%	
Molybdenum	A	mg/L	0.001086	0.001086		0.001	0	0		0.001		109%	80	120	0%	
Nickel	A	mg/L	0.001081	0.001081		0.001	0	0		0.005		108%	80	120	0%	
Potassium	A	mg/L	0.3185	0.3185		0.25	0	0		1		127%	80	120	0%	S
Selenium	A	mg/L	0.001169	0.001169		0.001	0	0		0.005		117%	80	120	0%	
Silicon	A	mg/L	0.005307	0.005307		0.004	0	0		0.1		133%	80	120	0%	S
Silver	A	mg/L	0.0004551	0.0004551		0.0004	0	0		0.001		114%	80	120	0%	
Sodium	A	mg/L	0.3157	0.3157		0.25	0	0		1		126%	80	120	0%	S
Strontium	A	mg/L	0.001212	0.001212		0.001	0	0		0.001		121%	80	120	0%	S
Thallium	A	mg/L	0.001085	0.001085		0.001	0	0		0.001		108%	80	120	0%	
Thorium	A	mg/L	0.0009882	0.0009882		0.001	0	0		0.05		99%	80	120	0%	
Tin	A	mg/L	0.0008853	0.0008853		0.001	0	0		0.001		89%	80	120	0%	
Titanium	A	mg/L	0.001228	0.001228		0.001	0	0		0.001		123%	80	120	0%	S
Uranium	A	mg/L	0.001093	0.001093		0.001	0	0		0.001		109%	80	120	0%	
Vanadium	A	mg/L	0.001515	0.001515		0.001	0	0		0.005		151%	80	120	0%	S
Zinc	A	mg/L	0.001382	0.001382		0.001	0	0		0.01		138%	80	120	0%	S
Iron, Ferrous	C	mg/L	0.03279	0.03279		0.001	0	0		0.01	5	3279%	80	120	0%	S
Silicon as SiO2	C	mg/L	0.01135698	0.01135698		0.0856	0	0		0.214	0.9	13%	80	120	0%	S

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14955746	10 ppb STD	ICPMS-6020B-C	Cal6		12/29/2021 3:36:	1	R372516		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.01101	0.01101		0.01	0	0		0.01		110%	90	110	0%	
Antimony	A	mg/L	0.0102	0.0102		0.01	0	0		0.001		102%	90	110	0%	
Arsenic	A	mg/L	0.01084	0.01084		0.01	0	0		0.001		108%	90	110	0%	
Barium	A	mg/L	0.01073	0.01073		0.01	0	0		0.0003		107%	90	110	0%	
Beryllium	A	mg/L	0.01062	0.01062		0.01	0	0		0.001		106%	90	110	0%	

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist				
14955746	10 ppb STD	ICPMS-6020B-C	Cal6		12/29/2021 3:36:	1	R372516		0	0					

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Boron	A	mg/L	0.009878	0.009878		0.01	0	0		0.1		99%	90	110	0%	
Cadmium	A	mg/L	0.0106	0.0106		0.01	0	0		0.001		106%	90	110	0%	
Calcium	A	mg/L	2.819	2.819		2.5	0	0		1		113%	90	110	0%	S
Cerium	A	mg/L	0.01067	0.01067		0.01	0	0		0.001		107%	90	110	0%	
Chromium	A	mg/L	0.01087	0.01087		0.01	0	0		0.001		109%	90	110	0%	
Cobalt	A	mg/L	0.01177	0.01177		0.01	0	0		0.001		118%	90	110	0%	S
Copper	A	mg/L	0.01169	0.01169		0.01	0	0		0.005		117%	90	110	0%	S
Iron	A	mg/L	0.2931	0.2931		0.25	0	0		0.01		117%	90	110	0%	S
Lanthanum	A	mg/L	0.01064	0.01064		0.01	0	0		0.001		106%	90	110	0%	
Lead	A	mg/L	0.01033	0.01033		0.01	0	0		0.001		103%	90	110	0%	
Lithium	A	mg/L	0.1398	0.1398		0.125	0	0		1		112%	90	110	0%	S
Magnesium	A	mg/L	2.99	2.99		2.5	0	0		1		120%	90	110	0%	S
Manganese	A	mg/L	0.01112	0.01112		0.01	0	0		0.001		111%	90	110	0%	S
Mercury	A	mg/L	0.0002053	0.0002053		0.0002	0	0		0.001		103%	90	110	0%	
Molybdenum	A	mg/L	0.01022	0.01022		0.01	0	0		0.001		102%	90	110	0%	
Nickel	A	mg/L	0.011	0.011		0.01	0	0		0.005		110%	90	110	0%	
Potassium	A	mg/L	2.857	2.857		2.5	0	0		1		114%	90	110	0%	S
Selenium	A	mg/L	0.01095	0.01095		0.01	0	0		0.005		109%	90	110	0%	
Silicon	A	mg/L	0.04443	0.04443		0.04	0	0		0.1		111%	90	110	0%	S
Silver	A	mg/L	0.004151	0.004151		0.004	0	0		0.001		104%	90	110	0%	
Sodium	A	mg/L	2.889	2.889		2.5	0	0		1		116%	90	110	0%	S
Strontium	A	mg/L	0.01102	0.01102		0.01	0	0		0.001		110%	90	110	0%	
Thallium	A	mg/L	0.0107	0.0107		0.01	0	0		0.001		107%	90	110	0%	
Thorium	A	mg/L	0.01017	0.01017		0.01	0	0		0.05		102%	90	110	0%	
Tin	A	mg/L	0.01044	0.01044		0.01	0	0		0.001		104%	90	110	0%	
Titanium	A	mg/L	0.01153	0.01153		0.01	0	0		0.001		115%	90	110	0%	S
Uranium	A	mg/L	0.01027	0.01027		0.01	0	0		0.001		103%	90	110	0%	
Vanadium	A	mg/L	0.01101	0.01101		0.01	0	0		0.005		110%	90	110	0%	
Zinc	A	mg/L	0.01134	0.01134		0.01	0	0		0.01		113%	90	110	0%	S
Iron, Ferrous	C	mg/L	0.2931	0.2931		0.01	0	0		0.01	5	2931%	90	110	0%	S
Silicon as SiO2	C	mg/L	0.0950802	0.0950802		0.856	0	0		0.214	0.9	11%	90	110	0%	S

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14955747	50 ppb STD	ICPMS-6020B-C	Cal7		12/29/2021 3:43:	1	R372516		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.04969	0.04969		0.05	0	0		0.01		99%	90	110	0%	
Antimony	A	mg/L	0.04834	0.04834		0.05	0	0		0.001		97%	90	110	0%	
Arsenic	A	mg/L	0.05012	0.05012		0.05	0	0		0.001		100%	90	110	0%	
Barium	A	mg/L	0.0507	0.0507		0.05	0	0		0.0003		101%	90	110	0%	
Beryllium	A	mg/L	0.04949	0.04949		0.05	0	0		0.001		99%	90	110	0%	
Boron	A	mg/L	0.04835	0.04835		0.05	0	0		0.1		97%	90	110	0%	
Cadmium	A	mg/L	0.04993	0.04993		0.05	0	0		0.001		100%	90	110	0%	
Calcium	A	mg/L	12.13	12.13		12.5	0	0		1		97%	90	110	0%	
Cerium	A	mg/L	0.04772	0.04772		0.05	0	0		0.001		95%	90	110	0%	
Chromium	A	mg/L	0.05042	0.05042		0.05	0	0		0.001		101%	90	110	0%	
Cobalt	A	mg/L	0.0527	0.0527		0.05	0	0		0.001		105%	90	110	0%	
Copper	A	mg/L	0.05236	0.05236		0.05	0	0		0.005		105%	90	110	0%	
Iron	A	mg/L	1.269	1.269		1.25	0	0		0.01		102%	90	110	0%	
Lanthanum	A	mg/L	0.04725	0.04725		0.05	0	0		0.001		94%	90	110	0%	
Lead	A	mg/L	0.04877	0.04877		0.05	0	0		0.001		98%	90	110	0%	
Lithium	A	mg/L	0.6256	0.6256		0.625	0	0		1		100%	90	110	0%	
Magnesium	A	mg/L	12.46	12.46		12.5	0	0		1		100%	90	110	0%	
Manganese	A	mg/L	0.05134	0.05134		0.05	0	0		0.001		103%	90	110	0%	
Mercury	A	mg/L	0.0009701	0.0009701		0.001	0	0		0.001		97%	90	110	0%	
Molybdenum	A	mg/L	0.04849	0.04849		0.05	0	0		0.001		97%	90	110	0%	
Nickel	A	mg/L	0.05086	0.05086		0.05	0	0		0.005		102%	90	110	0%	
Potassium	A	mg/L	12.66	12.66		12.5	0	0		1		101%	90	110	0%	
Selenium	A	mg/L	0.04931	0.04931		0.05	0	0		0.005		99%	90	110	0%	
Silicon	A	mg/L	0.1983	0.1983		0.2	0	0		0.1		99%	90	110	0%	
Silver	A	mg/L	0.01944	0.01944		0.02	0	0		0.001		97%	90	110	0%	
Sodium	A	mg/L	12.47	12.47		12.5	0	0		1		100%	90	110	0%	
Strontium	A	mg/L	0.05077	0.05077		0.05	0	0		0.001		102%	90	110	0%	
Thallium	A	mg/L	0.04956	0.04956		0.05	0	0		0.001		99%	90	110	0%	
Thorium	A	mg/L	0.04823	0.04823		0.05	0	0		0.05		96%	90	110	0%	
Tin	A	mg/L	0.04858	0.04858		0.05	0	0		0.001		97%	90	110	0%	
Titanium	A	mg/L	0.04984	0.04984		0.05	0	0		0.001		100%	90	110	0%	
Uranium	A	mg/L	0.04902	0.04902		0.05	0	0		0.001		98%	90	110	0%	
Vanadium	A	mg/L	0.04941	0.04941		0.05	0	0		0.005		99%	90	110	0%	
Zinc	A	mg/L	0.05155	0.05155		0.05	0	0		0.01		103%	90	110	0%	
Iron, Ferrous	C	mg/L	1.269	1.269		0.05	0	0		0.01	5	2538%	90	110	0%	S

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14955747	50 ppb STD	ICPMS-6020B-C	Cal7		12/29/2021 3:43:	1	R372516		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Silicon as SiO2	C	mg/L	0.424362	0.424362		4.28	0	0		0.214	0.9	10%	90	110	0%	S

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14955748	100 ppb STD	ICPMS-6020B-C	Cal8		12/29/2021 3:49:	1	R372516		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.1027	0.1027		0.1	0	0		0.01		103%	90	110	0%	
Antimony	A	mg/L	0.1008	0.1008		0.1	0	0		0.001		101%	90	110	0%	
Arsenic	A	mg/L	0.09921	0.09921		0.1	0	0		0.001		99%	90	110	0%	
Barium	A	mg/L	0.104	0.104		0.1	0	0		0.0003		104%	90	110	0%	
Beryllium	A	mg/L	0.1004	0.1004		0.1	0	0		0.001		100%	90	110	0%	
Boron	A	mg/L	0.09841	0.09841		0.1	0	0		0.1		98%	90	110	0%	
Cadmium	A	mg/L	0.1035	0.1035		0.1	0	0		0.001		103%	90	110	0%	
Calcium	A	mg/L	24.54	24.54		25	0	0		1		98%	90	110	0%	
Cerium	A	mg/L	0.1011	0.1011		0.1	0	0		0.001		101%	90	110	0%	
Chromium	A	mg/L	0.0989	0.0989		0.1	0	0		0.001		99%	90	110	0%	
Cobalt	A	mg/L	0.1006	0.1006		0.1	0	0		0.001		101%	90	110	0%	
Copper	A	mg/L	0.1028	0.1028		0.1	0	0		0.005		103%	90	110	0%	
Iron	A	mg/L	2.583	2.583		2.5	0	0		0.01		103%	90	110	0%	
Lanthanum	A	mg/L	0.1013	0.1013		0.1	0	0		0.001		101%	90	110	0%	
Lead	A	mg/L	0.09985	0.09985		0.1	0	0		0.001		100%	90	110	0%	
Lithium	A	mg/L	1.235	1.235		1.25	0	0		1		99%	90	110	0%	
Magnesium	A	mg/L	25.2	25.2		25	0	0		1		101%	90	110	0%	
Manganese	A	mg/L	0.1009	0.1009		0.1	0	0		0.001		101%	90	110	0%	
Mercury	A	mg/L	0.002014	0.002014		0.002	0	0		0.001		101%	90	110	0%	
Molybdenum	A	mg/L	0.1007	0.1007		0.1	0	0		0.001		101%	90	110	0%	
Nickel	A	mg/L	0.09975	0.09975		0.1	0	0		0.005		100%	90	110	0%	
Potassium	A	mg/L	24.84	24.84		25	0	0		1		99%	90	110	0%	
Selenium	A	mg/L	0.1003	0.1003		0.1	0	0		0.005		100%	90	110	0%	
Silicon	A	mg/L	0.4003	0.4003		0.4	0	0		0.1		100%	90	110	0%	
Silver	A	mg/L	0.04026	0.04026		0.04	0	0		0.001		101%	90	110	0%	
Sodium	A	mg/L	25.03	25.03		25	0	0		1		100%	90	110	0%	
Strontium	A	mg/L	0.1006	0.1006		0.1	0	0		0.001		101%	90	110	0%	
Thallium	A	mg/L	0.1002	0.1002		0.1	0	0		0.001		100%	90	110	0%	
Thorium	A	mg/L	0.1002	0.1002		0.1	0	0		0.05		100%	90	110	0%	

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14955748	100 ppb STD	ICPMS-6020B-C	Cal8		12/29/2021 3:49:	1	R372516		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Tin	A	mg/L	0.1007	0.1007		0.1	0	0		0.001		101%	90	110	0%	
Titanium	A	mg/L	0.09992	0.09992		0.1	0	0		0.001		100%	90	110	0%	
Uranium	A	mg/L	0.09901	0.09901		0.1	0	0		0.001		99%	90	110	0%	
Vanadium	A	mg/L	0.09952	0.09952		0.1	0	0		0.005		100%	90	110	0%	
Zinc	A	mg/L	0.09962	0.09962		0.1	0	0		0.01		100%	90	110	0%	
Iron, Ferrous	C	mg/L	2.583	2.583		0.1	0	0		0.01	5	2583%	90	110	0%	S
Silicon as SiO2	C	mg/L	0.856642	0.856642		8.56	0	0		0.214	0.9	10%	90	110	0%	S

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14955749	1000 ppb STD	ICPMS-6020B-C	Cal10		12/29/2021 3:55:	1	R372516		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.9997	0.9997		1	0	0		0.01		100%	90	110	0%	
Antimony	A	mg/L	0.0002309	0.0002309		0	0	0		0.001		0%			0%	
Arsenic	A	mg/L	1	1		1	0	0		0.001		100%	90	110	0%	
Barium	A	mg/L	0.9996	0.9996		1	0	0		0.0003		100%	90	110	0%	
Beryllium	A	mg/L	1	1		1	0	0		0.001		100%	90	110	0%	
Boron	A	mg/L	1	1		1	0	0		0.1		100%	90	110	0%	
Cadmium	A	mg/L	0.9996	0.9996		1	0	0		0.001		100%	90	110	0%	
Calcium	A	mg/L	50.31	50.31		50	0	0		1		101%	90	110	0%	
Cerium	A	mg/L	0.00004064	0.00004064		0	0	0		0.001		0%			0%	
Chromium	A	mg/L	1	1		1	0	0		0.001		100%	90	110	0%	
Cobalt	A	mg/L	0.9998	0.9998		1	0	0		0.001		100%	90	110	0%	
Copper	A	mg/L	0.9996	0.9996		1	0	0		0.005		100%	90	110	0%	
Iron	A	mg/L	6.013	6.013		6	0	0		0.01		100%	90	110	0%	
Lanthanum	A	mg/L	0.00002161	0.00002161		0	0	0		0.001		0%			0%	
Lead	A	mg/L	1	1		1	0	0		0.001		100%	90	110	0%	
Lithium	A	mg/L	2.507	2.507		2.5	0	0		1		100%	90	110	0%	
Magnesium	A	mg/L	49.89	49.89		50	0	0		1		100%	90	110	0%	
Manganese	A	mg/L	0.9998	0.9998		1	0	0		0.001		100%	90		0%	
Mercury	A	mg/L	0.00001824	0.00001824		0	0	0		0.001		0%			0%	
Molybdenum	A	mg/L	0.00009014	0.00009014		0	0	0		0.001		0%			0%	
Nickel	A	mg/L	1	1		1	0	0		0.005		100%	90	110	0%	
Potassium	A	mg/L	50.02	50.02		50	0	0		1		100%	90	110	0%	
Selenium	A	mg/L	1	1		1	0	0		0.005		100%	90	110	0%	

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14955749	1000 ppb STD	ICPMS-6020B-C	Cal10		12/29/2021 3:55:	1	R372516		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Silicon	A	mg/L	0.002171	0.002171		0	0	0		0.1		0%			0%	
Silver	A	mg/L	0.3572	0.3572		0	0	0		0.001		0%			0%	
Sodium	A	mg/L	49.97	49.97		50	0	0		1		100%	90	110	0%	
Strontium	A	mg/L	0.9999	0.9999		1	0	0		0.001		100%	90	110	0%	
Thallium	A	mg/L	1	1		1	0	0		0.001		100%	90	110	0%	
Thorium	A	mg/L	1	1		1	0	0		0.05		100%	90	110	0%	
Tin	A	mg/L	8.139E-06	8.139E-06		0	0	0		0.001		0%			0%	
Titanium	A	mg/L	0.006623	0.006623		1	0	0		0.001		1%	90	110	0%	S
Uranium	A	mg/L	1	1		1	0	0		0.001		100%	90	110	0%	
Vanadium	A	mg/L	1	1		1	0	0		0.005		100%	90	110	0%	
Zinc	A	mg/L	0.9999	0.9999		1	0	0		0.01		100%	90	110	0%	
Iron, Ferrous	C	mg/L	6.013	6.013		0	0	0		0.01	5	0%			0%	
Silicon as SiO2	C	mg/L	0.00464594	0.00464594		0	0	0		0.214	0.9	0%			0%	

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14955750	100 ppb Br STD	ICPMS-6020-W-	SAMP		12/29/2021 4:01:	1	R372516		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.000254	0		0	0	0	0.00086	0.001	1	0%	0	0	0%	
Antimony	A	mg/L	0.00007383	0		0	0	0	0.00042	0.001	0.1	0%	0	0	0%	
Arsenic	A	mg/L	0.0002018	0.0002018		0	0	0	0.00019	0.001	1	0%	0	0	0%	J
Barium	A	mg/L	0.00009225	0.00009225		0	0	0	0.000042	0.001	1	0%	0	0	0%	J
Beryllium	A	mg/L	0.0008025	0.0008025		0	0	0	0.00012	0.001	1	0%	0	0	0%	J
Cadmium	A	mg/L	0.00004287	0.00004287		0	0	0	0.000025	0.001	1	0%	0	0	0%	J
Cerium	A	mg/L	6.937E-06	0		0	0	0	0.000012	0.001	0.1	0%	0	0	0%	
Chromium	A	mg/L	0.0001102	0		0	0	0	0.00018	0.001	1	0%	0	0	0%	
Cobalt	A	mg/L	0.0001562	0.0001562		0	0	0	0.000042	0.001	1	0%	0	0	0%	J
Copper	A	mg/L	0.00009587	0		0	0	0	0.00027	0.001	1	0%	0	0	0%	
Lanthanum	A	mg/L	0.0000022	0		0	0	0	0.000011	0.001	0.1	0%	0	0	0%	
Lead	A	mg/L	0.00006224	0.00006224		0	0	0	0.000056	0.001	1	0%	0	0	0%	J
Manganese	A	mg/L	0.00008115	0		0	0	0	0.000095	0.001	1	0%	0	0	0%	
Mercury	A	mg/L	0.00000636	0		0	0	0	0.00016	0.001	0.002	0%	0	0	0%	
Molybdenum	A	mg/L	0.00001272	0		0	0	0	0.00005	0.001	0.1	0%	0	0	0%	
Nickel	A	mg/L	-3.407E-05	0		0	0	0	0.00063	0.001	1	0%	0	0	0%	
Selenium	A	mg/L	0.0002516	0		0	0	0	0.00033	0.001	1	0%	0	0	0%	

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14955750	100 ppb Br STD	ICPMS-6020-W-	SAMP		12/29/2021 4:01:	1	R372516		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Silicon	A	mg/L	0.001094	0		0	0	0	0.01223	0.1	0.4	0%	0	0	0%	
Silver	A	mg/L	0.00009763	0.00009763		0	0	0	0.00002	0.001	0.04	0%	0	0	0%	J
Strontium	A	mg/L	0.00004762	0		0	0	0	0.00014	0.001	1	0%	0	0	0%	
Thallium	A	mg/L	0.0002475	0.0002475		0	0	0	0.000041	0.001	1	0%	0	0	0%	J
Thorium	A	mg/L	0.0002098	0		0	0	0	0.00061	0.001	1	0%	0	0	0%	
Titanium	A	mg/L	0.000183	0.000183		0	0	0	0.000094	0.001	1	0%	0	0	0%	J
Uranium	A	mg/L	0.00001439	0		0	0	0	0.000052	0.0003	1	0%	0	0	0%	
Boron	B	mg/L	0.007872	0.007872		0	0	0	0.00561	0.00561	1	0%	0	0	0%	D
Calcium	B	mg/L	0.005038	0		0	0	0	0.02092	0.02092	50	0%	0	0	0%	L
Iron	B	mg/L	0.00004342	0		0	0	0	0.00119	0.00119	5	0%	0	0	0%	
Iron, Ferrous	B	mg/L	0.00004342	0		0	0	0	0.00119	0.00119	5	0%	0	0	0%	
Potassium	B	mg/L	0.01393	0		0	0	0	0.08139	0.08139	50	0%	0	0	0%	L
Sodium	B	mg/L	0.01309	0		0	0	0	0.02171	0.02171	50	0%	0	0	0%	L
Tin	B	mg/L	0.0001051	0		0	0	0	0.00132	0.00132	0.1	0%	0	0	0%	
Vanadium	B	mg/L	-0.0001888	0		0	0	0	0.0013	0.0013	1	0%	0	0	0%	
Zinc	B	mg/L	0.0002471	0		0	0	0	0.00273	0.00273	1	0%	0	0	0%	L

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14955751	QCS	ICPMS-6020-W-	ICV		12/29/2021 4:07:	1	R372516		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.2545	0.2545		0.25	0	0	0.00086	0.001	1	102%	90	110	0%	
Antimony	A	mg/L	0.04545	0.04545		0.05	0	0	0.00042	0.001	0.1	91%	90	110	0%	
Arsenic	A	mg/L	0.04927	0.04927		0.05	0	0	0.00019	0.001	1	99%	90	110	0%	
Barium	A	mg/L	0.05	0.05		0.05	0	0	0.000042	0.001	1	100%	90	110	0%	
Beryllium	A	mg/L	0.02456	0.02456		0.025	0	0	0.00012	0.001	1	98%	90	110	0%	
Boron	A	mg/L	0.05221	0.05221		0.05	0	0	0.00561	0.00561	1	104%	90	110	0%	
Cadmium	A	mg/L	0.02461	0.02461		0.025	0	0	0.000025	0.001	1	98%	90	110	0%	
Calcium	A	mg/L	2.551	2.551		2.5	0	0	0.02092	0.02092	50	102%	90	110	0%	
Cerium	A	mg/L	0.05121	0.05121		0.05	0	0	0.000012	0.001	0.1	102%	90	110	0%	
Chromium	A	mg/L	0.05045	0.05045		0.05	0	0	0.00018	0.001	1	101%	90	110	0%	
Cobalt	A	mg/L	0.05325	0.05325		0.05	0	0	0.000042	0.001	1	106%	90	110	0%	
Copper	A	mg/L	0.05342	0.05342		0.05	0	0	0.00027	0.001	1	107%	90	110	0%	
Iron	A	mg/L	0.2533	0.2533		0.25	0	0	0.00119	0.00119	5	101%	90	110	0%	
Lanthanum	A	mg/L	0.05028	0.05028		0.05	0	0	0.000011	0.001	0.1	101%	90	110	0%	

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14955751	QCS	ICPMS-6020-W- ICV			12/29/2021 4:07:	1	R372516		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Lead	A	mg/L	0.04762	0.04762		0.05	0	0	0.000056	0.001	1	95%	90	110	0%	
Magnesium	A	mg/L	2.74	2.74		2.5	0	0	0.00564	0.00564	50	110%	90	110	0%	
Manganese	A	mg/L	0.2588	0.2588		0.25	0	0	0.000095	0.001	1	104%	90	110	0%	
Mercury	A	mg/L	0.001004	0.001004		0.001	0	0	0.00016	0.001	0.002	100%	90	110	0%	
Molybdenum	A	mg/L	0.04548	0.04548		0.05	0	0	0.00005	0.001	0.1	91%	90	110	0%	
Nickel	A	mg/L	0.0511	0.0511		0.05	0	0	0.00063	0.001	1	102%	90	110	0%	
Potassium	A	mg/L	2.651	2.651		2.5	0	0	0.08139	0.08139	50	106%	90	110	0%	
Selenium	A	mg/L	0.04996	0.04996		0.05	0	0	0.00033	0.001	1	100%	90	110	0%	
Silicon	A	mg/L	0.4795	0.4795		0.5	0	0	0.01223	0.1	0.4	96%	90	110	0%	
Silver	A	mg/L	0.0245	0.0245		0.025	0	0	0.00002	0.001	0.04	98%	90	110	0%	
Sodium	A	mg/L	2.72	2.72		2.5	0	0	0.02171	0.02171	50	109%	90	110	0%	
Strontium	A	mg/L	0.05081	0.05081		0.05	0	0	0.00014	0.001	1	102%	90	110	0%	
Thallium	A	mg/L	0.04746	0.04746		0.05	0	0	0.000041	0.001	1	95%	90	110	0%	
Thorium	A	mg/L	0.04804	0.04804		0.05	0	0	0.00061	0.001	1	96%	90	110	0%	
Tin	A	mg/L	0.04574	0.04574		0.05	0	0	0.00132	0.00132	0.1	91%	90	110	0%	
Titanium	A	mg/L	0.04874	0.04874		0.05	0	0	0.000094	0.001	1	97%	90	110	0%	
Uranium	A	mg/L	0.0498	0.0498		0.05	0	0	0.000052	0.0003	1	100%	90	110	0%	
Vanadium	A	mg/L	0.04911	0.04911		0.05	0	0	0.0013	0.0013	1	98%	90	110	0%	
Zinc	A	mg/L	0.05078	0.05078		0.05	0	0	0.00273	0.00273	1	102%	90	110	0%	
Iron, Ferrous	C	mg/L	0.2533	0.2533		0	0	0	0.00119	0.00119	5	0%	0	0	0%	

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14955752	CCV	ICPMS-6020-W- CCV			12/29/2021 4:13:	1	R372516		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.05058	0.05058		0.05	0	0	0.00086	0.001	1	101%	90	110	0%	
Antimony	A	mg/L	0.04953	0.04953		0.05	0	0	0.00042	0.001	0.1	99%	90	110	0%	
Arsenic	A	mg/L	0.04906	0.04906		0.05	0	0	0.00019	0.001	1	98%	90	110	0%	
Barium	A	mg/L	0.0518	0.0518		0.05	0	0	0.000042	0.001	1	104%	90	110	0%	
Beryllium	A	mg/L	0.05063	0.05063		0.05	0	0	0.00012	0.001	1	101%	90	110	0%	
Boron	A	mg/L	0.05219	0.05219		0.05	0	0	0.00561	0.00561	1	104%	90	110	0%	
Cadmium	A	mg/L	0.0506	0.0506		0.05	0	0	0.000025	0.001	1	101%	90	110	0%	
Calcium	A	mg/L	12.52	12.52		12.5	0	0	0.02092	0.02092	50	100%	90	110	0%	
Cerium	A	mg/L	0.0478	0.0478		0.05	0	0	0.000012	0.001	0.1	96%	90	110	0%	
Chromium	A	mg/L	0.049	0.049		0.05	0	0	0.00018	0.001	1	98%	90	110	0%	

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14955752	CCV	ICPMS-6020-W-	CCV		12/29/2021 4:13:	1	R372516		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Cobalt	A	mg/L	0.05203	0.05203		0.05	0	0	0.000042	0.001	1	104%	90	110	0%	
Copper	A	mg/L	0.05167	0.05167		0.05	0	0	0.00027	0.001	1	103%	90	110	0%	
Iron	A	mg/L	1.287	1.287		1.3	0	0	0.00119	0.00119	5	99%	90	110	0%	
Lanthanum	A	mg/L	0.04751	0.04751		0.05	0	0	0.000011	0.001	0.1	95%	90	110	0%	
Lead	A	mg/L	0.04807	0.04807		0.05	0	0	0.000056	0.001	1	96%	90	110	0%	
Magnesium	A	mg/L	12.62	12.62		12.5	0	0	0.00564	0.00564	50	101%	90	110	0%	
Manganese	A	mg/L	0.05078	0.05078		0.05	0	0	0.000095	0.001	1	102%	90	110	0%	
Mercury	A	mg/L	0.001006	0.001006		0.001	0	0	0.00016	0.001	0.002	101%	90	110	0%	
Molybdenum	A	mg/L	0.04952	0.04952		0.05	0	0	0.00005	0.001	0.1	99%	90	110	0%	
Nickel	A	mg/L	0.05066	0.05066		0.05	0	0	0.00063	0.001	1	101%	90	110	0%	
Potassium	A	mg/L	12.32	12.32		12.5	0	0	0.08139	0.08139	50	99%	90	110	0%	
Selenium	A	mg/L	0.05023	0.05023		0.05	0	0	0.00033	0.001	1	100%	90	110	0%	
Silicon	A	mg/L	0.2007	0.2007		0.2	0	0	0.01223	0.1	0.4	100%	90	110	0%	
Silver	A	mg/L	0.01942	0.01942		0.02	0	0	0.00002	0.001	0.04	97%	90	110	0%	
Sodium	A	mg/L	12.6	12.6		12.5	0	0	0.02171	0.02171	50	101%	90	110	0%	
Strontium	A	mg/L	0.05023	0.05023		0.05	0	0	0.00014	0.001	1	100%	90	110	0%	
Thallium	A	mg/L	0.04892	0.04892		0.05	0	0	0.000041	0.001	1	98%	90	110	0%	
Thorium	A	mg/L	0.04808	0.04808		0.05	0	0	0.00061	0.001	1	96%	90	110	0%	
Tin	A	mg/L	0.04811	0.04811		0.05	0	0	0.00132	0.00132	0.1	96%	90	110	0%	
Titanium	A	mg/L	0.05041	0.05041		0.05	0	0	0.000094	0.001	1	101%	90	110	0%	
Uranium	A	mg/L	0.04786	0.04786		0.05	0	0	0.000052	0.0003	1	96%	90	110	0%	
Vanadium	A	mg/L	0.04798	0.04798		0.05	0	0	0.0013	0.0013	1	96%	90	110	0%	
Zinc	A	mg/L	0.04992	0.04992		0.05	0	0	0.00273	0.00273	1	100%	90	110	0%	
Iron, Ferrous	C	mg/L	1.287	1.287		0	0	0	0.00119	0.00119	5	0%	0	0	0%	

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14955753	CCB	ICPMS-6020-W-	CCB		12/29/2021 4:19:	1	R372516		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	-6.033E-06	-6.033E-06		0	0	0	0.00086	0.001	1	0%			0%	
Antimony	A	mg/L	0.00009702	0.00009702		0	0	0	0.00042	0.001	0.1	0%			0%	
Arsenic	A	mg/L	4.248E-06	4.248E-06		0	0	0	0.00019	0.001	1	0%			0%	
Barium	A	mg/L	0.00001272	0.00001272		0	0	0	0.000042	0.001	1	0%			0%	
Beryllium	A	mg/L	0.0001971	0.0001971		0	0	0	0.00012	0.001	1	0%			0%	
Boron	A	mg/L	0.00216	0.00216		0	0	0	0.00561	0.00561	1	0%			0%	

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14955753	CCB	ICPMS-6020-W-	CCB		12/29/2021 4:19:	1	R372516		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Cadmium	A	mg/L	0.00000762	0.00000762		0	0	0	0.000025	0.001	1	0%			0%	
Calcium	A	mg/L	-0.0007787	-0.0007787		0	0	0	0.02092	0.02092	50	0%			0%	
Cerium	A	mg/L	1.001E-06	1.001E-06		0	0	0	0.000012	0.001	0.1	0%	0	0	0%	
Chromium	A	mg/L	0.00000043	0.00000043		0	0	0	0.00018	0.001	1	0%			0%	
Cobalt	A	mg/L	0.00002998	0.00002998		0	0	0	0.000042	0.001	1	0%			0%	
Copper	A	mg/L	4.595E-06	4.595E-06		0	0	0	0.00027	0.001	1	0%			0%	
Iron	A	mg/L	-0.0003595	-0.0003595		0	0	0	0.00119	0.00119	5	0%			0%	
Lanthanum	A	mg/L	5.534E-07	5.534E-07		0	0	0	0.000011	0.001	0.1	0%	0	0	0%	
Lead	A	mg/L	0.00002038	0.00002038		0	0	0	0.000056	0.001	1	0%			0%	
Magnesium	A	mg/L	-0.02564	-0.02564		0	0	0	0.00564	0.00564	50	0%			0%	
Manganese	A	mg/L	-2.522E-05	-2.522E-05		0	0	0	0.000095	0.001	1	0%			0%	
Mercury	A	mg/L	6.244E-06	6.244E-06		0	0	0	0.00016	0.001	0.002	0%			0%	
Molybdenum	A	mg/L	0.00002812	0.00002812		0	0	0	0.00005	0.001	0.1	0%			0%	
Nickel	A	mg/L	0.00005951	0.00005951		0	0	0	0.00063	0.001	1	0%			0%	
Potassium	A	mg/L	-0.002332	-0.002332		0	0	0	0.08139	0.08139	50	0%			0%	
Selenium	A	mg/L	0.00004592	0.00004592		0	0	0	0.00033	0.001	1	0%			0%	
Silicon	A	mg/L	0.0001903	0.0001903		0	0	0	0.01223	0.1	0.4	0%	0	0	0%	
Silver	A	mg/L	0.0000021	0.0000021		0	0	0	0.00002	0.001	0.04	0%			0%	
Sodium	A	mg/L	-0.003747	-0.003747		0	0	0	0.02171	0.02171	50	0%			0%	
Strontium	A	mg/L	0.00001037	0.00001037		0	0	0	0.00014	0.001	1	0%	0	0	0%	
Thallium	A	mg/L	0.00005363	0.00005363		0	0	0	0.000041	0.001	1	0%	0	0	0%	
Thorium	A	mg/L	0.0000564	0.0000564		0	0	0	0.00061	0.001	1	0%	0	0	0%	
Tin	A	mg/L	0.00005161	0.00005161		0	0	0	0.00132	0.00132	0.1	0%	0	0	0%	
Titanium	A	mg/L	0.00006263	0.00006263		0	0	0	0.000094	0.001	1	0%	0	0	0%	
Uranium	A	mg/L	3.306E-06	3.306E-06		0	0	0	0.000052	0.0003	1	0%	0	0	0%	
Vanadium	A	mg/L	-0.000774	-0.000774		0	0	0	0.0013	0.0013	1	0%	0	0	0%	
Zinc	A	mg/L	0.00001403	0.00001403		0	0	0	0.00273	0.00273	1	0%	0	0	0%	
Iron, Ferrous	C	mg/L	-0.0003595	-0.0003595		0	0	0	0.00119	0.00119	5	0%	0	0	0%	

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14955754	LRB	ICPMS-6020-W-	MBLK		12/29/2021 4:25:	1	R372516		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14955754	LRB	ICPMS-6020-W-	MBLK		12/29/2021 4:25:	1	R372516		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.001067	0.001067		0	0	0	0.00086	0.001	1	0%	0	0	0%	
Antimony	A	mg/L	0.00001541	0		0	0	0	0.00042	0.001	0.1	0%	0	0	0%	
Arsenic	A	mg/L	-0.0001158	0		0	0	0	0.00019	0.001	1	0%	0	0	0%	
Barium	A	mg/L	0.00001184	0		0	0	0	0.000042	0.001	1	0%	0	0	0%	
Beryllium	A	mg/L	0.0001126	0		0	0	0	0.00012	0.001	1	0%	0	0	0%	
Boron	A	mg/L	0.0011	0		0	0	0	0.00561	0.00561	1	0%	0	0	0%	
Cadmium	A	mg/L	0.00000439	0		0	0	0	0.000025	0.001	1	0%	0	0	0%	
Calcium	A	mg/L	0.1245	0.1245		0	0	0	0.02092	0.02092	50	0%	0	0	0%	
Cerium	A	mg/L	3.346E-06	0		0	0	0	0.000012	0.001	0.1	0%	0	0	0%	
Chromium	A	mg/L	9.049E-06	0		0	0	0	0.00018	0.001	1	0%	0	0	0%	
Cobalt	A	mg/L	0.0000227	0		0	0	0	0.000042	0.001	1	0%	0	0	0%	
Copper	A	mg/L	0.00006957	0		0	0	0	0.00027	0.001	1	0%	0	0	0%	
Iron	A	mg/L	0.0003969	0		0	0	0	0.00119	0.00119	5	0%	0	0	0%	
Lanthanum	A	mg/L	8.508E-07	0		0	0	0	0.000011	0.001	0.1	0%	0	0	0%	
Lead	A	mg/L	0.00001645	0		0	0	0	0.000056	0.0005	1	0%	0	0	0%	
Magnesium	A	mg/L	-0.02177	0		0	0	0	0.00564	0.00564	50	0%	0	0	0%	
Manganese	A	mg/L	-1.778E-05	0		0	0	0	0.000095	0.001	1	0%	0	0	0%	
Mercury	A	mg/L	6.094E-06	0		0	0	0	0.00016	0.001	0.002	0%	0	0	0%	
Molybdenum	A	mg/L	8.307E-06	0		0	0	0	0.00005	0.001	0.1	0%	0	0	0%	
Nickel	A	mg/L	0.00004868	0		0	0	0	0.00063	0.001	1	0%	0	0	0%	
Potassium	A	mg/L	-0.004582	0		0	0	0	0.08139	0.08139	50	0%	0	0	0%	
Selenium	A	mg/L	0.00002892	0		0	0	0	0.00033	0.001	1	0%	0	0	0%	
Silicon	A	mg/L	0.001056	0		0	0	0	0.01223	0.1	0.4	0%	0	0	0%	
Silver	A	mg/L	5.951E-06	0		0	0	0	0.00002	0.001	0.04	0%	0	0	0%	
Sodium	A	mg/L	0.0009183	0		0	0	0	0.02171	0.02171	50	0%	0	0	0%	
Strontium	A	mg/L	0.00005739	0		0	0	0	0.00014	0.001	1	0%	0	0	0%	
Thallium	A	mg/L	0.00003868	0		0	0	0	0.000041	0.001	1	0%	0	0	0%	
Thorium	A	mg/L	2.298E-06	0		0	0	0	0.00061	0.001	1	0%	0	0	0%	
Tin	A	mg/L	-0.0002396	0		0	0	0	0.00132	0.00132	0.1	0%	0	0	0%	
Titanium	A	mg/L	1.527E-06	0		0	0	0	0.000094	0.001	1	0%	0	0	0%	
Uranium	A	mg/L	1.996E-06	0		0	0	0	0.000052	0.0003	1	0%	0	0	0%	
Vanadium	A	mg/L	-0.001779	0		0	0	0	0.0013	0.0013	1	0%	0	0	0%	
Zinc	A	mg/L	0.0004584	0		0	0	0	0.00273	0.00273	1	0%	0	0	0%	
Iron, Ferrous	C	mg/L	0.0003969	0		0	0	0	0.00119	0.00119	5	0%	0	0	0%	

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14955755	LFB	ICPMS-6020-W-	LFB		12/29/2021 4:31:	1.03	R372516		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.04865	0.0501095		0.05	0	0	0.0008858	0.001	1	100%	85	115	0%	
Antimony	A	mg/L	0.04686	0.0482658		0.05	0	0	0.0004326	0.001	0.1	97%	85	115	0%	
Arsenic	A	mg/L	0.04844	0.0498932		0.05	0	0	0.0001957	0.001	1	100%	85	115	0%	
Barium	A	mg/L	0.05045	0.0519635		0.05	0	0	4.326E-05	0.001	1	104%	85	115	0%	
Beryllium	A	mg/L	0.04768	0.0491104		0.05	0	0	0.0001236	0.001	1	98%	85	115	0%	
Boron	A	mg/L	0.04824	0.0496872		0.05	0	0	0.0057783	0.0057783	1	99%	85	115	0%	
Cadmium	A	mg/L	0.04882	0.0502846		0.05	0	0	2.575E-05	0.001	1	101%	85	115	0%	
Calcium	A	mg/L	47.93	49.3679		50	0	0	0.0215476	0.0215476	50	99%	85	115	0%	
Cerium	A	mg/L	0.04984	0.0513352		0.05	0	0	1.236E-05	0.001	0.1	103%	85	115	0%	
Chromium	A	mg/L	0.04843	0.0498829		0.05	0	0	0.0001854	0.001	1	100%	85	115	0%	
Cobalt	A	mg/L	0.04941	0.0508923		0.05	0	0	4.326E-05	0.001	1	102%	85	115	0%	
Copper	A	mg/L	0.05073	0.0522519		0.05	0	0	0.0002781	0.001	1	105%	85	115	0%	
Iron	A	mg/L	4.952	5.10056		5.05	0	0	0.0012257	0.0012257	5	101%	85	115	0%	
Lanthanum	A	mg/L	0.04987	0.0513661		0.05	0	0	1.133E-05	0.001	0.1	103%	85	115	0%	
Lead	A	mg/L	0.04788	0.0493164		0.05	0	0	5.768E-05	0.001	1	99%	88	115	0%	
Magnesium	A	mg/L	50.34	51.8502		50	0	0	0.0058092	0.0058092	50	104%	85	115	0%	
Manganese	A	mg/L	0.04948	0.0509644		0.05	0	0	9.785E-05	0.001	1	102%	85	115	0%	
Mercury	A	mg/L	0.0009889	0.00101857		0.001	0	0	0.0001648	0.001	0.002	102%	85	115	0%	
Molybdenum	A	mg/L	0.04594	0.0473182		0.05	0	0	0.0000515	0.001	0.1	95%	85	115	0%	
Nickel	A	mg/L	0.05013	0.0516339		0.05	0	0	0.0006489	0.001	1	103%	85	115	0%	
Potassium	A	mg/L	49.02	50.4906		50	0	0	0.0838317	0.0838317	50	101%	85	115	0%	
Selenium	A	mg/L	0.0485	0.049955		0.05	0	0	0.0003399	0.001	1	100%	85	115	0%	
Silicon	A	mg/L	0.1881	0.193743		0.2	0	0	0.0125969	0.1	0.4	97%	85	115	0%	
Silver	A	mg/L	0.01876	0.0193228		0.02	0	0	0.0000206	0.001	0.04	97%	85	115	0%	
Sodium	A	mg/L	49.86	51.3558		50	0	0	0.0223613	0.0223613	50	103%	85	115	0%	
Strontium	A	mg/L	0.04929	0.0507687		0.05	0	0	0.0001442	0.001	1	102%	85	115	0%	
Thallium	A	mg/L	0.04818	0.0496254		0.05	0	0	4.223E-05	0.001	1	99%	85	115	0%	
Thorium	A	mg/L	0.04885	0.0503155		0.05	0	0	0.0006283	0.001	1	101%	85	115	0%	
Tin	A	mg/L	0.0456	0.046968		0.05	0	0	0.0013596	0.0013596	0.1	94%	85	115	0%	
Titanium	A	mg/L	0.05108	0.0526124		0.05	0	0	9.682E-05	0.001	1	105%	85	115	0%	
Uranium	A	mg/L	0.04876	0.0502228		0.05	0	0	5.356E-05	0.0003	1	100%	85	115	0%	
Vanadium	A	mg/L	0.04902	0.0504906		0.05	0	0	0.001339	0.001339	1	101%	85	115	0%	
Zinc	A	mg/L	0.05341	0.0550123		0.05	0	0	0.0028119	0.0028119	1	110%	85	115	0%	
Iron, Ferrous	C	mg/L	4.952	5.10056		0	0	0	0.0012257	0.0012257	5	0%	0	0	0%	

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14955756	ICSA	ICPMS-6020-W-	ICSA		12/29/2021 4:38:	1	R372516		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	36.6	36.6		40	0	0	0.00086	0.001	1	92%	80	120	0%	
Antimony	A	mg/L	0.0001192	0.0001192		0	0	0	0.00042	0.001	0.1	0%			0%	
Arsenic	A	mg/L	0.00003765	0.00003765		0	0	0	0.00019	0.001	1	0%			0%	
Barium	A	mg/L	0.00007974	0.00007974		0	0	0	0.000042	0.001	1	0%			0%	
Beryllium	A	mg/L	0.0001224	0.0001224		0	0	0	0.00012	0.001	1	0%			0%	
Boron	A	mg/L	0.001342	0.001342		0	0	0	0.00561	0.00561	1	0%			0%	
Cadmium	A	mg/L	0.00006509	0.00006509		0	0	0	0.000025	0.001	1	0%			0%	
Calcium	A	mg/L	115.3	115.3		120	0	0	0.02092	0.02092	50	96%	80	120	0%	
Cerium	A	mg/L	8.012E-06	8.012E-06		0	0	0	0.000012	0.001	0.1	0%			0%	
Chromium	A	mg/L	0.0008834	0.0008834		0	0	0	0.00018	0.001	1	0%			0%	
Cobalt	A	mg/L	0.0003161	0.0003161		0	0	0	0.000042	0.001	1	0%			0%	
Copper	A	mg/L	0.0001965	0.0001965		0	0	0	0.00027	0.001	1	0%			0%	
Iron	A	mg/L	98.6	98.6		100	0	0	0.00119	0.00119	5	99%	80	120	0%	
Lanthanum	A	mg/L	0.00001223	0.00001223		0	0	0	0.000011	0.001	0.1	0%			0%	
Lead	A	mg/L	0.00002412	0.00002412		0	0	0	0.000056	0.001	1	0%			0%	
Magnesium	A	mg/L	40.88	40.88		50	0	0	0.00564	0.00564	50	82%			0%	
Manganese	A	mg/L	0.0001292	0.0001292		0	0	0	0.000095	0.001	1	0%			0%	
Mercury	A	mg/L	6.717E-06	6.717E-06		0	0	0	0.00016	0.001	0.002	0%			0%	
Molybdenum	A	mg/L	0.731	0.731		0.8	0	0	0.00005	0.001	0.1	91%	80	120	0%	
Nickel	A	mg/L	0.0005343	0.0005343		0	0	0	0.00063	0.001	1	0%			0%	
Potassium	A	mg/L	39.96	39.96		50	0	0	0.08139	0.08139	50	80%			0%	
Selenium	A	mg/L	0.0001139	0.0001139		0	0	0	0.00033	0.001	1	0%			0%	
Silicon	A	mg/L	0.00107	0.00107		0	0	0	0.01223	0.1	0.4	0%			0%	
Silver	A	mg/L	0.00001267	0.00001267		0	0	0	0.00002	0.001	0.04	0%			0%	
Sodium	A	mg/L	102.3	102.3		100	0	0	0.02171	0.02171	50	102%			0%	
Strontium	A	mg/L	0.001219	0.001219		0	0	0	0.00014	0.001	1	0%			0%	
Thallium	A	mg/L	0.0001741	0.0001741		0	0	0	0.000041	0.001	1	0%			0%	
Thorium	A	mg/L	0.00008841	0.00008841		0	0	0	0.00061	0.001	1	0%			0%	
Tin	A	mg/L	-0.0001018	-0.0001018		0	0	0	0.00132	0.00132	0.1	0%			0%	
Titanium	A	mg/L	0.7562	0.7562		0.8	0	0	0.000094	0.001	1	95%			0%	
Uranium	A	mg/L	3.034E-06	3.034E-06		0	0	0	0.000052	0.0003	1	0%			0%	
Vanadium	A	mg/L	-0.002862	-0.002862		0	0	0	0.0013	0.0013	1	0%			0%	
Zinc	A	mg/L	0.0009478	0.0009478		0	0	0	0.00273	0.00273	1	0%			0%	
Iron, Ferrous	C	mg/L	98.6	98.6		0	0	0	0.00119	0.00119	5	0%			0%	

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist				
14955757	ICSAB	ICPMS-6020-W-	ICSAB		12/29/2021 4:44:	1	R372516		0	0					

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	38.05	38.05		40	0	0	0.00086	0.001	1	95%	80	120	0%	
Antimony	A	mg/L	0.00005884	0.00005884		0	0	0	0.00042	0.001	0.1	0%			0%	
Arsenic	A	mg/L	0.009715	0.009715		0.01	0	0	0.00019	0.001	1	97%	80	120	0%	
Barium	A	mg/L	0.0001064	0.0001064		0	0	0	0.000042	0.001	1	0%			0%	
Beryllium	A	mg/L	0.0002456	0.0002456		0	0	0	0.00012	0.001	1	0%			0%	
Boron	A	mg/L	0.0008783	0.0008783		0	0	0	0.00561	0.00561	1	0%			0%	
Cadmium	A	mg/L	0.009629	0.009629		0.01	0	0	0.000025	0.001	1	96%	80	120	0%	
Calcium	A	mg/L	113.4	113.4		120	0	0	0.02092	0.02092	50	95%	80	120	0%	
Cerium	A	mg/L	0.00001048	0.00001048		0	0	0	0.000012	0.001	0.1	0%			0%	
Chromium	A	mg/L	0.02043	0.02043		0.02	0	0	0.00018	0.001	1	102%	80	120	0%	
Cobalt	A	mg/L	0.02058	0.02058		0.02	0	0	0.000042	0.001	1	103%	80	120	0%	
Copper	A	mg/L	0.0204	0.0204		0.02	0	0	0.00027	0.001	1	102%	80	120	0%	
Iron	A	mg/L	98.28	98.28		100	0	0	0.00119	0.00119	5	98%	80	120	0%	
Lanthanum	A	mg/L	0.00001048	0.00001048		0	0	0	0.000011	0.001	0.1	0%			0%	
Lead	A	mg/L	0.00002672	0.00002672		0	0	0	0.000056	0.001	1	0%			0%	
Magnesium	A	mg/L	40.79	40.79		40	0	0	0.00564	0.00564	50	102%	80	120	0%	
Manganese	A	mg/L	0.01989	0.01989		0.02	0	0	0.000095	0.001	1	99%	80	120	0%	
Mercury	A	mg/L	6.586E-06	6.586E-06		0	0	0	0.00016	0.001	0.002	0%			0%	
Molybdenum	A	mg/L	0.743	0.743		0.8	0	0	0.00005	0.001	0.1	93%	80	120	0%	
Nickel	A	mg/L	0.0207	0.0207		0.02	0	0	0.00063	0.001	1	103%	80	120	0%	
Potassium	A	mg/L	39.08	39.08		40	0	0	0.08139	0.08139	50	98%	80	120	0%	
Selenium	A	mg/L	0.00978	0.00978		0.01	0	0	0.00033	0.001	1	98%	80	120	0%	
Silicon	A	mg/L	0.00126	0.00126		0	0	0	0.01223	0.1	0.4	0%			0%	
Silver	A	mg/L	0.00468	0.00468		0.005	0	0	0.00002	0.001	0.04	94%	80	120	0%	
Sodium	A	mg/L	100.1	100.1		100	0	0	0.02171	0.02171	50	100%	80	120	0%	
Strontium	A	mg/L	0.001238	0.001238		0	0	0	0.00014	0.001	1	0%			0%	
Thallium	A	mg/L	0.00006583	0.00006583		0	0	0	0.000041	0.001	1	0%			0%	
Thorium	A	mg/L	0.00003496	0.00003496		0	0	0	0.00061	0.001	1	0%			0%	
Tin	A	mg/L	-4.708E-05	-4.708E-05		0	0	0	0.00132	0.00132	0.1	0%			0%	
Titanium	A	mg/L	0.7621	0.7621		0.8	0	0	0.000094	0.001	1	95%	80	120	0%	
Uranium	A	mg/L	2.607E-06	2.607E-06		0	0	0	0.000052	0.0003	1	0%			0%	
Vanadium	A	mg/L	0.01638	0.01638		0.02	0	0	0.0013	0.0013	1	82%	80	120	0%	
Zinc	A	mg/L	0.01106	0.01106		0.01	0	0	0.00273	0.00273	1	111%	80	120	0%	
Iron, Ferrous	C	mg/L	98.28	98.28		0	0	0	0.00119	0.00119	5	0%			0%	

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14955758	Rinse	ICPMS-6020-W-	SAMP		12/29/2021 4:50:	1	R372516		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.0004495	0		0	0	0	0.00086	0.001	1	0%	0	0	0%	
Antimony	A	mg/L	0.00001458	0		0	0	0	0.00042	0.001	0.1	0%	0	0	0%	
Arsenic	A	mg/L	-0.0001708	0		0	0	0	0.00019	0.001	1	0%	0	0	0%	
Barium	A	mg/L	7.462E-06	0		0	0	0	0.000042	0.001	1	0%	0	0	0%	
Beryllium	A	mg/L	0.00006212	0		0	0	0	0.00012	0.001	1	0%	0	0	0%	
Cadmium	A	mg/L	4.276E-06	0		0	0	0	0.000025	0.001	1	0%	0	0	0%	
Cerium	A	mg/L	7.957E-07	0		0	0	0	0.000012	0.001	0.1	0%	0	0	0%	
Chromium	A	mg/L	-1.937E-05	0		0	0	0	0.00018	0.001	1	0%	0	0	0%	
Cobalt	A	mg/L	-1.276E-05	0		0	0	0	0.000042	0.001	1	0%	0	0	0%	
Copper	A	mg/L	0.00003517	0		0	0	0	0.00027	0.001	1	0%	0	0	0%	
Lanthanum	A	mg/L	3.912E-07	0		0	0	0	0.000011	0.001	0.1	0%	0	0	0%	
Lead	A	mg/L	7.778E-06	0		0	0	0	0.000056	0.001	1	0%	0	0	0%	
Manganese	A	mg/L	-0.0001109	0		0	0	0	0.000095	0.001	1	0%	0	0	0%	
Mercury	A	mg/L	4.322E-06	0		0	0	0	0.00016	0.001	0.002	0%	0	0	0%	
Molybdenum	A	mg/L	0.0002415	0.0002415		0	0	0	0.00005	0.001	0.1	0%	0	0	0%	J
Nickel	A	mg/L	0.0002378	0		0	0	0	0.00063	0.001	1	0%	0	0	0%	
Selenium	A	mg/L	-5.891E-06	0		0	0	0	0.00033	0.001	1	0%	0	0	0%	
Silicon	A	mg/L	-0.0001873	0		0	0	0	0.01223	0.1	0.4	0%	0	0	0%	
Silver	A	mg/L	0.00000456	0		0	0	0	0.00002	0.001	0.04	0%	0	0	0%	
Strontium	A	mg/L	1.803E-06	0		0	0	0	0.00014	0.001	1	0%	0	0	0%	
Thallium	A	mg/L	0.00004838	0.00004838		0	0	0	0.000041	0.001	1	0%	0	0	0%	J
Thorium	A	mg/L	3.841E-06	0		0	0	0	0.00061	0.001	1	0%	0	0	0%	
Titanium	A	mg/L	0.0001099	0.0001099		0	0	0	0.000094	0.001	1	0%	0	0	0%	J
Uranium	A	mg/L	1.214E-06	0		0	0	0	0.000052	0.0003	1	0%	0	0	0%	
Boron	B	mg/L	0.00009966	0		0	0	0	0.00561	0.00561	1	0%	0	0	0%	L
Calcium	B	mg/L	0.001634	0		0	0	0	0.02092	0.02092	50	0%	0	0	0%	L
Potassium	B	mg/L	-0.006215	0		0	0	0	0.08139	0.08139	50	0%	0	0	0%	L
Sodium	B	mg/L	0.01002	0		0	0	0	0.02171	0.02171	50	0%	0	0	0%	L
Tin	B	mg/L	-0.0001812	0		0	0	0	0.00132	0.00132	0.1	0%	0	0	0%	
Zinc	B	mg/L	0.00008329	0		0	0	0	0.00273	0.00273	1	0%	0	0	0%	L

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14955759	CCV	ICPMS-6020-W-	CCV		12/29/2021 4:56:	1	R372516		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14955759	CCV	ICPMS-6020-W-	CCV		12/29/2021 4:56:	1	R372516		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.04893	0.04893		0.05	0	0	0.00086	0.001	1	98%	90	110	0%	
Antimony	A	mg/L	0.04796	0.04796		0.05	0	0	0.00042	0.001	0.1	96%	90	110	0%	
Arsenic	A	mg/L	0.04946	0.04946		0.05	0	0	0.00019	0.001	1	99%	90	110	0%	
Barium	A	mg/L	0.05098	0.05098		0.05	0	0	0.000042	0.001	1	102%	90	110	0%	
Beryllium	A	mg/L	0.04934	0.04934		0.05	0	0	0.00012	0.001	1	99%	90	110	0%	
Boron	A	mg/L	0.04776	0.04776		0.05	0	0	0.00561	0.00561	1	96%	90	110	0%	
Cadmium	A	mg/L	0.04935	0.04935		0.05	0	0	0.000025	0.001	1	99%	90	110	0%	
Calcium	A	mg/L	12.54	12.54		12.5	0	0	0.02092	0.02092	50	100%	90	110	0%	
Cerium	A	mg/L	0.04768	0.04768		0.05	0	0	0.000012	0.001	0.1	95%	90	110	0%	
Chromium	A	mg/L	0.04975	0.04975		0.05	0	0	0.00018	0.001	1	99%	90	110	0%	
Cobalt	A	mg/L	0.05356	0.05356		0.05	0	0	0.000042	0.001	1	107%	90	110	0%	
Copper	A	mg/L	0.05231	0.05231		0.05	0	0	0.00027	0.001	1	105%	90	110	0%	
Iron	A	mg/L	1.305	1.305		1.3	0	0	0.00119	0.00119	5	100%	90	110	0%	
Lanthanum	A	mg/L	0.04789	0.04789		0.05	0	0	0.000011	0.001	0.1	96%	90	110	0%	
Lead	A	mg/L	0.04824	0.04824		0.05	0	0	0.000056	0.001	1	96%	90	110	0%	
Magnesium	A	mg/L	12.23	12.23		12.5	0	0	0.00564	0.00564	50	98%	90	110	0%	
Manganese	A	mg/L	0.05074	0.05074		0.05	0	0	0.000095	0.001	1	101%	90	110	0%	
Mercury	A	mg/L	0.0009896	0.0009896		0.001	0	0	0.00016	0.001	0.002	99%	90	110	0%	
Molybdenum	A	mg/L	0.04753	0.04753		0.05	0	0	0.00005	0.001	0.1	95%	90	110	0%	
Nickel	A	mg/L	0.05064	0.05064		0.05	0	0	0.00063	0.001	1	101%	90	110	0%	
Potassium	A	mg/L	12.19	12.19		12.5	0	0	0.08139	0.08139	50	98%	90	110	0%	
Selenium	A	mg/L	0.04994	0.04994		0.05	0	0	0.00033	0.001	1	100%	90	110	0%	
Silicon	A	mg/L	0.196	0.196		0.2	0	0	0.01223	0.1	0.4	98%	90	110	0%	
Silver	A	mg/L	0.01918	0.01918		0.02	0	0	0.00002	0.001	0.04	96%	90	110	0%	
Sodium	A	mg/L	12.29	12.29		12.5	0	0	0.02171	0.02171	50	98%	90	110	0%	
Strontium	A	mg/L	0.04986	0.04986		0.05	0	0	0.00014	0.001	1	100%	90	110	0%	
Thallium	A	mg/L	0.04885	0.04885		0.05	0	0	0.000041	0.001	1	98%	90	110	0%	
Thorium	A	mg/L	0.04855	0.04855		0.05	0	0	0.00061	0.001	1	97%	90	110	0%	
Tin	A	mg/L	0.04767	0.04767		0.05	0	0	0.00132	0.00132	0.1	95%	90	110	0%	
Titanium	A	mg/L	0.05077	0.05077		0.05	0	0	0.000094	0.001	1	102%	90	110	0%	
Uranium	A	mg/L	0.0482	0.0482		0.05	0	0	0.000052	0.0003	1	96%	90	110	0%	
Vanadium	A	mg/L	0.04628	0.04628		0.05	0	0	0.0013	0.0013	1	93%	90	110	0%	
Zinc	A	mg/L	0.05038	0.05038		0.05	0	0	0.00273	0.00273	1	101%	90	110	0%	
Iron, Ferrous	C	mg/L	1.305	1.305		0	0	0	0.00119	0.00119	5	0%	0	0	0%	

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist				
14955760	CCB	ICPMS-6020-W-	CCB		12/29/2021 5:02:	1	R372516		0	0					

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.0002828	0.0002828		0	0	0	0.00086	0.001	1	0%			0%	
Antimony	A	mg/L	0.00006657	0.00006657		0	0	0	0.00042	0.001	0.1	0%			0%	
Arsenic	A	mg/L	-9.605E-05	-9.605E-05		0	0	0	0.00019	0.001	1	0%			0%	
Barium	A	mg/L	4.458E-06	4.458E-06		0	0	0	0.000042	0.001	1	0%			0%	
Beryllium	A	mg/L	0.0000722	0.0000722		0	0	0	0.00012	0.001	1	0%			0%	
Boron	A	mg/L	0.0004222	0.0004222		0	0	0	0.00561	0.00561	1	0%			0%	
Cadmium	A	mg/L	5.792E-07	5.792E-07		0	0	0	0.000025	0.001	1	0%			0%	
Calcium	A	mg/L	0.0005015	0.0005015		0	0	0	0.02092	0.02092	50	0%			0%	
Cerium	A	mg/L	9.64E-07	9.64E-07		0	0	0	0.000012	0.001	0.1	0%	0	0	0%	
Chromium	A	mg/L	-2.149E-05	-2.149E-05		0	0	0	0.00018	0.001	1	0%			0%	
Cobalt	A	mg/L	-3.637E-06	-3.637E-06		0	0	0	0.000042	0.001	1	0%			0%	
Copper	A	mg/L	0.00000848	0.00000848		0	0	0	0.00027	0.001	1	0%			0%	
Iron	A	mg/L	0.003064	0.003064		0	0	0	0.00119	0.00119	5	0%			0%	
Lanthanum	A	mg/L	-2.867E-07	-2.867E-07		0	0	0	0.000011	0.001	0.1	0%	0	0	0%	
Lead	A	mg/L	0.00000939	0.00000939		0	0	0	0.000056	0.001	1	0%			0%	
Magnesium	A	mg/L	-0.02143	-0.02143		0	0	0	0.00564	0.00564	50	0%			0%	
Manganese	A	mg/L	-0.0001119	-0.0001119		0	0	0	0.000095	0.001	1	0%			0%	
Mercury	A	mg/L	5.084E-06	5.084E-06		0	0	0	0.00016	0.001	0.002	0%			0%	
Molybdenum	A	mg/L	0.0000535	0.0000535		0	0	0	0.00005	0.001	0.1	0%			0%	
Nickel	A	mg/L	5.681E-06	5.681E-06		0	0	0	0.00063	0.001	1	0%			0%	
Potassium	A	mg/L	0.003867	0.003867		0	0	0	0.08139	0.08139	50	0%			0%	
Selenium	A	mg/L	0.00001782	0.00001782		0	0	0	0.00033	0.001	1	0%			0%	
Silicon	A	mg/L	-0.0001845	-0.0001845		0	0	0	0.01223	0.1	0.4	0%	0	0	0%	
Silver	A	mg/L	1.024E-06	1.024E-06		0	0	0	0.00002	0.001	0.04	0%			0%	
Sodium	A	mg/L	0.002622	0.002622		0	0	0	0.02171	0.02171	50	0%			0%	
Strontium	A	mg/L	4.906E-06	4.906E-06		0	0	0	0.00014	0.001	1	0%	0	0	0%	
Thallium	A	mg/L	0.00003313	0.00003313		0	0	0	0.000041	0.001	1	0%	0	0	0%	
Thorium	A	mg/L	0.00003575	0.00003575		0	0	0	0.00061	0.001	1	0%	0	0	0%	
Tin	A	mg/L	0.00005444	0.00005444		0	0	0	0.00132	0.00132	0.1	0%	0	0	0%	
Titanium	A	mg/L	0.0000978	0.0000978		0	0	0	0.000094	0.001	1	0%	0	0	0%	
Uranium	A	mg/L	0.00000112	0.00000112		0	0	0	0.000052	0.0003	1	0%	0	0	0%	
Vanadium	A	mg/L	-0.002766	-0.002766		0	0	0	0.0013	0.0013	1	0%	0	0	0%	
Zinc	A	mg/L	1.606E-06	1.606E-06		0	0	0	0.00273	0.00273	1	0%	0	0	0%	
Iron, Ferrous	C	mg/L	0.003064	0.003064		0	0	0	0.00119	0.00119	5	0%	0	0	0%	

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14955761	Rinse	ICPMS-6020-W-	SAMP		12/29/2021 5:08:	1	R372516		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.0002445	0		0	0	0	0.00086	0.001	1	0%	0	0	0%	
Antimony	A	mg/L	0.00001709	0		0	0	0	0.00042	0.001	0.1	0%	0	0	0%	
Arsenic	A	mg/L	-0.0001349	0		0	0	0	0.00019	0.001	1	0%	0	0	0%	
Barium	A	mg/L	4.544E-06	0		0	0	0	0.000042	0.001	1	0%	0	0	0%	
Beryllium	A	mg/L	0.00002653	0		0	0	0	0.00012	0.001	1	0%	0	0	0%	
Cadmium	A	mg/L	0.00000068	0		0	0	0	0.000025	0.001	1	0%	0	0	0%	
Cerium	A	mg/L	7.969E-07	0		0	0	0	0.000012	0.001	0.1	0%	0	0	0%	
Chromium	A	mg/L	-1.702E-06	0		0	0	0	0.00018	0.001	1	0%	0	0	0%	
Cobalt	A	mg/L	-2.509E-06	0		0	0	0	0.000042	0.001	1	0%	0	0	0%	
Copper	A	mg/L	0.00002213	0		0	0	0	0.00027	0.001	1	0%	0	0	0%	
Lanthanum	A	mg/L	4.727E-07	0		0	0	0	0.000011	0.001	0.1	0%	0	0	0%	
Lead	A	mg/L	5.793E-06	0		0	0	0	0.000056	0.001	1	0%	0	0	0%	
Manganese	A	mg/L	-0.000102	0		0	0	0	0.000095	0.001	1	0%	0	0	0%	
Mercury	A	mg/L	6.694E-06	0		0	0	0	0.00016	0.001	0.002	0%	0	0	0%	
Molybdenum	A	mg/L	0.00003104	0		0	0	0	0.00005	0.001	0.1	0%	0	0	0%	
Nickel	A	mg/L	0.00005887	0		0	0	0	0.00063	0.001	1	0%	0	0	0%	
Selenium	A	mg/L	-8.949E-06	0		0	0	0	0.00033	0.001	1	0%	0	0	0%	
Silicon	A	mg/L	-0.0001458	0		0	0	0	0.01223	0.1	0.4	0%	0	0	0%	
Silver	A	mg/L	3.468E-06	0		0	0	0	0.00002	0.001	0.04	0%	0	0	0%	
Strontium	A	mg/L	6.212E-06	0		0	0	0	0.00014	0.001	1	0%	0	0	0%	
Thallium	A	mg/L	0.00002152	0		0	0	0	0.000041	0.001	1	0%	0	0	0%	
Thorium	A	mg/L	8.778E-06	0		0	0	0	0.00061	0.001	1	0%	0	0	0%	
Titanium	A	mg/L	0.00008468	0		0	0	0	0.000094	0.001	1	0%	0	0	0%	
Uranium	A	mg/L	5.217E-07	0		0	0	0	0.000052	0.0003	1	0%	0	0	0%	
Boron	B	mg/L	0.00019	0		0	0	0	0.00561	0.00561	1	0%	0	0	0%	L
Calcium	B	mg/L	0.0002113	0		0	0	0	0.02092	0.02092	50	0%	0	0	0%	L
Potassium	B	mg/L	0.0006742	0		0	0	0	0.08139	0.08139	50	0%	0	0	0%	L
Sodium	B	mg/L	-0.001091	0		0	0	0	0.02171	0.02171	50	0%	0	0	0%	L
Tin	B	mg/L	-0.0001693	0		0	0	0	0.00132	0.00132	0.1	0%	0	0	0%	
Zinc	B	mg/L	0.00003406	0		0	0	0	0.00273	0.00273	1	0%	0	0	0%	L

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14955762	MB-162518	ICPMS-6020-W-	MBLK		12/29/2021 5:14:	1	162518	12/28/2021	0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14955762	MB-162518	ICPMS-6020-W-	MBLK		12/29/2021 5:14:	1	162518	12/28/2021	0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.001809	0		0	0	0	0.0038747	0.0031975	1	0%	0	0	0%	
Antimony	A	mg/L	0.00005156	0		0	0	0	0.0002799	0.001	0.1	0%	0	0	0%	
Arsenic	A	mg/L	0.0001466	0		0	0	0	0.0003412	0.001	1	0%	0	0	0%	
Barium	A	mg/L	0.00002582	0		0	0	0	0.0002682	0.001	1	0%	0	0	0%	
Beryllium	A	mg/L	0.00003868	0		0	0	0	0.0001071	0.01	1	0%	0	0	0%	
Boron	A	mg/L	0.001376	0		0	0	0	0.0203802	0.01467	1	0%	0	0	0%	
Cadmium	A	mg/L	1.172E-06	0		0	0	0	1.821E-05	0.005	1	0%	0	0	0%	
Calcium	A	mg/L	0.04687	0.04687		0	0	0	0.0372936	0.1103481	50	0%	0	0	0%	
Cerium	A	mg/L	1.739E-06	0		0	0	0	2.738E-05	0.001	0.1	0%	0	0	0%	
Chromium	A	mg/L	0.0001543	0		0	0	0	0.0015375	0.0015375	1	0%	0	0	0%	
Cobalt	A	mg/L	0.00009922	0.00009922		0	0	0	9.541E-05	0.001	1	0%	0	0	0%	
Copper	A	mg/L	0.0001982	0		0	0	0	0.0008747	0.00198	1	0%	0	0	0%	
Iron	A	mg/L	0.002593	0		0	0	0	0.007424	0.00513	5	0%	0	0	0%	
Lanthanum	A	mg/L	6.536E-07	0		0	0	0	0.000055	0.001	0.1	0%	0	0	0%	
Lead	A	mg/L	0.00005349	0		0	0	0	7.716E-05	0.0005	1	0%	0	0	0%	
Magnesium	A	mg/L	-0.02084	0		0	0	0	0.0104254	0.0081522	50	0%	0	0	0%	
Manganese	A	mg/L	0.00001454	0		0	0	0	0.0005399	0.001	1	0%	0	0	0%	
Molybdenum	A	mg/L	0.00005071	0		0	0	0	0.0001763	0.001	0.1	0%	0	0	0%	
Nickel	A	mg/L	0.000291	0.000291		0	0	0	0.0002288	0.0024200	1	0%	0	0	0%	
Potassium	A	mg/L	0.01135	0		0	0	0	0.0765619	0.0261205	50	0%	0	0	0%	
Selenium	A	mg/L	0.00003542	0		0	0	0	0.0001357	0.001	1	0%	0	0	0%	
Silicon	A	mg/L	0.01296	0		0	0	0	0.0422089	0.0053212	0.4	0%	0	0	0%	
Silver	A	mg/L	9.732E-07	0		0	0	0	4.281E-05	0.001	0.04	0%	0	0	0%	
Sodium	A	mg/L	0.01082	0		0	0	0	0.1019461	0.7330269	50	0%	0	0	0%	
Strontium	A	mg/L	0.0000435	0		0	0	0	0.0002433	0.001	1	0%	0	0	0%	
Thallium	A	mg/L	0.0001153	0.0001153		0	0	0	0.0001114	0.001	1	0%	0	0	0%	
Thorium	A	mg/L	0.00008837	0		0	0	0	0.0003796	0.00415	1	0%	0	0	0%	
Tin	A	mg/L	0.0000985	0		0	0	0	0.0018932	0.0011175	0.1	0%	0	0	0%	
Titanium	A	mg/L	0.0003485	0		0	0	0	0.0005733	0.001	1	0%	0	0	0%	
Uranium	A	mg/L	5.135E-07	0		0	0	0	1.699E-05	0.0003	1	0%	0	0	0%	
Vanadium	A	mg/L	-0.001014	0		0	0	0	0.0039127	0.0021085	1	0%	0	0	0%	
Zinc	A	mg/L	0.0003634	0		0	0	0	0.0011617	0.0065544	1	0%	0	0	0%	
Silica	C	mg/L	0.02772403	0		0	0	0	0.0902933	0.0113831	5	0%	0	0	0%	
Silicon as SiO2	C	mg/L	0.02772403	0		0	0	0	0.0902933	0.0113831	5	0%	0	0	0%	

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14955763	LCS4-162518	ICPMS-6020-W-	LCS4		12/29/2021 5:21:	1	162518	12/28/2021	0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.5079	0.5079		0.5	0	0	0.0038747	0.0031975	1	102%	80	120	0%	
Antimony	A	mg/L	0.09839	0.09839		0.1	0	0	0.0002799	0.001	0.1	98%	80	120	0%	
Arsenic	A	mg/L	0.09707	0.09707		0.1	0	0	0.0003412	0.001	1	97%	80	120	0%	
Barium	A	mg/L	0.09598	0.09598		0.1	0	0	0.0002682	0.001	1	96%	80	120	0%	
Beryllium	A	mg/L	0.04999	0.04999		0.05	0	0	0.0001071	0.01	1	100%	80	120	0%	
Boron	A	mg/L	0.1029	0.1029		0.1	0	0	0.0203802	0.01467	1	103%	80	120	0%	
Cadmium	A	mg/L	0.04933	0.04933		0.05	0	0	1.821E-05	0.005	1	99%	80	120	0%	
Calcium	A	mg/L	5.112	5.112		5	0	0	0.0372936	0.1103481	50	102%	80	120	0%	
Cerium	A	mg/L	0.1076	0.1076		0.1	0	0	2.738E-05	0.001	0.1	108%	80	120	0%	
Chromium	A	mg/L	0.09929	0.09929		0.1	0	0	0.0015375	0.0015375	1	99%	80	120	0%	
Cobalt	A	mg/L	0.1027	0.1027		0.1	0	0	9.541E-05	0.001	1	103%	80	120	0%	
Copper	A	mg/L	0.105	0.105		0.1	0	0	0.0008747	0.00198	1	105%	80	120	0%	
Iron	A	mg/L	0.5143	0.5143		0.5	0	0	0.007424	0.00513	5	103%	80	120	0%	
Lanthanum	A	mg/L	0.1064	0.1064		0.1	0	0	0.000055	0.001	0.1	106%	80	120	0%	
Lead	A	mg/L	0.1023	0.1023		0.1	0	0	7.716E-05	0.001	1	102%	88	115	0%	
Magnesium	A	mg/L	5.402	5.402		5	0	0	0.0104254	0.0081522	50	108%	80	120	0%	
Manganese	A	mg/L	0.5095	0.5095		0.5	0	0	0.0005399	0.001	1	102%	80	120	0%	
Molybdenum	A	mg/L	0.09458	0.09458		0.1	0	0	0.0001763	0.001	0.1	95%	80	120	0%	
Nickel	A	mg/L	0.1018	0.1018		0.1	0	0	0.0002288	0.0024200	1	102%	80	120	0%	
Potassium	A	mg/L	5.202	5.202		5	0	0	0.0765619	0.0261205	50	104%	80	120	0%	
Selenium	A	mg/L	0.0998	0.0998		0.1	0	0	0.0001357	0.001	1	100%	80	120	0%	
Silicon	A	mg/L	0.9916	0.9916		1	0	0	0.0422089	0.0053212	0.4	99%	80	120	0%	
Silver	A	mg/L	0.009489	0.009489		0.01	0	0	4.281E-05	0.001	0.04	95%	80	120	0%	
Sodium	A	mg/L	5.306	5.306		5	0	0	0.1019461	0.7330269	50	106%	80	120	0%	
Strontium	A	mg/L	0.09966	0.09966		0.1	0	0	0.0002433	0.001	1	100%	80	120	0%	
Thallium	A	mg/L	0.1002	0.1002		0.1	0	0	0.0001114	0.001	1	100%	80	120	0%	
Thorium	A	mg/L	0.1021	0.1021		0.1	0	0	0.0003796	0.00415	1	102%	80	120	0%	
Tin	A	mg/L	0.09481	0.09481		0.1	0	0	0.0018932	0.0011175	0.1	95%	80	120	0%	
Titanium	A	mg/L	0.09576	0.09576		0.1	0	0	0.0005733	0.001	1	96%	80	120	0%	
Uranium	A	mg/L	0.1034	0.1034		0.1	0	0	1.699E-05	0.0003	1	103%	80	120	0%	
Vanadium	A	mg/L	0.09814	0.09814		0.1	0	0	0.0039127	0.0021085	1	98%	80	120	0%	
Zinc	A	mg/L	0.09954	0.09954		0.1	0	0	0.0011617	0.0065544	1	100%	80	120	0%	
Silica	C	mg/L	2.12123072	2.12123072		0	0	0	0.0902933	0.0113831	5	0%	0	0	0%	
Silicon as SiO2	C	mg/L	2.12123072	2.12123072		2.14	0	0	0.0902933	0.0113831	5	99%	80	120	0%	

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14955764	B21121977-001	ICPMS-6020-W-	SAMP		12/29/2021 5:27:	1	R372516		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.0005974	0		0	0	0	0.00086	0.001	1	0%	0	0	0%	
Antimony	A	mg/L	0.000165	0		0	0	0	0.00042	0.001	0.1	0%	0	0	0%	
Arsenic	A	mg/L	0.001018	0.001018		0	0	0	0.00019	0.001	1	0%	0	0	0%	
Barium	A	mg/L	0.06602	0.06602		0	0	0	0.000042	0.001	1	0%	0	0	0%	
Beryllium	A	mg/L	-2.312E-06	0		0	0	0	0.00012	0.001	1	0%	0	0	0%	
Cadmium	A	mg/L	0.00001579	0		0	0	0	0.000025	0.001	1	0%	0	0	0%	
Cerium	A	mg/L	0.0000026	0		0	0	0	0.000012	0.001	0.1	0%	0	0	0%	
Chromium	A	mg/L	0.007554	0.007554		0	0	0	0.00018	0.001	1	0%	0	0	0%	
Cobalt	A	mg/L	0.0008497	0.0008497		0	0	0	0.000042	0.001	1	0%	0	0	0%	J
Copper	A	mg/L	0.0005534	0.0005534		0	0	0	0.00027	0.001	1	0%	0	0	0%	J
Lanthanum	A	mg/L	8.753E-07	0		0	0	0	0.000011	0.001	0.1	0%	0	0	0%	
Lead	A	mg/L	0.000063	0.000063		0	0	0	0.000056	0.001	1	0%	0	0	0%	J
Manganese	A	mg/L	0.003158	0.003158		0	0	0	0.000095	0.001	1	0%	0	0	0%	
Mercury	A	mg/L	0.00003033	0		0	0	0	0.00016	0.001	0.002	0%	0	0	0%	
Molybdenum	A	mg/L	0.001042	0.001042		0	0	0	0.00005	0.001	0.1	0%	0	0	0%	
Nickel	A	mg/L	0.09368	0.09368		0	0	0	0.00063	0.001	1	0%	0	0	0%	
Selenium	A	mg/L	0.004624	0.004624		0	0	0	0.00033	0.001	1	0%	0	0	0%	
Silver	A	mg/L	7.578E-06	0		0	0	0	0.00002	0.001	0.04	0%	0	0	0%	
Thallium	A	mg/L	0.0004626	0.0004626		0	0	0	0.000041	0.001	1	0%	0	0	0%	J
Thorium	A	mg/L	0.00001989	0		0	0	0	0.00061	0.001	1	0%	0	0	0%	
Titanium	A	mg/L	0.001954	0.001954		0	0	0	0.000094	0.001	1	0%	0	0	0%	
Uranium	A	mg/L	0.00007345	0.00007345		0	0	0	0.000052	0.0003	1	0%	0	0	0%	J
Boron	B	mg/L	0.04626	0.04626		0	0	0	0.00561	0.00561	1	0%	0	0	0%	D
Potassium	B	mg/L	7.556	7.556		0	0	0	0.08139	0.08139	50	0%	0	0	0%	D
Tin	B	mg/L	-0.0002921	0		0	0	0	0.00132	0.00132	0.1	0%	0	0	0%	
Zinc	B	mg/L	0.001788	0		0	0	0	0.00273	0.00273	1	0%	0	0	0%	L

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14955765	B21121977-001	ICPMS-6020-W-	SAMP		12/29/2021 5:33:	1	162518	12/28/2021	0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Antimony	A	mg/L	0.0002233	0		0	0	0	0.0002799	0.001	0.1	0%	0	0	0%	U
Arsenic	A	mg/L	0.001754	0.001754		0	0	0	0.0003412	0.001	1	0%	0	0	0%	
Barium	A	mg/L	0.06736	0.06736		0	0	0	0.0002682	0.001	1	0%	0	0	0%	
Beryllium	A	mg/L	0.00001752	0		0	0	0	0.0001071	0.01	1	0%	0	0	0%	U

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14955765	B21121977-001	ICPMS-6020-W-	SAMP		12/29/2021 5:33:	1	162518	12/28/2021	0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Cadmium	A	mg/L	6.426E-06	0		0	0	0	1.821E-05	0.005	1	0%	0	0	0%	U
Cerium	A	mg/L	0.00000234	0		0	0	0	2.738E-05	0.001	0.1	0%	0	0	0%	U
Cobalt	A	mg/L	0.001048	0.001048		0	0	0	9.541E-05	0.001	1	0%	0	0	0%	
Lanthanum	A	mg/L	1.076E-06	0		0	0	0	0.000055	0.001	0.1	0%	0	0	0%	U
Lead	A	mg/L	0.00006066	0		0	0	0	7.716E-05	0.001	1	0%	0	0	0%	U
Manganese	A	mg/L	0.003632	0.003632		0	0	0	0.0005399	0.001	1	0%	0	0	0%	
Molybdenum	A	mg/L	0.001115	0.001115		0	0	0	0.0001763	0.001	0.1	0%	0	0	0%	
Selenium	A	mg/L	0.00464	0.00464		0	0	0	0.0001357	0.001	1	0%	0	0	0%	
Silver	A	mg/L	6.371E-06	0		0	0	0	4.281E-05	0.001	0.04	0%	0	0	0%	U
Thallium	A	mg/L	0.0001957	0.0001957		0	0	0	0.0001114	0.001	1	0%	0	0	0%	J
Titanium	A	mg/L	0.002208	0.002208		0	0	0	0.0005733	0.001	1	0%	0	0	0%	
Uranium	A	mg/L	0.00007185	0.00007185		0	0	0	1.699E-05	0.0003	1	0%	0	0	0%	J
Aluminum	B	mg/L	0.002497	0		0	0	0	0.0038747	0.0031975	1	0%	0	0	0%	LU
Boron	B	mg/L	0.05286	0.05286		0	0	0	0.0203802	0.01467	1	0%	0	0	0%	D
Chromium	B	mg/L	0.01313	0.01313		0	0	0	0.0015375	0.0015375	1	0%	0	0	0%	D
Copper	B	mg/L	0.0005801	0		0	0	0	0.0008747	0.00198	1	0%	0	0	0%	LU
Iron	B	mg/L	0.1989	0.1989		0	0	0	0.007424	0.00513	5	0%	0	0	0%	D
Nickel	B	mg/L	0.1014	0.1014		0	0	0	0.0002288	0.0024200	1	0%	0	0	0%	D
Potassium	B	mg/L	7.739	7.739		0	0	0	0.0765619	0.0261205	50	0%	0	0	0%	D
Thorium	B	mg/L	0.0000996	0		0	0	0	0.0003796	0.00415	1	0%	0	0	0%	LU
Tin	B	mg/L	0.00005734	0		0	0	0	0.0018932	0.0011175	0.1	0%	0	0	0%	U
Vanadium	B	mg/L	0.01154	0.01154		0	0	0	0.0039127	0.0021085	1	0%	0	0	0%	D
Zinc	B	mg/L	0.0008685	0		0	0	0	0.0011617	0.0065544	1	0%	0	0	0%	LU

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14955766	B21121977-002	ICPMS-6020-W-	SAMP		12/29/2021 5:39:	1	R372516		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Antimony	A	mg/L	0.00003948	0		0	0	0	0.00042	0.001	0.1	0%	0	0	0%	
Arsenic	A	mg/L	-2.552E-05	0		0	0	0	0.00019	0.001	1	0%	0	0	0%	
Barium	A	mg/L	0.01067	0.01067		0	0	0	0.000042	0.001	1	0%	0	0	0%	
Beryllium	A	mg/L	-4.124E-05	0		0	0	0	0.00012	0.001	1	0%	0	0	0%	
Cadmium	A	mg/L	0.00001068	0		0	0	0	0.000025	0.001	1	0%	0	0	0%	
Cerium	A	mg/L	2.144E-06	0		0	0	0	0.000012	0.001	0.1	0%	0	0	0%	
Chromium	A	mg/L	0.002814	0.002814		0	0	0	0.00018	0.001	1	0%	0	0	0%	

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14955766	B21121977-002	ICPMS-6020-W-	SAMP		12/29/2021 5:39:	1	R372516		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Cobalt	A	mg/L	0.00002231	0		0	0	0	0.000042	0.001	1	0%	0	0	0%	
Copper	A	mg/L	0.0003532	0.0003532		0	0	0	0.00027	0.001	1	0%	0	0	0%	J
Lanthanum	A	mg/L	4.968E-07	0		0	0	0	0.000011	0.001	0.1	0%	0	0	0%	
Lead	A	mg/L	0.00003746	0		0	0	0	0.000056	0.001	1	0%	0	0	0%	U
Manganese	A	mg/L	4.785E-06	0		0	0	0	0.000095	0.001	1	0%	0	0	0%	
Mercury	A	mg/L	3.934E-06	0		0	0	0	0.00016	0.001	0.002	0%	0	0	0%	
Molybdenum	A	mg/L	0.0001472	0.0001472		0	0	0	0.00005	0.001	0.1	0%	0	0	0%	J
Nickel	A	mg/L	0.0004357	0		0	0	0	0.00063	0.001	1	0%	0	0	0%	
Selenium	A	mg/L	0.0002477	0		0	0	0	0.00033	0.001	1	0%	0	0	0%	
Silver	A	mg/L	4.588E-06	0		0	0	0	0.00002	0.001	0.04	0%	0	0	0%	
Strontium	A	mg/L	0.2525	0.2525		0	0	0	0.00014	0.001	1	0%	0	0	0%	
Thallium	A	mg/L	0.00009385	0.00009385		0	0	0	0.000041	0.001	1	0%	0	0	0%	J
Thorium	A	mg/L	-5.633E-06	0		0	0	0	0.00061	0.001	1	0%	0	0	0%	
Titanium	A	mg/L	0.002127	0.002127		0	0	0	0.000094	0.001	1	0%	0	0	0%	
Uranium	A	mg/L	0.00001255	0		0	0	0	0.000052	0.0003	1	0%	0	0	0%	
Boron	B	mg/L	0.06376	0.06376		0	0	0	0.00561	0.00561	1	0%	0	0	0%	D
Calcium	B	mg/L	27.44	27.44		0	0	0	0.02092	0.02092	50	0%	0	0	0%	D
Iron	B	mg/L	0.0008738	0		0	0	0	0.00119	0.00119	5	0%	0	0	0%	
Iron, Ferrous	B	mg/L	0.0008738	0		0	0	0	0.00119	0.00119	5	0%	0	0	0%	
Magnesium	B	mg/L	46.47	46.47		0	0	0	0.00564	0.00564	50	0%	0	0	0%	D
Potassium	B	mg/L	2.115	2.115		0	0	0	0.08139	0.08139	50	0%	0	0	0%	D
Tin	B	mg/L	-0.0002814	0		0	0	0	0.00132	0.00132	0.1	0%	0	0	0%	
Zinc	B	mg/L	0.003208	0.003208		0	0	0	0.00273	0.00273	1	0%	0	0	0%	D

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14955767	B21121977-002	ICPMS-6020-W-	SAMP		12/29/2021 5:45:	1	162518	12/28/2021	0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Antimony	A	mg/L	0.0001442	0		0	0	0	0.0002799	0.001	0.1	0%	0	0	0%	U
Arsenic	A	mg/L	0.0005626	0.0005626		0	0	0	0.0003412	0.001	1	0%	0	0	0%	J
Barium	A	mg/L	0.01207	0.01207		0	0	0	0.0002682	0.001	1	0%	0	0	0%	
Beryllium	A	mg/L	-0.0000163	0		0	0	0	0.0001071	0.01	1	0%	0	0	0%	U
Cadmium	A	mg/L	0.00001353	0		0	0	0	1.821E-05	0.005	1	0%	0	0	0%	U
Cerium	A	mg/L	0.0002336	0.0002336		0	0	0	2.738E-05	0.001	0.1	0%	0	0	0%	J
Cobalt	A	mg/L	0.000766	0.000766		0	0	0	9.541E-05	0.001	1	0%	0	0	0%	J

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14955767	B21121977-002	ICPMS-6020-W-	SAMP		12/29/2021 5:45:	1	162518	12/28/2021	0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Lanthanum	A	mg/L	0.00008798	0.00008798		0	0	0	0.000055	0.001	0.1	0%	0	0	0%	J
Lead	A	mg/L	0.0002501	0.0002501		0	0	0	7.716E-05	0.001	1	0%	0	0	0%	J
Manganese	A	mg/L	0.008219	0.008219		0	0	0	0.0005399	0.001	1	0%	0	0	0%	
Molybdenum	A	mg/L	0.002089	0.002089		0	0	0	0.0001763	0.001	0.1	0%	0	0	0%	
Selenium	A	mg/L	0.0003005	0.0003005		0	0	0	0.0001357	0.001	1	0%	0	0	0%	J
Silver	A	mg/L	0.00004354	0.00004354		0	0	0	4.281E-05	0.001	0.04	0%	0	0	0%	J
Strontium	A	mg/L	0.2464	0.2464		0	0	0	0.0002433	0.001	1	0%	0	0	0%	
Thallium	A	mg/L	0.00007827	0		0	0	0	0.0001114	0.001	1	0%	0	0	0%	U
Titanium	A	mg/L	0.02255	0.02255		0	0	0	0.0005733	0.001	1	0%	0	0	0%	
Uranium	A	mg/L	0.00001745	0.00001745		0	0	0	1.699E-05	0.0003	1	0%	0	0	0%	J
Aluminum	B	mg/L	0.2537	0.2537		0	0	0	0.0038747	0.0031975	1	0%	0	0	0%	D
Boron	B	mg/L	0.06487	0.06487		0	0	0	0.0203802	0.01467	1	0%	0	0	0%	D
Calcium	B	mg/L	27.6	27.6		0	0	0	0.0372936	0.1103481	50	0%	0	0	0%	D
Chromium	B	mg/L	0.04228	0.04228		0	0	0	0.0015375	0.0015375	1	0%	0	0	0%	D
Copper	B	mg/L	0.00141	0.00141		0	0	0	0.0008747	0.00198	1	0%	0	0	0%	JL
Iron	B	mg/L	0.4519	0.4519		0	0	0	0.007424	0.00513	5	0%	0	0	0%	D
Magnesium	B	mg/L	45.77	45.77		0	0	0	0.0104254	0.0081522	50	0%	0	0	0%	D
Nickel	B	mg/L	0.001586	0.001586		0	0	0	0.0002288	0.0024200	1	0%	0	0	0%	JL
Potassium	B	mg/L	2.118	2.118		0	0	0	0.0765619	0.0261205	50	0%	0	0	0%	D
Thorium	B	mg/L	0.0000497	0		0	0	0	0.0003796	0.00415	1	0%	0	0	0%	LU
Tin	B	mg/L	0.0002193	0		0	0	0	0.0018932	0.0011175	0.1	0%	0	0	0%	U
Vanadium	B	mg/L	0.02309	0.02309		0	0	0	0.0039127	0.0021085	1	0%	0	0	0%	D
Zinc	B	mg/L	0.01772	0.01772		0	0	0	0.0011617	0.0065544	1	0%	0	0	0%	D

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14955768	B21121979-001	ICPMS-6020-W-	SAMP		12/29/2021 5:51:	1	R372516		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Antimony	A	mg/L	0.001407	0.001407		0	0	0	0.00042	0.001	0.1	0%	0	0	0%	
Arsenic	A	mg/L	0.00649	0.00649		0	0	0	0.00019	0.001	1	0%	0	0	0%	
Barium	A	mg/L	0.003382	0.003382		0	0	0	0.000042	0.001	1	0%	0	0	0%	
Beryllium	A	mg/L	-6.909E-05	0		0	0	0	0.00012	0.001	1	0%	0	0	0%	
Cadmium	A	mg/L	0.000018	0		0	0	0	0.000025	0.001	1	0%	0	0	0%	
Cerium	A	mg/L	6.702E-06	0		0	0	0	0.000012	0.001	0.1	0%	0	0	0%	
Chromium	A	mg/L	0.002285	0.002285		0	0	0	0.00018	0.001	1	0%	0	0	0%	

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14955768	B21121979-001	ICPMS-6020-W-	SAMP		12/29/2021 5:51:	1	R372516		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Cobalt	A	mg/L	0.0001483	0.0001483		0	0	0	0.000042	0.001	1	0%	0	0	0%	J
Copper	A	mg/L	0.0008613	0.0008613		0	0	0	0.00027	0.001	1	0%	0	0	0%	J
Lanthanum	A	mg/L	2.149E-06	0		0	0	0	0.000011	0.001	0.1	0%	0	0	0%	
Lead	A	mg/L	0.0001013	0.0001013		0	0	0	0.000056	0.001	1	0%	0	0	0%	J
Manganese	A	mg/L	0.005081	0.005081		0	0	0	0.000095	0.001	1	0%	0	0	0%	
Molybdenum	A	mg/L	0.007982	0.007982		0	0	0	0.00005	0.001	0.1	0%	0	0	0%	
Nickel	A	mg/L	0.0009305	0.0009305		0	0	0	0.00063	0.001	1	0%	0	0	0%	J
Selenium	A	mg/L	0.0007899	0.0007899		0	0	0	0.00033	0.001	1	0%	0	0	0%	J
Silver	A	mg/L	0.00001842	0		0	0	0	0.00002	0.001	0.04	0%	0	0	0%	
Strontium	A	mg/L	0.1026	0.1026		0	0	0	0.00014	0.001	1	0%	0	0	0%	
Thallium	A	mg/L	0.00005994	0.00005994		0	0	0	0.000041	0.001	1	0%	0	0	0%	J
Thorium	A	mg/L	-5.097E-06	0		0	0	0	0.00061	0.001	1	0%	0	0	0%	
Titanium	A	mg/L	0.002415	0.002415		0	0	0	0.000094	0.001	1	0%	0	0	0%	
Uranium	A	mg/L	0.0003353	0.0003353		0	0	0	0.000052	0.0003	1	0%	0	0	0%	
Boron	B	mg/L	0.1146	0.1146		0	0	0	0.00561	0.00561	1	0%	0	0	0%	D
Calcium	B	mg/L	24.33	24.33		0	0	0	0.02092	0.02092	50	0%	0	0	0%	D
Magnesium	B	mg/L	24.73	24.73		0	0	0	0.00564	0.00564	50	0%	0	0	0%	D
Potassium	B	mg/L	3.075	3.075		0	0	0	0.08139	0.08139	50	0%	0	0	0%	D
Tin	B	mg/L	0.00005369	0		0	0	0	0.00132	0.00132	0.1	0%	0	0	0%	
Vanadium	B	mg/L	0.03466	0.03466		0	0	0	0.0013	0.0013	1	0%	0	0	0%	
Zinc	B	mg/L	0.01616	0.01616		0	0	0	0.00273	0.00273	1	0%	0	0	0%	D

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14955769	B21121979-001	ICPMS-6020-W-	SAMP		12/29/2021 5:57:	1	162518	12/28/2021	0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Antimony	A	mg/L	0.002545	0.002545		0	0	0	0.0002799	0.001	0.1	0%	0	0	0%	
Arsenic	A	mg/L	0.007589	0.007589		0	0	0	0.0003412	0.001	1	0%	0	0	0%	
Barium	A	mg/L	0.00407	0.00407		0	0	0	0.0002682	0.001	1	0%	0	0	0%	
Beryllium	A	mg/L	-4.774E-05	0		0	0	0	0.0001071	0.01	1	0%	0	0	0%	U
Cadmium	A	mg/L	0.00001587	0		0	0	0	1.821E-05	0.005	1	0%	0	0	0%	U
Cerium	A	mg/L	0.0000561	0.0000561		0	0	0	2.738E-05	0.001	0.1	0%	0	0	0%	J
Cobalt	A	mg/L	0.0003042	0.0003042		0	0	0	9.541E-05	0.001	1	0%	0	0	0%	J
Lanthanum	A	mg/L	0.00002451	0		0	0	0	0.000055	0.001	0.1	0%	0	0	0%	U
Lead	A	mg/L	0.0004302	0.0004302		0	0	0	7.716E-05	0.001	1	0%	0	0	0%	J

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14955769	B21121979-001	ICPMS-6020-W-	SAMP		12/29/2021 5:57:	1	162518	12/28/2021	0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Manganese	A	mg/L	0.008206	0.008206		0	0	0	0.0005399	0.001	1	0%	0	0	0%	
Molybdenum	A	mg/L	0.008325	0.008325		0	0	0	0.0001763	0.001	0.1	0%	0	0	0%	
Selenium	A	mg/L	0.0008522	0.0008522		0	0	0	0.0001357	0.001	1	0%	0	0	0%	J
Silver	A	mg/L	0.00006321	0.00006321		0	0	0	4.281E-05	0.001	0.04	0%	0	0	0%	J
Strontium	A	mg/L	0.1098	0.1098		0	0	0	0.0002433	0.001	1	0%	0	0	0%	
Thallium	A	mg/L	0.00005665	0		0	0	0	0.0001114	0.001	1	0%	0	0	0%	U
Titanium	A	mg/L	0.006248	0.006248		0	0	0	0.0005733	0.001	1	0%	0	0	0%	
Uranium	A	mg/L	0.0003491	0.0003491		0	0	0	1.699E-05	0.0003	1	0%	0	0	0%	
Aluminum	B	mg/L	0.05663	0.05663		0	0	0	0.0038747	0.0031975	1	0%	0	0	0%	D
Boron	B	mg/L	0.116	0.116		0	0	0	0.0203802	0.01467	1	0%	0	0	0%	D
Calcium	B	mg/L	23.4	23.4		0	0	0	0.0372936	0.1103481	50	0%	0	0	0%	D
Chromium	B	mg/L	0.005433	0.005433		0	0	0	0.0015375	0.0015375	1	0%	0	0	0%	D
Copper	B	mg/L	0.001966	0.001966		0	0	0	0.0008747	0.00198	1	0%	0	0	0%	JL
Iron	B	mg/L	0.09419	0.09419		0	0	0	0.007424	0.00513	5	0%	0	0	0%	D
Magnesium	B	mg/L	26.06	26.06		0	0	0	0.0104254	0.0081522	50	0%	0	0	0%	D
Nickel	B	mg/L	0.001888	0.001888		0	0	0	0.0002288	0.0024200	1	0%	0	0	0%	JL
Potassium	B	mg/L	3.326	3.326		0	0	0	0.0765619	0.0261205	50	0%	0	0	0%	D
Thorium	B	mg/L	0.00002934	0		0	0	0	0.0003796	0.00415	1	0%	0	0	0%	LU
Tin	B	mg/L	0.001003	0		0	0	0	0.0018932	0.0011175	0.1	0%	0	0	0%	U
Vanadium	B	mg/L	0.04169	0.04169		0	0	0	0.0039127	0.0021085	1	0%	0	0	0%	D
Zinc	B	mg/L	0.04074	0.04074		0	0	0	0.0011617	0.0065544	1	0%	0	0	0%	D

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14955770	B21121979-003	ICPMS-6020-W-	SAMP		12/29/2021 6:03:	1	R372516		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.0006949	0		0	0	0	0.00086	0.001	1	0%	0	0	0%	
Antimony	A	mg/L	0.00001378	0		0	0	0	0.00042	0.001	0.1	0%	0	0	0%	
Arsenic	A	mg/L	-9.793E-05	0		0	0	0	0.00019	0.001	1	0%	0	0	0%	
Barium	A	mg/L	0.002533	0.002533		0	0	0	0.000042	0.001	1	0%	0	0	0%	
Beryllium	A	mg/L	-6.678E-05	0		0	0	0	0.00012	0.001	1	0%	0	0	0%	
Cadmium	A	mg/L	6.105E-06	0		0	0	0	0.000025	0.001	1	0%	0	0	0%	
Cerium	A	mg/L	1.581E-06	0		0	0	0	0.000012	0.001	0.1	0%	0	0	0%	
Chromium	A	mg/L	-4.072E-05	0		0	0	0	0.00018	0.001	1	0%	0	0	0%	
Cobalt	A	mg/L	0.0001923	0.0001923		0	0	0	0.000042	0.001	1	0%	0	0	0%	J

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14955770	B21121979-003	ICPMS-6020-W-	SAMP		12/29/2021 6:03:	1	R372516		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Copper	A	mg/L	0.00005345	0		0	0	0	0.00027	0.001	1	0%	0	0	0%	
Lanthanum	A	mg/L	9.178E-07	0		0	0	0	0.000011	0.001	0.1	0%	0	0	0%	
Lead	A	mg/L	0.00002676	0		0	0	0	0.000056	0.001	1	0%	0	0	0%	U
Manganese	A	mg/L	0.3918	0.3918		0	0	0	0.000095	0.001	1	0%	0	0	0%	
Mercury	A	mg/L	0.00006285	0		0	0	0	0.00016	0.001	0.002	0%	0	0	0%	
Molybdenum	A	mg/L	0.006252	0.006252		0	0	0	0.00005	0.001	0.1	0%	0	0	0%	
Nickel	A	mg/L	0.0004904	0		0	0	0	0.00063	0.001	1	0%	0	0	0%	
Selenium	A	mg/L	-0.000032	0		0	0	0	0.00033	0.001	1	0%	0	0	0%	
Silver	A	mg/L	0.00000245	0		0	0	0	0.00002	0.001	0.04	0%	0	0	0%	
Strontium	A	mg/L	0.1501	0.1501		0	0	0	0.00014	0.001	1	0%	0	0	0%	
Thallium	A	mg/L	0.00004063	0		0	0	0	0.000041	0.001	1	0%	0	0	0%	
Thorium	A	mg/L	-6.051E-06	0		0	0	0	0.00061	0.001	1	0%	0	0	0%	
Titanium	A	mg/L	0.00139	0.00139		0	0	0	0.000094	0.001	1	0%	0	0	0%	
Uranium	A	mg/L	6.369E-06	0		0	0	0	0.000052	0.0003	1	0%	0	0	0%	
Boron	B	mg/L	0.045	0.045		0	0	0	0.00561	0.00561	1	0%	0	0	0%	D
Calcium	B	mg/L	18.77	18.77		0	0	0	0.02092	0.02092	50	0%	0	0	0%	D
Iron	B	mg/L	0.1141	0.1141		0	0	0	0.00119	0.00119	5	0%	0	0	0%	
Iron, Ferrous	B	mg/L	0.1141	0.1141		0	0	0	0.00119	0.00119	5	0%	0	0	0%	
Magnesium	B	mg/L	19.81	19.81		0	0	0	0.00564	0.00564	50	0%	0	0	0%	D
Potassium	B	mg/L	1.386	1.386		0	0	0	0.08139	0.08139	50	0%	0	0	0%	D
Sodium	B	mg/L	42.2	42.2		0	0	0	0.02171	0.02171	50	0%	0	0	0%	D
Tin	B	mg/L	-0.0002453	0		0	0	0	0.00132	0.00132	0.1	0%	0	0	0%	
Zinc	B	mg/L	0.006449	0.006449		0	0	0	0.00273	0.00273	1	0%	0	0	0%	D

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14955771	B21121979-003	ICPMS-6020-W-	SAMP		12/29/2021 6:10:	1	162518	12/28/2021	0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Antimony	A	mg/L	0.00006826	0		0	0	0	0.0002799	0.001	0.1	0%	0	0	0%	U
Arsenic	A	mg/L	0.0004576	0.0004576		0	0	0	0.0003412	0.001	1	0%	0	0	0%	J
Barium	A	mg/L	0.002525	0.002525		0	0	0	0.0002682	0.001	1	0%	0	0	0%	
Beryllium	A	mg/L	-4.579E-05	0		0	0	0	0.0001071	0.01	1	0%	0	0	0%	U
Cadmium	A	mg/L	3.321E-06	0		0	0	0	1.821E-05	0.005	1	0%	0	0	0%	U
Cerium	A	mg/L	3.349E-06	0		0	0	0	2.738E-05	0.001	0.1	0%	0	0	0%	U
Cobalt	A	mg/L	0.0002616	0.0002616		0	0	0	9.541E-05	0.001	1	0%	0	0	0%	J

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14955771	B21121979-003	ICPMS-6020-W-	SAMP		12/29/2021 6:10:	1	162518	12/28/2021	0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Lanthanum	A	mg/L	1.286E-06	0		0	0	0	0.000055	0.001	0.1	0%	0	0	0%	U
Lead	A	mg/L	0.00003443	0		0	0	0	7.716E-05	0.001	1	0%	0	0	0%	U
Manganese	A	mg/L	0.3831	0.3831		0	0	0	0.0005399	0.001	1	0%	0	0	0%	
Molybdenum	A	mg/L	0.006597	0.006597		0	0	0	0.0001763	0.001	0.1	0%	0	0	0%	
Selenium	A	mg/L	0.00002668	0		0	0	0	0.0001357	0.001	1	0%	0	0	0%	U
Silver	A	mg/L	2.038E-06	0		0	0	0	4.281E-05	0.001	0.04	0%	0	0	0%	U
Strontium	A	mg/L	0.1514	0.1514		0	0	0	0.0002433	0.001	1	0%	0	0	0%	
Thallium	A	mg/L	0.00003714	0		0	0	0	0.0001114	0.001	1	0%	0	0	0%	U
Titanium	A	mg/L	0.001856	0.001856		0	0	0	0.0005733	0.001	1	0%	0	0	0%	
Uranium	A	mg/L	7.424E-06	0		0	0	0	1.699E-05	0.0003	1	0%	0	0	0%	U
Aluminum	B	mg/L	0.002775	0		0	0	0	0.0038747	0.0031975	1	0%	0	0	0%	LU
Boron	B	mg/L	0.0469	0.0469		0	0	0	0.0203802	0.01467	1	0%	0	0	0%	DU
Calcium	B	mg/L	18.12	18.12		0	0	0	0.0372936	0.1103481	50	0%	0	0	0%	D
Chromium	B	mg/L	0.0005736	0		0	0	0	0.0015375	0.0015375	1	0%	0	0	0%	LU
Copper	B	mg/L	0.000426	0		0	0	0	0.0008747	0.00198	1	0%	0	0	0%	LU
Iron	B	mg/L	0.1492	0.1492		0	0	0	0.007424	0.00513	5	0%	0	0	0%	D
Magnesium	B	mg/L	20.1	20.1		0	0	0	0.0104254	0.0081522	50	0%	0	0	0%	D
Nickel	B	mg/L	0.0008594	0.0008594		0	0	0	0.0002288	0.0024200	1	0%	0	0	0%	JL
Potassium	B	mg/L	1.403	1.403		0	0	0	0.0765619	0.0261205	50	0%	0	0	0%	D
Sodium	B	mg/L	43.4	43.4		0	0	0	0.1019461	0.7330269	50	0%	0	0	0%	D
Thorium	B	mg/L	0.00001717	0		0	0	0	0.0003796	0.00415	1	0%	0	0	0%	LU
Tin	B	mg/L	0.00005848	0		0	0	0	0.0018932	0.0011175	0.1	0%	0	0	0%	U
Vanadium	B	mg/L	0.002312	0		0	0	0	0.0039127	0.0021085	1	0%	0	0	0%	LU
Zinc	B	mg/L	0.004509	0.004509		0	0	0	0.0011617	0.0065544	1	0%	0	0	0%	JL

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14955772	CCV	ICPMS-6020-W-	CCV		12/29/2021 6:16:	1	R372516		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.04951	0.04951		0.05	0	0	0.00086	0.001	1	99%	90	110	0%	
Antimony	A	mg/L	0.04748	0.04748		0.05	0	0	0.00042	0.001	0.1	95%	90	110	0%	
Arsenic	A	mg/L	0.04899	0.04899		0.05	0	0	0.00019	0.001	1	98%	90	110	0%	
Barium	A	mg/L	0.05067	0.05067		0.05	0	0	0.000042	0.001	1	101%	90	110	0%	
Beryllium	A	mg/L	0.05081	0.05081		0.05	0	0	0.00012	0.001	1	102%	90	110	0%	
Boron	A	mg/L	0.04971	0.04971		0.05	0	0	0.00561	0.00561	1	99%	90	110	0%	

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14955772	CCV	ICPMS-6020-W-	CCV		12/29/2021 6:16:	1	R372516		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Cadmium	A	mg/L	0.04901	0.04901		0.05	0	0	0.000025	0.001	1	98%	90	110	0%	
Calcium	A	mg/L	12.34	12.34		12.5	0	0	0.02092	0.02092	50	99%	90	110	0%	
Cerium	A	mg/L	0.04801	0.04801		0.05	0	0	0.000012	0.001	0.1	96%	90	110	0%	
Chromium	A	mg/L	0.04988	0.04988		0.05	0	0	0.00018	0.001	1	100%	90	110	0%	
Cobalt	A	mg/L	0.05335	0.05335		0.05	0	0	0.000042	0.001	1	107%	90	110	0%	
Copper	A	mg/L	0.05285	0.05285		0.05	0	0	0.00027	0.001	1	106%	90	110	0%	
Iron	A	mg/L	1.286	1.286		1.3	0	0	0.00119	0.00119	5	99%	90	110	0%	
Lanthanum	A	mg/L	0.04818	0.04818		0.05	0	0	0.000011	0.001	0.1	96%	90	110	0%	
Lead	A	mg/L	0.04834	0.04834		0.05	0	0	0.000056	0.001	1	97%	90	110	0%	
Magnesium	A	mg/L	12.65	12.65		12.5	0	0	0.00564	0.00564	50	101%	90	110	0%	
Manganese	A	mg/L	0.05101	0.05101		0.05	0	0	0.000095	0.001	1	102%	90	110	0%	
Mercury	A	mg/L	0.00101	0.00101		0.001	0	0	0.00016	0.001	0.002	101%	90	110	0%	
Molybdenum	A	mg/L	0.04749	0.04749		0.05	0	0	0.00005	0.001	0.1	95%	90	110	0%	
Nickel	A	mg/L	0.05124	0.05124		0.05	0	0	0.00063	0.001	1	102%	90	110	0%	
Potassium	A	mg/L	12.31	12.31		12.5	0	0	0.08139	0.08139	50	98%	90	110	0%	
Selenium	A	mg/L	0.04943	0.04943		0.05	0	0	0.00033	0.001	1	99%	90	110	0%	
Silicon	A	mg/L	0.2135	0.2135		0.2	0	0	0.01223	0.1	0.4	107%	90	110	0%	
Silver	A	mg/L	0.0191	0.0191		0.02	0	0	0.00002	0.001	0.04	96%	90	110	0%	
Sodium	A	mg/L	12.76	12.76		12.5	0	0	0.02171	0.02171	50	102%	90	110	0%	
Strontium	A	mg/L	0.04935	0.04935		0.05	0	0	0.00014	0.001	1	99%	90	110	0%	
Thallium	A	mg/L	0.05003	0.05003		0.05	0	0	0.000041	0.001	1	100%	90	110	0%	
Thorium	A	mg/L	0.04878	0.04878		0.05	0	0	0.00061	0.001	1	98%	90	110	0%	
Tin	A	mg/L	0.04754	0.04754		0.05	0	0	0.00132	0.00132	0.1	95%	90	110	0%	
Titanium	A	mg/L	0.05021	0.05021		0.05	0	0	0.000094	0.001	1	100%	90	110	0%	
Uranium	A	mg/L	0.04941	0.04941		0.05	0	0	0.000052	0.0003	1	99%	90	110	0%	
Vanadium	A	mg/L	0.04939	0.04939		0.05	0	0	0.0013	0.0013	1	99%	90	110	0%	
Zinc	A	mg/L	0.05006	0.05006		0.05	0	0	0.00273	0.00273	1	100%	90	110	0%	
Iron, Ferrous	C	mg/L	1.286	1.286		0	0	0	0.00119	0.00119	5	0%	0	0	0%	

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14955773	CCB	ICPMS-6020-W-	CCB		12/29/2021 6:22:	1	R372516		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist		
14955773	CCB	ICPMS-6020-W-	CCB		12/29/2021 6:22:	1	R372516		0	0			

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.000112	0.000112		0	0	0	0.00086	0.001	1	0%			0%	
Antimony	A	mg/L	0.0001069	0.0001069		0	0	0	0.00042	0.001	0.1	0%			0%	
Arsenic	A	mg/L	-2.742E-05	-2.742E-05		0	0	0	0.00019	0.001	1	0%			0%	
Barium	A	mg/L	2.597E-06	2.597E-06		0	0	0	0.000042	0.001	1	0%			0%	
Beryllium	A	mg/L	-1.808E-05	-1.808E-05		0	0	0	0.00012	0.001	1	0%			0%	
Boron	A	mg/L	0.0005656	0.0005656		0	0	0	0.00561	0.00561	1	0%			0%	
Cadmium	A	mg/L	3.265E-06	3.265E-06		0	0	0	0.000025	0.001	1	0%			0%	
Calcium	A	mg/L	0.0005729	0.0005729		0	0	0	0.02092	0.02092	50	0%			0%	
Cerium	A	mg/L	1.213E-06	1.213E-06		0	0	0	0.000012	0.001	0.1	0%	0	0	0%	
Chromium	A	mg/L	-1.386E-05	-1.386E-05		0	0	0	0.00018	0.001	1	0%			0%	
Cobalt	A	mg/L	-6.261E-06	-6.261E-06		0	0	0	0.000042	0.001	1	0%			0%	
Copper	A	mg/L	5.906E-06	5.906E-06		0	0	0	0.00027	0.001	1	0%			0%	
Iron	A	mg/L	0.0003337	0.0003337		0	0	0	0.00119	0.00119	5	0%			0%	
Lanthanum	A	mg/L	-1.224E-07	-1.224E-07		0	0	0	0.000011	0.001	0.1	0%	0	0	0%	
Lead	A	mg/L	0.00001328	0.00001328		0	0	0	0.000056	0.001	1	0%			0%	
Magnesium	A	mg/L	-0.002915	-0.002915		0	0	0	0.00564	0.00564	50	0%			0%	
Manganese	A	mg/L	-6.506E-06	-6.506E-06		0	0	0	0.000095	0.001	1	0%			0%	
Mercury	A	mg/L	6.433E-06	6.433E-06		0	0	0	0.00016	0.001	0.002	0%			0%	
Molybdenum	A	mg/L	0.00001935	0.00001935		0	0	0	0.00005	0.001	0.1	0%			0%	
Nickel	A	mg/L	0.0002587	0.0002587		0	0	0	0.00063	0.001	1	0%			0%	
Potassium	A	mg/L	-0.0008134	-0.0008134		0	0	0	0.08139	0.08139	50	0%			0%	
Selenium	A	mg/L	3.013E-06	3.013E-06		0	0	0	0.00033	0.001	1	0%			0%	
Silicon	A	mg/L	0.007707	0.007707		0	0	0	0.01223	0.1	0.4	0%	0	0	0%	
Silver	A	mg/L	2.476E-07	2.476E-07		0	0	0	0.00002	0.001	0.04	0%			0%	
Sodium	A	mg/L	0.02806	0.02806		0	0	0	0.02171	0.02171	50	0%			0%	
Strontium	A	mg/L	0.0000312	0.0000312		0	0	0	0.00014	0.001	1	0%	0	0	0%	
Thallium	A	mg/L	9.261E-06	9.261E-06		0	0	0	0.000041	0.001	1	0%	0	0	0%	
Thorium	A	mg/L	0.00004242	0.00004242		0	0	0	0.00061	0.001	1	0%	0	0	0%	
Tin	A	mg/L	0.0000342	0.0000342		0	0	0	0.00132	0.00132	0.1	0%	0	0	0%	
Titanium	A	mg/L	0.00007174	0.00007174		0	0	0	0.000094	0.001	1	0%	0	0	0%	
Uranium	A	mg/L	1.162E-06	1.162E-06		0	0	0	0.000052	0.0003	1	0%	0	0	0%	
Vanadium	A	mg/L	-0.0008865	-0.0008865		0	0	0	0.0013	0.0013	1	0%	0	0	0%	
Zinc	A	mg/L	0.00002388	0.00002388		0	0	0	0.00273	0.00273	1	0%	0	0	0%	
Iron, Ferrous	C	mg/L	0.0003337	0.0003337		0	0	0	0.00119	0.00119	5	0%	0	0	0%	

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14955774	B21121981-001	ICPMS-6020-W-	SAMP		12/29/2021 6:28:	1	R372516		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.03594	0.03594		0	0	0	0.00086	0.001	1	0%	0	0	0%	
Antimony	A	mg/L	0.00008507	0		0	0	0	0.00042	0.001	0.1	0%	0	0	0%	
Arsenic	A	mg/L	-2.509E-05	0		0	0	0	0.00019	0.001	1	0%	0	0	0%	
Barium	A	mg/L	0.005083	0.005083		0	0	0	0.000042	0.001	1	0%	0	0	0%	
Beryllium	A	mg/L	-6.639E-05	0		0	0	0	0.00012	0.001	1	0%	0	0	0%	
Cadmium	A	mg/L	6.193E-06	0		0	0	0	0.000025	0.001	1	0%	0	0	0%	
Cerium	A	mg/L	0.0001559	0.0001559		0	0	0	0.000012	0.001	0.1	0%	0	0	0%	J
Chromium	A	mg/L	0.003731	0.003731		0	0	0	0.00018	0.001	1	0%	0	0	0%	
Cobalt	A	mg/L	0.0001084	0.0001084		0	0	0	0.000042	0.001	1	0%	0	0	0%	J
Copper	A	mg/L	0.0004788	0.0004788		0	0	0	0.00027	0.001	1	0%	0	0	0%	J
Lanthanum	A	mg/L	0.00004261	0.00004261		0	0	0	0.000011	0.001	0.1	0%	0	0	0%	J
Lead	A	mg/L	0.00006176	0.00006176		0	0	0	0.000056	0.001	1	0%	0	0	0%	J
Manganese	A	mg/L	0.004251	0.004251		0	0	0	0.000095	0.001	1	0%	0	0	0%	
Mercury	A	mg/L	9.104E-06	0		0	0	0	0.00016	0.001	0.002	0%	0	0	0%	
Molybdenum	A	mg/L	0.0004091	0.0004091		0	0	0	0.00005	0.001	0.1	0%	0	0	0%	J
Nickel	A	mg/L	0.0005638	0		0	0	0	0.00063	0.001	1	0%	0	0	0%	
Selenium	A	mg/L	0.0003064	0		0	0	0	0.00033	0.001	1	0%	0	0	0%	
Silver	A	mg/L	3.442E-06	0		0	0	0	0.00002	0.001	0.04	0%	0	0	0%	
Strontium	A	mg/L	0.05247	0.05247		0	0	0	0.00014	0.001	1	0%	0	0	0%	
Thallium	A	mg/L	1.544E-06	0		0	0	0	0.000041	0.001	1	0%	0	0	0%	
Thorium	A	mg/L	4.708E-06	0		0	0	0	0.00061	0.001	1	0%	0	0	0%	
Titanium	A	mg/L	0.003809	0.003809		0	0	0	0.000094	0.001	1	0%	0	0	0%	
Uranium	A	mg/L	0.00001741	0		0	0	0	0.000052	0.0003	1	0%	0	0	0%	
Boron	B	mg/L	0.1881	0.1881		0	0	0	0.00561	0.00561	1	0%	0	0	0%	D
Calcium	B	mg/L	5.645	5.645		0	0	0	0.02092	0.02092	50	0%	0	0	0%	D
Iron	B	mg/L	0.02994	0.02994		0	0	0	0.00119	0.00119	5	0%	0	0	0%	
Iron, Ferrous	B	mg/L	0.02994	0.02994		0	0	0	0.00119	0.00119	5	0%	0	0	0%	
Magnesium	B	mg/L	9.236	9.236		0	0	0	0.00564	0.00564	50	0%	0	0	0%	D
Potassium	B	mg/L	3.551	3.551		0	0	0	0.08139	0.08139	50	0%	0	0	0%	D
Tin	B	mg/L	-0.0002784	0		0	0	0	0.00132	0.00132	0.1	0%	0	0	0%	
Vanadium	B	mg/L	0.04184	0.04184		0	0	0	0.0013	0.0013	1	0%	0	0	0%	
Zinc	B	mg/L	0.001021	0		0	0	0	0.00273	0.00273	1	0%	0	0	0%	L

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14955775	B21121981-001	ICPMS-6020-W-	SD		12/29/2021 6:34:	5	R372516		0	1E+07	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.00683	0.03415		0	0	0.03594	0.0043	0.0043	1	0%				N
Antimony	A	mg/L	0.00003097	0		0	0	0	0.0021	0.0021	0.1	0%				
Arsenic	A	mg/L	-1.409E-05	0		0	0	0	0.00095	0.001	1	0%				
Barium	A	mg/L	0.0009882	0.004941		0	0	0.005083	0.00021	0.001	1	0%			3%	
Beryllium	A	mg/L	-6.162E-05	0		0	0	0	0.0006	0.001	1	0%				
Boron	A	mg/L	0.04061	0.20305		0	0	0.1881	0.02805	0.02805	1	0%				N
Cadmium	A	mg/L	2.455E-06	0		0	0	0	0.000125	0.001	1	0%				
Calcium	A	mg/L	1.145	5.725		0	0	5.645	0.1046	0.1046	50	0%			1%	
Cerium	A	mg/L	0.00003083	0.00015415		0	0	0.0001559	0.00006	0.001	0.1	0%				N
Chromium	A	mg/L	0.0007167	0.0035835		0	0	0.003731	0.0009	0.001	1	0%				N
Cobalt	A	mg/L	0.00001511	0		0	0	0.0001084	0.00021	0.001	1	0%				
Copper	A	mg/L	0.0001695	0		0	0	0.0004788	0.00135	0.00135	1	0%				
Iron	A	mg/L	0.007602	0.03801		0	0	0.02994	0.00595	0.00595	5	0%				N
Lanthanum	A	mg/L	8.734E-06	0		0	0	4.261E-05	0.000055	0.001	0.1	0%				
Lead	A	mg/L	0.00001827	0		0	0	6.176E-05	0.00028	0.001	1	0%				
Magnesium	A	mg/L	1.872	9.36		0	0	9.236	0.0282	0.0282	50	0%			1%	
Manganese	A	mg/L	0.0008023	0.0040115		0	0	0.004251	0.000475	0.001	1	0%				N
Mercury	A	mg/L	0.00000389	0		0	0	0	0.0008	0.001	0.002	0%				
Molybdenum	A	mg/L	0.00009298	0.0004649		0	0	0.0004091	0.00025	0.001	0.1	0%				N
Nickel	A	mg/L	0.0003885	0		0	0	0	0.00315	0.00315	1	0%				
Potassium	A	mg/L	0.6743	3.3715		0	0	3.551	0.40695	0.40695	50	0%				N
Selenium	A	mg/L	0.00004833	0		0	0	0	0.00165	0.00165	1	0%				
Silicon	A	mg/L	6.051	30.255		0	0	30.5	0.06115	0.1	0.4	0%			1%	
Silver	A	mg/L	7.004E-06	0		0	0	0	0.0001	0.001	0.04	0%				
Sodium	A	mg/L	19.07	95.35		0	0	96.72	0.10855	0.10855	50	0%			1%	
Strontium	A	mg/L	0.0102	0.051		0	0	0.05247	0.0007	0.001	1	0%			3%	
Thallium	A	mg/L	-1.469E-05	0		0	0	0	0.000205	0.001	1	0%				
Thorium	A	mg/L	3.783E-06	0		0	0	0	0.00305	0.00305	1	0%				
Tin	A	mg/L	-0.0002358	0		0	0	0	0.0066	0.0066	0.1	0%				
Titanium	A	mg/L	0.0008543	0.0042715		0	0	0.003809	0.00047	0.001	1	0%				N
Uranium	A	mg/L	3.629E-06	0		0	0	0	0.00026	0.0003	1	0%				
Vanadium	A	mg/L	0.007689	0.038445		0	0	0.04184	0.0065	0.0065	1	0%				N
Zinc	A	mg/L	0.0005391	0		0	0	0	0.01365	0.01365	1	0%				
Iron, Ferrous	C	mg/L	0.007602	0.03801		0	0	0.02994	0.00595	0.00595	5	0%				N

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14955776	B21121981-001	ICPMS-6020-W-	MS		12/29/2021 6:40:	1.03	R372516		1E+07	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.08392	0.0864376		0.05	0.03594	0	0.0008858	0.001	1	101%	75	125	0%	
Antimony	A	mg/L	0.04602	0.0474006		0.05	0	0	0.0004326	0.001	0.1	95%	75	125	0%	
Arsenic	A	mg/L	0.04755	0.0489765		0.05	0	0	0.0001957	0.001	1	98%	75	125	0%	
Barium	A	mg/L	0.05425	0.0558775		0.05	0.005083	0	4.326E-05	0.001	1	102%	75	125	0%	
Beryllium	A	mg/L	0.04789	0.0493267		0.05	0	0	0.0001236	0.001	1	99%	75	125	0%	
Boron	A	mg/L	0.2369	0.244007		0.05	0.1881	0	0.0057783	0.0057783	1	112%	75	125	0%	
Cadmium	A	mg/L	0.04781	0.0492443		0.05	0	0	2.575E-05	0.001	1	98%	75	125	0%	
Calcium	A	mg/L	54.63	56.2689		50	5.645	0	0.0215476	0.0215476	50	101%	75	125	0%	E
Cerium	A	mg/L	0.04943	0.0509129		0.05	0.0001559	0	1.236E-05	0.001	0.1	102%	75	125	0%	
Chromium	A	mg/L	0.05098	0.0525094		0.05	0.003731	0	0.0001854	0.001	1	98%	75	125	0%	
Cobalt	A	mg/L	0.05005	0.0515515		0.05	0.0001084	0	4.326E-05	0.001	1	103%	75	125	0%	
Copper	A	mg/L	0.05009	0.0515927		0.05	0.0004788	0	0.0002781	0.001	1	102%	75	125	0%	
Iron	A	mg/L	5.021	5.17163		5.05	0.02994	0	0.0012257	0.0012257	5	102%	75	125	0%	E
Lanthanum	A	mg/L	0.04823	0.0496769		0.05	4.261E-05	0	1.133E-05	0.001	0.1	99%	75	125	0%	
Lead	A	mg/L	0.04686	0.0482658		0.05	6.176E-05	0	5.768E-05	0.001	1	96%	88	115	0%	
Magnesium	A	mg/L	57.66	59.3898		50	9.236	0	0.0058092	0.0058092	50	100%	75	125	0%	E
Manganese	A	mg/L	0.05221	0.0537763		0.05	0.004251	0	9.785E-05	0.001	1	99%	75	125	0%	
Mercury	A	mg/L	0.0009788	0.00100816		0.001	0	0	0.0001648	0.001	0.002	101%	75	125	0%	
Molybdenum	A	mg/L	0.04524	0.0465972		0.05	0.0004091	0	0.0000515	0.001	0.1	92%	75	125	0%	
Nickel	A	mg/L	0.0485	0.049955		0.05	0	0	0.0006489	0.001	1	100%	75	125	0%	
Potassium	A	mg/L	53.05	54.6415		50	3.551	0	0.0838317	0.0838317	50	102%	75	125	0%	E
Selenium	A	mg/L	0.04816	0.0496048		0.05	0	0	0.0003399	0.001	1	99%	75	125	0%	
Silicon	A	mg/L	30.72	31.6416		0.2	30.5	0	0.0125969	0.1	0.4		75	125	0%	AE
Silver	A	mg/L	0.01822	0.0187666		0.02	0	0	0.0000206	0.001	0.04	94%	75	125	0%	
Sodium	A	mg/L	134.2	138.226		50	96.72	0	0.0223613	0.0223613	50	83%	75	125	0%	E
Strontium	A	mg/L	0.09804	0.1009812		0.05	0.05247	0	0.0001442	0.001	1	97%	75	125	0%	
Thallium	A	mg/L	0.04754	0.0489662		0.05	0	0	4.223E-05	0.001	1	98%	75	125	0%	
Thorium	A	mg/L	0.04819	0.0496357		0.05	0	0	0.0006283	0.001	1	99%	75	125	0%	
Tin	A	mg/L	0.045	0.04635		0.05	0	0	0.0013596	0.0013596	0.1	93%	75	125	0%	
Titanium	A	mg/L	0.05603	0.0577109		0.05	0.003809	0	9.682E-05	0.001	1	108%	75	125	0%	
Uranium	A	mg/L	0.04812	0.0495636		0.05	0	0	5.356E-05	0.0003	1	99%	75	125	0%	
Vanadium	A	mg/L	0.08907	0.0917421		0.05	0.04184	0	0.001339	0.001339	1	100%	75	125	0%	
Zinc	A	mg/L	0.05113	0.0526639		0.05	0	0	0.0028119	0.0028119	1	105%	75	125	0%	
Iron, Ferrous	C	mg/L	5.021	5.17163		0	0.02994	0	0.0012257	0.0012257	5	0%	0	0	0%	E

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14955777	B21121981-001	ICPMS-6020-W-	MSD		12/29/2021 6:46:	1.03	R372516		1E+07	1E+07	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.09101	0.0937403		0.05	0.03594	0.0864376	0.0008858	0.001	1	116%	75	125	8%	
Antimony	A	mg/L	0.04738	0.0488014		0.05	0	0.0474006	0.0004326	0.001	0.1	98%	75	125	3%	
Arsenic	A	mg/L	0.05064	0.0521592		0.05	0	0.0489765	0.0001957	0.001	1	104%	75	125	6%	
Barium	A	mg/L	0.0546	0.056238		0.05	0.005083	0.0558775	4.326E-05	0.001	1	102%	75	125	1%	
Beryllium	A	mg/L	0.04722	0.0486366		0.05	0	0.0493267	0.0001236	0.001	1	97%	75	125	1%	
Boron	A	mg/L	0.2314	0.238342		0.05	0.1881	0.244007	0.0057783	0.0057783	1	100%	75	125	2%	
Cadmium	A	mg/L	0.04817	0.0496151		0.05	0	0.0492443	2.575E-05	0.001	1	99%	75	125	1%	
Calcium	A	mg/L	53.47	55.0741		50	5.645	56.2689	0.0215476	0.0215476	50	99%	75	125	2%	E
Cerium	A	mg/L	0.05103	0.0525609		0.05	0.0001559	0.0509129	1.236E-05	0.001	0.1	105%	75	125	3%	
Chromium	A	mg/L	0.05318	0.0547754		0.05	0.003731	0.0525094	0.0001854	0.001	1	102%	75	125	4%	
Cobalt	A	mg/L	0.05186	0.0534158		0.05	0.0001084	0.0515515	4.326E-05	0.001	1	107%	75	125	4%	
Copper	A	mg/L	0.05233	0.0538999		0.05	0.0004788	0.0515927	0.0002781	0.001	1	107%	75	125	4%	
Iron	A	mg/L	5.024	5.17472		5.05	0.02994	5.17163	0.0012257	0.0012257	5	102%	75	125	0%	E
Lanthanum	A	mg/L	0.0508	0.052324		0.05	4.261E-05	0.0496769	1.133E-05	0.001	0.1	105%	75	125	5%	
Lead	A	mg/L	0.04701	0.0484203		0.05	6.176E-05	0.0482658	5.768E-05	0.001	1	97%	88	115	0%	
Magnesium	A	mg/L	60.47	62.2841		50	9.236	59.3898	0.0058092	0.0058092	50	106%	75	125	5%	E
Manganese	A	mg/L	0.05476	0.0564028		0.05	0.004251	0.0537763	9.785E-05	0.001	1	104%	75	125	5%	
Mercury	A	mg/L	0.001033	0.00106399		0.001	0	0.0010082	0.0001648	0.001	0.002	106%	75	125	5%	
Molybdenum	A	mg/L	0.04586	0.0472358		0.05	0.0004091	0.0465972	0.0000515	0.001	0.1	94%	75	125	1%	
Nickel	A	mg/L	0.05043	0.0519429		0.05	0	0.049955	0.0006489	0.001	1	104%	75	125	4%	
Potassium	A	mg/L	54.52	56.1556		50	3.551	54.6415	0.0838317	0.0838317	50	105%	75	125	3%	E
Selenium	A	mg/L	0.04874	0.0502022		0.05	0	0.0496048	0.0003399	0.001	1	100%	75	125	1%	
Silicon	A	mg/L	29.65	30.5395		0.2	30.5	31.6416	0.0125969	0.1	0.4		75	125	4%	AE
Silver	A	mg/L	0.01847	0.0190241		0.02	0	0.0187666	0.0000206	0.001	0.04	95%	75	125	1%	
Sodium	A	mg/L	141	145.23		50	96.72	138.226	0.0223613	0.0223613	50	97%	75	125	5%	E
Strontium	A	mg/L	0.1008	0.103824		0.05	0.05247	0.1009812	0.0001442	0.001	1	103%	75	125	3%	
Thallium	A	mg/L	0.04764	0.0490692		0.05	0	0.0489662	4.223E-05	0.001	1	98%	75	125	0%	
Thorium	A	mg/L	0.05045	0.0519635		0.05	0	0.0496357	0.0006283	0.001	1	104%	75	125	5%	
Tin	A	mg/L	0.04534	0.0467002		0.05	0	0.04635	0.0013596	0.0013596	0.1	93%	75	125	1%	
Titanium	A	mg/L	0.05645	0.0581435		0.05	0.003809	0.0577109	9.682E-05	0.001	1	109%	75	125	1%	
Uranium	A	mg/L	0.04815	0.0495945		0.05	0	0.0495636	5.356E-05	0.0003	1	99%	75	125	0%	
Vanadium	A	mg/L	0.09379	0.0966037		0.05	0.04184	0.0917421	0.001339	0.001339	1	110%	75	125	5%	
Zinc	A	mg/L	0.05159	0.0531377		0.05	0	0.0526639	0.0028119	0.0028119	1	106%	75	125	1%	
Iron, Ferrous	C	mg/L	5.024	5.17472		0	0.02994	5.17163	0.0012257	0.0012257	5	0%	0	0	0%	E

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14955778	Rinse	ICPMS-6020-W-	SAMP		12/29/2021 6:52:	1	R372516		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.0001563	0		0	0	0	0.00086	0.001	1	0%	0	0	0%	
Antimony	A	mg/L	0.0001026	0		0	0	0	0.00042	0.001	0.1	0%	0	0	0%	
Arsenic	A	mg/L	-5.883E-05	0		0	0	0	0.00019	0.001	1	0%	0	0	0%	
Barium	A	mg/L	0.00002165	0		0	0	0	0.000042	0.001	1	0%	0	0	0%	
Beryllium	A	mg/L	0.00000659	0		0	0	0	0.00012	0.001	1	0%	0	0	0%	
Cadmium	A	mg/L	2.008E-06	0		0	0	0	0.000025	0.001	1	0%	0	0	0%	
Cerium	A	mg/L	1.781E-06	0		0	0	0	0.000012	0.001	0.1	0%	0	0	0%	
Chromium	A	mg/L	-6.746E-06	0		0	0	0	0.00018	0.001	1	0%	0	0	0%	
Cobalt	A	mg/L	-5.773E-06	0		0	0	0	0.000042	0.001	1	0%	0	0	0%	
Copper	A	mg/L	0.00002743	0		0	0	0	0.00027	0.001	1	0%	0	0	0%	
Lanthanum	A	mg/L	4.845E-07	0		0	0	0	0.000011	0.001	0.1	0%	0	0	0%	
Lead	A	mg/L	0.00001656	0		0	0	0	0.000056	0.001	1	0%	0	0	0%	
Manganese	A	mg/L	-4.931E-05	0		0	0	0	0.000095	0.001	1	0%	0	0	0%	
Mercury	A	mg/L	4.655E-06	0		0	0	0	0.00016	0.001	0.002	0%	0	0	0%	
Molybdenum	A	mg/L	0.0000542	0.0000542		0	0	0	0.00005	0.001	0.1	0%	0	0	0%	J
Nickel	A	mg/L	0.00004573	0		0	0	0	0.00063	0.001	1	0%	0	0	0%	
Selenium	A	mg/L	0.00001095	0		0	0	0	0.00033	0.001	1	0%	0	0	0%	
Silver	A	mg/L	3.113E-06	0		0	0	0	0.00002	0.001	0.04	0%	0	0	0%	
Strontium	A	mg/L	0.00002038	0		0	0	0	0.00014	0.001	1	0%	0	0	0%	
Thallium	A	mg/L	0.0001309	0.0001309		0	0	0	0.000041	0.001	1	0%	0	0	0%	J
Thorium	A	mg/L	0.00004076	0		0	0	0	0.00061	0.001	1	0%	0	0	0%	
Titanium	A	mg/L	0.0003243	0.0003243		0	0	0	0.000094	0.001	1	0%	0	0	0%	J
Uranium	A	mg/L	1.284E-06	0		0	0	0	0.000052	0.0003	1	0%	0	0	0%	
Boron	B	mg/L	0.004166	0		0	0	0	0.00561	0.00561	1	0%	0	0	0%	L
Calcium	B	mg/L	0.00105	0		0	0	0	0.02092	0.02092	50	0%	0	0	0%	L
Iron	B	mg/L	0.000542	0		0	0	0	0.00119	0.00119	5	0%	0	0	0%	
Iron, Ferrous	B	mg/L	0.000542	0		0	0	0	0.00119	0.00119	5	0%	0	0	0%	
Potassium	B	mg/L	0.008329	0		0	0	0	0.08139	0.08139	50	0%	0	0	0%	L
Tin	B	mg/L	-3.233E-05	0		0	0	0	0.00132	0.00132	0.1	0%	0	0	0%	
Vanadium	B	mg/L	-0.0006354	0		0	0	0	0.0013	0.0013	1	0%	0	0	0%	
Zinc	B	mg/L	0.00007792	0		0	0	0	0.00273	0.00273	1	0%	0	0	0%	L

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14955779	B21121981-001	ICPMS-6020-W-	SAMP		12/29/2021 6:59:	1	162518	12/28/2021	0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Antimony	A	mg/L	0.0001946	0		0	0	0	0.0002799	0.001	0.1	0%	0	0	0%	U
Arsenic	A	mg/L	0.0005796	0.0005796		0	0	0	0.0003412	0.001	1	0%	0	0	0%	J
Barium	A	mg/L	0.006582	0.006582		0	0	0	0.0002682	0.001	1	0%	0	0	0%	
Beryllium	A	mg/L	1.641E-06	0		0	0	0	0.0001071	0.01	1	0%	0	0	0%	U
Cadmium	A	mg/L	0.00001291	0		0	0	0	1.821E-05	0.005	1	0%	0	0	0%	U
Cerium	A	mg/L	0.0009232	0.0009232		0	0	0	2.738E-05	0.001	0.1	0%	0	0	0%	J
Cobalt	A	mg/L	0.0007558	0.0007558		0	0	0	9.541E-05	0.001	1	0%	0	0	0%	J
Lanthanum	A	mg/L	0.0002499	0.0002499		0	0	0	0.000055	0.001	0.1	0%	0	0	0%	J
Lead	A	mg/L	0.0002817	0.0002817		0	0	0	7.716E-05	0.001	1	0%	0	0	0%	J
Manganese	A	mg/L	0.02557	0.02557		0	0	0	0.0005399	0.001	1	0%	0	0	0%	
Molybdenum	A	mg/L	0.0006222	0.0006222		0	0	0	0.0001763	0.001	0.1	0%	0	0	0%	J
Selenium	A	mg/L	0.0003682	0.0003682		0	0	0	0.0001357	0.001	1	0%	0	0	0%	J
Silver	A	mg/L	0.00001496	0		0	0	0	4.281E-05	0.001	0.04	0%	0	0	0%	U
Strontium	A	mg/L	0.05302	0.05302		0	0	0	0.0002433	0.001	1	0%	0	0	0%	
Thallium	A	mg/L	0.00009402	0		0	0	0	0.0001114	0.001	1	0%	0	0	0%	U
Titanium	A	mg/L	0.04887	0.04887		0	0	0	0.0005733	0.001	1	0%	0	0	0%	
Uranium	A	mg/L	0.00002988	0.00002988		0	0	0	1.699E-05	0.0003	1	0%	0	0	0%	J
Aluminum	B	mg/L	0.7832	0.7832		0	0	0	0.0038747	0.0031975	1	0%	0	0	0%	D
Boron	B	mg/L	0.1973	0.1973		0	0	0	0.0203802	0.01467	1	0%	0	0	0%	D
Calcium	B	mg/L	5.738	5.738		0	0	0	0.0372936	0.1103481	50	0%	0	0	0%	D
Chromium	B	mg/L	0.008433	0.008433		0	0	0	0.0015375	0.0015375	1	0%	0	0	0%	D
Copper	B	mg/L	0.002111	0.002111		0	0	0	0.0008747	0.00198	1	0%	0	0	0%	D
Iron	B	mg/L	0.8568	0.8568		0	0	0	0.007424	0.00513	5	0%	0	0	0%	D
Magnesium	B	mg/L	9.274	9.274		0	0	0	0.0104254	0.0081522	50	0%	0	0	0%	D
Nickel	B	mg/L	0.001941	0.001941		0	0	0	0.0002288	0.0024200	1	0%	0	0	0%	JL
Potassium	B	mg/L	3.517	3.517		0	0	0	0.0765619	0.0261205	50	0%	0	0	0%	D
Thorium	B	mg/L	0.0001542	0		0	0	0	0.0003796	0.00415	1	0%	0	0	0%	LU
Tin	B	mg/L	0.0003218	0		0	0	0	0.0018932	0.0011175	0.1	0%	0	0	0%	U
Vanadium	B	mg/L	0.04955	0.04955		0	0	0	0.0039127	0.0021085	1	0%	0	0	0%	D
Zinc	B	mg/L	0.002361	0.002361		0	0	0	0.0011617	0.0065544	1	0%	0	0	0%	JL

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14955780	B21121981-001	ICPMS-6020-W-	SD		12/29/2021 7:05:	5	162518	12/28/2021	0	1E+07	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14955780	B21121981-001	ICPMS-6020-W-	SD		12/29/2021 7:05:	5	162518	12/28/2021	0	1E+07	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.1659	0.8295		0	0	0.7832	0.0193736	0.0159875	1	0%	0	0	6%	
Antimony	A	mg/L	0.00004823	0		0	0	0	0.0013997	0.0049	0.1	0%	0	0		
Arsenic	A	mg/L	0.00009642	0		0	0	0.0005796	0.0017061	0.0013383	1	0%	0	0		
Barium	A	mg/L	0.001317	0.006585		0	0	0.006582	0.0013411	0.0012039	1	0%	0	0		N
Beryllium	A	mg/L	-5.713E-05	0		0	0	0	0.0005353	0.01	1	0%	0	0		
Boron	A	mg/L	0.04455	0.22275		0	0	0.1973	0.1019008	0.07335	1	0%	0	0		N
Cadmium	A	mg/L	3.046E-06	0		0	0	0	9.105E-05	0.005	1	0%	0	0		
Calcium	A	mg/L	1.261	6.305		0	0	5.738	0.1864681	0.5517403	50	0%	0	0	9%	
Cerium	A	mg/L	0.000185	0.000925		0	0	0.0009232	0.0001369	0.001	0.1	0%	0	0		N
Chromium	A	mg/L	0.001628	0.00814		0	0	0.008433	0.0076875	0.0076875	1	0%	0	0		N
Cobalt	A	mg/L	0.0001563	0.0007815		0	0	0.0007558	0.0004771	0.001	1	0%	0	0		N
Copper	A	mg/L	0.0004777	0		0	0	0.002111	0.0043735	0.0099	1	0%	0	0		
Iron	A	mg/L	0.1787	0.8935		0	0	0.8568	0.0371198	0.02565	5	0%	0	0	4%	
Lanthanum	A	mg/L	0.00005008	0		0	0	0.0002499	0.000275	0.001	0.1	0%	0	0		
Lead	A	mg/L	0.00006305	0		0	0	0.0002817	0.0003858	0.001	1	0%	0	0		
Magnesium	A	mg/L	1.908	9.54		0	0	9.274	0.0521269	0.0407608	50	0%	0	0	3%	
Manganese	A	mg/L	0.005108	0.02554		0	0	0.02557	0.0026994	0.0010695	1	0%	0	0		N
Molybdenum	A	mg/L	0.0001257	0		0	0	0.0006222	0.0008814	0.001	0.1	0%	0	0		
Nickel	A	mg/L	0.0004614	0.002307		0	0	0.001941	0.0011441	0.0121000	1	0%	0	0		N
Potassium	A	mg/L	0.7023	3.5115		0	0	3.517	0.3828097	0.1306027	50	0%	0	0		N
Selenium	A	mg/L	0.00006858	0		0	0	0.0003682	0.0006787	0.0029274	1	0%	0	0		
Silicon	A	mg/L	5.826	29.13		0	0	27.86	0.2110446	0.026606	0.4	0%	0	0	4%	
Silver	A	mg/L	3.906E-06	0		0	0	0	0.0002141	0.001	0.04	0%	0	0		
Sodium	A	mg/L	19.44	97.2		0	0	97.42	0.5097304	3.6651346	50	0%	0	0	0%	
Strontium	A	mg/L	0.01076	0.0538		0	0	0.05302	0.0012164	0.001	1	0%	0	0	1%	
Thallium	A	mg/L	0.00002177	0		0	0	0	0.0005569	0.001	1	0%	0	0		
Thorium	A	mg/L	0.00001535	0		0	0	0	0.0018981	0.02075	1	0%	0	0		
Tin	A	mg/L	-0.0001631	0		0	0	0	0.0094659	0.0055874	0.1	0%	0	0		
Titanium	A	mg/L	0.0099	0.0495		0	0	0.04887	0.0028666	0.001	1	0%	0	0	1%	
Uranium	A	mg/L	5.294E-06	0		0	0	2.988E-05	8.495E-05	0.0004224	1	0%	0	0		
Vanadium	A	mg/L	0.009566	0.04783		0	0	0.04955	0.0195637	0.0105423	1	0%	0	0		N
Zinc	A	mg/L	0.0009927	0		0	0	0.002361	0.0058087	0.0327721	1	0%	0	0		
Silica	C	mg/L	12.4629792	62.314896		0	0	0	0.4514666	0.0569155	5	0%	0	0		N
Silicon as SiO2	C	mg/L	12.4629792	62.314896		0	0	0	0.4514666	0.0569155	5	0%	0	0		N

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14955781	B21121981-001	ICPMS-6020-W-	PDS1		12/29/2021 7:11:	1.03	162518	12/28/2021	1E+07	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.8046	0.828738		0.0515	0.7832	0	0.003991	0.0032934	1		75	125	0%	A
Antimony	A	mg/L	0.04647	0.0478641		0.0515	0	0	0.0002883	0.0010094	0.1	93%	75	125	0%	
Arsenic	A	mg/L	0.04781	0.0492443		0.0515	0.0005796	0	0.0003514	0.001	1	94%	75	125	0%	
Barium	A	mg/L	0.05804	0.0597812		0.0515	0.006582	0	0.0002763	0.001	1	103%	75	125	0%	
Beryllium	A	mg/L	0.04724	0.0486572		0.0515	0	0	0.0001103	0.01	1	94%	75	125	0%	
Boron	A	mg/L	0.252	0.25956		0.0515	0.1973	0	0.0209916	0.0151101	1	121%	75	125	0%	
Cadmium	A	mg/L	0.04784	0.0492752		0.0515	0	0	1.876E-05	0.005	1	96%	75	125	0%	
Calcium	A	mg/L	52.11	53.6733		51.5	5.738	0	0.0384124	0.1136585	50	93%	75	125	0%	
Cerium	A	mg/L	0.05122	0.0527566		0.0515	0.0009232	0	2.820E-05	0.001	0.1	101%	75	125	0%	
Chromium	A	mg/L	0.05665	0.0583495		0.0515	0.008433	0	0.0015836	0.0015836	1	97%	75	125	0%	
Cobalt	A	mg/L	0.04932	0.0507996		0.0515	0.0007558	0	9.827E-05	0.001	1	97%	75	125	0%	
Copper	A	mg/L	0.0525	0.054075		0.0515	0.002111	0	0.0009009	0.0020394	1	101%	75	125	0%	
Iron	A	mg/L	5.651	5.82053		5.15	0.8568	0	0.0076467	0.0052839	5	96%	75	125	0%	
Lanthanum	A	mg/L	0.04913	0.0506039		0.0515	0.0002499	0	5.665E-05	0.001	0.1	98%	75	125	0%	
Lead	A	mg/L	0.0472	0.048616		0.0515	0.0002817	0	7.947E-05	0.001	1	94%	80	120	0%	
Magnesium	A	mg/L	58.42	60.1726		51.5	9.274	0	0.0107381	0.0083967	50	99%	75	125	0%	
Manganese	A	mg/L	0.07345	0.0756535		0.0515	0.02557	0	0.0005561	0.001	1	97%	75	125	0%	
Molybdenum	A	mg/L	0.04645	0.0478435		0.0515	0.0006222	0	0.0001816	0.001	0.1	92%	75	125	0%	
Nickel	A	mg/L	0.05071	0.0522313		0.0515	0.001941	0	0.0002357	0.0024926	1	98%	75	125	0%	
Potassium	A	mg/L	51.66	53.2098		51.5	3.517	0	0.0788588	0.0269042	50	96%	75	125	0%	
Selenium	A	mg/L	0.04737	0.0487911		0.0515	0.0003682	0	0.0001398	0.001	1	94%	75	125	0%	
Silicon	A	mg/L	29.44	30.3232		0.206	27.86	0	0.0434752	0.0054808	0.4		0	0	0%	A
Silver	A	mg/L	0.01854	0.0190962		0.0206	0	0	4.409E-05	0.001	0.04	93%	75	125	0%	
Sodium	A	mg/L	142.3	146.569		51.5	97.42	0	0.1050045	0.7550177	50	95%	75	125	0%	
Strontium	A	mg/L	0.09944	0.1024232		0.0515	0.05302	0	0.0002506	0.001	1	96%	75	125	0%	
Thallium	A	mg/L	0.04727	0.0486881		0.0515	0	0	0.0001147	0.001	1	95%	75	125	0%	
Thorium	A	mg/L	0.04828	0.0497284		0.0515	0	0	0.000391	0.0042745	1	97%	75	125	0%	
Tin	A	mg/L	0.04627	0.0476581		0.0515	0	0	0.00195	0.001151	0.1	93%	75	125	0%	
Titanium	A	mg/L	0.09442	0.0972526		0.0515	0.04887	0	0.0005905	0.001	1	94%	75	125	0%	
Uranium	A	mg/L	0.04867	0.0501301		0.0515	2.988E-05	0	1.75E-05	0.0003	1	97%	75	125	0%	
Vanadium	A	mg/L	0.09755	0.1004765		0.0515	0.04955	0	0.0040301	0.0021717	1	99%	75	125	0%	
Zinc	A	mg/L	0.05117	0.0527051		0.0515	0.002361	0	0.0011966	0.0067511	1	98%	75	125	0%	
Silica	C	mg/L	62.978048	64.8673894		0	0	0	0.0930021	0.0117246	5	0%	0	0	0%	
Silicon as SiO2	C	mg/L	62.978048	64.8673894		0.0515	0	0	0.0930021	0.0117246	5	125956%	75	125	0%	S

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14955782	B21121981-001	ICPMS-6020-W-	MS4		12/29/2021 7:17:	1	162518	12/28/2021	1E+07	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	1.738	1.738		0.5	0.7832	0	0.0038747	0.0031975	1	191%	75	125	0%	S
Antimony	A	mg/L	0.1004	0.1004		0.1	0	0	0.0002799	0.001	0.1	100%	75	125	0%	
Arsenic	A	mg/L	0.09391	0.09391		0.1	0.0005796	0	0.0003412	0.001	1	93%	75	125	0%	
Barium	A	mg/L	0.1066	0.1066		0.1	0.006582	0	0.0002682	0.001	1	100%	75	125	0%	
Beryllium	A	mg/L	0.05042	0.05042		0.05	0	0	0.0001071	0.01	1	101%	75	125	0%	
Boron	A	mg/L	0.3121	0.3121		0.1	0.1973	0	0.0203802	0.01467	1	115%	75	125	0%	
Cadmium	A	mg/L	0.04762	0.04762		0.05	0	0	1.821E-05	0.005	1	95%	75	125	0%	
Calcium	A	mg/L	10.67	10.67		5	5.738	0	0.0372936	0.1103481	50	99%	75	125	0%	
Cerium	A	mg/L	0.102	0.102		0.1	0.0009232	0	2.738E-05	0.001	0.1	101%	75	125	0%	
Chromium	A	mg/L	0.1044	0.1044		0.1	0.008433	0	0.0015375	0.0015375	1	96%	75	125	0%	
Cobalt	A	mg/L	0.1036	0.1036		0.1	0.0007558	0	9.541E-05	0.001	1	103%	75	125	0%	
Copper	A	mg/L	0.1028	0.1028		0.1	0.002111	0	0.0008747	0.00198	1	101%	75	125	0%	
Iron	A	mg/L	1.471	1.471		0.5	0.8568	0	0.007424	0.00513	5	123%	75	125	0%	
Lanthanum	A	mg/L	0.1001	0.1001		0.1	0.0002499	0	0.000055	0.001	0.1	100%	75	125	0%	
Lead	A	mg/L	0.1017	0.1017		0.1	0.0002817	0	7.716E-05	0.001	1	101%	88	115	0%	
Magnesium	A	mg/L	13.16	13.16		5	9.274	0	0.0104254	0.0081522	50	78%	75	125	0%	
Manganese	A	mg/L	0.5117	0.5117		0.5	0.02557	0	0.0005399	0.001	1	97%	75	125	0%	
Molybdenum	A	mg/L	0.09682	0.09682		0.1	0.0006222	0	0.0001763	0.001	0.1	96%	75	125	0%	
Nickel	A	mg/L	0.1002	0.1002		0.1	0.001941	0	0.0002288	0.0024200	1	98%	75	125	0%	
Potassium	A	mg/L	7.866	7.866		5	3.517	0	0.0765619	0.0261205	50	87%	75	125	0%	
Selenium	A	mg/L	0.09964	0.09964		0.1	0.0003682	0	0.0001357	0.001	1	99%	75	125	0%	
Silicon	A	mg/L	31.62	31.62		1	27.86	0	0.0422089	0.0053212	0.4		75	125	0%	A
Silver	A	mg/L	0.009551	0.009551		0.01	0	0	4.281E-05	0.001	0.04	96%	75	125	0%	
Sodium	A	mg/L	93.19	93.19		5	97.42	0	0.1019461	0.7330269	50		75	125	0%	A
Strontium	A	mg/L	0.1453	0.1453		0.1	0.05302	0	0.0002433	0.001	1	92%	75	125	0%	
Thallium	A	mg/L	0.09454	0.09454		0.1	0	0	0.0001114	0.001	1	95%	75	125	0%	
Thorium	A	mg/L	0.09686	0.09686		0.1	0	0	0.0003796	0.00415	1	97%	75	125	0%	
Tin	A	mg/L	0.09904	0.09904		0.1	0	0	0.0018932	0.0011175	0.1	99%	75	125	0%	
Titanium	A	mg/L	0.1533	0.1533		0.1	0.04887	0	0.0005733	0.001	1	104%	75	125	0%	
Uranium	A	mg/L	0.1051	0.1051		0.1	2.988E-05	0	1.699E-05	0.0003	1	105%	75	125	0%	
Vanadium	A	mg/L	0.142	0.142		0.1	0.04955	0	0.0039127	0.0021085	1	92%	75	125	0%	
Zinc	A	mg/L	0.09751	0.09751		0.1	0.002361	0	0.0011617	0.0065544	1	95%	75	125	0%	
Silica	C	mg/L	67.641504	67.641504		0	0	0	0.0902933	0.0113831	5	0%	0	0	0%	
Silicon as SiO2	C	mg/L	67.641504	67.641504		2.14	0	0	0.0902933	0.0113831	5	3161%	75	125	0%	S

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist				
14955783	B21121981-001	ICPMS-6020-W-	MSD4		12/29/2021 7:23:	1	162518	12/28/2021	1E+07	1E+07					

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	1.74	1.74		0.5	0.7832	1.738	0.0038747	0.0031975	1	191%	75	125	0%	S
Antimony	A	mg/L	0.09867	0.09867		0.1	0	0.1004	0.0002799	0.001	0.1	99%	75	125	2%	
Arsenic	A	mg/L	0.1014	0.1014		0.1	0.0005796	0.09391	0.0003412	0.001	1	101%	75	125	8%	
Barium	A	mg/L	0.1051	0.1051		0.1	0.006582	0.1066	0.0002682	0.001	1	99%	75	125	1%	
Beryllium	A	mg/L	0.04909	0.04909		0.05	0	0.05042	0.0001071	0.01	1	98%	75	125	3%	
Boron	A	mg/L	0.3016	0.3016		0.1	0.1973	0.3121	0.0203802	0.01467	1	104%	75	125	3%	
Cadmium	A	mg/L	0.05155	0.05155		0.05	0	0.04762	1.821E-05	0.005	1	103%	75	125	8%	
Calcium	A	mg/L	10.8	10.8		5	5.738	10.67	0.0372936	0.1103481	50	101%	75	125	1%	
Cerium	A	mg/L	0.1112	0.1112		0.1	0.0009232	0.102	2.738E-05	0.001	0.1	110%	75	125	9%	
Chromium	A	mg/L	0.1121	0.1121		0.1	0.008433	0.1044	0.0015375	0.0015375	1	104%	75	125	7%	
Cobalt	A	mg/L	0.1061	0.1061		0.1	0.0007558	0.1036	9.541E-05	0.001	1	105%	75	125	2%	
Copper	A	mg/L	0.1107	0.1107		0.1	0.002111	0.1028	0.0008747	0.00198	1	109%	75	125	7%	
Iron	A	mg/L	1.526	1.526		0.5	0.8568	1.471	0.007424	0.00513	5	134%	75	125	4%	S
Lanthanum	A	mg/L	0.1095	0.1095		0.1	0.0002499	0.1001	0.000055	0.001	0.1	109%	75	125	9%	
Lead	A	mg/L	0.09893	0.09893		0.1	0.0002817	0.1017	7.716E-05	0.001	1	99%	88	115	3%	
Magnesium	A	mg/L	14.69	14.69		5	9.274	13.16	0.0104254	0.0081522	50	108%	75	125	11%	
Manganese	A	mg/L	0.541	0.541		0.5	0.02557	0.5117	0.0005399	0.001	1	103%	75	125	6%	
Molybdenum	A	mg/L	0.09708	0.09708		0.1	0.0006222	0.09682	0.0001763	0.001	0.1	96%	75	125	0%	
Nickel	A	mg/L	0.1081	0.1081		0.1	0.001941	0.1002	0.0002288	0.0024200	1	106%	75	125	8%	
Potassium	A	mg/L	8.726	8.726		5	3.517	7.866	0.0765619	0.0261205	50	104%	75	125	10%	
Selenium	A	mg/L	0.1013	0.1013		0.1	0.0003682	0.09964	0.0001357	0.001	1	101%	75	125	2%	
Silicon	A	mg/L	31.16	31.16		1	27.86	31.62	0.0422089	0.0053212	0.4		75	125	1%	A
Silver	A	mg/L	0.009693	0.009693		0.01	0	0.009551	4.281E-05	0.001	0.04	97%	75	125	1%	
Sodium	A	mg/L	102.4	102.4		5	97.42	93.19	0.1019461	0.7330269	50		75	125	9%	A
Strontium	A	mg/L	0.1564	0.1564		0.1	0.05302	0.1453	0.0002433	0.001	1	103%	75	125	7%	
Thallium	A	mg/L	0.1011	0.1011		0.1	0	0.09454	0.0001114	0.001	1	101%	75	125	7%	
Thorium	A	mg/L	0.1049	0.1049		0.1	0	0.09686	0.0003796	0.00415	1	105%	75	125	8%	
Tin	A	mg/L	0.09712	0.09712		0.1	0	0.09904	0.0018932	0.0011175	0.1	97%	75	125	2%	
Titanium	A	mg/L	0.151	0.151		0.1	0.04887	0.1533	0.0005733	0.001	1	102%	75	125	2%	
Uranium	A	mg/L	0.1016	0.1016		0.1	2.988E-05	0.1051	1.699E-05	0.0003	1	102%	75	125	3%	
Vanadium	A	mg/L	0.1525	0.1525		0.1	0.04955	0.142	0.0039127	0.0021085	1	103%	75	125	7%	
Zinc	A	mg/L	0.1059	0.1059		0.1	0.002361	0.09751	0.0011617	0.0065544	1	104%	75	125	8%	
Silica	C	mg/L	66.657472	66.657472		0	0	67.641504	0.0902933	0.0113831	5	0%	0	0	1%	
Silicon as SiO2	C	mg/L	66.657472	66.657472		2.14	0	67.641504	0.0902933	0.0113831	5	3115%	75	125	1%	S

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14955784	Rinse	ICPMS-6020-W-	SAMP		12/29/2021 7:29:	1	R372516		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.0001472	0		0	0	0	0.00086	0.001	1	0%	0	0	0%	
Antimony	A	mg/L	0.00008891	0		0	0	0	0.00042	0.001	0.1	0%	0	0	0%	
Arsenic	A	mg/L	-8.223E-05	0		0	0	0	0.00019	0.001	1	0%	0	0	0%	
Barium	A	mg/L	9.153E-06	0		0	0	0	0.000042	0.001	1	0%	0	0	0%	
Beryllium	A	mg/L	-8.437E-06	0		0	0	0	0.00012	0.001	1	0%	0	0	0%	
Cadmium	A	mg/L	1.713E-06	0		0	0	0	0.000025	0.001	1	0%	0	0	0%	
Cerium	A	mg/L	1.594E-06	0		0	0	0	0.000012	0.001	0.1	0%	0	0	0%	
Chromium	A	mg/L	-1.452E-05	0		0	0	0	0.00018	0.001	1	0%	0	0	0%	
Cobalt	A	mg/L	0.00001302	0		0	0	0	0.000042	0.001	1	0%	0	0	0%	
Copper	A	mg/L	0.00004256	0		0	0	0	0.00027	0.001	1	0%	0	0	0%	
Lanthanum	A	mg/L	1.235E-06	0		0	0	0	0.000011	0.001	0.1	0%	0	0	0%	
Lead	A	mg/L	0.00002253	0		0	0	0	0.000056	0.001	1	0%	0	0	0%	
Manganese	A	mg/L	0.0000626	0		0	0	0	0.000095	0.001	1	0%	0	0	0%	
Mercury	A	mg/L	4.322E-06	0		0	0	0	0.00016	0.001	0.002	0%	0	0	0%	
Molybdenum	A	mg/L	0.00001387	0		0	0	0	0.00005	0.001	0.1	0%	0	0	0%	
Nickel	A	mg/L	0.0001143	0		0	0	0	0.00063	0.001	1	0%	0	0	0%	
Selenium	A	mg/L	5.154E-06	0		0	0	0	0.00033	0.001	1	0%	0	0	0%	
Silver	A	mg/L	3.528E-06	0		0	0	0	0.00002	0.001	0.04	0%	0	0	0%	
Strontium	A	mg/L	0.00001424	0		0	0	0	0.00014	0.001	1	0%	0	0	0%	
Thallium	A	mg/L	0.0003528	0.0003528		0	0	0	0.000041	0.001	1	0%	0	0	0%	J
Thorium	A	mg/L	0.00002752	0		0	0	0	0.00061	0.001	1	0%	0	0	0%	
Titanium	A	mg/L	0.0001473	0.0001473		0	0	0	0.000094	0.001	1	0%	0	0	0%	J
Uranium	A	mg/L	1.562E-06	0		0	0	0	0.000052	0.0003	1	0%	0	0	0%	
Boron	B	mg/L	0.003405	0		0	0	0	0.00561	0.00561	1	0%	0	0	0%	L
Calcium	B	mg/L	-0.0002121	0		0	0	0	0.02092	0.02092	50	0%	0	0	0%	L
Iron	B	mg/L	0.000385	0		0	0	0	0.00119	0.00119	5	0%	0	0	0%	
Iron, Ferrous	B	mg/L	0.000385	0		0	0	0	0.00119	0.00119	5	0%	0	0	0%	
Potassium	B	mg/L	-0.01983	0		0	0	0	0.08139	0.08139	50	0%	0	0	0%	L
Tin	B	mg/L	-0.0001554	0		0	0	0	0.00132	0.00132	0.1	0%	0	0	0%	
Zinc	B	mg/L	0.00005108	0		0	0	0	0.00273	0.00273	1	0%	0	0	0%	L

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14955785	B21121981-003	ICPMS-6020-W-	SAMP		12/29/2021 7:35:	1	R372516		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist				
14955785	B21121981-003	ICPMS-6020-W-	SAMP		12/29/2021 7:35:	1	R372516		0	0					

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Antimony	A	mg/L	0.00002144	0		0	0	0	0.00042	0.001	0.1	0%	0	0	0%	
Arsenic	A	mg/L	-0.0001998	0		0	0	0	0.00019	0.001	1	0%	0	0	0%	
Barium	A	mg/L	0.008371	0.008371		0	0	0	0.000042	0.001	1	0%	0	0	0%	
Beryllium	A	mg/L	-5.537E-05	0		0	0	0	0.00012	0.001	1	0%	0	0	0%	
Cadmium	A	mg/L	0.00001139	0		0	0	0	0.000025	0.001	1	0%	0	0	0%	
Cerium	A	mg/L	8.619E-07	0		0	0	0	0.000012	0.001	0.1	0%	0	0	0%	
Chromium	A	mg/L	0.0009156	0.0009156		0	0	0	0.00018	0.001	1	0%	0	0	0%	J
Cobalt	A	mg/L	0.0000584	0.0000584		0	0	0	0.000042	0.001	1	0%	0	0	0%	J
Copper	A	mg/L	0.0006768	0.0006768		0	0	0	0.00027	0.001	1	0%	0	0	0%	J
Lanthanum	A	mg/L	5.338E-07	0		0	0	0	0.000011	0.001	0.1	0%	0	0	0%	
Lead	A	mg/L	0.0000296	0		0	0	0	0.000056	0.001	1	0%	0	0	0%	U
Manganese	A	mg/L	0.02174	0.02174		0	0	0	0.000095	0.001	1	0%	0	0	0%	
Mercury	A	mg/L	6.854E-06	0		0	0	0	0.00016	0.001	0.002	0%	0	0	0%	
Molybdenum	A	mg/L	0.0002074	0.0002074		0	0	0	0.00005	0.001	0.1	0%	0	0	0%	J
Nickel	A	mg/L	0.000857	0.000857		0	0	0	0.00063	0.001	1	0%	0	0	0%	J
Selenium	A	mg/L	0.0003882	0.0003882		0	0	0	0.00033	0.001	1	0%	0	0	0%	J
Silver	A	mg/L	2.289E-06	0		0	0	0	0.00002	0.001	0.04	0%	0	0	0%	
Strontium	A	mg/L	0.1547	0.1547		0	0	0	0.00014	0.001	1	0%	0	0	0%	
Thallium	A	mg/L	0.000139	0.000139		0	0	0	0.000041	0.001	1	0%	0	0	0%	J
Thorium	A	mg/L	-8.486E-08	0		0	0	0	0.00061	0.001	1	0%	0	0	0%	
Titanium	A	mg/L	0.001499	0.001499		0	0	0	0.000094	0.001	1	0%	0	0	0%	
Uranium	A	mg/L	0.00002576	0		0	0	0	0.000052	0.0003	1	0%	0	0	0%	
Boron	B	mg/L	0.06778	0.06778		0	0	0	0.00561	0.00561	1	0%	0	0	0%	D
Calcium	B	mg/L	22.68	22.68		0	0	0	0.02092	0.02092	50	0%	0	0	0%	D
Iron	B	mg/L	0.01868	0.01868		0	0	0	0.00119	0.00119	5	0%	0	0	0%	
Iron, Ferrous	B	mg/L	0.01868	0.01868		0	0	0	0.00119	0.00119	5	0%	0	0	0%	
Magnesium	B	mg/L	21.45	21.45		0	0	0	0.00564	0.00564	50	0%	0	0	0%	D
Potassium	B	mg/L	2.781	2.781		0	0	0	0.08139	0.08139	50	0%	0	0	0%	D
Sodium	B	mg/L	49	49		0	0	0	0.02171	0.02171	50	0%	0	0	0%	D
Tin	B	mg/L	-0.0002723	0		0	0	0	0.00132	0.00132	0.1	0%	0	0	0%	
Zinc	B	mg/L	0.003195	0.003195		0	0	0	0.00273	0.00273	1	0%	0	0	0%	D

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14955786	CCV	ICPMS-6020-W-	CCV		12/29/2021 7:41:	1	R372516		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.04908	0.04908		0.05	0	0	0.00086	0.001	1	98%	90	110	0%	
Antimony	A	mg/L	0.04768	0.04768		0.05	0	0	0.00042	0.001	0.1	95%	90	110	0%	
Arsenic	A	mg/L	0.04891	0.04891		0.05	0	0	0.00019	0.001	1	98%	90	110	0%	
Barium	A	mg/L	0.05127	0.05127		0.05	0	0	0.000042	0.001	1	103%	90	110	0%	
Beryllium	A	mg/L	0.04951	0.04951		0.05	0	0	0.00012	0.001	1	99%	90	110	0%	
Boron	A	mg/L	0.04969	0.04969		0.05	0	0	0.00561	0.00561	1	99%	90	110	0%	
Cadmium	A	mg/L	0.04952	0.04952		0.05	0	0	0.000025	0.001	1	99%	90	110	0%	
Calcium	A	mg/L	12.4	12.4		12.5	0	0	0.02092	0.02092	50	99%	90	110	0%	
Cerium	A	mg/L	0.04755	0.04755		0.05	0	0	0.000012	0.001	0.1	95%	90	110	0%	
Chromium	A	mg/L	0.04941	0.04941		0.05	0	0	0.00018	0.001	1	99%	90	110	0%	
Cobalt	A	mg/L	0.0526	0.0526		0.05	0	0	0.000042	0.001	1	105%	90	110	0%	
Copper	A	mg/L	0.05219	0.05219		0.05	0	0	0.00027	0.001	1	104%	90	110	0%	
Iron	A	mg/L	1.297	1.297		1.3	0	0	0.00119	0.00119	5	100%	90	110	0%	
Lanthanum	A	mg/L	0.04789	0.04789		0.05	0	0	0.000011	0.001	0.1	96%	90	110	0%	
Lead	A	mg/L	0.04708	0.04708		0.05	0	0	0.000056	0.001	1	94%	90	110	0%	
Magnesium	A	mg/L	12.74	12.74		12.5	0	0	0.00564	0.00564	50	102%	90	110	0%	
Manganese	A	mg/L	0.05025	0.05025		0.05	0	0	0.000095	0.001	1	100%	90	110	0%	
Mercury	A	mg/L	0.0009692	0.0009692		0.001	0	0	0.00016	0.001	0.002	97%	90	110	0%	
Molybdenum	A	mg/L	0.04793	0.04793		0.05	0	0	0.00005	0.001	0.1	96%	90	110	0%	
Nickel	A	mg/L	0.05095	0.05095		0.05	0	0	0.00063	0.001	1	102%	90	110	0%	
Potassium	A	mg/L	12.35	12.35		12.5	0	0	0.08139	0.08139	50	99%	90	110	0%	
Selenium	A	mg/L	0.04989	0.04989		0.05	0	0	0.00033	0.001	1	100%	90	110	0%	
Silicon	A	mg/L	0.2224	0.2224		0.2	0	0	0.01223	0.1	0.4	111%	90	110	0%	S
Silver	A	mg/L	0.01941	0.01941		0.02	0	0	0.00002	0.001	0.04	97%	90	110	0%	
Sodium	A	mg/L	12.66	12.66		12.5	0	0	0.02171	0.02171	50	101%	90	110	0%	
Strontium	A	mg/L	0.04944	0.04944		0.05	0	0	0.00014	0.001	1	99%	90	110	0%	
Thallium	A	mg/L	0.04747	0.04747		0.05	0	0	0.000041	0.001	1	95%	90	110	0%	
Thorium	A	mg/L	0.04851	0.04851		0.05	0	0	0.00061	0.001	1	97%	90	110	0%	
Tin	A	mg/L	0.04773	0.04773		0.05	0	0	0.00132	0.00132	0.1	95%	90	110	0%	
Titanium	A	mg/L	0.05063	0.05063		0.05	0	0	0.000094	0.001	1	101%	90	110	0%	
Uranium	A	mg/L	0.04836	0.04836		0.05	0	0	0.000052	0.0003	1	97%	90	110	0%	
Vanadium	A	mg/L	0.04863	0.04863		0.05	0	0	0.0013	0.0013	1	97%	90	110	0%	
Zinc	A	mg/L	0.05033	0.05033		0.05	0	0	0.00273	0.00273	1	101%	90	110	0%	
Iron, Ferrous	C	mg/L	1.297	1.297		0	0	0	0.00119	0.00119	5	0%	0	0	0%	

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist			
14955787	CCB	ICPMS-6020-W-	CCB		12/29/2021 7:47:	1	R372516		0	0				

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.00004686	0.00004686		0	0	0	0.00086	0.001	1	0%			0%	
Antimony	A	mg/L	0.0001071	0.0001071		0	0	0	0.00042	0.001	0.1	0%			0%	
Arsenic	A	mg/L	-3.926E-05	-3.926E-05		0	0	0	0.00019	0.001	1	0%			0%	
Barium	A	mg/L	3.957E-06	3.957E-06		0	0	0	0.000042	0.001	1	0%			0%	
Beryllium	A	mg/L	-1.829E-05	-1.829E-05		0	0	0	0.00012	0.001	1	0%			0%	
Boron	A	mg/L	0.002025	0.002025		0	0	0	0.00561	0.00561	1	0%			0%	
Cadmium	A	mg/L	0.00000242	0.00000242		0	0	0	0.000025	0.001	1	0%			0%	
Calcium	A	mg/L	-0.001175	-0.001175		0	0	0	0.02092	0.02092	50	0%			0%	
Cerium	A	mg/L	7.237E-07	7.237E-07		0	0	0	0.000012	0.001	0.1	0%	0	0	0%	
Chromium	A	mg/L	1.274E-07	1.274E-07		0	0	0	0.00018	0.001	1	0%			0%	
Cobalt	A	mg/L	-1.384E-06	-1.384E-06		0	0	0	0.000042	0.001	1	0%			0%	
Copper	A	mg/L	6.798E-06	6.798E-06		0	0	0	0.00027	0.001	1	0%			0%	
Iron	A	mg/L	0.00002838	0.00002838		0	0	0	0.00119	0.00119	5	0%			0%	
Lanthanum	A	mg/L	6.817E-08	6.817E-08		0	0	0	0.000011	0.001	0.1	0%	0	0	0%	
Lead	A	mg/L	0.00001068	0.00001068		0	0	0	0.000056	0.001	1	0%			0%	
Magnesium	A	mg/L	-0.01828	-0.01828		0	0	0	0.00564	0.00564	50	0%			0%	
Manganese	A	mg/L	-4.568E-05	-4.568E-05		0	0	0	0.000095	0.001	1	0%			0%	
Mercury	A	mg/L	7.379E-06	7.379E-06		0	0	0	0.00016	0.001	0.002	0%			0%	
Molybdenum	A	mg/L	0.00001764	0.00001764		0	0	0	0.00005	0.001	0.1	0%			0%	
Nickel	A	mg/L	-2.015E-05	-2.015E-05		0	0	0	0.00063	0.001	1	0%			0%	
Potassium	A	mg/L	-0.007517	-0.007517		0	0	0	0.08139	0.08139	50	0%			0%	
Selenium	A	mg/L	5.738E-06	5.738E-06		0	0	0	0.00033	0.001	1	0%			0%	
Silicon	A	mg/L	0.01836	0.01836		0	0	0	0.01223	0.1	0.4	0%	0	0	0%	
Silver	A	mg/L	-4.707E-07	-4.707E-07		0	0	0	0.00002	0.001	0.04	0%			0%	
Sodium	A	mg/L	0.01996	0.01996		0	0	0	0.02171	0.02171	50	0%			0%	
Strontium	A	mg/L	0.00001839	0.00001839		0	0	0	0.00014	0.001	1	0%	0	0	0%	
Thallium	A	mg/L	0.00002547	0.00002547		0	0	0	0.000041	0.001	1	0%	0	0	0%	
Thorium	A	mg/L	0.00003906	0.00003906		0	0	0	0.00061	0.001	1	0%	0	0	0%	
Tin	A	mg/L	0.00004469	0.00004469		0	0	0	0.00132	0.00132	0.1	0%	0	0	0%	
Titanium	A	mg/L	0.0001095	0.0001095		0	0	0	0.000094	0.001	1	0%	0	0	0%	
Uranium	A	mg/L	2.004E-07	2.004E-07		0	0	0	0.000052	0.0003	1	0%	0	0	0%	
Vanadium	A	mg/L	-0.0009429	-0.0009429		0	0	0	0.0013	0.0013	1	0%	0	0	0%	
Zinc	A	mg/L	-3.419E-06	-3.419E-06		0	0	0	0.00273	0.00273	1	0%	0	0	0%	
Iron, Ferrous	C	mg/L	0.00002838	0.00002838		0	0	0	0.00119	0.00119	5	0%	0	0	0%	

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14955788	B21121981-003	ICPMS-6020-W-	SAMP		12/29/2021 7:53:	1	162518	12/28/2021	0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Antimony	A	mg/L	0.0001017	0		0	0	0	0.0002799	0.001	0.1	0%	0	0	0%	U
Arsenic	A	mg/L	0.0003572	0.0003572		0	0	0	0.0003412	0.001	1	0%	0	0	0%	J
Barium	A	mg/L	0.0085	0.0085		0	0	0	0.0002682	0.001	1	0%	0	0	0%	
Beryllium	A	mg/L	-2.259E-05	0		0	0	0	0.0001071	0.01	1	0%	0	0	0%	U
Cadmium	A	mg/L	5.818E-06	0		0	0	0	1.821E-05	0.005	1	0%	0	0	0%	U
Cerium	A	mg/L	6.101E-06	0		0	0	0	2.738E-05	0.001	0.1	0%	0	0	0%	U
Cobalt	A	mg/L	0.0001334	0.0001334		0	0	0	9.541E-05	0.001	1	0%	0	0	0%	J
Lanthanum	A	mg/L	2.409E-06	0		0	0	0	0.000055	0.001	0.1	0%	0	0	0%	U
Lead	A	mg/L	0.0000459	0		0	0	0	7.716E-05	0.001	1	0%	0	0	0%	U
Manganese	A	mg/L	0.02243	0.02243		0	0	0	0.0005399	0.001	1	0%	0	0	0%	
Molybdenum	A	mg/L	0.0002474	0.0002474		0	0	0	0.0001763	0.001	0.1	0%	0	0	0%	J
Selenium	A	mg/L	0.0004415	0.0004415		0	0	0	0.0001357	0.001	1	0%	0	0	0%	J
Silver	A	mg/L	2.223E-06	0		0	0	0	4.281E-05	0.001	0.04	0%	0	0	0%	U
Strontium	A	mg/L	0.1551	0.1551		0	0	0	0.0002433	0.001	1	0%	0	0	0%	
Thallium	A	mg/L	0.00007461	0		0	0	0	0.0001114	0.001	1	0%	0	0	0%	U
Titanium	A	mg/L	0.001929	0.001929		0	0	0	0.0005733	0.001	1	0%	0	0	0%	
Uranium	A	mg/L	0.00002699	0.00002699		0	0	0	1.699E-05	0.0003	1	0%	0	0	0%	J
Aluminum	B	mg/L	0.005161	0.005161		0	0	0	0.0038747	0.0031975	1	0%	0	0	0%	DU
Boron	B	mg/L	0.06828	0.06828		0	0	0	0.0203802	0.01467	1	0%	0	0	0%	D
Calcium	B	mg/L	21.66	21.66		0	0	0	0.0372936	0.1103481	50	0%	0	0	0%	D
Chromium	B	mg/L	0.001622	0.001622		0	0	0	0.0015375	0.0015375	1	0%	0	0	0%	DU
Copper	B	mg/L	0.0008332	0		0	0	0	0.0008747	0.00198	1	0%	0	0	0%	LU
Iron	B	mg/L	0.0437	0.0437		0	0	0	0.007424	0.00513	5	0%	0	0	0%	D
Magnesium	B	mg/L	21.66	21.66		0	0	0	0.0104254	0.0081522	50	0%	0	0	0%	D
Nickel	B	mg/L	0.001056	0.001056		0	0	0	0.0002288	0.0024200	1	0%	0	0	0%	JL
Potassium	B	mg/L	2.771	2.771		0	0	0	0.0765619	0.0261205	50	0%	0	0	0%	D
Sodium	B	mg/L	49.61	49.61		0	0	0	0.1019461	0.7330269	50	0%	0	0	0%	D
Thorium	B	mg/L	0.00009853	0		0	0	0	0.0003796	0.00415	1	0%	0	0	0%	LU
Tin	B	mg/L	0.00011	0		0	0	0	0.0018932	0.0011175	0.1	0%	0	0	0%	U
Vanadium	B	mg/L	0.01682	0.01682		0	0	0	0.0039127	0.0021085	1	0%	0	0	0%	D
Zinc	B	mg/L	0.002823	0.002823		0	0	0	0.0011617	0.0065544	1	0%	0	0	0%	JL

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14955789	B21121981-004	ICPMS-6020-W-	SAMP		12/29/2021 7:59:	1	R372516		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Antimony	A	mg/L	0.00001428	0		0	0	0	0.00042	0.001	0.1	0%	0	0	0%	
Arsenic	A	mg/L	-0.0001968	0		0	0	0	0.00019	0.001	1	0%	0	0	0%	
Barium	A	mg/L	0.01009	0.01009		0	0	0	0.000042	0.001	1	0%	0	0	0%	
Beryllium	A	mg/L	-7.364E-05	0		0	0	0	0.00012	0.001	1	0%	0	0	0%	
Cadmium	A	mg/L	0.00002028	0		0	0	0	0.000025	0.001	1	0%	0	0	0%	
Cerium	A	mg/L	2.699E-06	0		0	0	0	0.000012	0.001	0.1	0%	0	0	0%	
Chromium	A	mg/L	0.0007755	0.0007755		0	0	0	0.00018	0.001	1	0%	0	0	0%	J
Cobalt	A	mg/L	0.0001248	0.0001248		0	0	0	0.000042	0.001	1	0%	0	0	0%	J
Copper	A	mg/L	0.0007168	0.0007168		0	0	0	0.00027	0.001	1	0%	0	0	0%	J
Lanthanum	A	mg/L	6.715E-07	0		0	0	0	0.000011	0.001	0.1	0%	0	0	0%	
Lead	A	mg/L	0.00004104	0		0	0	0	0.000056	0.001	1	0%	0	0	0%	U
Manganese	A	mg/L	0.05199	0.05199		0	0	0	0.000095	0.001	1	0%	0	0	0%	
Mercury	A	mg/L	6.295E-06	0		0	0	0	0.00016	0.001	0.002	0%	0	0	0%	
Molybdenum	A	mg/L	0.0002213	0.0002213		0	0	0	0.00005	0.001	0.1	0%	0	0	0%	J
Nickel	A	mg/L	0.001727	0.001727		0	0	0	0.00063	0.001	1	0%	0	0	0%	
Selenium	A	mg/L	0.0004894	0.0004894		0	0	0	0.00033	0.001	1	0%	0	0	0%	J
Silver	A	mg/L	2.593E-06	0		0	0	0	0.00002	0.001	0.04	0%	0	0	0%	
Strontium	A	mg/L	0.1742	0.1742		0	0	0	0.00014	0.001	1	0%	0	0	0%	
Thallium	A	mg/L	0.00005111	0.00005111		0	0	0	0.000041	0.001	1	0%	0	0	0%	J
Thorium	A	mg/L	-4.631E-06	0		0	0	0	0.00061	0.001	1	0%	0	0	0%	
Titanium	A	mg/L	0.001362	0.001362		0	0	0	0.000094	0.001	1	0%	0	0	0%	
Uranium	A	mg/L	0.00002386	0		0	0	0	0.000052	0.0003	1	0%	0	0	0%	
Boron	B	mg/L	0.08065	0.08065		0	0	0	0.00561	0.00561	1	0%	0	0	0%	D
Calcium	B	mg/L	23.79	23.79		0	0	0	0.02092	0.02092	50	0%	0	0	0%	D
Iron	B	mg/L	0.05457	0.05457		0	0	0	0.00119	0.00119	5	0%	0	0	0%	
Iron, Ferrous	B	mg/L	0.05457	0.05457		0	0	0	0.00119	0.00119	5	0%	0	0	0%	
Magnesium	B	mg/L	23.82	23.82		0	0	0	0.00564	0.00564	50	0%	0	0	0%	D
Potassium	B	mg/L	2.959	2.959		0	0	0	0.08139	0.08139	50	0%	0	0	0%	D
Tin	B	mg/L	-0.0002616	0		0	0	0	0.00132	0.00132	0.1	0%	0	0	0%	
Zinc	B	mg/L	0.006031	0.006031		0	0	0	0.00273	0.00273	1	0%	0	0	0%	D

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14955790	B21121981-004	ICPMS-6020-W-	SAMP		12/29/2021 8:06:	1	162518	12/28/2021	0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14955790	B21121981-004	ICPMS-6020-W-	SAMP		12/29/2021 8:06:	1	162518	12/28/2021	0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Antimony	A	mg/L	0.000058	0		0	0	0	0.0002799	0.001	0.1	0%	0	0	0%	U
Arsenic	A	mg/L	0.0003357	0		0	0	0	0.0003412	0.001	1	0%	0	0	0%	U
Barium	A	mg/L	0.009526	0.009526		0	0	0	0.0002682	0.001	1	0%	0	0	0%	
Beryllium	A	mg/L	-4.298E-05	0		0	0	0	0.0001071	0.01	1	0%	0	0	0%	U
Cadmium	A	mg/L	0.00001374	0		0	0	0	1.821E-05	0.005	1	0%	0	0	0%	U
Cerium	A	mg/L	8.166E-06	0		0	0	0	2.738E-05	0.001	0.1	0%	0	0	0%	U
Cobalt	A	mg/L	0.0001953	0.0001953		0	0	0	9.541E-05	0.001	1	0%	0	0	0%	J
Lanthanum	A	mg/L	3.497E-06	0		0	0	0	0.000055	0.001	0.1	0%	0	0	0%	U
Lead	A	mg/L	0.00008638	0.00008638		0	0	0	7.716E-05	0.001	1	0%	0	0	0%	J
Manganese	A	mg/L	0.0465	0.0465		0	0	0	0.0005399	0.001	1	0%	0	0	0%	
Molybdenum	A	mg/L	0.0002539	0.0002539		0	0	0	0.0001763	0.001	0.1	0%	0	0	0%	J
Selenium	A	mg/L	0.0005221	0.0005221		0	0	0	0.0001357	0.001	1	0%	0	0	0%	J
Silver	A	mg/L	3.091E-06	0		0	0	0	4.281E-05	0.001	0.04	0%	0	0	0%	U
Strontium	A	mg/L	0.163	0.163		0	0	0	0.0002433	0.001	1	0%	0	0	0%	
Thallium	A	mg/L	0.00004603	0		0	0	0	0.0001114	0.001	1	0%	0	0	0%	U
Titanium	A	mg/L	0.00188	0.00188		0	0	0	0.0005733	0.001	1	0%	0	0	0%	
Uranium	A	mg/L	0.0000259	0.0000259		0	0	0	1.699E-05	0.0003	1	0%	0	0	0%	J
Aluminum	B	mg/L	0.006039	0.006039		0	0	0	0.0038747	0.0031975	1	0%	0	0	0%	DU
Boron	B	mg/L	0.08267	0.08267		0	0	0	0.0203802	0.01467	1	0%	0	0	0%	D
Calcium	B	mg/L	22.88	22.88		0	0	0	0.0372936	0.1103481	50	0%	0	0	0%	D
Chromium	B	mg/L	0.001632	0.001632		0	0	0	0.0015375	0.0015375	1	0%	0	0	0%	DU
Copper	B	mg/L	0.0009859	0.0009859		0	0	0	0.0008747	0.00198	1	0%	0	0	0%	JL
Iron	B	mg/L	0.08399	0.08399		0	0	0	0.007424	0.00513	5	0%	0	0	0%	D
Magnesium	B	mg/L	22.67	22.67		0	0	0	0.0104254	0.0081522	50	0%	0	0	0%	D
Nickel	B	mg/L	0.001668	0.001668		0	0	0	0.0002288	0.0024200	1	0%	0	0	0%	JL
Potassium	B	mg/L	2.837	2.837		0	0	0	0.0765619	0.0261205	50	0%	0	0	0%	D
Thorium	B	mg/L	0.00003264	0		0	0	0	0.0003796	0.00415	1	0%	0	0	0%	LU
Tin	B	mg/L	0.00003149	0		0	0	0	0.0018932	0.0011175	0.1	0%	0	0	0%	U
Vanadium	B	mg/L	0.01577	0.01577		0	0	0	0.0039127	0.0021085	1	0%	0	0	0%	D
Zinc	B	mg/L	0.006735	0.006735		0	0	0	0.0011617	0.0065544	1	0%	0	0	0%	D

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14955791	No Sample	ICPMS-6020-W-	SAMP		12/29/2021 8:12:	1	R372516		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14955791	No Sample	ICPMS-6020-W-	SAMP		12/29/2021 8:12:	1	R372516		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.00001054	0		0	0	0	0.00086	0.001	1	0%	0	0	0%	
Antimony	A	mg/L	-6.09E-06	0		0	0	0	0.00042	0.001	0.1	0%	0	0	0%	
Arsenic	A	mg/L	-0.0003795	0		0	0	0	0.00019	0.001	1	0%	0	0	0%	
Barium	A	mg/L	-1.382E-06	0		0	0	0	0.000042	0.001	1	0%	0	0	0%	
Beryllium	A	mg/L	-0.0001192	0		0	0	0	0.00012	0.001	1	0%	0	0	0%	
Cadmium	A	mg/L	3.311E-06	0		0	0	0	0.000025	0.001	1	0%	0	0	0%	
Cerium	A	mg/L	0.00000313	0		0	0	0	0.000012	0.001	0.1	0%	0	0	0%	
Chromium	A	mg/L	-0.0002378	0		0	0	0	0.00018	0.001	1	0%	0	0	0%	
Cobalt	A	mg/L	-0.0000335	0		0	0	0	0.000042	0.001	1	0%	0	0	0%	
Copper	A	mg/L	-3.049E-05	0		0	0	0	0.00027	0.001	1	0%	0	0	0%	
Lanthanum	A	mg/L	2.916E-06	0		0	0	0	0.000011	0.001	0.1	0%	0	0	0%	
Lead	A	mg/L	-1.345E-05	0		0	0	0	0.000056	0.001	1	0%	0	0	0%	
Manganese	A	mg/L	-0.0001269	0		0	0	0	0.000095	0.001	1	0%	0	0	0%	
Mercury	A	mg/L	-1.123E-06	0		0	0	0	0.00016	0.001	0.002	0%	0	0	0%	
Molybdenum	A	mg/L	-9.209E-08	0		0	0	0	0.00005	0.001	0.1	0%	0	0	0%	
Nickel	A	mg/L	-0.0004397	0		0	0	0	0.00063	0.001	1	0%	0	0	0%	
Selenium	A	mg/L	-6.277E-05	0		0	0	0	0.00033	0.001	1	0%	0	0	0%	
Silver	A	mg/L	-1.949E-07	0		0	0	0	0.00002	0.001	0.04	0%	0	0	0%	
Strontium	A	mg/L	0.00002796	0		0	0	0	0.00014	0.001	1	0%	0	0	0%	
Thallium	A	mg/L	-1.037E-05	0		0	0	0	0.000041	0.001	1	0%	0	0	0%	
Thorium	A	mg/L	1.136E-06	0		0	0	0	0.00061	0.001	1	0%	0	0	0%	
Titanium	A	mg/L	-9.223E-05	0		0	0	0	0.000094	0.001	1	0%	0	0	0%	
Uranium	A	mg/L	1.743E-06	0		0	0	0	0.000052	0.0003	1	0%	0	0	0%	
Boron	B	mg/L	-0.001878	0		0	0	0	0.00561	0.00561	1	0%	0	0	0%	L
Iron	B	mg/L	-0.001216	0		0	0	0	0.00119	0.00119	5	0%	0	0	0%	
Iron, Ferrous	B	mg/L	-0.001216	0		0	0	0	0.00119	0.00119	5	0%	0	0	0%	
Potassium	B	mg/L	-0.2846	0		0	0	0	0.08139	0.08139	50	0%	0	0	0%	L
Sodium	B	mg/L	-0.03552	0		0	0	0	0.02171	0.02171	50	0%	0	0	0%	L
Tin	B	mg/L	-0.000298	0		0	0	0	0.00132	0.00132	0.1	0%	0	0	0%	
Zinc	B	mg/L	-4.397E-05	0		0	0	0	0.00273	0.00273	1	0%	0	0	0%	L

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14955792	Rinse	ICPMS-6020-W-	SAMP		12/29/2021 8:18:	1	R372516		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14955792	Rinse	ICPMS-6020-W-	SAMP		12/29/2021 8:18:	1	R372516		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.0001108	0		0	0	0	0.00086	0.001	1	0%	0	0	0%	
Antimony	A	mg/L	6.645E-06	0		0	0	0	0.00042	0.001	0.1	0%	0	0	0%	
Arsenic	A	mg/L	-0.0000975	0		0	0	0	0.00019	0.001	1	0%	0	0	0%	
Barium	A	mg/L	0.00001077	0		0	0	0	0.000042	0.001	1	0%	0	0	0%	
Beryllium	A	mg/L	-0.0000839	0		0	0	0	0.00012	0.001	1	0%	0	0	0%	
Cadmium	A	mg/L	1.295E-06	0		0	0	0	0.000025	0.001	1	0%	0	0	0%	
Cerium	A	mg/L	1.627E-07	0		0	0	0	0.000012	0.001	0.1	0%	0	0	0%	
Chromium	A	mg/L	-7.435E-06	0		0	0	0	0.00018	0.001	1	0%	0	0	0%	
Cobalt	A	mg/L	-4.347E-06	0		0	0	0	0.000042	0.001	1	0%	0	0	0%	
Copper	A	mg/L	0.00002319	0		0	0	0	0.00027	0.001	1	0%	0	0	0%	
Lanthanum	A	mg/L	-3.236E-08	0		0	0	0	0.000011	0.001	0.1	0%	0	0	0%	
Lead	A	mg/L	7.134E-06	0		0	0	0	0.000056	0.001	1	0%	0	0	0%	
Manganese	A	mg/L	-5.437E-05	0		0	0	0	0.000095	0.001	1	0%	0	0	0%	
Mercury	A	mg/L	2.737E-06	0		0	0	0	0.00016	0.001	0.002	0%	0	0	0%	
Molybdenum	A	mg/L	-1.19E-06	0		0	0	0	0.00005	0.001	0.1	0%	0	0	0%	
Nickel	A	mg/L	0.000124	0		0	0	0	0.00063	0.001	1	0%	0	0	0%	
Selenium	A	mg/L	-1.494E-05	0		0	0	0	0.00033	0.001	1	0%	0	0	0%	
Silver	A	mg/L	3.043E-06	0		0	0	0	0.00002	0.001	0.04	0%	0	0	0%	
Strontium	A	mg/L	0.00001726	0		0	0	0	0.00014	0.001	1	0%	0	0	0%	
Thallium	A	mg/L	7.371E-06	0		0	0	0	0.000041	0.001	1	0%	0	0	0%	
Thorium	A	mg/L	-5.397E-06	0		0	0	0	0.00061	0.001	1	0%	0	0	0%	
Titanium	A	mg/L	0.00003769	0		0	0	0	0.000094	0.001	1	0%	0	0	0%	
Uranium	A	mg/L	-5.355E-07	0		0	0	0	0.000052	0.0003	1	0%	0	0	0%	
Boron	B	mg/L	0.0007794	0		0	0	0	0.00561	0.00561	1	0%	0	0	0%	L
Calcium	B	mg/L	-0.001062	0		0	0	0	0.02092	0.02092	50	0%	0	0	0%	L
Iron	B	mg/L	1.354E-06	0		0	0	0	0.00119	0.00119	5	0%	0	0	0%	
Iron, Ferrous	B	mg/L	1.354E-06	0		0	0	0	0.00119	0.00119	5	0%	0	0	0%	
Potassium	B	mg/L	-0.01414	0		0	0	0	0.08139	0.08139	50	0%	0	0	0%	L
Sodium	B	mg/L	0.01516	0		0	0	0	0.02171	0.02171	50	0%	0	0	0%	L
Tin	B	mg/L	-0.000178	0		0	0	0	0.00132	0.00132	0.1	0%	0	0	0%	
Zinc	B	mg/L	0.00006824	0		0	0	0	0.00273	0.00273	1	0%	0	0	0%	L

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14955793	CCV	ICPMS-6020-W-	CCV		12/29/2021 8:24:	1	R372516		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.04972	0.04972		0.05	0	0	0.00086	0.001	1	99%	90	110	0%	
Antimony	A	mg/L	0.04855	0.04855		0.05	0	0	0.00042	0.001	0.1	97%	90	110	0%	
Arsenic	A	mg/L	0.04914	0.04914		0.05	0	0	0.00019	0.001	1	98%	90	110	0%	
Barium	A	mg/L	0.05087	0.05087		0.05	0	0	0.000042	0.001	1	102%	90	110	0%	
Beryllium	A	mg/L	0.05028	0.05028		0.05	0	0	0.00012	0.001	1	101%	90	110	0%	
Boron	A	mg/L	0.04996	0.04996		0.05	0	0	0.00561	0.00561	1	100%	90	110	0%	
Cadmium	A	mg/L	0.04973	0.04973		0.05	0	0	0.000025	0.001	1	99%	90	110	0%	
Calcium	A	mg/L	12.14	12.14		12.5	0	0	0.02092	0.02092	50	97%	90	110	0%	
Cerium	A	mg/L	0.04837	0.04837		0.05	0	0	0.000012	0.001	0.1	97%	90	110	0%	
Chromium	A	mg/L	0.04982	0.04982		0.05	0	0	0.00018	0.001	1	100%	90	110	0%	
Cobalt	A	mg/L	0.05369	0.05369		0.05	0	0	0.000042	0.001	1	107%	90	110	0%	
Copper	A	mg/L	0.05234	0.05234		0.05	0	0	0.00027	0.001	1	105%	90	110	0%	
Iron	A	mg/L	1.281	1.281		1.3	0	0	0.00119	0.00119	5	99%	90	110	0%	
Lanthanum	A	mg/L	0.04845	0.04845		0.05	0	0	0.000011	0.001	0.1	97%	90	110	0%	
Lead	A	mg/L	0.0481	0.0481		0.05	0	0	0.000056	0.001	1	96%	90	110	0%	
Magnesium	A	mg/L	12.54	12.54		12.5	0	0	0.00564	0.00564	50	100%	90	110	0%	
Manganese	A	mg/L	0.05053	0.05053		0.05	0	0	0.000095	0.001	1	101%	90	110	0%	
Mercury	A	mg/L	0.0009905	0.0009905		0.001	0	0	0.00016	0.001	0.002	99%	90	110	0%	
Molybdenum	A	mg/L	0.04852	0.04852		0.05	0	0	0.00005	0.001	0.1	97%	90	110	0%	
Nickel	A	mg/L	0.05074	0.05074		0.05	0	0	0.00063	0.001	1	101%	90	110	0%	
Potassium	A	mg/L	12.71	12.71		12.5	0	0	0.08139	0.08139	50	102%	90	110	0%	
Selenium	A	mg/L	0.04914	0.04914		0.05	0	0	0.00033	0.001	1	98%	90	110	0%	
Silicon	A	mg/L	0.212	0.212		0.2	0	0	0.01223	0.1	0.4	106%	90	110	0%	
Silver	A	mg/L	0.0194	0.0194		0.02	0	0	0.00002	0.001	0.04	97%	90	110	0%	
Sodium	A	mg/L	12.66	12.66		12.5	0	0	0.02171	0.02171	50	101%	90	110	0%	
Strontium	A	mg/L	0.04983	0.04983		0.05	0	0	0.00014	0.001	1	100%	90	110	0%	
Thallium	A	mg/L	0.04958	0.04958		0.05	0	0	0.000041	0.001	1	99%	90	110	0%	
Thorium	A	mg/L	0.04809	0.04809		0.05	0	0	0.00061	0.001	1	96%	90	110	0%	
Tin	A	mg/L	0.04679	0.04679		0.05	0	0	0.00132	0.00132	0.1	94%	90	110	0%	
Titanium	A	mg/L	0.05116	0.05116		0.05	0	0	0.000094	0.001	1	102%	90	110	0%	
Uranium	A	mg/L	0.04822	0.04822		0.05	0	0	0.000052	0.0003	1	96%	90	110	0%	
Vanadium	A	mg/L	0.04876	0.04876		0.05	0	0	0.0013	0.0013	1	98%	90	110	0%	
Zinc	A	mg/L	0.05057	0.05057		0.05	0	0	0.00273	0.00273	1	101%	90	110	0%	
Iron, Ferrous	C	mg/L	1.281	1.281		0	0	0	0.00119	0.00119	5	0%	0	0	0%	

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14955794	CCB	ICPMS-6020-W-	CCB		12/29/2021 8:30:	1	R372516		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.00004047	0.00004047		0	0	0	0.00086	0.001	1	0%			0%	
Antimony	A	mg/L	0.00009417	0.00009417		0	0	0	0.00042	0.001	0.1	0%			0%	
Arsenic	A	mg/L	-5.083E-05	-5.083E-05		0	0	0	0.00019	0.001	1	0%			0%	
Barium	A	mg/L	4.029E-06	4.029E-06		0	0	0	0.000042	0.001	1	0%			0%	
Beryllium	A	mg/L	-3.346E-05	-3.346E-05		0	0	0	0.00012	0.001	1	0%			0%	
Boron	A	mg/L	0.0009505	0.0009505		0	0	0	0.00561	0.00561	1	0%			0%	
Cadmium	A	mg/L	1.926E-06	1.926E-06		0	0	0	0.000025	0.001	1	0%			0%	
Calcium	A	mg/L	-0.001201	-0.001201		0	0	0	0.02092	0.02092	50	0%			0%	
Cerium	A	mg/L	5.437E-07	5.437E-07		0	0	0	0.000012	0.001	0.1	0%	0	0	0%	
Chromium	A	mg/L	-7.013E-06	-7.013E-06		0	0	0	0.00018	0.001	1	0%			0%	
Cobalt	A	mg/L	-2.063E-06	-2.063E-06		0	0	0	0.000042	0.001	1	0%			0%	
Copper	A	mg/L	-4.112E-06	-4.112E-06		0	0	0	0.00027	0.001	1	0%			0%	
Iron	A	mg/L	-0.00011	-0.00011		0	0	0	0.00119	0.00119	5	0%			0%	
Lanthanum	A	mg/L	3.878E-07	3.878E-07		0	0	0	0.000011	0.001	0.1	0%	0	0	0%	
Lead	A	mg/L	9.269E-06	9.269E-06		0	0	0	0.000056	0.001	1	0%			0%	
Magnesium	A	mg/L	-0.02015	-0.02015		0	0	0	0.00564	0.00564	50	0%			0%	
Manganese	A	mg/L	-6.852E-05	-6.852E-05		0	0	0	0.000095	0.001	1	0%			0%	
Mercury	A	mg/L	5.167E-06	5.167E-06		0	0	0	0.00016	0.001	0.002	0%			0%	
Molybdenum	A	mg/L	0.00002106	0.00002106		0	0	0	0.00005	0.001	0.1	0%			0%	
Nickel	A	mg/L	0.00002746	0.00002746		0	0	0	0.00063	0.001	1	0%			0%	
Potassium	A	mg/L	-0.01455	-0.01455		0	0	0	0.08139	0.08139	50	0%			0%	
Selenium	A	mg/L	2.406E-06	2.406E-06		0	0	0	0.00033	0.001	1	0%			0%	
Silicon	A	mg/L	0.00553	0.00553		0	0	0	0.01223	0.1	0.4	0%	0	0	0%	
Silver	A	mg/L	-7.019E-07	-7.019E-07		0	0	0	0.00002	0.001	0.04	0%			0%	
Sodium	A	mg/L	0.01195	0.01195		0	0	0	0.02171	0.02171	50	0%			0%	
Strontium	A	mg/L	0.00001258	0.00001258		0	0	0	0.00014	0.001	1	0%	0	0	0%	
Thallium	A	mg/L	-1.223E-08	-1.223E-08		0	0	0	0.000041	0.001	1	0%	0	0	0%	
Thorium	A	mg/L	0.00004008	0.00004008		0	0	0	0.00061	0.001	1	0%	0	0	0%	
Tin	A	mg/L	0.00005794	0.00005794		0	0	0	0.00132	0.00132	0.1	0%	0	0	0%	
Titanium	A	mg/L	0.0000625	0.0000625		0	0	0	0.000094	0.001	1	0%	0	0	0%	
Uranium	A	mg/L	-1.349E-07	-1.349E-07		0	0	0	0.000052	0.0003	1	0%	0	0	0%	
Vanadium	A	mg/L	-0.001069	-0.001069		0	0	0	0.0013	0.0013	1	0%	0	0	0%	
Zinc	A	mg/L	-0.0000145	-0.0000145		0	0	0	0.00273	0.00273	1	0%	0	0	0%	
Iron, Ferrous	C	mg/L	-0.00011	-0.00011		0	0	0	0.00119	0.00119	5	0%	0	0	0%	

Batch Summary Report

Batch Folder: D:\Agilent\ICPMH\1\DATA\211229DoD.b\
Analysis File: 211229DoD.batch.bin
Tune Step: #1 No Gas
#2 H2
#3 He

	Rjct	Acq. Date-Time	Data File	Sample Name	Type	Level	Dilution
1		2021-12-29 12:31:55	001BLKV.d	Rinse	BlkVrfy		1.0000
2		2021-12-29 12:38:05	002BLKV.d	Rinse	BlkVrfy		1.0000
3		2021-12-29 12:44:17	003CALB.d	Cal Blk	CalBlk	1	1.0000
4		2021-12-29 12:51:10	004CALS.d	0.025 ppb STD	CalStd	2	1.0000
5		2021-12-29 12:57:46	005CALS.d	0.05 ppb STD	CalStd	3	1.0000
6		2021-12-29 13:04:21	006CALS.d	0.10 ppb STD	CalStd	4	1.0000
7		2021-12-29 13:10:55	007CALS.d	0.5 ppb STD	CalStd	5	1.0000
8		2021-12-29 13:17:29	008CALS.d	1 ppb STD	CalStd	6	1.0000
9		2021-12-29 13:24:03	009CALS.d	10 ppb STD	CalStd	7	1.0000
10		2021-12-29 13:30:35	010CALS.d	50 ppb STD	CalStd	8	1.0000
11		2021-12-29 13:37:01	011CALS.d	100 ppb STD	CalStd	9	1.0000
12		2021-12-29 13:43:14	012CALS.d	1000 ppb STD	CalStd	10	1.0000
13		2021-12-29 13:49:01	013CALS.d	100 ppb Br STD	CalStd	11	1.0000
14		2021-12-29 14:33:40	014BLKV.d	Rinse	BlkVrfy		1.0000
15		2021-12-29 14:39:51	015CALB.d	Cal Blk	CalBlk	1	1.0000
16		2021-12-29 14:46:11	016CALS.d	0.025 ppb STD	CalStd	2	1.0000
17		2021-12-29 14:52:32	017BLKV.d	Rinse	BlkVrfy		1.0000
18		2021-12-29 14:58:43	018CALB.d	Cal Blk	CalBlk	1	1.0000
19		2021-12-29 15:05:04	019CALS.d	0.025 ppb STD	CalStd	2	1.0000
20		2021-12-29 15:11:24	020CALS.d	0.05 ppb STD	CalStd	3	1.0000
21		2021-12-29 15:17:46	021CALS.d	0.10 ppb STD	CalStd	4	1.0000
22		2021-12-29 15:24:06	022CALS.d	0.5 ppb STD	CalStd	5	1.0000
23		2021-12-29 15:30:26	023CALS.d	1 ppb STD	CalStd	6	1.0000
24		2021-12-29 15:36:47	024CALS.d	10 ppb STD	CalStd	7	1.0000
25		2021-12-29 15:43:05	025CALS.d	50 ppb STD	CalStd	8	1.0000

	Rjct	Acq. Date-Time	Data File	Sample Name	Type	Level	Dilution
26		2021-12-29 15:49:19	026CALS.d	100 ppb STD	CalStd	9	1.0000
27		2021-12-29 15:55:26	027CALS.d	1000 ppb STD	CalStd	10	1.0000
28		2021-12-29 16:01:04	028CALS.d	100 ppb Br STD	CalStd	11	1.0000
29		2021-12-29 16:07:25	029_QC1.d	QCS	QC1		1.0000
30		2021-12-29 16:13:31	030_CCV.d	CCV	CCV		1.0000
31		2021-12-29 16:19:36	031_CCB.d	CCB	CCB		1.0000
32		2021-12-29 16:25:46	032MBLK.d	LRB	MBLK		1.0000
33		2021-12-29 16:31:58	033_LFB.d	LFB	LFB		1.0300
34		2021-12-29 16:38:04	034ICSA.d	ICSA	ICSA		1.0000
35		2021-12-29 16:44:14	035ICSB.d	ICSAB	ICSAB		1.0000
36		2021-12-29 16:50:23	036BLKV.d	Rinse	BlkVrfy		1.0000
37		2021-12-29 16:56:33	037_CCV.d	CCV	CCV		1.0000
38		2021-12-29 17:02:37	038_CCB.d	CCB	CCB		1.0000
39		2021-12-29 17:08:48	039BLKV.d	Rinse	BlkVrfy		1.0000
40		2021-12-29 17:14:58	040ARef.d	MB-162518	AllRef		1.0000
41		2021-12-29 17:21:09	041LCS4.d	LCS4-162518	LCS4		1.0000
42		2021-12-29 17:27:05	042SMPL.d	B21121977-001A	Sample		1.0000
43		2021-12-29 17:33:14	043SMPL.d	B21121977-001B	Sample		1.0000
44		2021-12-29 17:39:23	044SMPL.d	B21121977-002A	Sample		1.0000
45		2021-12-29 17:45:32	045SMPL.d	B21121977-002B	Sample		1.0000
46		2021-12-29 17:51:40	046SMPL.d	B21121979-001A	Sample		1.0000
47		2021-12-29 17:57:49	047SMPL.d	B21121979-001B	Sample		1.0000
48		2021-12-29 18:03:58	048SMPL.d	B21121979-003A	Sample		1.0000
49		2021-12-29 18:10:07	049SMPL.d	B21121979-003B	Sample		1.0000
50		2021-12-29 18:16:14	050_CCV.d	CCV	CCV		1.0000
51		2021-12-29 18:22:19	051_CCB.d	CCB	CCB		1.0000
52		2021-12-29 18:28:30	052SMPL.d	B21121981-001A	Sample		1.0000
53		2021-12-29 18:34:38	053ARef.d	B21121981-001ADIL	AllRef		5.0000
54		2021-12-29 18:40:47	054MS.d	B21121981-001AMS	MS		1.0300
55		2021-12-29 18:46:50	055MSD.d	B21121981-001AMSD	MSD		1.0300
56		2021-12-29 18:52:53	056BLKV.d	Rinse	BlkVrfy		1.0000
57		2021-12-29 18:59:04	057SMPL.d	B21121981-001B	Sample		1.0000

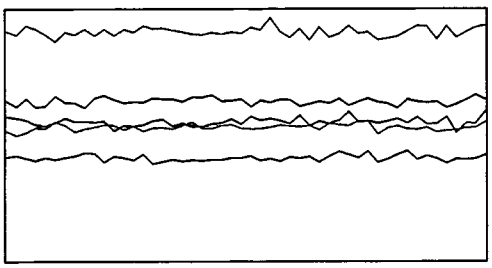
	Rjct	Acq. Date-Time	Data File	Sample Name	Type	Level	Dilution
58		2021-12-29 19:05:11	058SMPL.d	B21121981-001BDIL	Sample		5.0000
59		2021-12-29 19:11:18	059ARef.d	B21121981-001BPDS1	AllRef		1.0300
60		2021-12-29 19:17:21	060MS4.d	B21121981-001BMS4	MS4		1.0000
61		2021-12-29 19:23:17	061MSD4.d	B21121981-001BMSD4	MSD4		1.0000
62		2021-12-29 19:29:12	062BLKV.d	Rinse	BlkVrfy		1.0000
63		2021-12-29 19:35:22	063SMPL.d	B21121981-003A	Sample		1.0000
64		2021-12-29 19:41:31	064_CCV.d	CCV	CCV		1.0000
65		2021-12-29 19:47:36	065_CCB.d	CCB	CCB		1.0000
66		2021-12-29 19:53:47	066SMPL.d	B21121981-003B	Sample		1.0000
67		2021-12-29 19:59:55	067SMPL.d	B21121981-004A	Sample		1.0000
68		2021-12-29 20:06:04	068SMPL.d	B21121981-004B	Sample		1.0000
69	On	2021-12-29 20:12:13	069SMPL.d	No Sample	Sample		1.0000
70		2021-12-29 20:18:22	070BLKV.d	Rinse	BlkVrfy		1.0000
71		2021-12-29 20:24:32	071_CCV.d	CCV	CCV		1.0000
72		2021-12-29 20:30:37	072_CCB.d	CCB	CCB		1.0000

Tune Report

Operator Name	elim
Acq/Data Batch	D:\Agilent\ICPMH\1\DATA\211227B.b
Acq. Date-Time	2021-12-27 10 12 29
Report Comment	ICPMS207-B JPV
Instrument Name	G8403A JP17281923

[No Gas]

Sensitivity



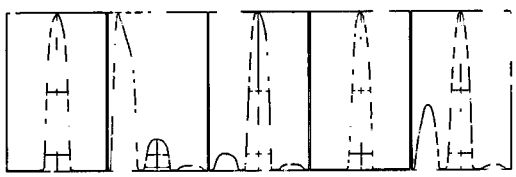
Mass	Range	Count	RSD%	Background
9	200000	110534	2.980	5.100
24	50000	45728	2.057	2.700
59	100000	63543	2.158	1.500
115	100000	52977	2.374	3.000
208	50000	20337	3.019	5.900

Sampling Period [sec]	0.514
Integration Time [sec]	0 1

Oxide/Doubly Charged Ratio

Oxide	156 / 140 1.172 %
Doubly Charged	70 / 140 1.813 %

Resolution/Axis



Mass	Peak Height	Axis	W-50%	W-10%
9	113136.39	9.05	0.63	0.769
24	46214.12	24.00	0.66	0.770
59	63229.66	59.00	0.61	0.758
115	52817.54	115.05	0.55	0.706
208	20115.67	208.00	0.55	0.717

Integration Time [sec]	0.1
Acquisition Time [sec]	37.4
Y Axis	Linear

Tune Parameters

Plasma Parameters

Plasma Mode	—	Nebulizer Gas	0.80 L/min	Dilution Gas	0.12 L/min
RF Power	1600 W	Option Gas	—	Auxiliary Gas	0.90 L/min
RF Matching	1.00 V	Nebulizer Pump	0 10 rps	Plasma Gas	15.0 L/min
Sample Depth	8.0 mm	S/C Temp	2 °C		

Lens Parameters

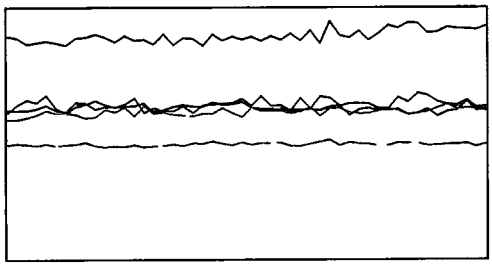
Extract 1	0.0 V	Omega Lens	11 1 V	Deflect	14 8 V
Extract 2	-250.0 V	Cell Entrance	-30 V	Plate Bias	-35 V

Tune Report

Omega Bias	-85 V	Cell Exit	-50 V		
Cell Parameters					
Use Gas	No	3rd Gas Flow	—	Energy Discrimination	5.0 V
He Flow	0 0 mL/min	OctP Bias	-8.0 V		
H2 Flow	0.0 mL/min	OctP RF	200 V		
QP Parameters					
Mass Gain	126	Axis Gain	0 9988	QP Bias	-3.0 V
Mass Offset	126	Axis Offset	0 14		
Hardware Settings					
Torch					
Torch H	-0.8 mm	Torch V	0.2 mm		
EM					
Discriminator	5.1 mV	Analog HV	2264 V	Pulse HV	1583 V

[H2]

Sensitivity



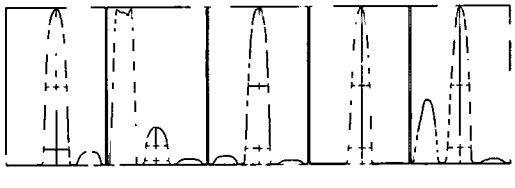
Mass	Range	Count	RSD%	Background
9	50000	30971	3 249	0 300
24	50000	22921	1.362	0.900
59	50000	30154	2 235	0 100
115	100000	58758	2 424	0.400
208	20000	17838	2.848	0 300

Sampling Period [sec] 0.514
Integration Time [sec] 0.1

Oxide/Doubly Charged Ratio

Oxide —
Doubly Charged 70 / 140 1.540 %

Resolution/Axis



Mass	Peak Height	Axis	W-50%	W-10%
9	32166.96	9.05	0 63	0 761
24	23437 92	24 00	0 64	0 740
59	30284.17	59.05	0.61	0.754
115	60478 09	115 10	0 54	0.699
208	18558.47	208.00	0 55	0.716

Integration Time [sec] 0.1
Acquisition Time [sec] 37.4
Y Axis Linear

Tune Parameters

Plasma Parameters

Tune Report

Plasma Mode	—	Nebulizer Gas	0 80 L/min	Dilution Gas	0.12 L/min
RF Power	1600 W	Option Gas	---	Auxiliary Gas	0.90 L/min
RF Matching	1.00 V	Nebulizer Pump	0 10 rps	Plasma Gas	15.0 L/min
Sample Depth	8.0 mm	S/C Temp	2 °C		

Lens Parameters

Extract 1	0.0 V	Omega Lens	10 6 V	Deflect	3.4 V
Extract 2	-235.0 V	Cell Entrance	-30 V	Plate Bias	-80 V
Omega Bias	-115 V	Cell Exit	-50 V		

Cell Parameters

Use Gas	Yes	3rd Gas Flow	—	Energy Discrimination	5.0 V
He Flow	0.0 mL/min	OctP Bias	-18.0 V		
H2 Flow	3.8 mL/min	OctP RF	200 V		

QP Parameters

Mass Gain	126	Axis Gain	0 9988	QP Bias	-13.0 V
Mass Offset	126	Axis Offset	0.14		

Hardware Settings

Torch

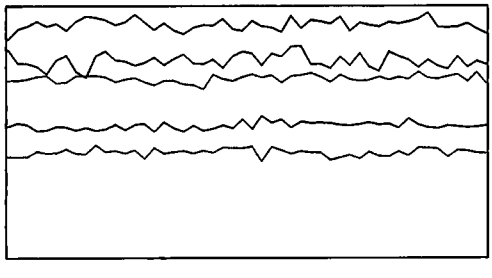
Torch H	-0 8 mm	Torch V	0.2 mm		

EM

Discriminator	5.1 mV	Analog HV	2264 V	Pulse HV	1583 V

[He]

Sensitivity



Mass	Range	Count	RSD%	Background
9	2000	1572	3.552	4 100
24	5000	2093	3.567	1 400
59	20000	18618	2.321	0.400
115	20000	14280	2.032	1 200
208	20000	10539	2.666	2 100

Sampling Period [sec] 0.514

Integration Time [sec] 0.1

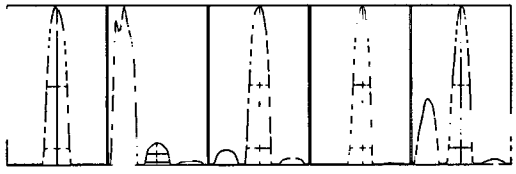
Oxide/Doubly Charged Ratio

Oxide —

Doubly Charged 70 / 140 1 225 %

Resolution/Axis

Tune Report



Mass	Peak Height	Axis	W-50%	W-10%
9	1605.90	9.05	0.61	0.769
24	2178.14	24.00	0.63	0.734
59	18568.12	59.05	0.60	0.747
115	14887.86	115.10	0.52	0.682
208	10749.34	208.00	0.53	0.702

Integration Time [sec]	0.1
Acquisition Time [sec]	37.4
Y Axis	Linear

Tune Parameters

Plasma Parameters

Plasma Mode	---	Nebulizer Gas	0.80 L/min	Dilution Gas	0.12 L/min
RF Power	1600 W	Option Gas	---	Auxiliary Gas	0.90 L/min
RF Matching	1.00 V	Nebulizer Pump	0.10 rps	Plasma Gas	15.0 L/min
Sample Depth	8.0 mm	S/C Temp	2 °C		

Lens Parameters

Extract 1	0.0 V	Omega Lens	12.4 V	Deflect	1.0 V
Extract 2	-240.0 V	Cell Entrance	-30 V	Plate Bias	-80 V
Omega Bias	-105 V	Cell Exit	-50 V		

Cell Parameters

Use Gas	Yes	3rd Gas Flow	---	Energy Discrimination	5.0 V
He Flow	4.0 mL/min	OctP Bias	-18.0 V		
H2 Flow	0.0 mL/min	OctP RF	200 V		

QP Parameters

Mass Gain	126	Axis Gain	0.9988	QP Bias	-13.0 V
Mass Offset	126	Axis Offset	0.14		

Hardware Settings

Torch

Torch H	-0.8 mm	Torch V	0.2 mm

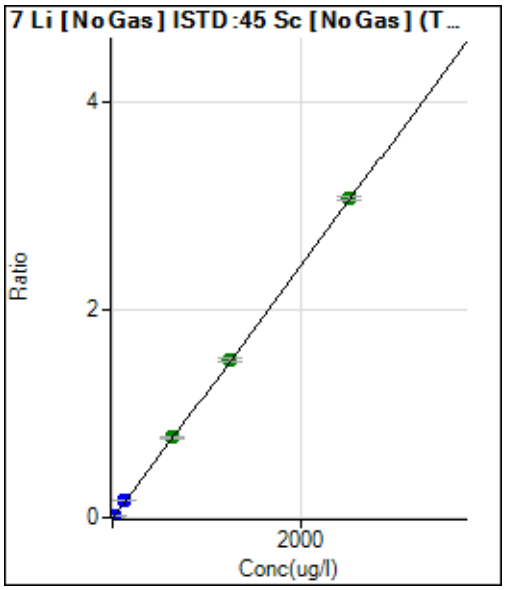
EM

Discriminator	5.1 mV	Analog HV	2264 V	Pulse HV	1583 V

Calibration for 029_QC1.d

Batch Folder: D:\Agilent\ICPMH\1\DATA\211229DoD.b\
Analysis File: 211229DoD.batch.bin
DA Date-Time: 2021-12-29 16:10:12
Calibration Title:
Calibration Method: External Calibration
VIS Interpolation Fit:

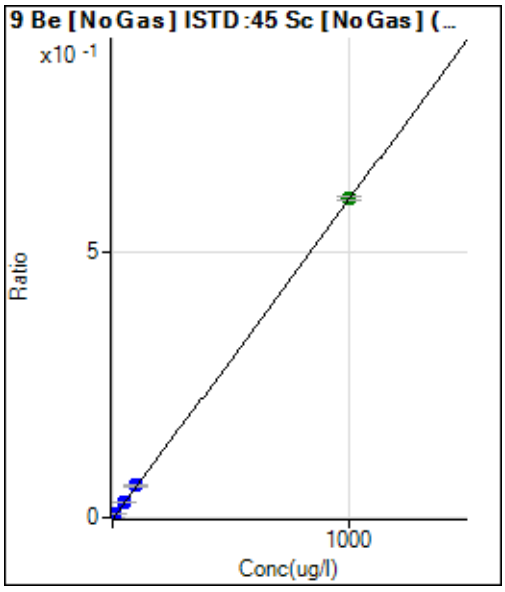
Level	Standard Data File	Sample Name	Acq. Date-Time
1	018CALB.d	Cal Blk	2021-12-29 14:58:43
2	019CALS.d	0.025 ppb STD	2021-12-29 15:05:04
3	020CALS.d	0.05 ppb STD	2021-12-29 15:11:24
4	021CALS.d	0.10 ppb STD	2021-12-29 15:17:46
5	022CALS.d	0.5 ppb STD	2021-12-29 15:24:06
6	023CALS.d	1 ppb STD	2021-12-29 15:30:26
7	024CALS.d	10 ppb STD	2021-12-29 15:36:47
8	025CALS.d	50 ppb STD	2021-12-29 15:43:05
9	026CALS.d	100 ppb STD	2021-12-29 15:49:19
10	027CALS.d	1000 ppb STD	2021-12-29 15:55:26
11	028CALS.d	100 ppb Br STD	2021-12-29 16:01:04



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	8952.22	0.0026	P	3.5	
2	☐	0.313	0.418	10341.67	0.0031	P	7.0	33.9
3	☐	0.625	0.741	11935.48	0.0035	P	2.8	18.5
4	☐	1.250	1.615	15747.80	0.0046	P	2.4	29.2
5	☐	6.250	6.946	38710.60	0.0111	P	2.8	11.1
6	☐	12.500	15.391	74132.06	0.0215	P	1.6	23.1
7	☐	125.000	139.778	606872.29	0.1741	P	1.8	11.8
8	☐	625.000	625.612	2660080.85	0.7704	A	0.4	0.1
9	☐	1250.000	1234.659	5173001.33	1.5178	A	2.3	-1.2
10	☐	2500.000	2506.762	10465738.39	3.0790	A	1.2	0.3
11	☐			24657.82	0.0072	P	3.1	

y = 0.0012 * x + 0.0026
R = 1.0000
DL = 0.2248 ug/l
BEC = 2.124 ug/l

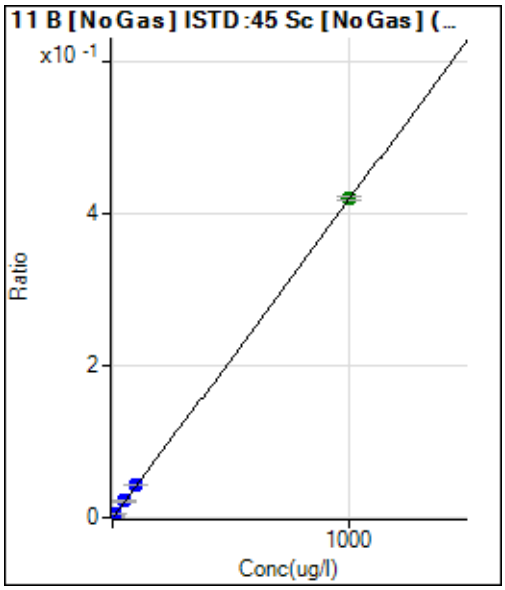
Weight: 1/y
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	260.95	0.0001	P	4.8	
2	☐	0.025	-0.006	240.95	0.0001	P	3.8	-122.5
3	☐	0.050	0.006	269.62	0.0001	P	4.9	-88.5
4	☐	0.100	0.058	381.26	0.0001	P	4.3	-41.6
5	☐	0.500	0.463	1232.47	0.0004	P	4.3	-7.5
6	☐	1.000	1.075	2493.71	0.0007	P	1.6	7.5
7	☐	10.000	10.620	22538.51	0.0065	P	1.1	6.2
8	☐	50.000	49.488	103096.38	0.0299	P	2.2	-1.0
9	☐	100.000	100.363	206104.88	0.0605	P	2.6	0.4
10	☐	1000.000	999.983	2045909.09	0.6019	A	1.3	0.0
11	☐			1909.41	0.0006	P	8.1	

y = 6.0183E-004 * x + 7.5977E-005
R = 1.0000
DL = 0.0181 ug/l
BEC = 0.1262 ug/l

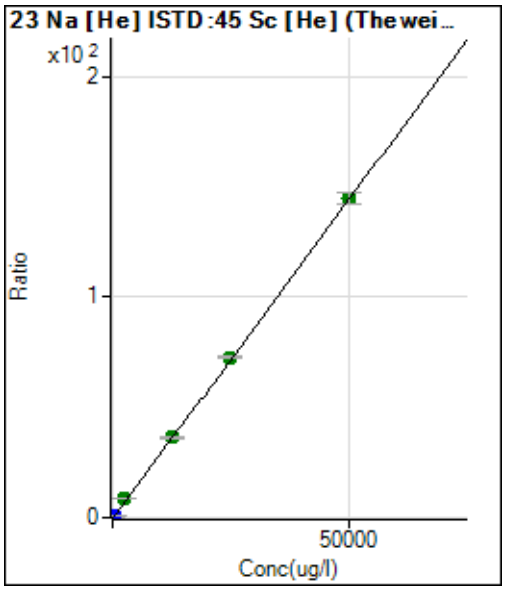
Weight: 1/y
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	4385.74	0.0013	P	2.9	
2	☐			4299.01	0.0013	P	7.6	
3	☐	0.050	-0.163	4098.87	0.0012	P	7.7	-426.1
4	☐	0.100	-0.232	4049.51	0.0012	P	2.4	-331.7
5	☐	0.500	-0.026	4403.75	0.0013	P	2.5	-105.3
6	☐	1.000	0.528	5166.96	0.0015	P	2.1	-47.2
7	☐	10.000	9.878	18878.64	0.0054	P	0.6	-1.2
8	☐	50.000	48.352	74391.28	0.0215	P	2.0	-3.3
9	☐	100.000	98.412	144927.69	0.0425	P	2.8	-1.6
10	☐	1000.000	1000.243	1429822.05	0.4206	A	1.4	0.0
11	☐			15632.30	0.0046	P	2.6	

y = 4.1917E-004 * x + 0.0013
R = 1.0000
DL = 0.2684 ug/l
BEC = 3.047 ug/l

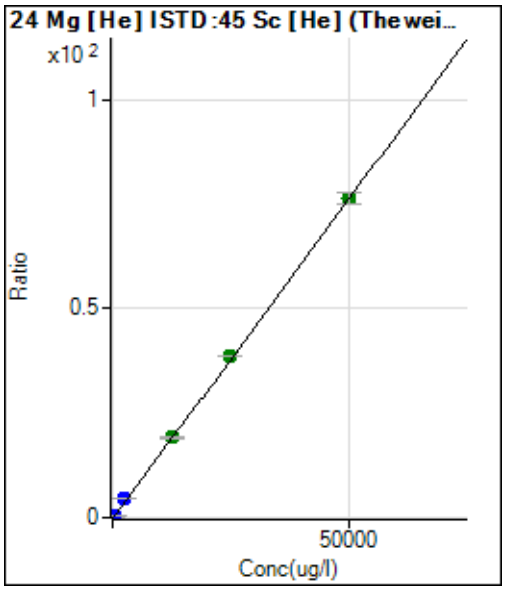
Weight: 1/y
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	42699.20	0.2039	P	2.7	
2	☐	6.250	8.513	47773.25	0.2285	P	1.7	36.2
3	☐	12.500	15.223	51815.44	0.2479	P	1.1	21.8
4	☐	25.000	35.261	63567.95	0.3059	P	1.2	41.0
5	☐	125.000	147.125	131332.04	0.6294	P	1.3	17.7
6	☐	250.000	315.727	236846.43	1.1170	P	2.1	26.3
7	☐	2500.000	2889.299	1827987.24	8.5601	A	1.8	15.6
8	☐	12500.00	12474.75	7730863.50	36.2825	A	2.2	-0.2
9	☐	25000.00	25027.47	15516168.80	72.5865	A	0.8	0.1
10	☐	50000.00	49972.72	30533695.94	144.731	A	3.0	-0.1
11	☐			48366.27	0.2417	P	1.7	

y = 0.0029 * x + 0.2039
R = 1.0000
DL = 5.782 ug/l
BEC = 70.49 ug/l

Weight: 1/y
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	15497.30	0.0740	P	1.5	
2	☐	6.250	4.388	16872.72	0.0807	P	0.7	-29.8
3	☐	12.500	6.383	17505.44	0.0838	P	2.6	-48.9
4	☐	25.000	23.634	22902.03	0.1102	P	2.2	-5.5
5	☐	125.000	139.895	60160.50	0.2883	P	1.6	11.9
6	☐	250.000	316.269	118419.33	0.5585	P	2.4	26.5
7	☐	2500.000	2989.542	993592.79	4.6535	P	0.7	19.6
8	☐	12500.00	12462.34	4083571.09	19.1646	A	1.2	-0.3
9	☐	25000.00	25198.30	8267336.27	38.6743	A	0.4	0.8
10	☐	50000.00	49885.41	16135684.78	76.4916	A	3.9	-0.2
11	☐			6505.20	0.0326	P	9.2	

y = 0.0015 * x + 0.0740

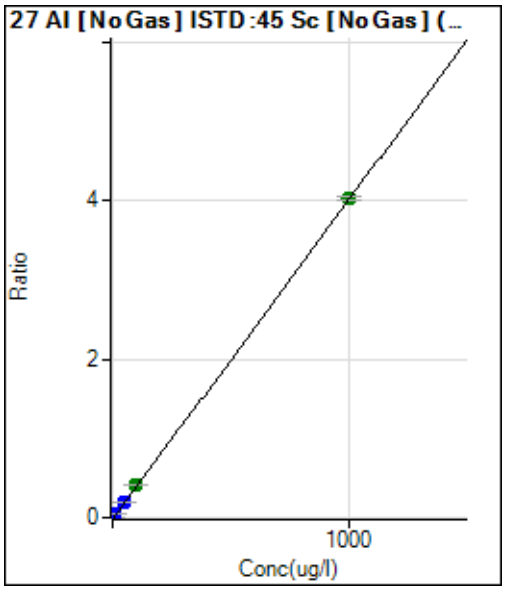
R = 0.9999

DL = 2.228 ug/l

BEC = 48.29 ug/l

Weight: 1/y

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	2082.44	0.0006	P	12.4	
2	☐			3261.48	0.0010	P	7.4	
3	☐	0.050	0.442	8124.94	0.0024	P	6.5	784.8
4	☐	0.100	0.194	4769.67	0.0014	P	3.0	94.0
5	☐	0.500	0.628	10930.52	0.0031	P	4.5	25.6
6	☐	1.000	1.296	20133.56	0.0058	P	1.0	29.6
7	☐	10.000	11.009	156917.13	0.0450	P	0.0	10.1
8	☐	50.000	49.687	694370.01	0.2011	P	2.8	-0.6
9	☐	100.000	102.660	1414023.54	0.4149	A	3.9	2.7
10	☐	1000.000	999.739	13715299.52	4.0349	A	0.7	0.0
11	☐			5574.39	0.0016	P	1.9	

y = 0.0040 * x + 6.0704E-004

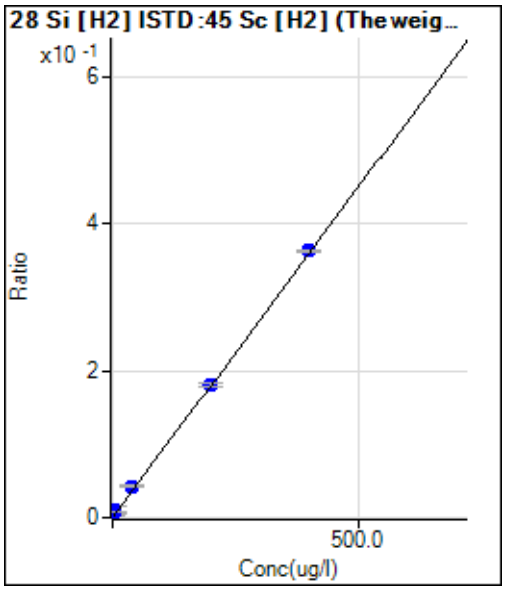
R = 1.0000

DL = 0.05598 ug/l

BEC = 0.1504 ug/l

Weight: 1/y

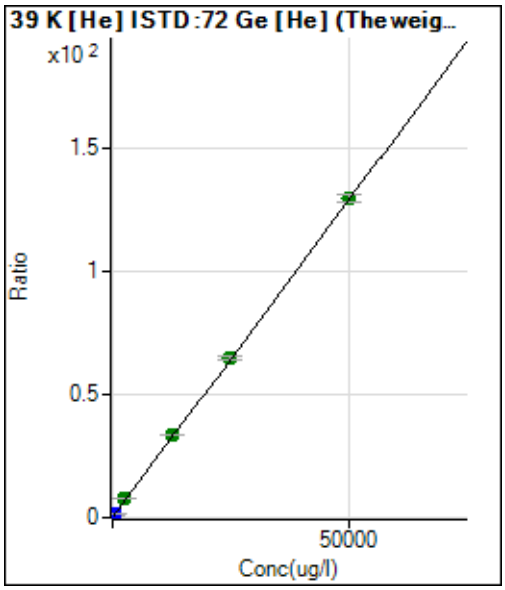
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	4671.28	0.0026	P	1.9	
2	☐			45908.57	0.0246	P	152.4	
3	☐	0.200	0.680	5726.74	0.0032	P	0.9	240.2
4	☐	0.400	1.116	6497.36	0.0036	P	2.5	179.1
5	☐	2.000	9.139	19911.56	0.0108	P	95.9	356.9
6	☐	4.000	5.307	13253.19	0.0073	P	2.0	32.7
7	☐	40.000	44.431	76090.48	0.0426	P	3.0	11.1
8	☐	200.000	198.328	328003.23	0.1813	P	2.1	-0.8
9	☐	400.000	400.343	650054.37	0.3635	P	0.5	0.1
10	☐			7625.01	0.0045	P	4.1	
11	☐			6251.82	0.0035	P	1.6	

y = 9.0150E-004 * x + 0.0026
R = 0.9998
DL = 0.1621 ug/l
BEC = 2.829 ug/l

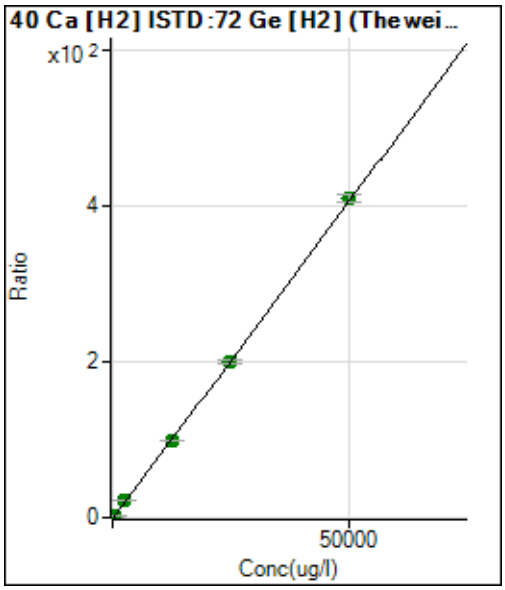
Weight: 1/y
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	120520.99	0.8020	P	3.8	
2	☐	6.250	11.562	124285.83	0.8318	P	1.2	85.0
3	☐	12.500	15.400	126925.47	0.8417	P	1.9	23.2
4	☐	25.000	34.590	133723.44	0.8912	P	1.4	38.4
5	☐	125.000	150.060	178111.26	1.1889	P	1.3	20.0
6	☐	250.000	318.534	245350.32	1.6233	P	1.8	27.4
7	☐	2500.000	2857.465	1260959.45	8.1701	A	0.9	14.3
8	☐	12500.00	12661.62	5100656.00	33.4507	A	0.6	1.3
9	☐	25000.00	24837.03	10015569.37	64.8456	A	2.0	-0.7
10	☐	50000.00	50022.79	19666641.37	129.788	A	2.3	0.0
11	☐			122618.67	0.8379	P	3.8	

y = 0.0026 * x + 0.8020
R = 1.0000
DL = 35.47 ug/l
BEC = 311 ug/l

Weight: 1/y
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	194614.27	0.2650	P	1.3	
2	☐	6.250	13.594	271119.33	0.3760	P	13.8	117.5
3	☐	12.500	16.375	287621.20	0.3986	P	2.2	31.0
4	☐	25.000	35.827	402474.83	0.5573	P	1.6	43.3
5	☐	125.000	141.642	1055917.29	1.4207	P	3.2	13.3
6	☐	250.000	317.856	2089352.22	2.8583	A	1.2	27.1
7	☐	2500.000	2818.900	17181803.07	23.2635	A	1.4	12.8
8	☐	12500.00	12131.40	75099254.94	99.2413	A	0.4	-2.9
9	☐	25000.00	24535.94	147592390.5	200.446	A	2.1	-1.9
10	☐	50000.00	50307.84	290956356.1	410.710	A	2.7	0.6
11	☐			218328.01	0.3061	P	0.7	

y = 0.0082 * x + 0.2650

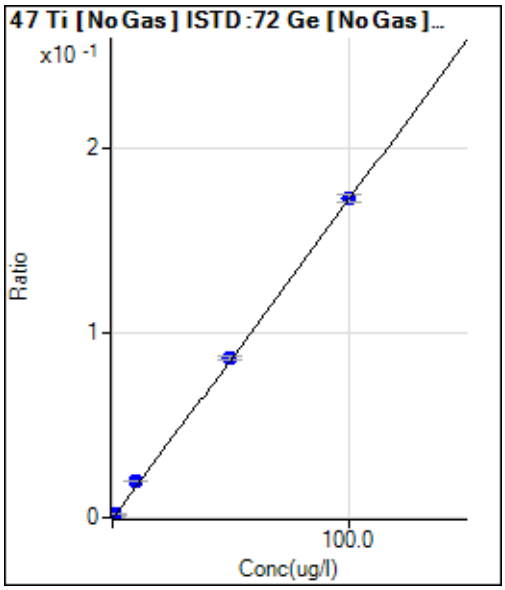
R = 0.9999

DL = 1.24 ug/l

BEC = 32.49 ug/l

Weight: 1/y

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	243.58	0.0002	P	5.2	
2	☐	0.025	0.060	337.01	0.0003	P	9.9	139.0
3	☐	0.050	0.105	425.44	0.0004	P	15.6	109.7
4	☐	0.100	0.175	570.59	0.0005	P	18.0	75.4
5	☐	0.500	0.585	1323.06	0.0012	P	7.3	17.0
6	☐	1.000	1.228	2537.78	0.0024	P	3.9	22.8
7	☐	10.000	11.535	21402.01	0.0202	P	0.9	15.3
8	☐	50.000	49.844	93921.04	0.0863	P	2.9	-0.3
9	☐	100.000	99.921	190123.68	0.1729	P	2.4	-0.1
10	☐			12290.93	0.0117	P	1.5	
11	☐			583.94	0.0005	P	13.9	

y = 0.0017 * x + 2.2948E-004

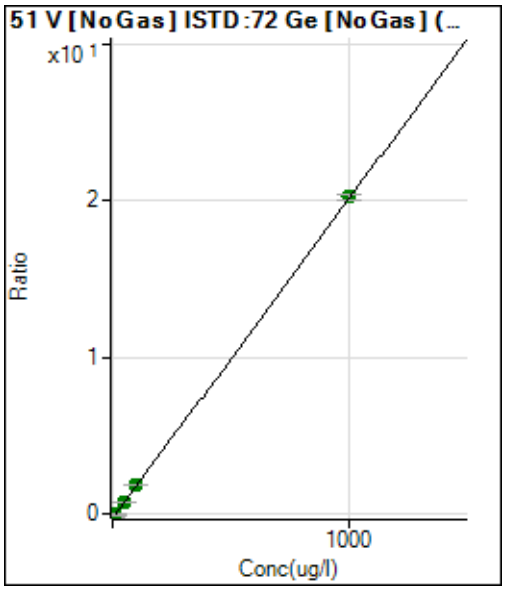
R = 0.9999

DL = 0.02081 ug/l

BEC = 0.1328 ug/l

Weight: 1/y

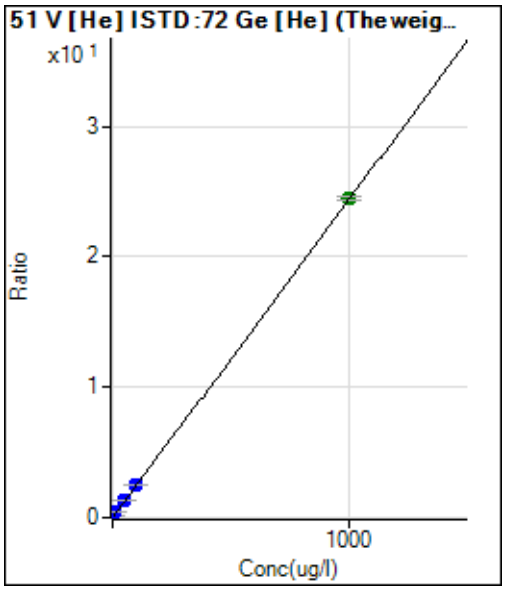
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	-127206.26	-0.1200	A	-11.7	
2	☐	0.025	-1.192	-145164.91	-0.1442	A	-17.7	-4868.
3	☐	0.050	-3.299	-194494.98	-0.1871	A	-10.3	-6697.
4	☐	0.100	-0.630	-142562.83	-0.1328	A	-33.2	-729.6
5	☐	0.500	0.792	-110834.38	-0.1038	A	-27.3	58.5
6	☐	1.000	-0.510	-140359.30	-0.1303	A	-35.2	-151.0
7	☐	10.000	5.948	1329.34	0.0011	A	1890.	-40.5
8	☐	50.000	46.423	898505.25	0.8248	A	7.1	-7.2
9	☐	100.000	99.381	2092725.30	1.9026	A	2.7	-0.6
10	☐	1000.000	1000.283	21306895.78	20.2371	A	2.3	0.0
11	☐			-155867.91	-0.1462	A	-22.8	

y = 0.0204 * x - 0.1200
R = 1.0000
DL = 2.065 ug/l
BEC = -5.894 ug/l

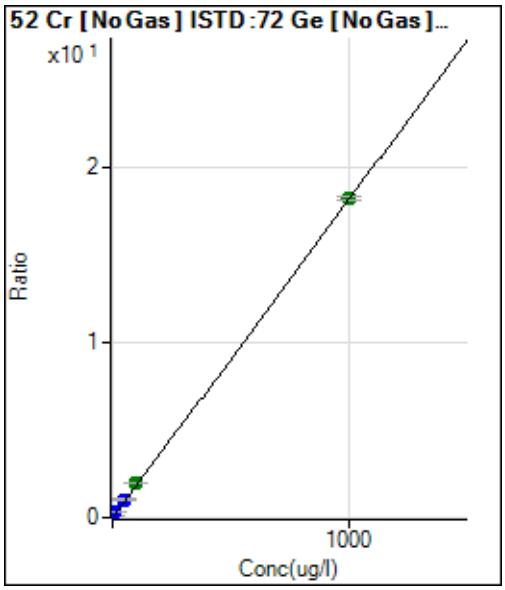
Weight: 1/y
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	18716.37	0.1245	P	2.3	
2	☐	0.025	0.275	19605.32	0.1312	P	0.8	998.7
3	☐	0.050	0.407	20272.86	0.1344	P	0.9	713.2
4	☐	0.100	0.447	20318.50	0.1354	P	2.2	347.0
5	☐	0.500	0.889	21897.39	0.1462	P	1.2	77.8
6	☐	1.000	1.515	24394.62	0.1614	P	1.9	51.5
7	☐	10.000	11.012	60605.01	0.3927	P	0.3	10.1
8	☐	50.000	49.409	202441.68	1.3278	P	1.2	-1.2
9	☐	100.000	99.516	393558.68	2.5480	P	1.8	-0.5
10	☐	1000.000	1000.067	3709941.30	24.4790	A	0.7	0.0
11	☐			17546.05	0.1199	P	4.2	

y = 0.0244 * x + 0.1245
R = 1.0000
DL = 0.3507 ug/l
BEC = 5.113 ug/l

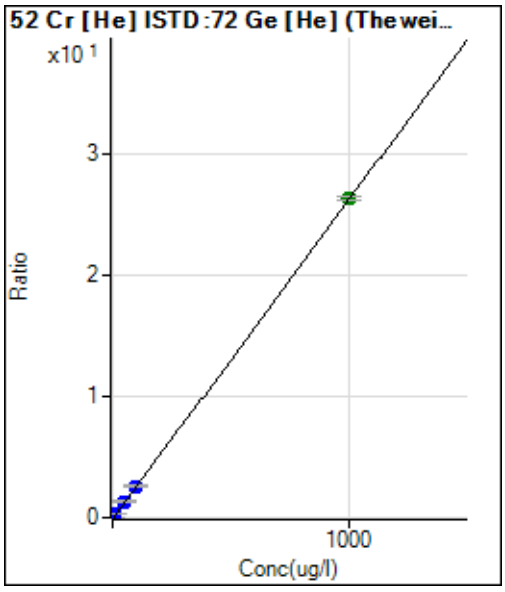
Weight: 1/y
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	80502.81	0.0759	P	0.9	
2	☐	0.025	0.428	84603.72	0.0836	P	4.4	1612.2
3	☐	0.050	0.516	88318.04	0.0852	P	3.8	932.4
4	☐	0.100	0.365	88455.93	0.0825	P	2.1	265.2
5	☐	0.500	0.827	96948.08	0.0909	P	1.8	65.3
6	☐	1.000	1.605	113298.13	0.1050	P	0.4	60.5
7	☐	10.000	12.299	317436.23	0.2990	P	1.1	23.0
8	☐	50.000	53.166	1131882.93	1.0402	P	1.5	6.3
9	☐	100.000	102.996	2138184.18	1.9440	A	1.0	3.0
10	☐	1000.000	999.518	19168271.45	18.2050	A	1.4	0.0
11	☐			91692.59	0.0858	P	2.4	

y = 0.0181 * x + 0.0759
R = 1.0000
DL = 0.109 ug/l
BEC = 4.183 ug/l

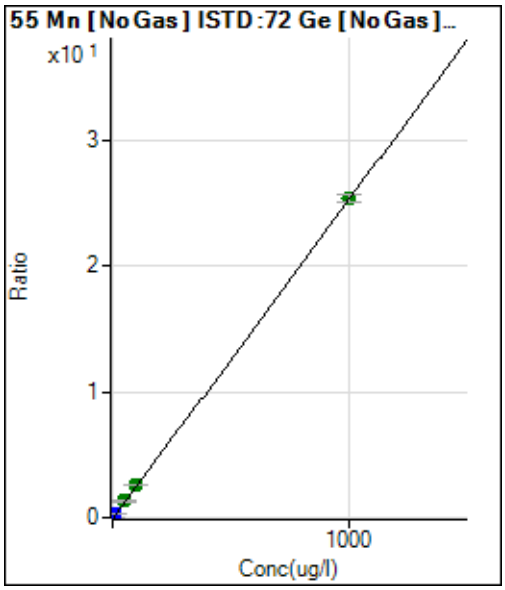
Weight: 1/y
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	1113.38	0.0074	P	3.3	
2	☐	0.025	0.041	1266.73	0.0085	P	5.4	63.2
3	☐	0.050	0.065	1376.74	0.0091	P	3.4	31.0
4	☐	0.100	0.137	1652.32	0.0110	P	2.0	37.2
5	☐	0.500	0.573	3363.74	0.0225	P	1.9	14.5
6	☐	1.000	1.221	5969.02	0.0395	P	1.3	22.1
7	☐	10.000	10.868	45211.54	0.2929	P	2.0	8.7
8	☐	50.000	50.421	203068.99	1.3321	P	2.5	0.8
9	☐	100.000	98.902	402492.91	2.6058	P	0.7	-1.1
10	☐	1000.000	1000.080	3982714.91	26.2816	A	1.5	0.0
11	☐			1508.98	0.0103	P	1.1	

y = 0.0263 * x + 0.0074
R = 1.0000
DL = 0.02793 ug/l
BEC = 0.2819 ug/l

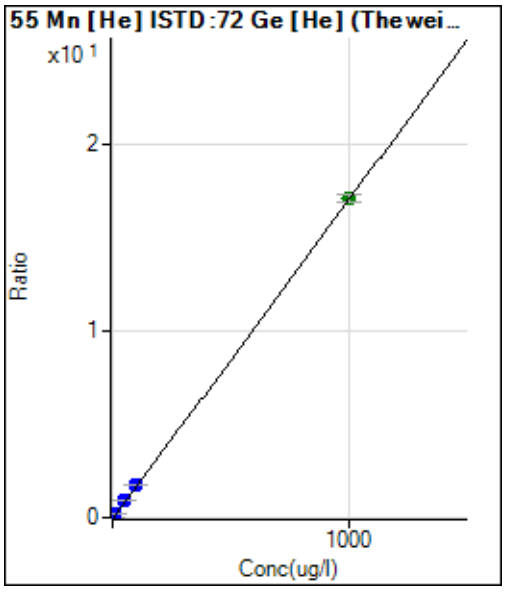
Weight: 1/y
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	18418.32	0.0174	P	3.7	
2	☐	0.025	0.096	20034.06	0.0198	P	4.5	284.6
3	☐	0.050	0.121	21163.27	0.0204	P	5.1	141.7
4	☐	0.100	0.130	22166.13	0.0207	P	1.6	30.4
5	☐	0.500	0.603	34862.01	0.0327	P	1.7	20.6
6	☐	1.000	1.263	53323.95	0.0494	P	2.2	26.3
7	☐	10.000	11.920	339729.31	0.3200	P	1.4	19.2
8	☐	50.000	50.916	1424897.61	1.3100	A	3.1	1.8
9	☐	100.000	100.946	2837783.85	2.5801	A	1.9	0.9
10	☐	1000.000	999.840	26742431.04	25.4005	A	2.4	0.0
11	☐			25031.61	0.0234	P	1.9	

y = 0.0254 * x + 0.0174
R = 1.0000
DL = 0.07491 ug/l
BEC = 0.6839 ug/l

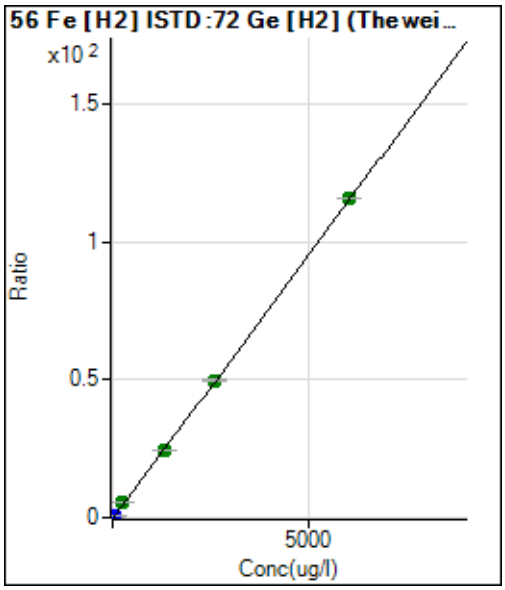
Weight: 1/y
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	488.24	0.0032	P	2.3	
2	☐	0.025	0.018	531.57	0.0036	P	5.4	-27.4
3	☐	0.050	0.053	625.56	0.0041	P	6.0	5.1
4	☐	0.100	0.124	805.86	0.0054	P	0.4	24.2
5	☐	0.500	0.589	1993.41	0.0133	P	3.1	17.7
6	☐	1.000	1.216	3633.06	0.0240	P	0.4	21.6
7	☐	10.000	11.124	29839.13	0.1934	P	1.3	11.2
8	☐	50.000	51.342	134287.03	0.8807	P	1.0	2.7
9	☐	100.000	100.862	266746.19	1.7270	P	0.7	0.9
10	☐	1000.000	999.835	2589771.65	17.0905	A	2.0	0.0
11	☐			678.55	0.0046	P	3.1	

y = 0.0171 * x + 0.0032
R = 1.0000
DL = 0.01296 ug/l
BEC = 0.1901 ug/l

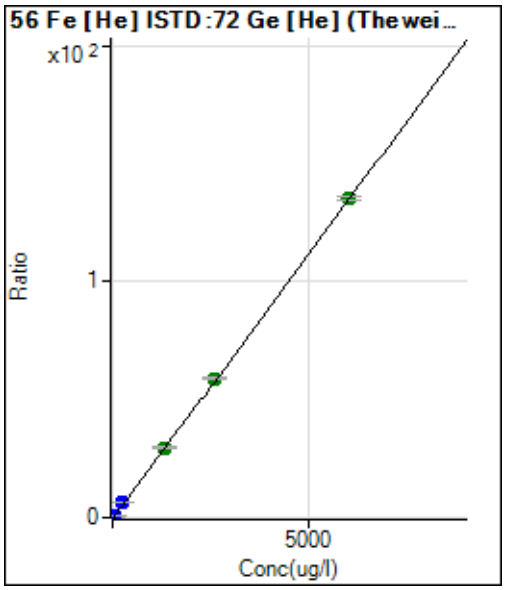
Weight: 1/y
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	26329.98	0.0359	P	0.7	
2	☐	0.650	0.623	34478.23	0.0478	P	3.9	-4.1
3	☐	1.300	1.264	43410.69	0.0602	P	1.7	-2.8
4	☐	2.600	3.273	71348.59	0.0988	P	1.6	25.9
5	☐	13.000	14.221	229940.92	0.3094	P	2.8	9.4
6	☐	26.000	32.790	487139.06	0.6666	P	2.3	26.1
7	☐	260.000	293.102	4191351.52	5.6743	A	0.8	12.7
8	☐	1300.000	1268.572	18488844.65	24.4397	A	1.4	-2.4
9	☐	2600.000	2583.389	36618650.70	49.7331	A	2.1	-0.6
10	☐	6000.000	6012.541	81975387.50	115.700	A	0.5	0.2
11	☐			26164.51	0.0367	P	2.2	

y = 0.0192 * x + 0.0359
R = 1.0000
DL = 0.03989 ug/l
BEC = 1.864 ug/l

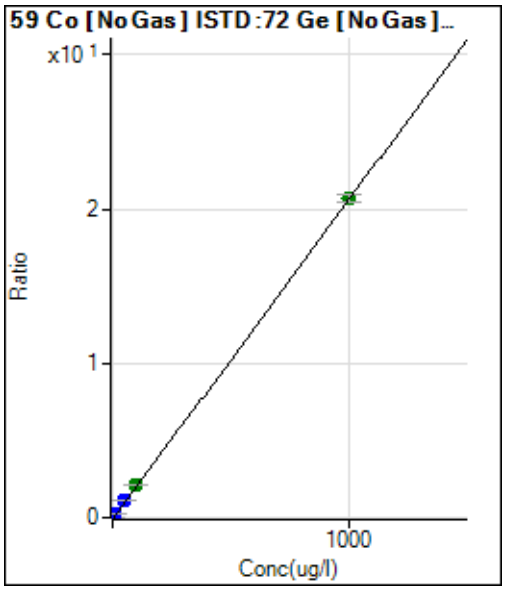
Weight: 1/y
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	9990.13	0.0665	P	2.9	
2	☐	0.650	0.650	12125.55	0.0812	P	2.2	0.1
3	☐	1.300	1.363	14665.42	0.0972	P	1.2	4.9
4	☐	2.600	3.189	20775.56	0.1385	P	1.0	22.7
5	☐	13.000	14.784	59943.49	0.4001	P	1.5	13.7
6	☐	26.000	31.972	119107.81	0.7881	P	1.8	23.0
7	☐	260.000	293.717	1033320.53	6.6956	P	0.7	13.0
8	☐	1300.000	1312.443	4527095.84	29.6879	A	0.9	1.0
9	☐	2600.000	2601.726	9080392.99	58.7866	A	1.3	0.1
10	☐	6000.000	5995.065	20514736.93	135.373	A	1.4	-0.1
11	☐			10120.36	0.0692	P	4.3	

y = 0.0226 * x + 0.0665
R = 1.0000
DL = 0.255 ug/l
BEC = 2.945 ug/l

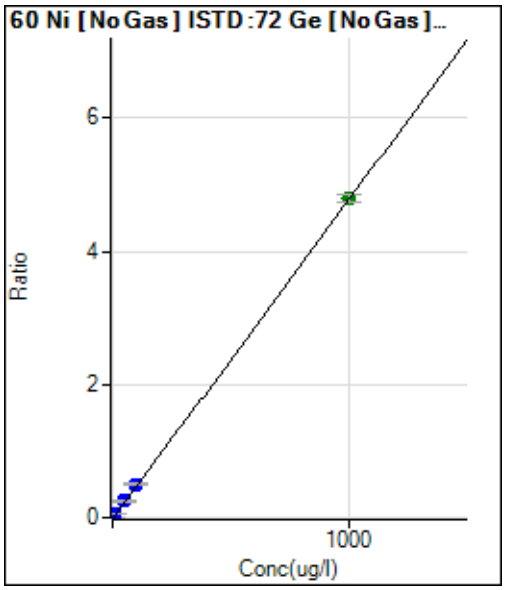
Weight: 1/y
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	1081.23	0.0010	P	15.3	
2	☐	0.025	0.029	1633.52	0.0016	P	14.2	15.5
3	☐	0.050	0.052	2169.20	0.0021	P	4.8	3.8
4	☐	0.100	0.136	4109.11	0.0038	P	8.1	35.9
5	☐	0.500	0.579	13875.71	0.0130	P	1.5	15.8
6	☐	1.000	1.287	29841.21	0.0277	P	2.3	28.7
7	☐	10.000	11.773	259855.18	0.2447	P	1.7	17.7
8	☐	50.000	52.704	1187416.16	1.0921	P	5.5	5.4
9	☐	100.000	100.612	2292183.11	2.0840	A	0.5	0.6
10	☐	1000.000	999.786	21792084.31	20.6993	A	1.9	0.0
11	☐			4548.38	0.0043	P	4.0	

y = 0.0207 * x + 0.0010
R = 1.0000
DL = 0.02259 ug/l
BEC = 0.04925 ug/l

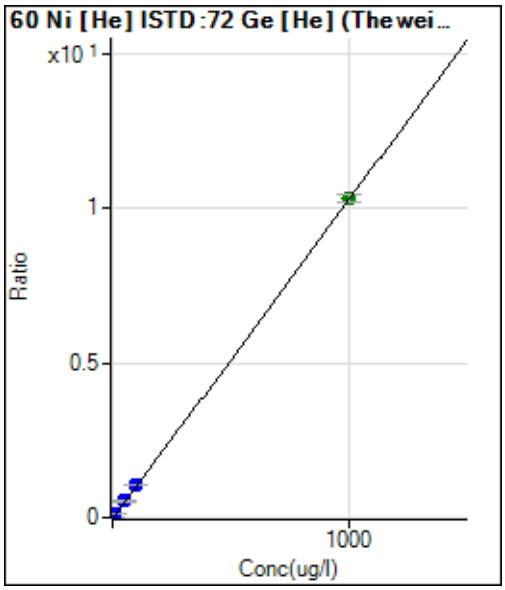
Weight: 1/y
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	3070.90	0.0029	P	2.3	
2	☐	0.025	-0.009	2874.59	0.0028	P	12.0	-137.0
3	☐	0.050	-0.172	2142.59	0.0021	P	9.1	-443.4
4	☐	0.100	-0.045	2874.59	0.0027	P	8.3	-144.6
5	☐	0.500	0.334	4794.62	0.0045	P	0.3	-33.3
6	☐	1.000	0.989	8239.37	0.0076	P	1.6	-1.1
7	☐	10.000	11.541	61817.72	0.0582	P	1.2	15.4
8	☐	50.000	51.228	270210.02	0.2485	P	5.3	2.5
9	☐	100.000	103.764	550336.18	0.5004	P	5.3	3.8
10	☐	1000.000	999.547	5049970.19	4.7953	A	2.5	0.0
11	☐			3300.50	0.0031	P	6.2	

y = 0.0048 * x + 0.0029
R = 1.0000
DL = 0.04109 ug/l
BEC = 0.6035 ug/l

Weight: 1/y
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	753.36	0.0050	P	4.2	
2	☐	0.025	-0.090	610.02	0.0041	P	8.0	-460.1
3	☐	0.050	-0.131	552.24	0.0037	P	3.4	-362.0
4	☐	0.100	-0.027	710.02	0.0047	P	4.6	-127.3
5	☐	0.500	0.394	1358.96	0.0091	P	2.7	-21.2
6	☐	1.000	1.081	2442.44	0.0162	P	1.9	8.1
7	☐	10.000	11.001	18279.25	0.1185	P	1.8	10.0
8	☐	50.000	50.864	80738.12	0.5295	P	0.5	1.7
9	☐	100.000	99.745	159639.89	1.0336	P	1.2	-0.3
10	☐	1000.000	999.972	1563194.46	10.3165	A	2.7	0.0
11	☐			681.13	0.0047	P	8.9	

y = 0.0103 * x + 0.0050

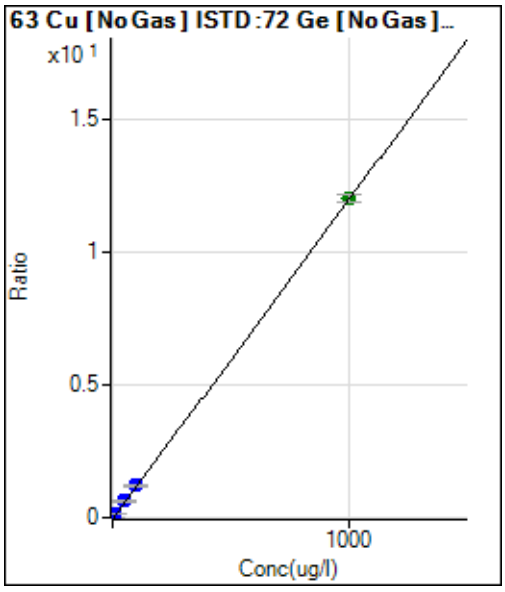
R = 1.0000

DL = 0.06074 ug/l

BEC = 0.486 ug/l

Weight: 1/y

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	1102.48	0.0010	P	5.0	
2	☐	0.025	0.038	1514.03	0.0015	P	2.9	51.5
3	☐	0.050	0.082	2095.00	0.0020	P	5.6	63.7
4	☐	0.100	0.134	2845.42	0.0027	P	1.6	34.3
5	☐	0.500	0.579	8539.26	0.0080	P	2.3	15.8
6	☐	1.000	1.288	17828.01	0.0165	P	3.2	28.8
7	☐	10.000	11.517	148146.14	0.1395	P	1.3	15.2
8	☐	50.000	51.150	670229.27	0.6162	P	3.0	2.3
9	☐	100.000	99.802	1321275.50	1.2012	P	2.3	-0.2
10	☐	1000.000	999.947	12660648.64	12.0262	A	2.8	0.0
11	☐			2489.22	0.0023	P	3.7	

y = 0.0120 * x + 0.0010

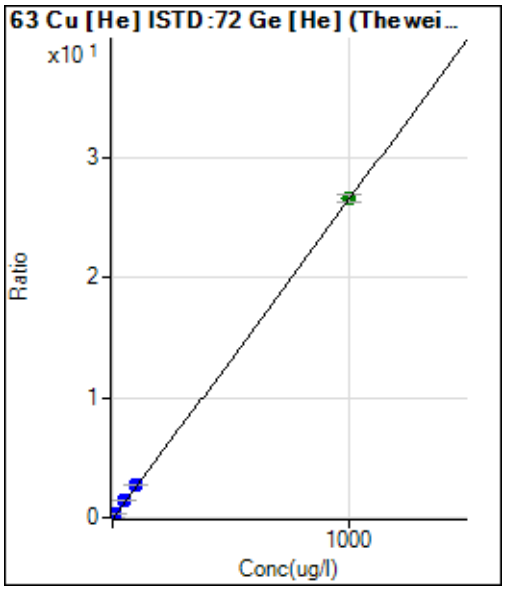
R = 1.0000

DL = 0.01297 ug/l

BEC = 0.08637 ug/l

Weight: 1/y

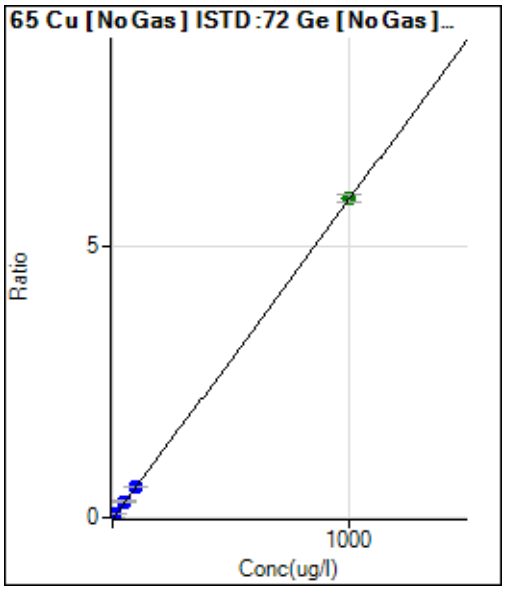
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	240.95	0.0016	P	4.3	
2	☐	0.025	0.039	394.26	0.0026	P	4.3	55.5
3	☐	0.050	0.091	608.23	0.0040	P	3.8	82.6
4	☐	0.100	0.152	846.86	0.0056	P	1.2	51.8
5	☐	0.500	0.604	2650.71	0.0177	P	1.0	20.9
6	☐	1.000	1.337	5622.96	0.0372	P	1.9	33.7
7	☐	10.000	11.688	48257.79	0.3127	P	1.8	16.9
8	☐	50.000	52.356	212736.55	1.3953	P	1.1	4.7
9	☐	100.000	102.795	422907.71	2.7380	P	0.2	2.8
10	☐	1000.000	999.585	4032322.69	26.6101	A	1.9	0.0
11	☐			607.89	0.0042	P	4.9	

y = 0.0266 * x + 0.0016
R = 1.0000
DL = 0.007727 ug/l
BEC = 0.06024 ug/l

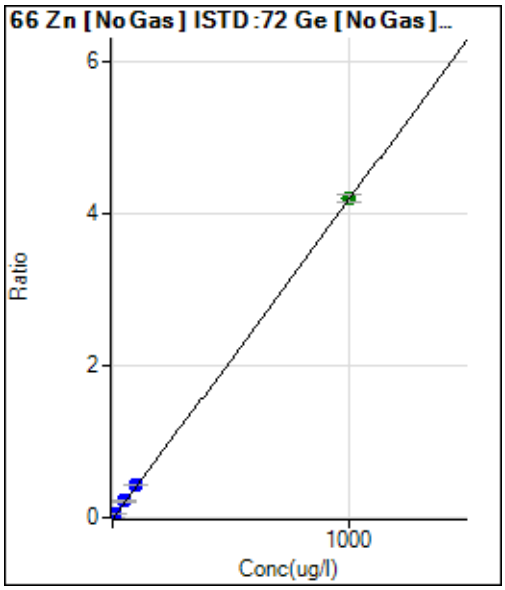
Weight: 1/y
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	614.26	0.0006	P	6.4	
2	☐	0.025	0.041	826.36	0.0008	P	8.5	62.4
3	☐	0.050	0.086	1122.49	0.0011	P	7.2	71.5
4	☐	0.100	0.134	1467.33	0.0014	P	1.0	34.0
5	☐	0.500	0.594	4351.74	0.0041	P	2.4	18.8
6	☐	1.000	1.250	8567.29	0.0079	P	3.2	25.0
7	☐	10.000	11.352	71610.49	0.0674	P	1.0	13.5
8	☐	50.000	50.175	322020.65	0.2961	P	4.0	0.4
9	☐	100.000	98.527	638913.89	0.5809	P	0.6	-1.5
10	☐	1000.000	1000.125	6201282.54	5.8910	A	2.7	0.0
11	☐			1175.86	0.0011	P	4.7	

y = 0.0059 * x + 5.7906E-004
R = 1.0000
DL = 0.01898 ug/l
BEC = 0.09832 ug/l

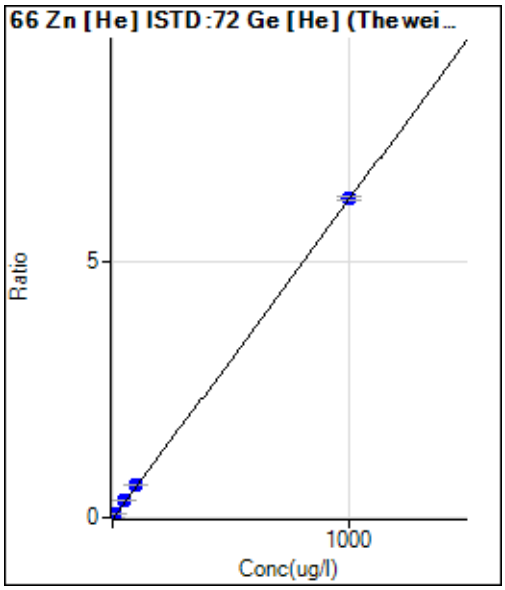
Weight: 1/y
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	612.41	0.0006	P	13.1	
2	☐			1078.19	0.0011	P	8.9	
3	☐	0.050	0.148	1241.14	0.0012	P	8.9	195.2
4	☐	0.100	0.235	1676.79	0.0016	P	13.7	135.3
5	☐	0.500	0.629	3433.78	0.0032	P	0.7	25.8
6	☐	1.000	1.474	7297.02	0.0068	P	3.1	47.4
7	☐	10.000	11.762	53023.49	0.0499	P	0.8	17.6
8	☐	50.000	51.483	235643.19	0.2167	P	3.5	3.0
9	☐	100.000	102.552	474047.20	0.4310	P	1.5	2.6
10	☐	1000.000	999.652	4417230.62	4.1961	A	2.4	0.0
11	☐			1860.74	0.0017	P	4.9	

y = 0.0042 * x + 5.7762E-004
R = 1.0000
DL = 0.05426 ug/l
BEC = 0.1376 ug/l

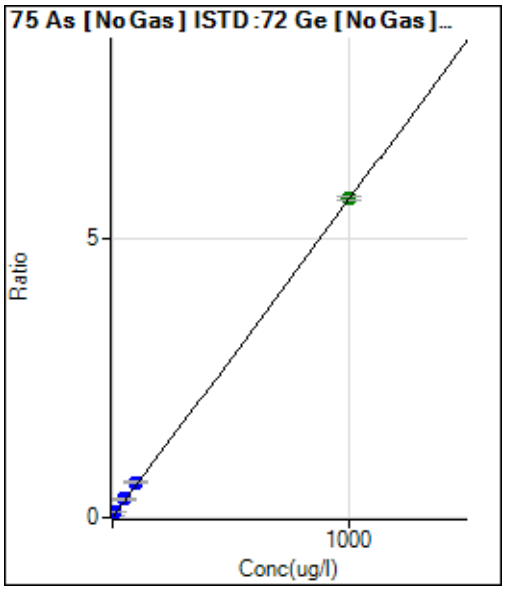
Weight: 1/y
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	105.56	0.0007	P	28.4	
2	☐			221.12	0.0015	P	4.8	
3	☐	0.050	0.129	227.78	0.0015	P	1.3	158.6
4	☐	0.100	0.190	283.34	0.0019	P	14.2	90.2
5	☐	0.500	0.664	725.58	0.0048	P	8.0	32.8
6	☐	1.000	1.382	1408.97	0.0093	P	4.0	38.2
7	☐	10.000	11.343	11020.89	0.0714	P	2.0	13.4
8	☐	50.000	51.555	49106.77	0.3221	P	1.4	3.1
9	☐	100.000	99.617	96027.18	0.6217	P	0.4	-0.4
10	☐	1000.000	999.947	944783.52	6.2342	P	0.7	0.0
11	☐			327.79	0.0022	P	11.5	

y = 0.0062 * x + 7.0418E-004
R = 1.0000
DL = 0.09635 ug/l
BEC = 0.113 ug/l

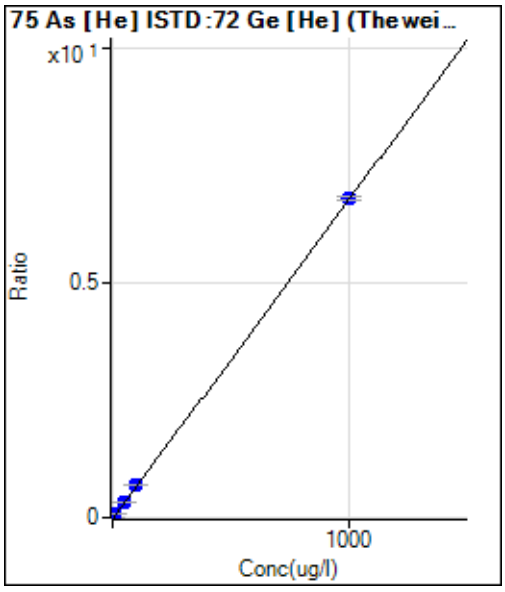
Weight: 1/y
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	33498.65	0.0316	P	11.1	
2	☐	0.025	0.014	32022.68	0.0317	P	5.8	-44.3
3	☐	0.050	0.378	34994.21	0.0337	P	4.3	656.9
4	☐	0.100	-0.411	31287.30	0.0292	P	32.4	-511.3
5	☐	0.500	0.327	35709.17	0.0334	P	23.7	-34.6
6	☐	1.000	1.312	42138.06	0.0391	P	7.9	31.2
7	☐	10.000	12.095	106876.20	0.1007	P	4.8	21.0
8	☐	50.000	52.193	358803.38	0.3297	P	1.7	4.4
9	☐	100.000	105.058	694883.84	0.6318	P	2.7	5.1
10	☐	1000.000	999.363	6044016.17	5.7408	A	1.3	-0.1
11	☐			36819.47	0.0344	P	12.1	

y = 0.0057 * x + 0.0316
R = 1.0000
DL = 1.833 ug/l
BEC = 5.527 ug/l

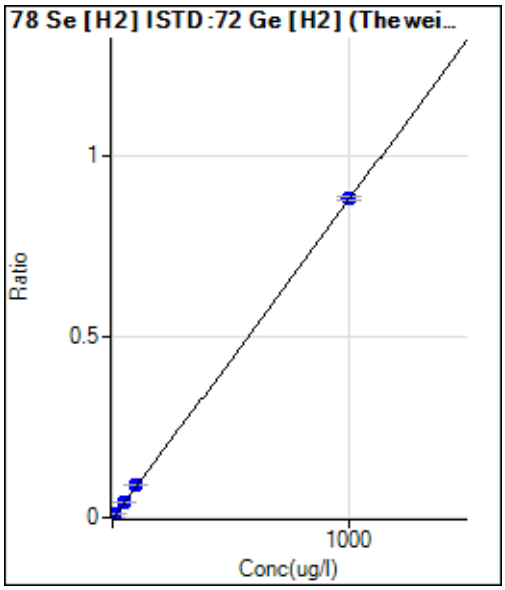
Weight: 1/y
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	422.87	0.0028	P	4.7	
2	☐	0.025	0.054	475.60	0.0032	P	2.7	116.8
3	☐	0.050	0.073	499.07	0.0033	P	1.4	45.5
4	☐	0.100	0.153	578.27	0.0039	P	1.2	52.8
5	☐	0.500	0.572	1004.08	0.0067	P	3.2	14.3
6	☐	1.000	1.213	1672.26	0.0111	P	2.5	21.3
7	☐	10.000	10.839	11815.54	0.0766	P	1.5	8.4
8	☐	50.000	50.120	52420.99	0.3438	P	1.3	0.2
9	☐	100.000	99.211	104699.83	0.6778	P	0.2	-0.8
10	☐	1000.000	1000.064	1031584.26	6.8072	P	1.2	0.0
11	☐			612.67	0.0042	P	4.0	

y = 0.0068 * x + 0.0028
R = 1.0000
DL = 0.05841 ug/l
BEC = 0.4136 ug/l

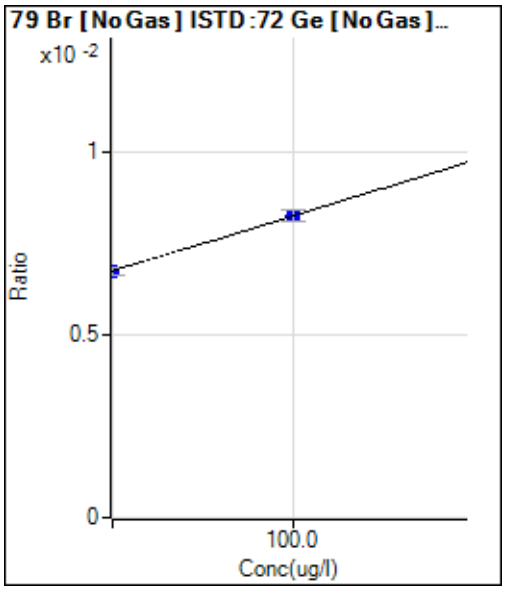
Weight: 1/y
Min Conc: <None>



	Rj ct	Conc.	Calc Conc.	CPS	Ratio	De t.	RSD	%RE
1	☐	0.000	0.000	52.56	0.0001	P	10.5	
2	☐	0.025	0.028	69.11	0.0001	P	2.1	10.3
3	☐	0.050	0.059	88.89	0.0001	P	5.2	17.1
4	☐	0.100	0.116	125.55	0.0002	P	5.6	16.0
5	☐	0.500	0.523	395.56	0.0005	P	3.7	4.5
6	☐	1.000	1.169	805.47	0.0011	P	1.8	16.9
7	☐	10.000	10.949	7180.77	0.0097	P	1.5	9.5
8	☐	50.000	49.312	32939.96	0.0435	P	1.2	-1.4
9	☐	100.000	100.275	65137.13	0.0885	P	0.9	0.3
10	☐	1000.000	999.997	624589.39	0.8816	P	1.3	0.0
11	☐			209.22	0.0003	P	1.5	

y = 8.8154E-004 * x + 7.1586E-005
R = 1.0000
DL = 0.02559 ug/l
BEC = 0.08121 ug/l

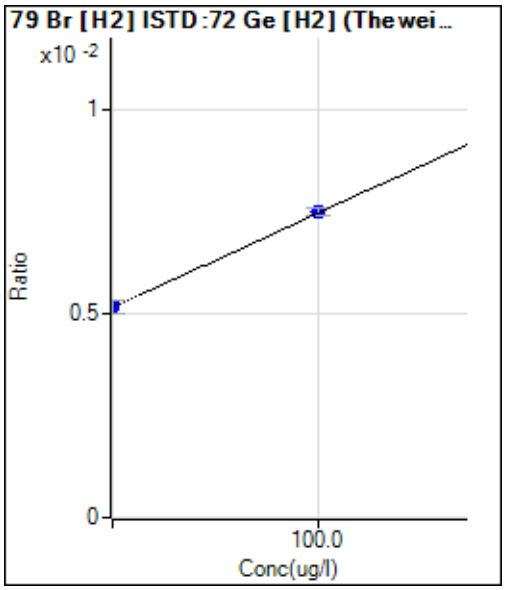
Weight: 1/y
Min Conc: <None>



	Rj ct	Conc.	Calc Conc.	CPS	Ratio	De t.	RSD	%RE
1	☐	0.000	0.000	7180.91	0.0068	P	3.2	
2	☐			9021.60	0.0089	P	9.7	
3	☐			9451.04	0.0091	P	8.7	
4	☐			9604.18	0.0090	P	4.8	
5	☐			9091.55	0.0085	P	4.7	
6	☐			10559.63	0.0098	P	4.4	
7	☐			9227.99	0.0087	P	4.5	
8	☐			9614.18	0.0088	P	12.9	
9	☐			10716.07	0.0097	P	3.5	
10	☐			12111.12	0.0115	P	4.2	
11	☐	100.000	100.000	8861.85	0.0083	P	3.8	0.0

y = 1.5284E-005 * x + 0.0068
R = 1.0000
DL = 42.04 ug/l
BEC = 442.7 ug/l

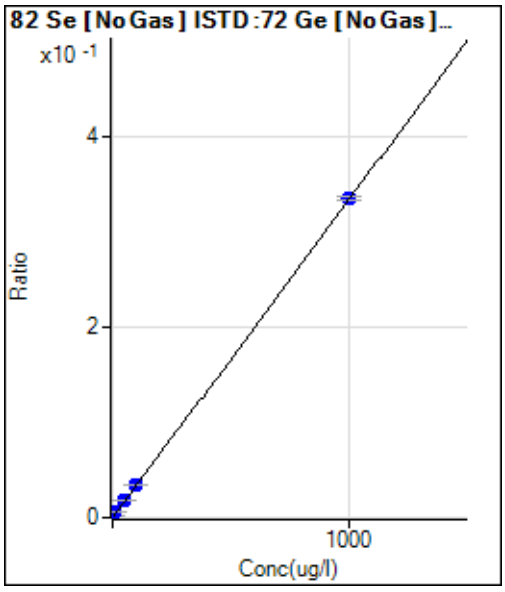
Weight: 1/y
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	3802.97	0.0052	P	5.8	
2	☐			4678.16	0.0065	P	6.0	
3	☐			5164.03	0.0072	P	1.3	
4	☐			5240.57	0.0073	P	3.5	
5	☐			4974.34	0.0067	P	2.1	
6	☐			5733.12	0.0078	P	6.3	
7	☐			5223.94	0.0071	P	3.2	
8	☐			5846.29	0.0077	P	5.2	
9	☐			6734.91	0.0091	P	7.1	
10	☐			18122.10	0.0256	P	2.1	
11	☐	100.000	100.000	5343.72	0.0075	P	2.5	0.0

y = 2.3168E-005 * x + 0.0052
R = 1.0000
DL = 39.09 ug/l
BEC = 223.5 ug/l

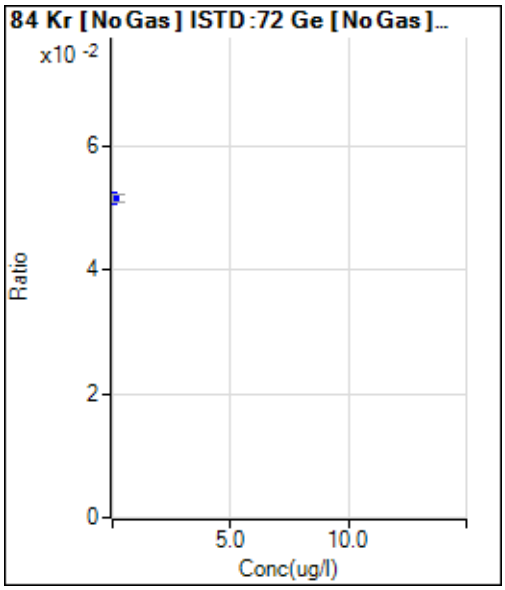
Weight: 1/y
Min Conc: <None>



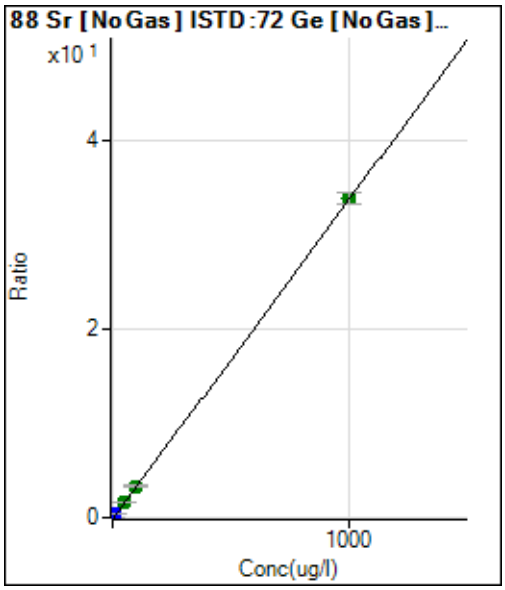
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	1736.42	0.0016	P	18.6	
2	☐	0.025	0.934	1964.68	0.0019	P	12.2	3634.8
3	☐	0.050	0.737	1943.20	0.0019	P	21.4	1374.7
4	☐	0.100	0.072	1778.05	0.0017	P	12.8	-28.1
5	☐	0.500	1.103	2137.56	0.0020	P	2.8	120.5
6	☐	1.000	1.202	2196.94	0.0020	P	3.2	20.2
7	☐	10.000	11.044	5656.02	0.0053	P	3.5	10.4
8	☐	50.000	50.494	20141.34	0.0185	P	2.5	1.0
9	☐	100.000	99.607	38421.48	0.0349	P	1.4	-0.4
10	☐	1000.000	1000.004	353692.13	0.3359	P	1.0	0.0
11	☐			1617.16	0.0015	P	16.1	

y = 3.3429E-004 * x + 0.0016
R = 1.0000
DL = 2.722 ug/l
BEC = 4.89 ug/l

Weight: 1/y
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000		54758.06	0.0516	P	2.9	
2	☐			52731.20	0.0521	P	5.0	
3	☐			52040.22	0.0502	P	3.2	
4	☐			50504.38	0.0471	P	1.6	
5	☐			52384.08	0.0491	P	3.1	
6	☐			52898.25	0.0490	P	0.7	
7	☐			55412.54	0.0522	P	2.0	
8	☐			65745.25	0.0604	P	2.7	
9	☐			78821.15	0.0717	P	1.1	
10	☐			284601.73	0.2703	P	2.7	
11	☐			51976.98	0.0486	P	2.0	



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	1018.02	0.0010	P	8.8	
2	☐	0.025	0.038	2269.03	0.0022	P	11.1	51.8
3	☐	0.050	0.066	3307.17	0.0032	P	10.6	31.8
4	☐	0.100	0.139	6085.90	0.0057	P	1.0	39.0
5	☐	0.500	0.579	21993.35	0.0206	P	5.3	15.8
6	☐	1.000	1.315	49186.77	0.0456	P	4.1	31.5
7	☐	10.000	11.979	432640.79	0.4075	P	1.5	19.8
8	☐	50.000	50.165	1852940.60	1.7035	A	3.5	0.3
9	☐	100.000	98.016	3659770.37	3.3276	A	3.4	-2.0
10	☐	1000.000	1000.170	35733199.93	33.9466	A	3.9	0.0
11	☐			2681.61	0.0025	P	6.4	

y = 0.0339 * x + 9.5900E-004

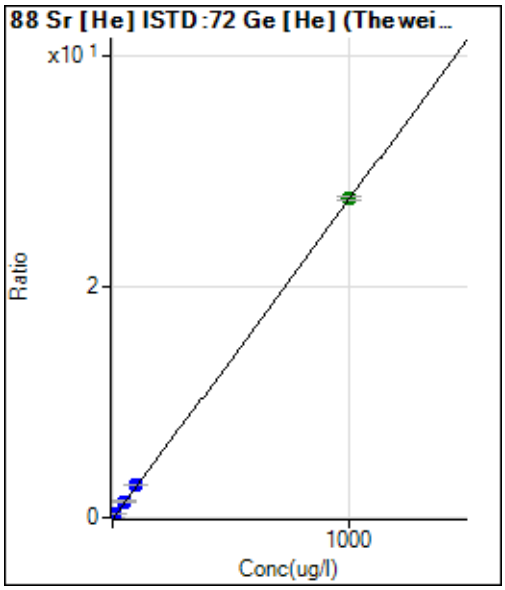
R = 1.0000

DL = 0.007482 ug/l

BEC = 0.02826 ug/l

Weight: 1/y

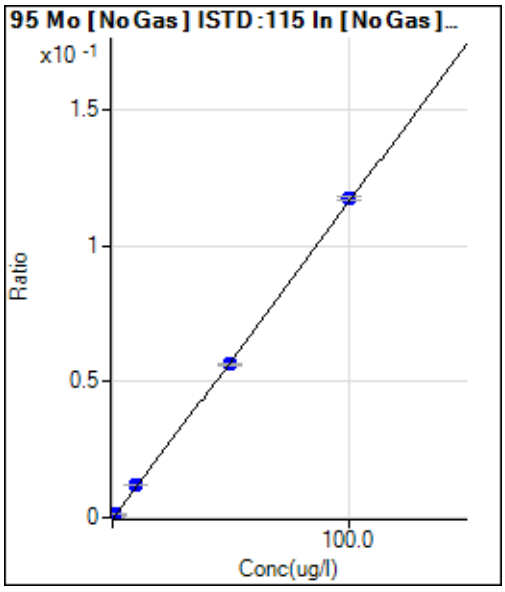
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	132.23	0.0009	P	9.0	
2	☐	0.025	0.033	267.78	0.0018	P	11.8	32.0
3	☐	0.050	0.075	446.68	0.0030	P	6.2	50.4
4	☐	0.100	0.135	692.24	0.0046	P	8.8	34.9
5	☐	0.500	0.586	2562.47	0.0171	P	1.1	17.2
6	☐	1.000	1.212	5206.53	0.0344	P	1.6	21.2
7	☐	10.000	11.015	47213.98	0.3060	P	1.8	10.2
8	☐	50.000	50.767	214494.01	1.4069	P	2.1	1.5
9	☐	100.000	100.621	430589.27	2.7877	P	0.7	0.6
10	☐	1000.000	999.889	4197078.62	27.6941	A	0.7	0.0
11	☐			322.23	0.0022	P	3.7	

y = 0.0277 * x + 8.7866E-004
R = 1.0000
DL = 0.00855 ug/l
BEC = 0.03172 ug/l

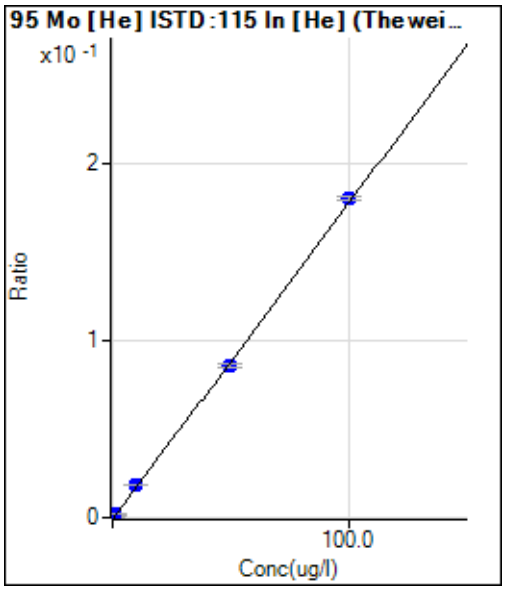
Weight: 1/y
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	68.89	0.0000	P	31.3	
2	☐	0.025	0.027	272.22	0.0000	P	9.4	9.7
3	☐	0.050	0.053	480.01	0.0001	P	4.0	5.3
4	☐	0.100	0.125	1078.94	0.0002	P	12.4	25.1
5	☐	0.500	0.505	4081.72	0.0006	P	0.5	1.0
6	☐	1.000	1.086	8763.85	0.0013	P	3.3	8.6
7	☐	10.000	10.218	80942.44	0.0119	P	3.0	2.2
8	☐	50.000	48.492	373433.59	0.0565	P	1.4	-3.0
9	☐	100.000	100.731	751164.59	0.1173	P	1.1	0.7
10	☐			735.58	0.0001	P	9.1	
11	☐			163.34	0.0000	P	5.3	

y = 0.0012 * x + 1.0033E-005
R = 0.9999
DL = 0.008092 ug/l
BEC = 0.008614 ug/l

Weight: 1/y
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	24.45	0.0000	P	16.7	
2	☐	0.025	0.022	81.11	0.0001	P	8.3	-13.2
3	☐	0.050	0.056	168.89	0.0001	P	10.6	12.2
4	☐	0.100	0.128	354.45	0.0002	P	20.7	28.1
5	☐	0.500	0.498	1316.74	0.0009	P	2.5	-0.5
6	☐	1.000	1.086	2901.42	0.0020	P	3.1	8.6
7	☐	10.000	10.240	26748.36	0.0183	P	1.8	2.4
8	☐	50.000	47.956	122506.03	0.0856	P	2.3	-4.1
9	☐	100.000	100.997	252223.57	0.1802	P	1.4	1.0
10	☐			284.45	0.0002	P	2.2	
11	☐			62.22	0.0000	P	11.9	

y = 0.0018 * x + 1.6699E-005

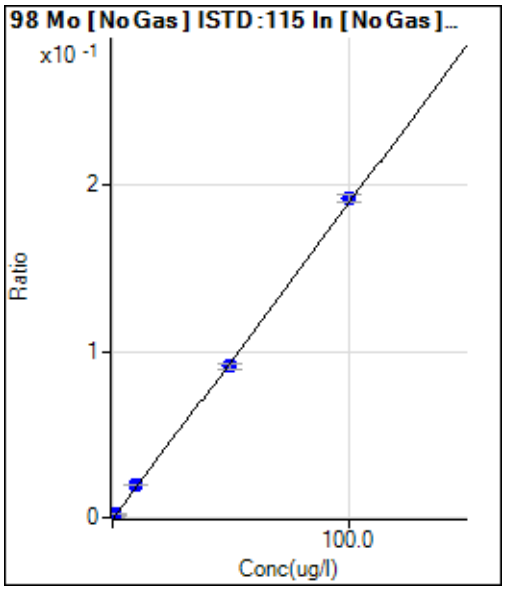
R = 0.9997

DL = 0.004701 ug/l

BEC = 0.009359 ug/l

Weight: 1/y

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	72.85	0.0000	P	20.4	
2	☐	0.025	0.029	424.11	0.0001	P	7.9	15.4
3	☐	0.050	0.051	724.61	0.0001	P	11.5	2.4
4	☐	0.100	0.119	1646.43	0.0002	P	4.4	19.2
5	☐	0.500	0.506	6646.79	0.0010	P	2.5	1.3
6	☐	1.000	1.095	14387.48	0.0021	P	2.3	9.5
7	☐	10.000	10.150	131352.76	0.0193	P	1.8	1.5
8	☐	50.000	47.865	602331.79	0.0911	P	3.5	-4.3
9	☐	100.000	101.051	1231450.31	0.1924	P	2.0	1.1
10	☐			1701.86	0.0003	P	2.5	
11	☐			266.81	0.0000	P	5.9	

y = 0.0019 * x + 1.0562E-005

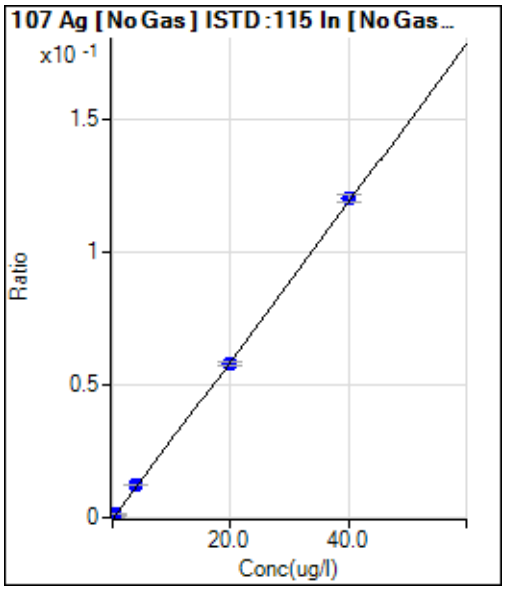
R = 0.9997

DL = 0.0034 ug/l

BEC = 0.005548 ug/l

Weight: 1/y

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	52.69	0.0000	P	40.5	
2	☐	0.010	0.017	369.49	0.0001	P	12.1	65.7
3	☐	0.020	0.026	570.91	0.0001	P	7.3	29.2
4	☐	0.040	0.055	1198.54	0.0002	P	0.7	38.2
5	☐	0.200	0.219	4519.21	0.0007	P	0.6	9.5
6	☐	0.400	0.455	9398.89	0.0014	P	2.2	13.8
7	☐	4.000	4.151	84386.67	0.0124	P	2.9	3.8
8	☐	20.000	19.441	384285.44	0.0581	P	2.4	-2.8
9	☐	40.000	40.264	770589.49	0.1204	P	2.9	0.7
10	☐			6833570.94	1.0681	A	0.8	
11	☐			1972.27	0.0003	P	13.1	

y = 0.0030 * x + 7.6050E-006

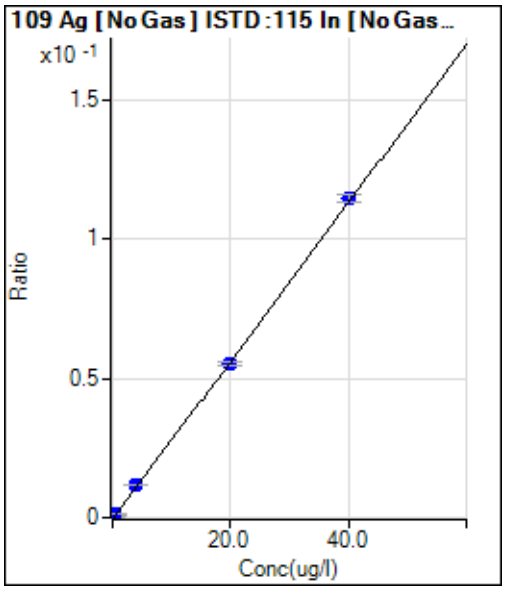
R = 0.9999

DL = 0.003087 ug/l

BEC = 0.002543 ug/l

Weight: 1/y

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	46.02	0.0000	P	25.4	
2	☐	0.010	0.017	350.15	0.0001	P	12.1	65.9
3	☐	0.020	0.027	564.24	0.0001	P	4.1	35.2
4	☐	0.040	0.055	1134.50	0.0002	P	3.6	37.7
5	☐	0.200	0.219	4309.06	0.0006	P	2.3	9.7
6	☐	0.400	0.456	8975.12	0.0013	P	2.8	14.1
7	☐	4.000	4.186	81054.65	0.0119	P	1.0	4.6
8	☐	20.000	19.361	364552.56	0.0552	P	2.9	-3.2
9	☐	40.000	40.300	734770.75	0.1148	P	2.8	0.8
10	☐			6834263.21	1.0684	A	3.6	
11	☐			2018.29	0.0003	P	13.3	

y = 0.0028 * x + 6.7017E-006

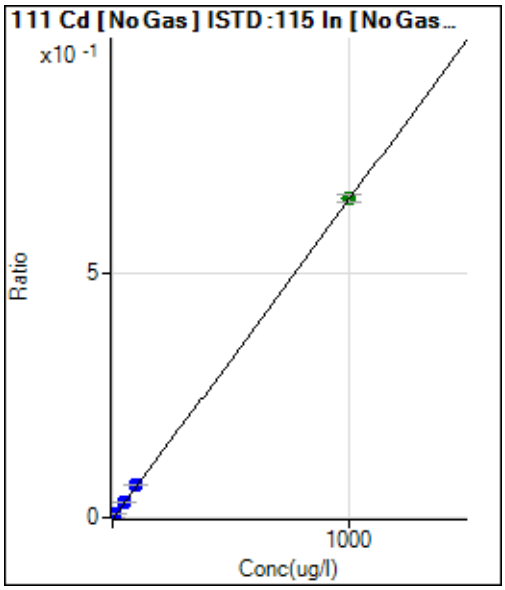
R = 0.9998

DL = 0.001794 ug/l

BEC = 0.002353 ug/l

Weight: 1/y

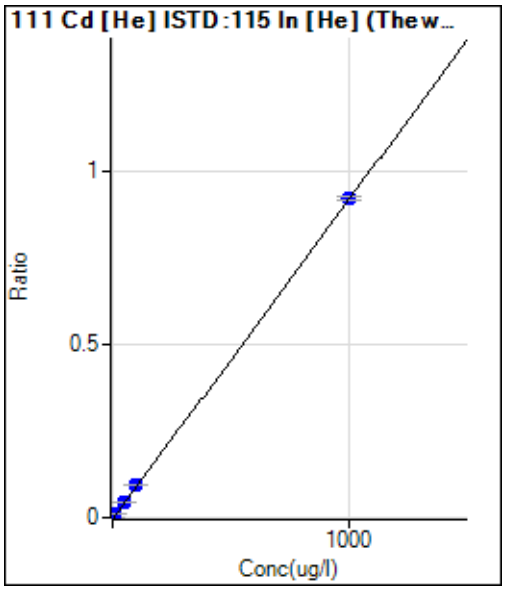
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	20.41	0.0000	P	52.0	
2	☐	0.025	0.028	138.64	0.0000	P	29.0	11.2
3	☐	0.050	0.057	268.48	0.0000	P	1.0	13.3
4	☐	0.100	0.113	533.09	0.0001	P	5.8	13.5
5	☐	0.500	0.533	2389.76	0.0004	P	2.3	6.7
6	☐	1.000	1.132	5083.47	0.0007	P	3.9	13.2
7	☐	10.000	10.665	47219.27	0.0069	P	1.0	6.6
8	☐	50.000	50.120	215798.20	0.0326	P	3.0	0.2
9	☐	100.000	103.430	431237.59	0.0674	P	2.4	3.4
10	☐	1000.000	999.644	4166174.24	0.6511	A	2.7	0.0
11	☐			216.37	0.0000	P	3.8	

y = 6.5136E-004 * x + 2.9830E-006
R = 1.0000
DL = 0.007142 ug/l
BEC = 0.00458 ug/l

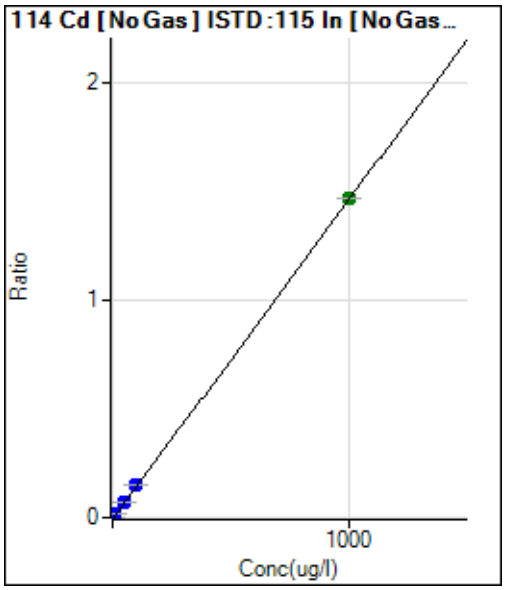
Weight: 1/y
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	6.00	0.0000	P	18.6	
2	☐	0.025	0.028	43.56	0.0000	P	7.3	11.1
3	☐	0.050	0.053	77.33	0.0001	P	7.8	6.9
4	☐	0.100	0.123	169.89	0.0001	P	6.3	22.7
5	☐	0.500	0.525	712.24	0.0005	P	2.5	5.0
6	☐	1.000	1.140	1571.42	0.0011	P	1.0	14.0
7	☐	10.000	10.585	14322.43	0.0098	P	1.0	5.8
8	☐	50.000	49.388	65352.35	0.0457	P	4.2	-1.2
9	☐	100.000	101.184	130960.04	0.0936	P	1.0	1.2
10	☐	1000.000	999.906	1282075.93	0.9246	P	1.6	0.0
11	☐			47.56	0.0000	P	8.3	

y = 9.2470E-004 * x + 4.0919E-006
R = 1.0000
DL = 0.00247 ug/l
BEC = 0.004425 ug/l

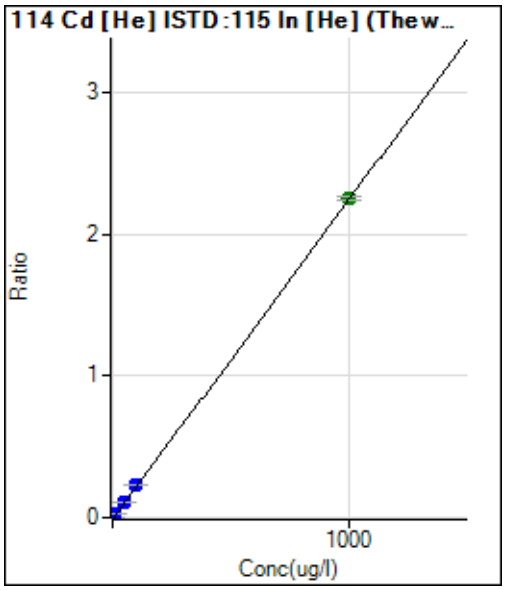
Weight: 1/y
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	36.17	0.0000	P	43.9	
2	☐	0.025	0.025	274.39	0.0000	P	17.4	0.1
3	☐	0.050	0.053	557.78	0.0001	P	5.8	5.9
4	☐	0.100	0.116	1221.60	0.0002	P	3.4	16.3
5	☐	0.500	0.532	5367.63	0.0008	P	2.2	6.4
6	☐	1.000	1.141	11553.73	0.0017	P	3.4	14.1
7	☐	10.000	10.598	105847.78	0.0156	P	0.9	6.0
8	☐	50.000	49.929	485003.55	0.0734	P	2.3	-0.1
9	☐	100.000	103.492	973474.21	0.1521	P	2.4	3.5
10	☐	1000.000	999.648	9397604.95	1.4690	A	0.4	0.0
11	☐			448.63	0.0001	P	9.2	

y = 0.0015 * x + 5.2382E-006
R = 1.0000
DL = 0.004694 ug/l
BEC = 0.003565 ug/l

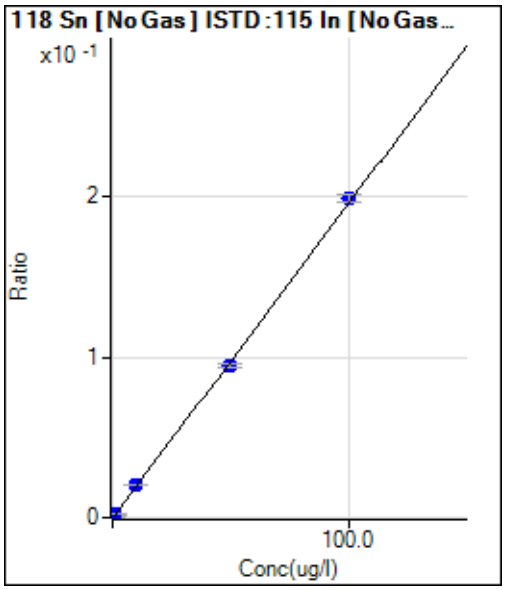
Weight: 1/y
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	9.50	0.0000	P	18.1	
2	☐	0.025	0.027	98.64	0.0001	P	3.4	8.0
3	☐	0.050	0.055	190.04	0.0001	P	7.8	10.9
4	☐	0.100	0.127	423.04	0.0003	P	3.4	27.0
5	☐	0.500	0.540	1779.80	0.0012	P	4.4	7.9
6	☐	1.000	1.133	3802.74	0.0026	P	1.8	13.3
7	☐	10.000	10.600	34973.46	0.0239	P	1.3	6.0
8	☐	50.000	49.373	159350.75	0.1114	P	3.5	-1.3
9	☐	100.000	101.451	320223.90	0.2288	P	0.9	1.5
10	☐	1000.000	999.880	3126823.89	2.2549	A	1.0	0.0
11	☐			104.14	0.0001	P	2.7	

y = 0.0023 * x + 6.4855E-006
R = 1.0000
DL = 0.001562 ug/l
BEC = 0.002876 ug/l

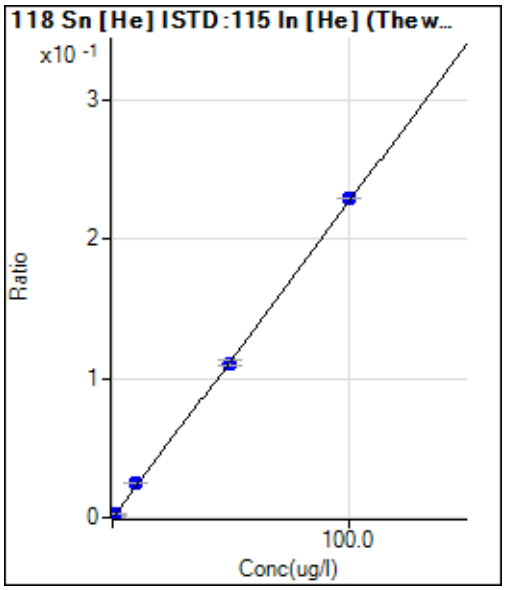
Weight: 1/y
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	5080.88	0.0007	P	5.2	
2	☐	0.025	-0.220	1979.56	0.0003	P	8.4	-979.8
3	☐	0.050	-0.183	2545.19	0.0004	P	6.1	-466.3
4	☐	0.100	-0.130	3343.79	0.0005	P	4.3	-230.0
5	☐	0.500	0.242	8276.06	0.0012	P	3.3	-51.5
6	☐	1.000	0.845	16477.05	0.0024	P	2.2	-15.5
7	☐	10.000	10.103	139844.42	0.0206	P	2.0	1.0
8	☐	50.000	47.872	626403.89	0.0948	P	2.9	-4.3
9	☐	100.000	101.057	1275346.93	0.1992	P	2.0	1.1
10	☐			4807.98	0.0008	P	2.6	
11	☐			6212.41	0.0009	P	4.3	

y = 0.0020 * x + 7.3771E-004
R = 0.9997
DL = 0.05861 ug/l
BEC = 0.3756 ug/l

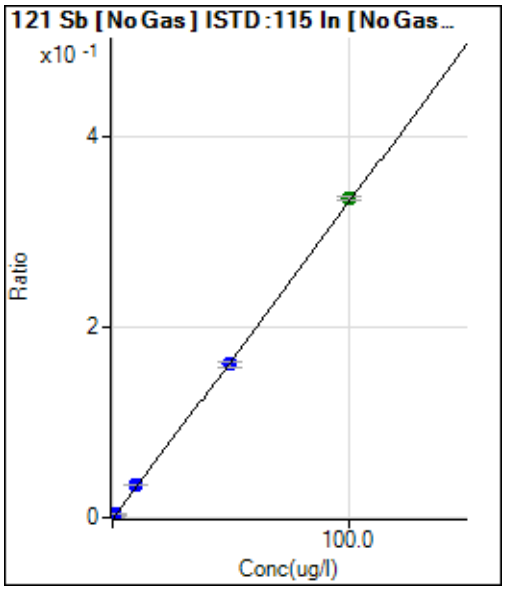
Weight: 1/y
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	1236.73	0.0008	P	4.0	
2	☐	0.025	-0.207	544.46	0.0004	P	6.1	-929.5
3	☐	0.050	-0.179	632.24	0.0004	P	9.7	-457.3
4	☐	0.100	-0.110	858.92	0.0006	P	8.6	-209.6
5	☐	0.500	0.261	2090.17	0.0014	P	6.7	-47.8
6	☐	1.000	0.885	4239.56	0.0029	P	3.9	-11.5
7	☐	10.000	10.441	35942.41	0.0246	P	0.8	4.4
8	☐	50.000	48.584	159217.99	0.1113	P	3.7	-2.8
9	☐	100.000	100.666	321414.60	0.2296	P	0.4	0.7
10	☐			1195.61	0.0009	P	1.2	
11	☐			1612.34	0.0012	P	7.8	

y = 0.0023 * x + 8.4345E-004
R = 0.9999
DL = 0.04449 ug/l
BEC = 0.3711 ug/l

Weight: 1/y
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	391.71	0.0001	P	9.4	
2	☐	0.025	0.024	880.11	0.0001	P	6.7	-5.1
3	☐	0.050	0.051	1527.91	0.0002	P	9.4	2.7
4	☐	0.100	0.114	3026.97	0.0004	P	5.8	14.2
5	☐	0.500	0.505	11844.84	0.0017	P	0.7	1.0
6	☐	1.000	1.087	25232.71	0.0037	P	1.5	8.7
7	☐	10.000	10.197	230822.89	0.0340	P	1.8	2.0
8	☐	50.000	48.339	1063005.65	0.1608	P	2.8	-3.3
9	☐	100.000	100.810	2146550.92	0.3353	A	1.8	0.8
10	☐			5276.86	0.0008	P	3.5	
11	☐			1579.25	0.0002	P	1.3	

y = 0.0033 * x + 5.6891E-005

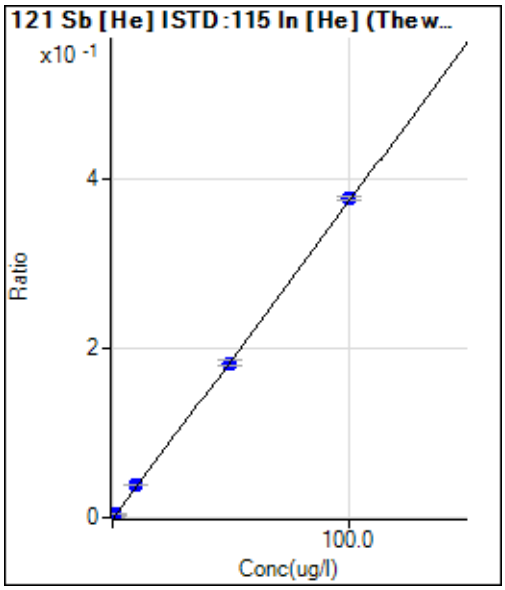
R = 0.9998

DL = 0.004813 ug/l

BEC = 0.01711 ug/l

Weight: 1/y

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	97.68	0.0001	P	8.8	
2	☐	0.025	0.025	234.36	0.0002	P	14.0	-0.5
3	☐	0.050	0.048	359.37	0.0002	P	2.0	-3.1
4	☐	0.100	0.117	733.43	0.0005	P	6.2	17.4
5	☐	0.500	0.518	2927.60	0.0020	P	1.5	3.5
6	☐	1.000	1.125	6374.09	0.0043	P	2.3	12.5
7	☐	10.000	10.396	57239.24	0.0391	P	1.0	4.0
8	☐	50.000	48.755	262245.40	0.1833	P	3.9	-2.5
9	☐	100.000	100.581	529054.30	0.3780	P	1.0	0.6
10	☐			1102.49	0.0008	P	5.1	
11	☐			373.71	0.0003	P	1.8	

y = 0.0038 * x + 6.6678E-005

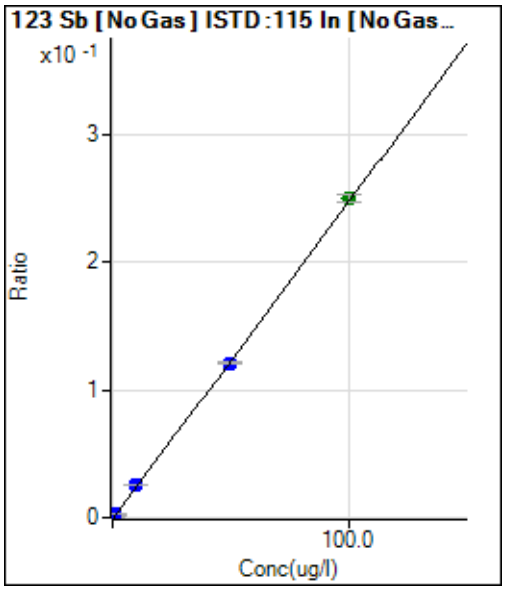
R = 0.9999

DL = 0.004671 ug/l

BEC = 0.01775 ug/l

Weight: 1/y

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	336.04	0.0000	P	16.8	
2	☐	0.025	0.028	763.77	0.0001	P	7.4	11.0
3	☐	0.050	0.052	1196.51	0.0002	P	4.3	3.8
4	☐	0.100	0.117	2362.11	0.0003	P	5.0	17.3
5	☐	0.500	0.506	8926.07	0.0013	P	2.5	1.3
6	☐	1.000	1.108	19272.12	0.0028	P	2.3	10.8
7	☐	10.000	10.265	173917.18	0.0256	P	1.9	2.6
8	☐	50.000	48.727	801941.39	0.1213	P	2.3	-2.5
9	☐	100.000	100.609	1602905.25	0.2504	A	2.8	0.6
10	☐			4287.75	0.0007	P	1.6	
11	☐			1528.57	0.0002	P	5.9	

y = 0.0025 * x + 4.8840E-005

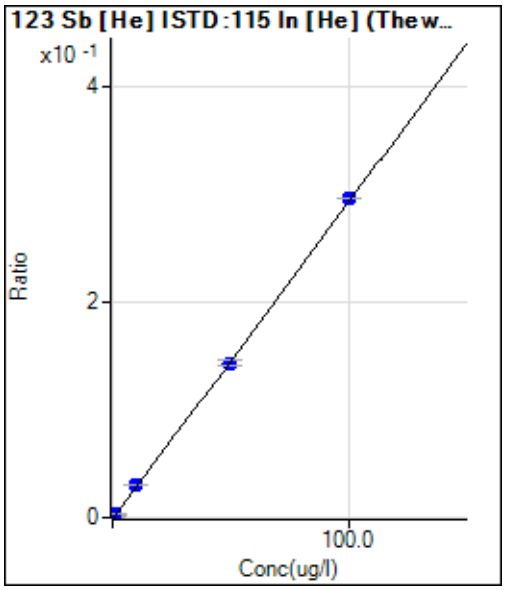
R = 0.9999

DL = 0.009893 ug/l

BEC = 0.01962 ug/l

Weight: 1/y

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	77.34	0.0001	P	3.7	
2	☐	0.025	0.023	177.69	0.0001	P	6.4	-6.9
3	☐	0.050	0.049	286.03	0.0002	P	1.2	-1.6
4	☐	0.100	0.117	574.74	0.0004	P	2.7	17.0
5	☐	0.500	0.526	2335.43	0.0016	P	2.0	5.2
6	☐	1.000	1.091	4854.67	0.0033	P	1.4	9.1
7	☐	10.000	10.436	45108.79	0.0308	P	0.4	4.4
8	☐	50.000	48.612	205288.30	0.1435	P	4.0	-2.8
9	☐	100.000	100.649	415683.57	0.2970	P	0.5	0.6
10	☐			865.12	0.0006	P	9.3	
11	☐			292.70	0.0002	P	9.0	

y = 0.0030 * x + 5.2754E-005

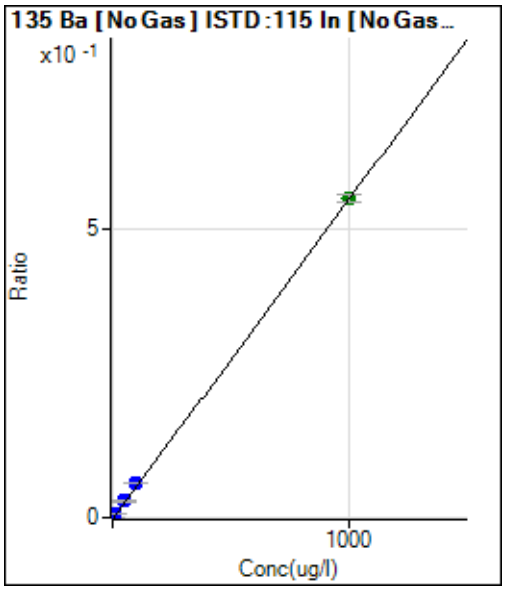
R = 0.9999

DL = 0.001974 ug/l

BEC = 0.01788 ug/l

Weight: 1/y

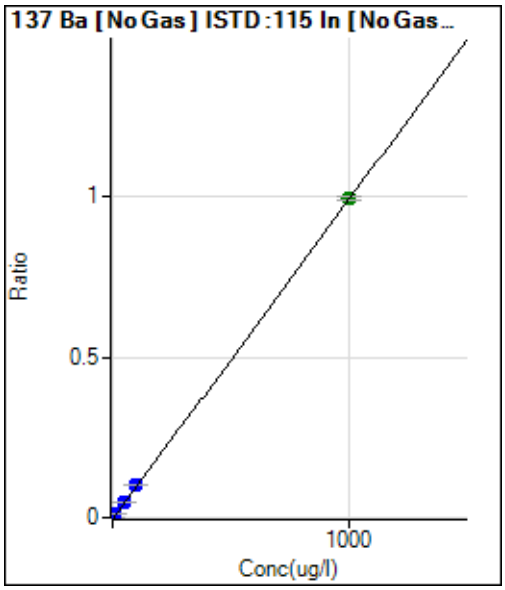
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	19.96	0.0000	P	48.8	
2	☐	0.025	0.028	119.76	0.0000	P	22.5	11.7
3	☐	0.050	0.061	246.18	0.0000	P	6.3	21.6
4	☐	0.100	0.117	472.40	0.0001	P	10.4	17.4
5	☐	0.500	0.540	2069.40	0.0003	P	8.2	8.1
6	☐	1.000	1.182	4525.10	0.0007	P	9.1	18.2
7	☐	10.000	11.016	41596.39	0.0061	P	1.2	10.2
8	☐	50.000	51.637	189621.75	0.0287	P	2.9	3.3
9	☐	100.000	106.938	380213.54	0.0594	P	2.5	6.9
10	☐	1000.000	999.214	3550523.83	0.5550	A	1.8	-0.1
11	☐			375.93	0.0001	P	30.2	

y = 5.5546E-004 * x + 2.8787E-006
R = 1.0000
DL = 0.007585 ug/l
BEC = 0.005183 ug/l

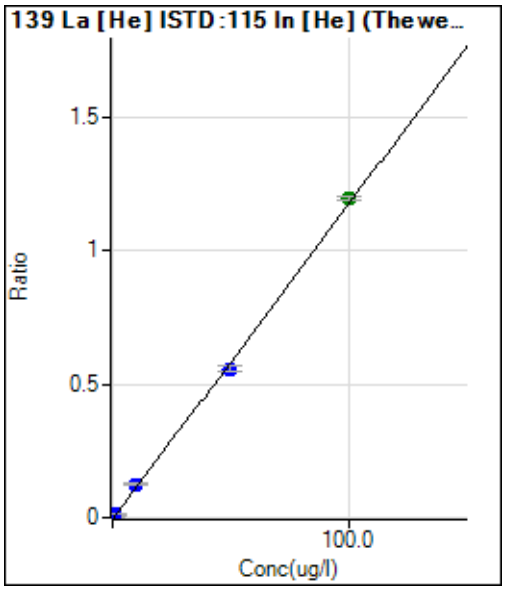
Weight: 1/y
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	49.90	0.0000	P	39.4	
2	☐	0.025	0.037	286.10	0.0000	P	11.6	48.1
3	☐	0.050	0.065	485.71	0.0001	P	7.7	30.9
4	☐	0.100	0.124	904.90	0.0001	P	7.1	23.9
5	☐	0.500	0.540	3706.50	0.0005	P	9.5	8.0
6	☐	1.000	1.144	7866.65	0.0011	P	3.7	14.4
7	☐	10.000	10.729	72557.45	0.0107	P	0.4	7.3
8	☐	50.000	50.695	333378.13	0.0504	P	1.3	1.4
9	☐	100.000	103.972	662126.38	0.1034	P	0.8	4.0
10	☐	1000.000	999.561	6360189.06	0.9942	A	1.7	0.0
11	☐			652.06	0.0001	P	11.1	

y = 9.9465E-004 * x + 7.2396E-006
R = 1.0000
DL = 0.008611 ug/l
BEC = 0.007279 ug/l

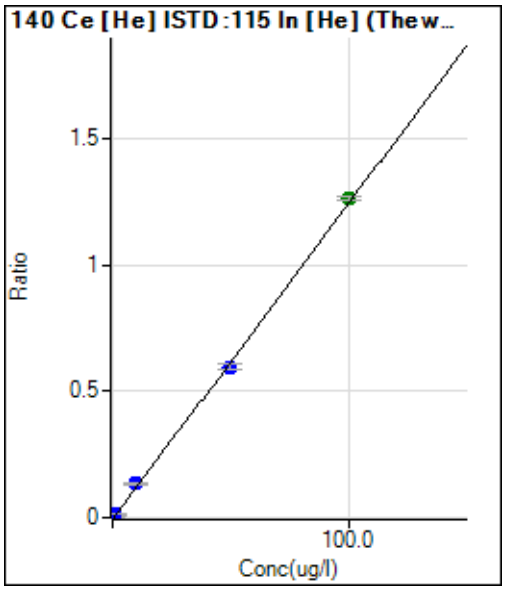
Weight: 1/y
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	17.78	0.0000	P	56.5	
2	☐	0.025	0.026	458.90	0.0003	P	5.4	2.1
3	☐	0.050	0.055	947.82	0.0007	P	6.5	9.0
4	☐	0.100	0.128	2207.97	0.0015	P	4.5	28.4
5	☐	0.500	0.529	9114.14	0.0063	P	1.0	5.8
6	☐	1.000	1.133	19879.86	0.0134	P	3.5	13.3
7	☐	10.000	10.639	183815.27	0.1257	P	2.5	6.4
8	☐	50.000	47.245	798644.37	0.5581	P	3.5	-5.5
9	☐	100.000	101.312	1674877.14	1.1967	A	1.3	1.3
10	☐			371.12	0.0003	P	5.5	
11	☐			53.33	0.0000	P	17.8	

y = 0.0118 * x + 1.2085E-005
R = 0.9995
DL = 0.001735 ug/l
BEC = 0.001023 ug/l

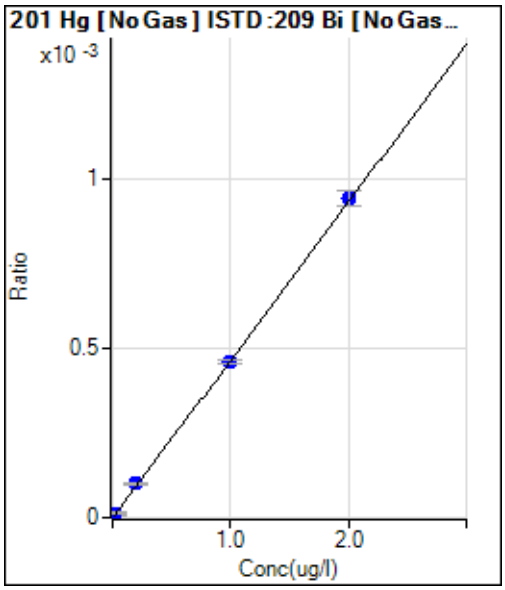
Weight: 1/y
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	12.22	0.0000	P	42.5	
2	☐	0.025	0.027	511.12	0.0003	P	8.2	9.1
3	☐	0.050	0.053	965.60	0.0007	P	3.9	5.6
4	☐	0.100	0.130	2361.33	0.0016	P	6.3	30.2
5	☐	0.500	0.540	9827.97	0.0068	P	1.9	8.0
6	☐	1.000	1.135	21071.60	0.0142	P	0.9	13.5
7	☐	10.000	10.669	195004.93	0.1333	P	1.5	6.7
8	☐	50.000	47.719	853383.56	0.5962	P	2.9	-4.6
9	☐	100.000	101.072	1767523.74	1.2629	A	1.6	1.1
10	☐			715.58	0.0005	P	4.2	
11	☐			132.22	0.0001	P	32.3	

y = 0.0125 * x + 8.3656E-006
R = 0.9996
DL = 0.000853 ug/l
BEC = 0.0006695 ug/l

Weight: 1/y
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	18.67	0.0000	P	9.1	
2	☐			20.00	0.0000	P	15.5	
3	☐	0.001	0.002	23.33	0.0000	P	22.9	94.4
4	☐	0.002	0.003	26.66	0.0000	P	19.1	73.0
5	☐	0.010	0.011	45.32	0.0000	P	12.7	13.8
6	☐	0.020	0.021	68.32	0.0000	P	19.8	3.5
7	☐	0.200	0.209	506.58	0.0001	P	3.9	4.5
8	☐	1.000	0.976	2224.75	0.0005	P	3.1	-2.4
9	☐	2.000	2.011	4431.19	0.0009	P	4.3	0.6
10	☐			34.99	0.0000	P	22.3	
11	☐			25.99	0.0000	P	8.9	

y = 4.6793E-004 * x + 3.7740E-006

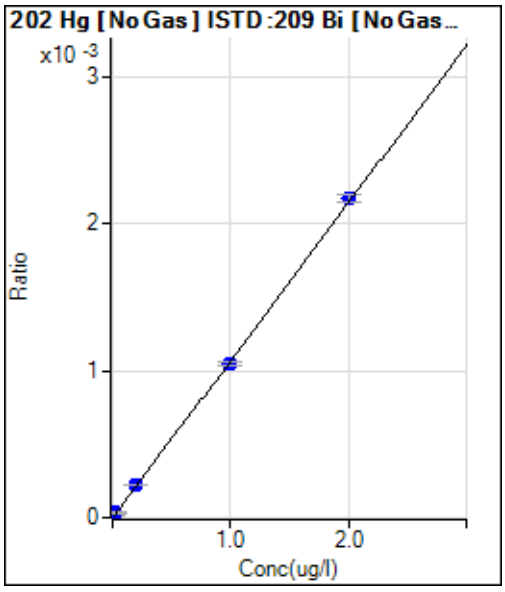
R = 0.9999

DL = 0.0022 ug/l

BEC = 0.008065 ug/l

Weight: 1/y

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	47.99	0.0000	P	11.3	
2	☐			50.99	0.0000	P	25.4	
3	☐	0.001	0.001	50.66	0.0000	P	7.8	-49.7
4	☐	0.002	0.003	65.99	0.0000	P	6.0	70.0
5	☐	0.010	0.011	106.65	0.0000	P	4.9	9.3
6	☐	0.020	0.022	168.97	0.0000	P	4.5	9.7
7	☐	0.200	0.201	1127.82	0.0002	P	2.6	0.7
8	☐	1.000	0.968	5071.29	0.0010	P	2.7	-3.2
9	☐	2.000	2.016	10204.19	0.0022	P	2.2	0.8
10	☐			113.31	0.0000	P	11.1	
11	☐			72.65	0.0000	P	11.3	

y = 0.0011 * x + 9.6874E-006

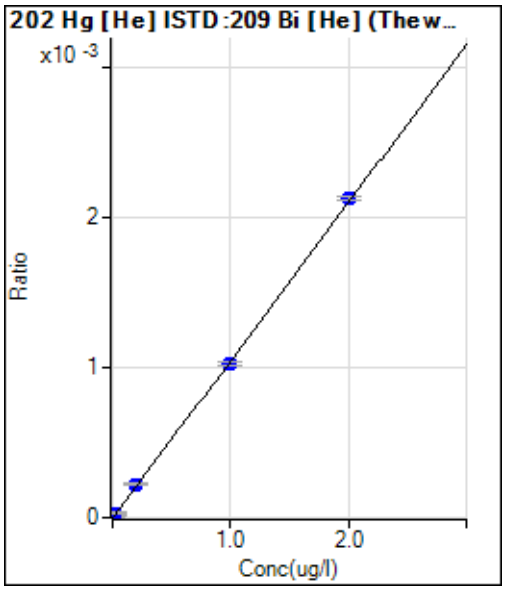
R = 0.9998

DL = 0.003056 ug/l

BEC = 0.009018 ug/l

Weight: 1/y

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	13.67	0.0000	P	26.0	
2	☐			18.00	0.0000	P	32.0	
3	☐	0.001	0.004	22.00	0.0000	P	1.3	261.9
4	☐	0.002	0.005	25.99	0.0000	P	23.2	154.1
5	☐	0.010	0.010	36.99	0.0000	P	8.1	-0.2
6	☐	0.020	0.023	68.32	0.0000	P	12.6	15.0
7	☐	0.200	0.205	487.25	0.0002	P	6.6	2.6
8	☐	1.000	0.970	2213.74	0.0010	P	2.1	-3.0
9	☐	2.000	2.014	4488.86	0.0021	P	0.6	0.7
10	☐			51.99	0.0000	P	7.0	
11	☐			27.66	0.0000	P	13.1	

y = 0.0011 * x + 6.2977E-006

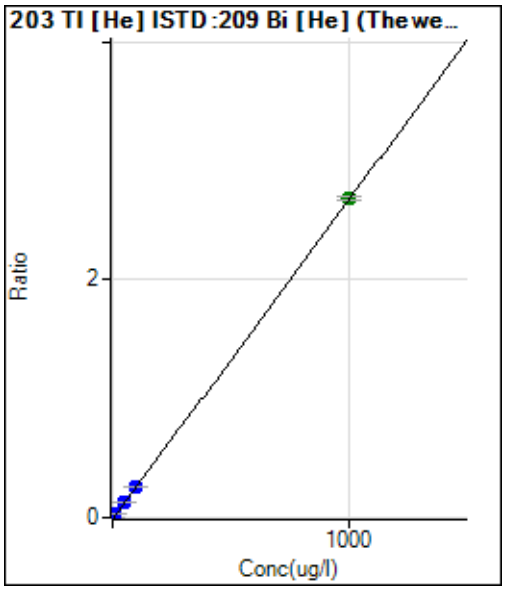
R = 0.9998

DL = 0.004655 ug/l

BEC = 0.005976 ug/l

Weight: 1/y

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	432.85	0.0002	P	5.9	
2	☐	0.025	0.029	601.59	0.0003	P	1.0	14.5
3	☐	0.050	0.047	704.97	0.0003	P	8.7	-6.2
4	☐	0.100	0.099	1033.79	0.0005	P	5.6	-0.9
5	☐	0.500	0.499	3383.80	0.0015	P	6.4	-0.2
6	☐	1.000	1.105	7084.07	0.0032	P	1.4	10.5
7	☐	10.000	10.451	61847.15	0.0283	P	1.7	4.5
8	☐	50.000	47.705	276039.17	0.1282	P	1.1	-4.6
9	☐	100.000	98.334	556843.11	0.2641	P	1.7	-1.7
10	☐	1000.000	1000.277	5466159.76	2.6851	A	1.2	0.0
11	☐			1809.52	0.0008	P	3.0	

y = 0.0027 * x + 1.9823E-004

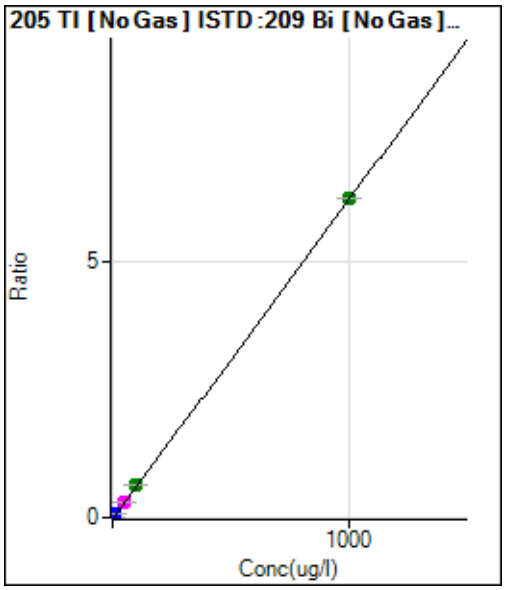
R = 1.0000

DL = 0.01317 ug/l

BEC = 0.07385 ug/l

Weight: 1/y

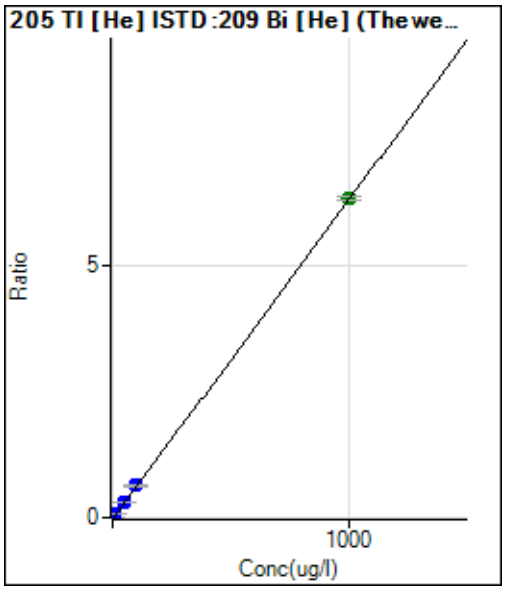
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	1906.82	0.0004	P	1.5	
2	☐	0.025	0.025	2586.94	0.0005	P	12.4	0.6
3	☐	0.050	0.048	3376.01	0.0007	P	7.0	-4.0
4	☐	0.100	0.114	5410.03	0.0011	P	3.3	13.6
5	☐	0.500	0.515	17888.72	0.0036	P	3.2	3.0
6	☐	1.000	1.092	36540.04	0.0072	P	3.1	9.2
7	☐	10.000	10.582	331163.03	0.0664	P	2.2	5.8
8	☐	50.000	48.409	1461036.02	0.3022	M	2.0	-3.2
9	☐	100.000	102.982	3014867.21	0.6425	A	2.4	3.0
10	☐	1000.000	999.775	28518967.63	6.2347	A	0.5	0.0
11	☐			9594.63	0.0019	P	8.4	

y = 0.0062 * x + 3.8524E-004
R = 1.0000
DL = 0.002767 ug/l
BEC = 0.06178 ug/l

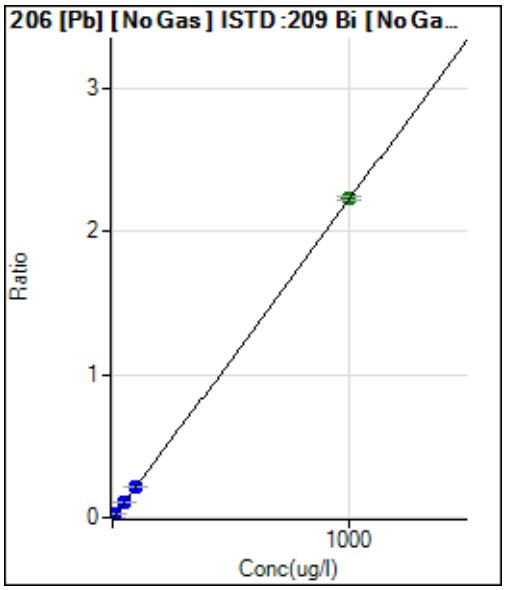
Weight: 1/y
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	1024.45	0.0005	P	3.5	
2	☐	0.025	0.030	1443.33	0.0007	P	2.8	20.5
3	☐	0.050	0.050	1708.80	0.0008	P	1.9	0.0
4	☐	0.100	0.115	2666.68	0.0012	P	1.7	15.2
5	☐	0.500	0.515	8197.82	0.0037	P	0.9	3.0
6	☐	1.000	1.085	16405.97	0.0073	P	2.9	8.5
7	☐	10.000	10.701	149098.84	0.0681	P	2.0	7.0
8	☐	50.000	49.564	675302.03	0.3138	P	1.5	-0.9
9	☐	100.000	100.166	1335429.89	0.6336	P	2.8	0.2
10	☐	1000.000	999.998	12868204.32	6.3214	A	1.7	0.0
11	☐			4311.77	0.0020	P	3.9	

y = 0.0063 * x + 4.6921E-004
R = 1.0000
DL = 0.007735 ug/l
BEC = 0.07423 ug/l

Weight: 1/y
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	555.57	0.0001	P	2.9	
2	☐	0.025	0.027	822.25	0.0002	P	11.6	7.9
3	☐	0.050	0.048	1082.27	0.0002	P	2.4	-4.1
4	☐	0.100	0.117	1844.58	0.0004	P	1.4	16.7
5	☐	0.500	0.504	6151.46	0.0012	P	4.9	0.8
6	☐	1.000	1.093	12966.36	0.0026	P	5.1	9.3
7	☐	10.000	10.183	113994.37	0.0228	P	0.7	1.8
8	☐	50.000	47.681	515114.25	0.1066	P	0.4	-4.6
9	☐	100.000	98.332	1030280.89	0.2196	P	2.1	-1.7
10	☐	1000.000	1000.281	10214135.19	2.2332	A	1.4	0.0
11	☐			1242.29	0.0002	P	11.9	

y = 0.0022 * x + 1.1229E-004

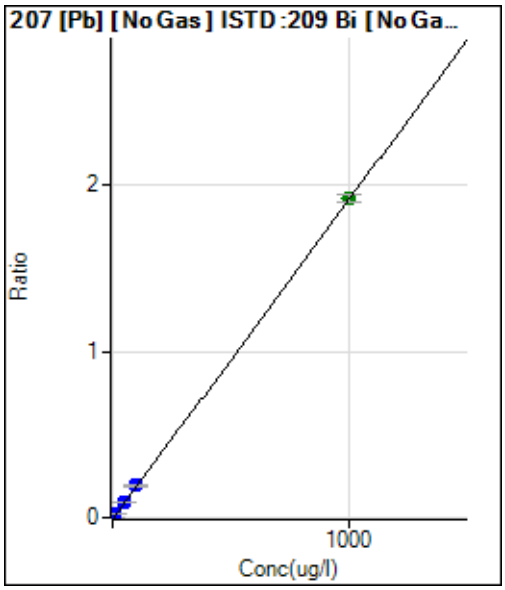
R = 1.0000

DL = 0.004389 ug/l

BEC = 0.0503 ug/l

Weight: 1/y

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	505.57	0.0001	P	5.6	
2	☐	0.025	0.020	668.91	0.0001	P	10.3	-20.4
3	☐	0.050	0.050	977.82	0.0002	P	5.0	0.2
4	☐	0.100	0.124	1687.90	0.0003	P	2.9	24.3
5	☐	0.500	0.509	5373.35	0.0011	P	1.0	1.8
6	☐	1.000	1.096	11222.58	0.0022	P	2.5	9.6
7	☐	10.000	10.171	98085.47	0.0197	P	0.7	1.7
8	☐	50.000	48.581	452006.22	0.0935	P	0.3	-2.8
9	☐	100.000	100.219	904371.92	0.1928	P	2.2	0.2
10	☐	1000.000	1000.047	8793267.65	1.9228	A	2.8	0.0
11	☐			1102.28	0.0002	P	5.5	

y = 0.0019 * x + 1.0202E-004

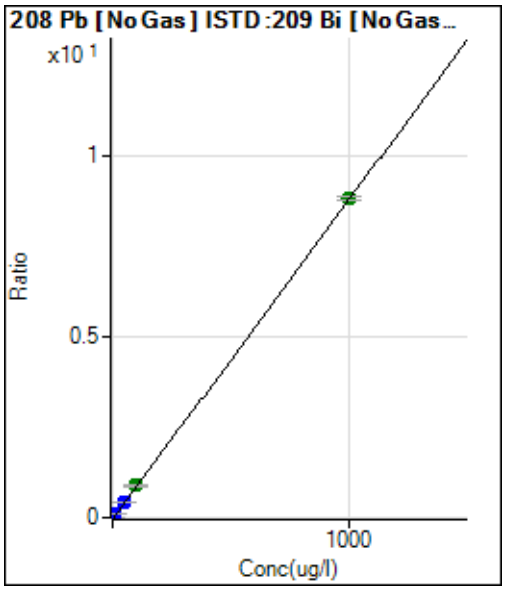
R = 1.0000

DL = 0.008982 ug/l

BEC = 0.05306 ug/l

Weight: 1/y

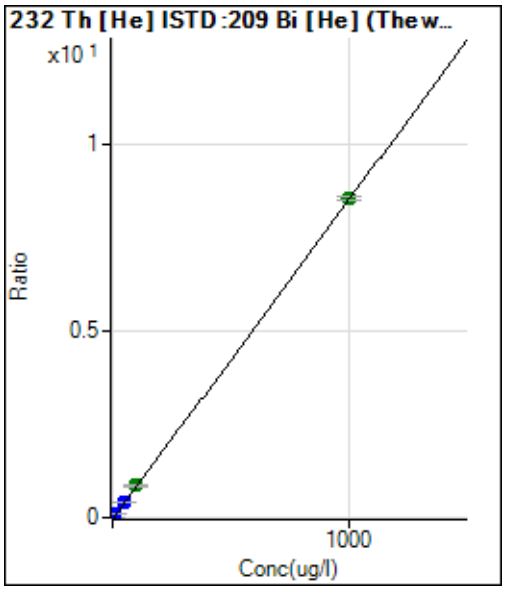
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	2228.98	0.0005	P	1.6	
2	☐	0.025	0.028	3316.86	0.0007	P	7.8	11.1
3	☐	0.050	0.050	4380.31	0.0009	P	6.0	-0.5
4	☐	0.100	0.119	7419.74	0.0015	P	0.9	19.1
5	☐	0.500	0.517	24869.35	0.0050	P	3.6	3.4
6	☐	1.000	1.103	51651.73	0.0102	P	3.6	10.3
7	☐	10.000	10.333	456280.54	0.0914	P	1.4	3.3
8	☐	50.000	48.769	2078260.57	0.4299	P	0.9	-2.5
9	☐	100.000	99.846	4126947.67	0.8797	A	1.7	-0.2
10	☐	1000.000	1000.074	40283584.47	8.8073	A	1.4	0.0
11	☐			4964.84	0.0010	P	0.3	

y = 0.0088 * x + 4.5035E-004
R = 1.0000
DL = 0.002402 ug/l
BEC = 0.05114 ug/l

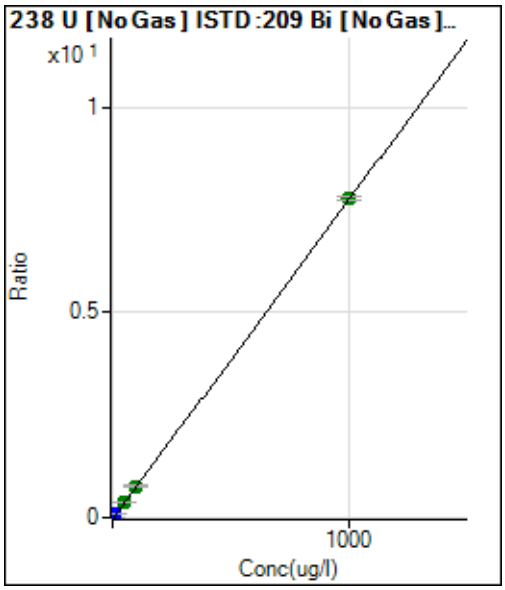
Weight: 1/y
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	228.76	0.0001	P	16.1	
2	☐	0.025	0.013	468.20	0.0002	P	2.8	-49.0
3	☐	0.050	0.031	802.35	0.0004	P	8.8	-38.3
4	☐	0.100	0.083	1807.52	0.0008	P	4.7	-17.3
5	☐	0.500	0.423	8181.18	0.0037	P	4.0	-15.5
6	☐	1.000	0.988	19148.29	0.0085	P	1.2	-1.2
7	☐	10.000	10.168	190412.82	0.0870	P	2.7	1.7
8	☐	50.000	48.229	887156.83	0.4122	P	1.7	-3.5
9	☐	100.000	100.241	1805689.38	0.8566	A	2.0	0.2
10	☐	1000.000	1000.063	17397641.99	8.5451	A	1.1	0.0
11	☐			4046.93	0.0019	P	5.1	

y = 0.0085 * x + 1.0512E-004
R = 1.0000
DL = 0.005946 ug/l
BEC = 0.0123 ug/l

Weight: 1/y
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	103.31	0.0000	P	10.6	
2	☐	0.025	0.026	1075.16	0.0002	P	6.9	5.0
3	☐	0.050	0.052	2080.08	0.0004	P	8.3	3.2
4	☐	0.100	0.121	4752.58	0.0010	P	3.6	20.8
5	☐	0.500	0.514	19980.56	0.0040	P	2.9	2.7
6	☐	1.000	1.093	43344.10	0.0085	P	1.8	9.3
7	☐	10.000	10.272	398965.35	0.0800	P	0.8	2.7
8	☐	50.000	49.025	1844331.72	0.3815	A	0.9	-2.0
9	☐	100.000	99.007	3614354.68	0.7705	A	2.0	-1.0
10	☐	1000.000	1000.145	35599776.20	7.7831	A	1.3	0.0
11	☐			660.55	0.0001	P	3.1	

y = 0.0078 * x + 2.0916E-005

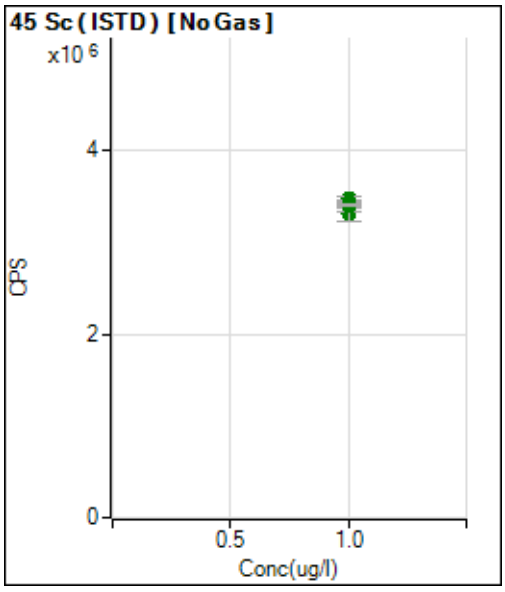
R = 1.0000

DL = 0.000858 ug/l

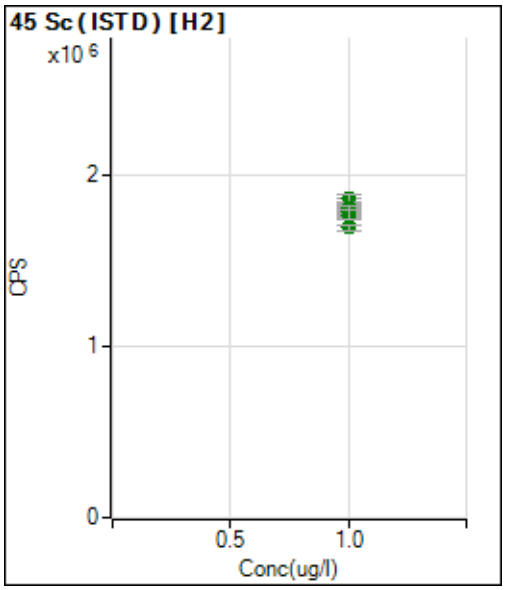
BEC = 0.002688 ug/l

Weight: 1/y

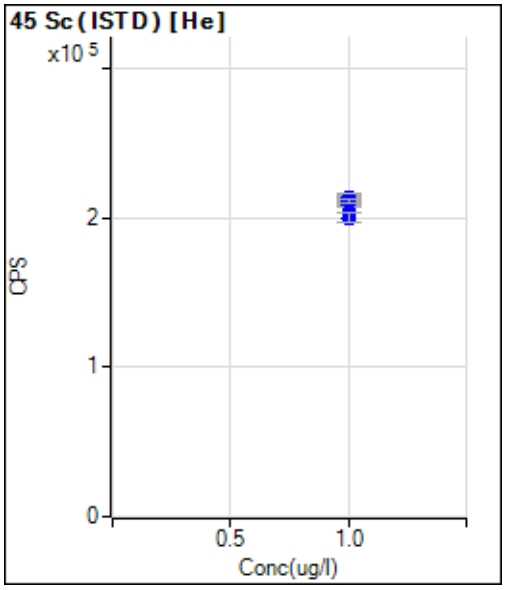
Min Conc: <None>



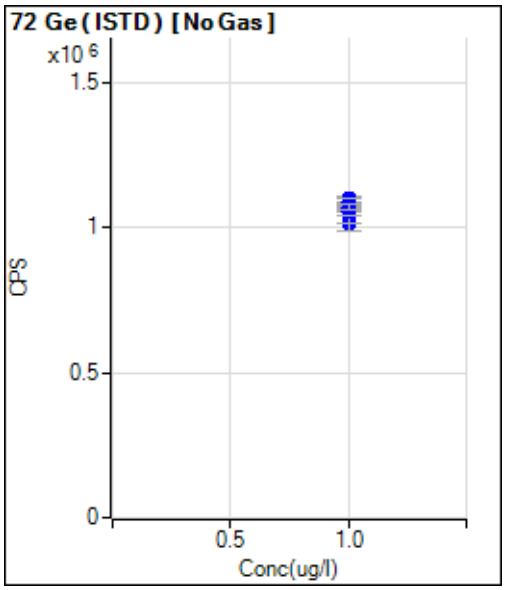
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	1.000		3435877.68		A	3.8	
2	☐	1.000		3323188.84		A	5.7	
3	☐	1.000		3396727.93		A	3.6	
4	☐	1.000		3432144.60		A	1.3	
5	☐	1.000		3479200.91		A	2.0	
6	☐	1.000		3448972.30		A	1.2	
7	☐	1.000		3484669.76		A	0.8	
8	☐	1.000		3453030.93		A	0.8	
9	☐	1.000		3408456.90		A	1.3	
10	☐	1.000		3399395.31		A	1.6	
11	☐	1.000		3415418.96		A	0.6	



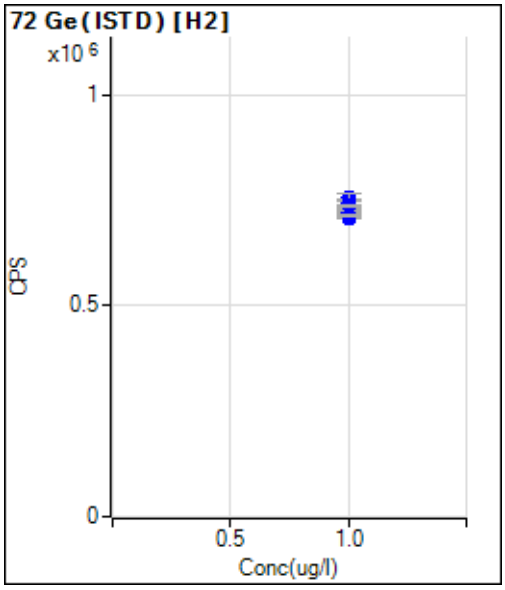
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	1.000		1832370.51		A	3.6	
2	☐	1.000		1818697.35		A	2.6	
3	☐	1.000		1809932.20		A	1.6	
4	☐	1.000		1826167.61		A	2.3	
5	☐	1.000		1865176.05		A	2.2	
6	☐	1.000		1807053.53		A	3.3	
7	☐	1.000		1785719.31		A	2.6	
8	☐	1.000		1808411.34		A	1.8	
9	☐	1.000		1788688.66		A	3.8	
10	☐	1.000		1692621.15		A	2.1	
11	☐	1.000		1768185.19		A	3.1	



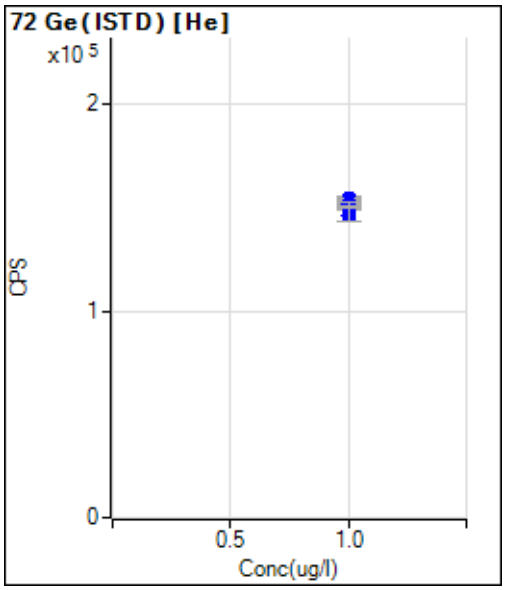
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	1.000		209475.73		P	1.0	
2	☐	1.000		209100.17		P	1.2	
3	☐	1.000		209014.09		P	0.2	
4	☐	1.000		207853.57		P	1.1	
5	☐	1.000		208691.60		P	1.3	
6	☐	1.000		212054.57		P	0.8	
7	☐	1.000		213520.01		P	1.5	
8	☐	1.000		213090.74		P	0.7	
9	☐	1.000		213776.06		P	2.3	
10	☐	1.000		211034.65		P	1.6	
11	☐	1.000		200156.37		P	3.4	



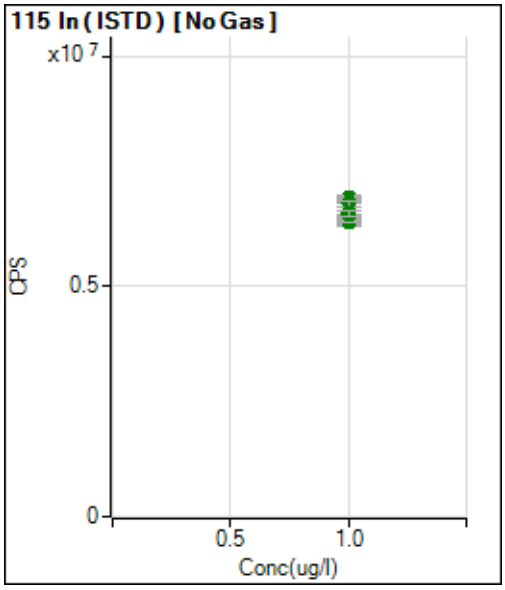
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	1.000		1061075.79		P	1.1	
2	☐	1.000		1013283.75		P	5.7	
3	☐	1.000		1037203.78		P	4.0	
4	☐	1.000		1072227.29		P	0.8	
5	☐	1.000		1067013.83		P	0.4	
6	☐	1.000		1079129.55		P	1.4	
7	☐	1.000		1061752.24		P	1.2	
8	☐	1.000		1088366.37		P	2.8	
9	☐	1.000		1099912.68		P	0.4	
10	☐	1.000		1052986.14		P	1.8	
11	☐	1.000		1068789.99		P	1.6	



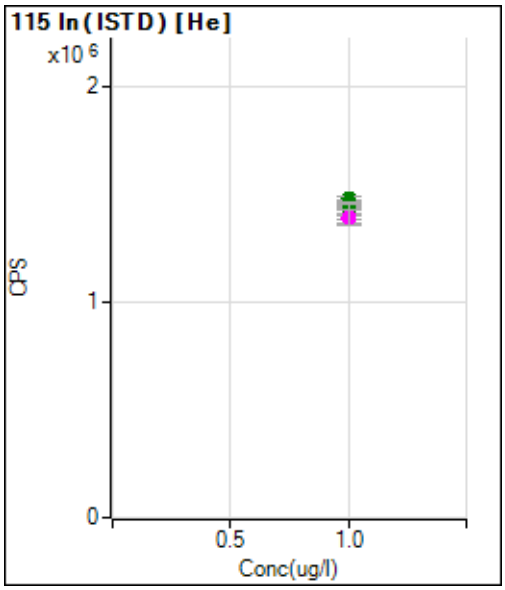
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	1.000		734341.42		P	1.2	
2	☐	1.000		720743.22		P	1.6	
3	☐	1.000		721478.30		P	0.4	
4	☐	1.000		722067.23		P	1.4	
5	☐	1.000		743322.03		P	2.0	
6	☐	1.000		730914.93		P	1.6	
7	☐	1.000		738711.16		P	3.0	
8	☐	1.000		756673.40		P	2.7	
9	☐	1.000		736285.82		P	0.6	
10	☐	1.000		708532.53		P	1.1	
11	☐	1.000		713140.07		P	0.8	



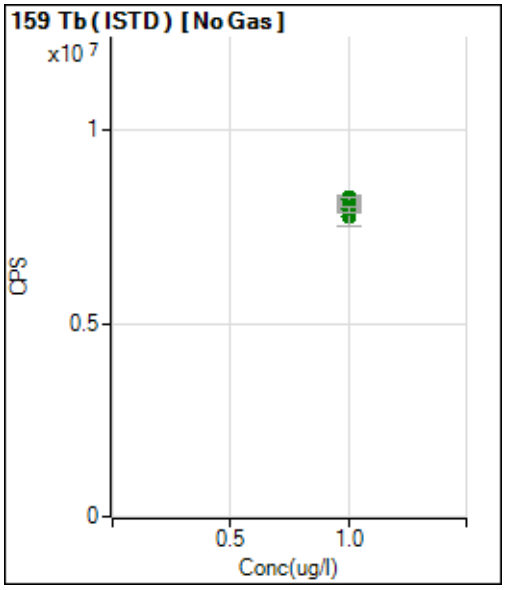
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	1.000		150343.69		P	1.7	
2	☐	1.000		149426.44		P	0.7	
3	☐	1.000		150815.63		P	1.0	
4	☐	1.000		150059.17		P	0.8	
5	☐	1.000		149813.65		P	0.8	
6	☐	1.000		151153.90		P	1.0	
7	☐	1.000		154336.91		P	1.3	
8	☐	1.000		152480.58		P	1.3	
9	☐	1.000		154459.75		P	0.4	
10	☐	1.000		151555.80		P	1.2	
11	☐	1.000		146487.84		P	4.3	



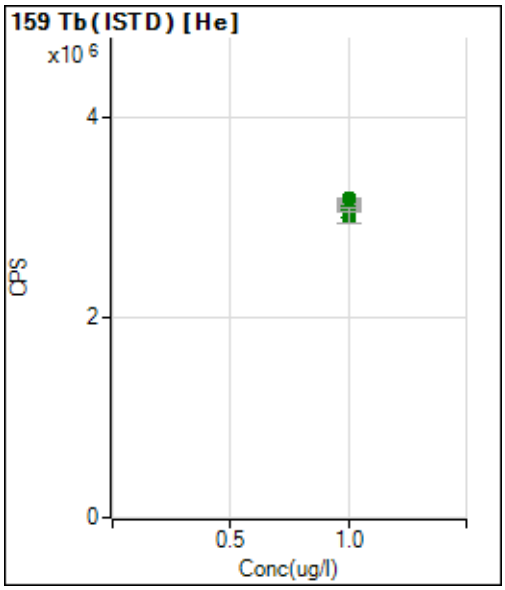
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	1.000		6892618.33		A	2.2	
2	☐	1.000		6498700.04		A	6.4	
3	☐	1.000		6728937.53		A	4.8	
4	☐	1.000		6934000.60		A	1.3	
5	☐	1.000		6821308.52		A	2.4	
6	☐	1.000		6870844.59		A	1.8	
7	☐	1.000		6795024.45		A	1.5	
8	☐	1.000		6611238.83		A	1.3	
9	☐	1.000		6402519.81		A	1.8	
10	☐	1.000		6397592.64		A	0.8	
11	☐	1.000		6577212.03		A	1.9	



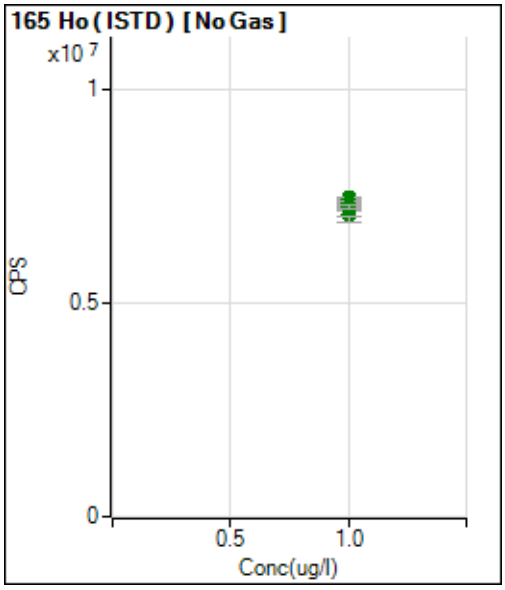
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	1.000		1465833.53		A	1.1	
2	☐	1.000		1463851.82		A	1.2	
3	☐	1.000		1444854.08		A	1.1	
4	☐	1.000		1444742.16		A	0.2	
5	☐	1.000		1455352.43		A	1.1	
6	☐	1.000		1484516.29		A	1.6	
7	☐	1.000		1462715.10		A	0.4	
8	☐	1.000		1432206.83		A	3.4	
9	☐	1.000		1399746.27		A	1.5	
10	☐	1.000		1386923.97		M	2.4	
11	☐	1.000		1393896.06		M	4.7	



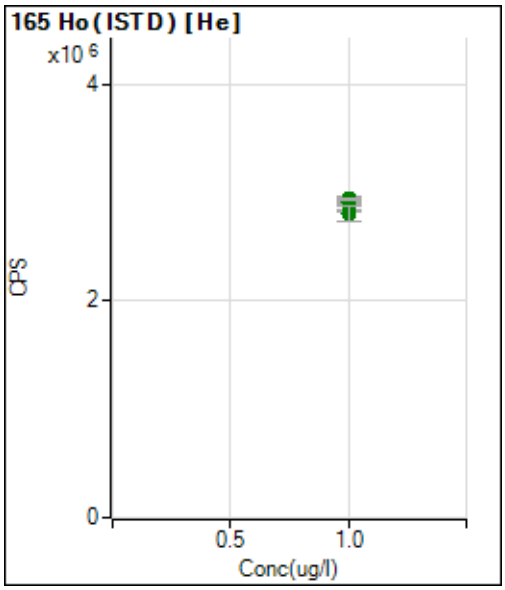
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	1.000		8077952.30		A	3.2	
2	☐	1.000		7750805.53		A	5.8	
3	☐	1.000		8044723.76		A	4.2	
4	☐	1.000		8266521.44		A	1.3	
5	☐	1.000		8128631.05		A	0.5	
6	☐	1.000		8137152.91		A	0.7	
7	☐	1.000		8005941.29		A	0.9	
8	☐	1.000		8195806.98		A	1.9	
9	☐	1.000		7977141.60		A	0.7	
10	☐	1.000		7997184.98		A	1.8	
11	☐	1.000		7953973.59		A	1.8	



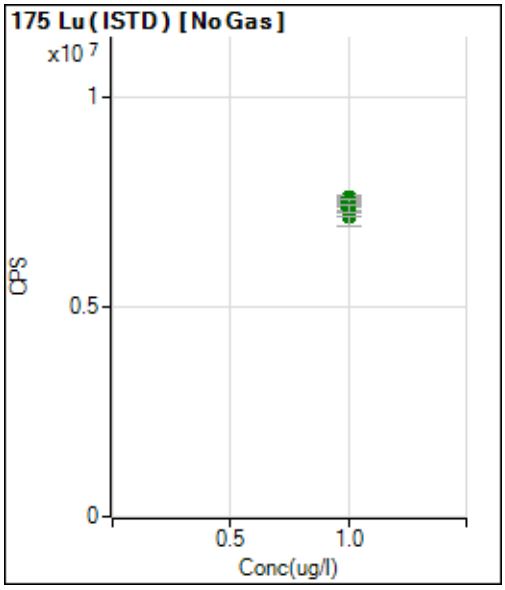
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	1.000		3145101.14		A	0.8	
2	☐	1.000		3155315.67		A	0.4	
3	☐	1.000		3124772.92		A	0.6	
4	☐	1.000		3188518.82		A	0.4	
5	☐	1.000		3124532.47		A	1.3	
6	☐	1.000		3153221.57		A	1.6	
7	☐	1.000		3119382.55		A	2.5	
8	☐	1.000		3128550.03		A	1.0	
9	☐	1.000		3105763.15		A	2.1	
10	☐	1.000		3068371.91		A	1.4	
11	☐	1.000		3000709.28		A	4.0	



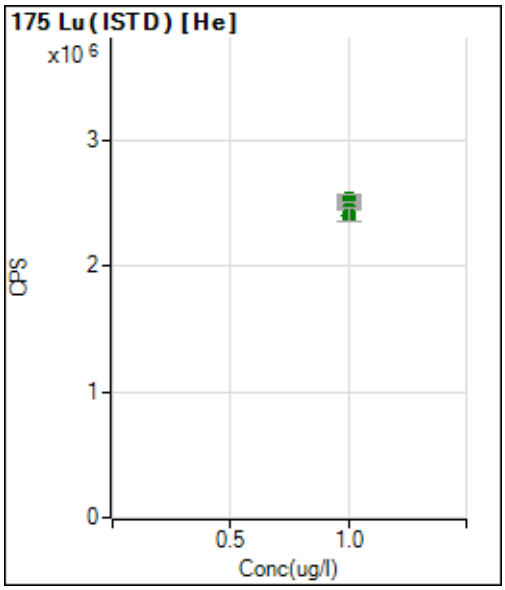
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	1.000		7313494.49		A	3.1	
2	☐	1.000		7089516.50		A	4.9	
3	☐	1.000		7171242.03		A	3.3	
4	☐	1.000		7454169.07		A	0.2	
5	☐	1.000		7352822.77		A	0.9	
6	☐	1.000		7488156.33		A	0.5	
7	☐	1.000		7374305.45		A	1.1	
8	☐	1.000		7428213.27		A	1.2	
9	☐	1.000		7208456.02		A	1.0	
10	☐	1.000		7331884.54		A	2.1	
11	☐	1.000		7247839.51		A	1.4	



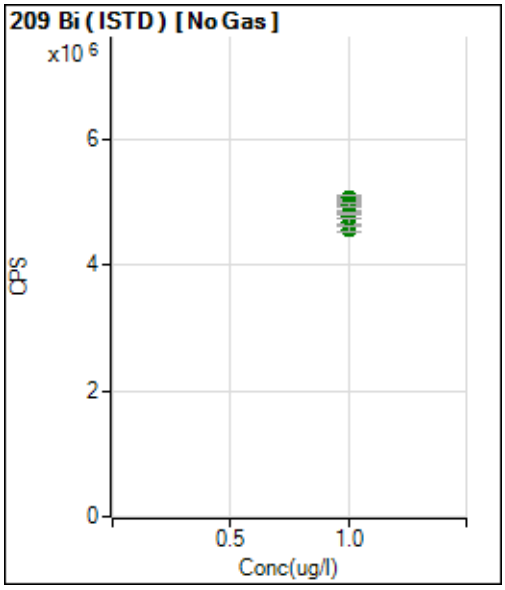
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	1.000		2948239.26		A	1.5	
2	☐	1.000		2937821.05		A	0.1	
3	☐	1.000		2918823.77		A	1.6	
4	☐	1.000		2945652.24		A	1.1	
5	☐	1.000		2888753.76		A	0.9	
6	☐	1.000		2948208.05		A	0.8	
7	☐	1.000		2882426.52		A	2.3	
8	☐	1.000		2906979.64		A	1.1	
9	☐	1.000		2933083.47		A	0.5	
10	☐	1.000		2834091.67		A	1.1	
11	☐	1.000		2807146.32		A	5.6	



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	1.000		7499268.01		A	3.4	
2	☐	1.000		7154017.77		A	6.1	
3	☐	1.000		7310109.85		A	4.3	
4	☐	1.000		7506422.57		A	0.1	
5	☐	1.000		7549541.93		A	1.9	
6	☐	1.000		7604367.44		A	1.0	
7	☐	1.000		7500242.22		A	2.0	
8	☐	1.000		7511788.56		A	1.0	
9	☐	1.000		7358155.92		A	1.6	
10	☐	1.000		7479536.88		A	1.7	
11	☐	1.000		7331645.45		A	2.4	

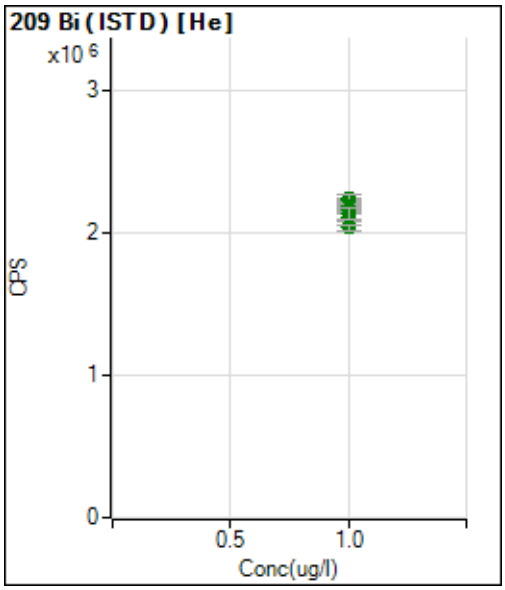


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	1.000		2535829.23		A	1.5	
2	☐	1.000		2534561.66		A	1.9	
3	☐	1.000		2478520.05		A	2.7	
4	☐	1.000		2490991.19		A	0.9	
5	☐	1.000		2464757.69		A	1.0	
6	☐	1.000		2505997.60		A	0.9	
7	☐	1.000		2509257.11		A	2.3	
8	☐	1.000		2472875.00		A	0.4	
9	☐	1.000		2503549.03		A	0.6	
10	☐	1.000		2438571.38		A	0.1	
11	☐	1.000		2405677.05		A	4.5	



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	1.000		4950768.25		A	3.2	
2	☐	1.000		4786212.95		A	5.7	
3	☐	1.000		4938737.48		A	5.7	
4	☐	1.000		4948398.88		A	0.8	
5	☐	1.000		4973976.61		A	2.3	
6	☐	1.000		5082414.32		A	1.6	
7	☐	1.000		4989677.33		A	0.2	
8	☐	1.000		4834177.04		A	0.6	
9	☐	1.000		4692287.24		A	2.1	
10	☐	1.000		4574499.11		A	1.6	
11	☐	1.000		4972484.65		A	1.2	

Calibration for 029_QC1.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	1.000		2183708.67		A	3.7	
2	☐	1.000		2187390.35		A	2.2	
3	☐	1.000		2175976.15		A	1.3	
4	☐	1.000		2227583.99		A	0.9	
5	☐	1.000		2201027.48		A	0.9	
6	☐	1.000		2240120.20		A	2.5	
7	☐	1.000		2189434.41		A	1.1	
8	☐	1.000		2152741.55		A	2.0	
9	☐	1.000		2108544.76		A	2.3	
10	☐	1.000		2036041.54		A	2.0	
11	☐	1.000		2135223.56		A	4.1	

ICPMS207-B Analytical Data

Sample Name	Rinse
File Name	001BLKV.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\211229DoD.b
Acq Time	2021-12-29 12:31:55
Sample Type	BlkVrfy
Total Dilution	1.0000
Comment	ICPMS-6020-W-D
Operator	CAR/SRH/JPV/AEM
Method	SW6020/ SW6020B

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas		ug/l	10079.39
Be	9	45	1	No Gas		ug/l	123.31
B	11	45	1	No Gas		ug/l	5281.05
Na	23	45	3	He		ug/l	65478.31
Mg	24	45	3	He		ug/l	12710.23
Al	27	45	1	No Gas		ug/l	2132.39
Si	28	45	2	H2		ug/l	4279.69
K	39	72	3	He		ug/l	126450.57
Ca	40	72	2	H2		ug/l	186594.25
Ti	47	72	1	No Gas		ug/l	323.67
V	51	72	1	No Gas		ug/l	-158373.71
V	51	72	3	He		ug/l	19279.31
Cr	52	72	1	No Gas		ug/l	92144.73
Cr	52	72	3	He		ug/l	1312.29
Mn	55	72	1	No Gas		ug/l	24448.42
Mn	55	72	3	He		ug/l	954.17
Fe	56	72	2	H2		ug/l	13955.67
Fe	56	72	3	He		ug/l	7860.02
Co	59	72	1	No Gas		ug/l	715.27
Ni	60	72	1	No Gas		ug/l	1214.31
Ni	60	72	3	He		ug/l	223.34
Cu	63	72	1	No Gas		ug/l	1957.59
Cu	63	72	3	He		ug/l	520.57
Cu	65	72	1	No Gas		ug/l	1294.58
Zn	66	72	1	No Gas		ug/l	1254.61
Zn	66	72	3	He		ug/l	173.34
As	75	72	1	No Gas		ug/l	36388.36
As	75	72	3	He		ug/l	491.20
Se	78	72	2	H2		ug/l	48.44
Br	79	72	1	No Gas		ug/l	8315.93
Br	79	72	2	H2		ug/l	4681.50
Se	82	72	1	No Gas		ug/l	1741.36
Kr	84	72	1	No Gas		ug/l	51245.56
Sr	88	72	1	No Gas		ug/l	1037.98
Sr	88	72	3	He		ug/l	156.67
Mo	95	115	1	No Gas		ug/l	102.22
Mo	95	115	3	He		ug/l	40.00
Mo	98	115	1	No Gas		ug/l	166.67
Ag	107	115	1	No Gas		ug/l	106.04
Ag	109	115	1	No Gas		ug/l	100.04
Cd	111	115	1	No Gas		ug/l	22.17

ICPMS207-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Cd	111	115	3	He		ug/l	5.22
Cd	114	115	1	No Gas		ug/l	22.62
Cd	114	115	3	He		ug/l	6.34
Sn	118	115	1	No Gas		ug/l	2904.55
Sn	118	115	3	He		ug/l	748.92
Sb	121	115	1	No Gas		ug/l	1651.60
Sb	121	115	3	He		ug/l	348.37
Sb	123	115	1	No Gas		ug/l	1324.86
Sb	123	115	3	He		ug/l	261.36
Ba	135	115	1	No Gas		ug/l	36.59
Ba	137	115	1	No Gas		ug/l	56.55
La	139	115	3	He		ug/l	13.34
Ce	140	115	3	He		ug/l	20.00
Hg	201	209	1	No Gas		ug/l	21.33
Hg	202	209	1	No Gas		ug/l	61.32
Hg	202	209	3	He		ug/l	21.00
Tl	203	209	3	He		ug/l	524.22
Tl	205	209	1	No Gas		ug/l	2296.90
Tl	205	209	3	He		ug/l	1261.24
[Pb]	206	209	1	No Gas		ug/l	504.46
[Pb]	207	209	1	No Gas		ug/l	482.24
Pb	208	209	1	No Gas		ug/l	2068.97
Th	232	209	3	He		ug/l	437.52
U	238	209	1	No Gas		ug/l	47.32

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	3571655.53	
Sc	45	2	H2	1770702.74	
Sc	45	3	He	213093.75	
Ge	72	1	No Gas	1061462.82	
Ge	72	2	H2	684746.66	
Ge	72	3	He	152319.24	
In	115	1	No Gas	6888539.40	
In	115	3	He	1472420.38	
Tb	159	1	No Gas	8407787.18	
Tb	159	3	He	3203556.83	
Ho	165	1	No Gas	7746419.01	
Ho	165	3	He	2951811.21	
Lu	175	1	No Gas	7757758.95	
Lu	175	3	He	2529971.89	
Bi	209	1	No Gas	5185858.25	
Bi	209	3	He	2256331.45	

ICPMS207-B Analytical Data

Sample Name	Rinse
File Name	002BLKV.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\211229DoD.b
Acq Time	2021-12-29 12:38:05
Sample Type	BlkVrfy
Total Dilution	1.0000
Comment	ICPMS-6020-W-D
Operator	CAR/SRH/JPV/AEM
Method	SW6020/ SW6020B

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas		ug/l	10486.49
Be	9	45	1	No Gas		ug/l	107.31
B	11	45	1	No Gas		ug/l	4952.14
Na	23	45	3	He		ug/l	64519.71
Mg	24	45	3	He		ug/l	12277.36
Al	27	45	1	No Gas		ug/l	2222.40
Si	28	45	2	H2		ug/l	4554.53
K	39	72	3	He		ug/l	124557.08
Ca	40	72	2	H2		ug/l	191358.21
Ti	47	72	1	No Gas		ug/l	295.30
V	51	72	1	No Gas		ug/l	-70269.46
V	51	72	3	He		ug/l	21510.22
Cr	52	72	1	No Gas		ug/l	101670.77
Cr	52	72	3	He		ug/l	1274.51
Mn	55	72	1	No Gas		ug/l	25204.97
Mn	55	72	3	He		ug/l	948.17
Fe	56	72	2	H2		ug/l	14249.56
Fe	56	72	3	He		ug/l	7743.18
Co	59	72	1	No Gas		ug/l	698.64
Ni	60	72	1	No Gas		ug/l	1054.62
Ni	60	72	3	He		ug/l	182.23
Cu	63	72	1	No Gas		ug/l	1772.83
Cu	63	72	3	He		ug/l	443.59
Cu	65	72	1	No Gas		ug/l	1213.88
Zn	66	72	1	No Gas		ug/l	1317.47
Zn	66	72	3	He		ug/l	192.22
As	75	72	1	No Gas		ug/l	37730.58
As	75	72	3	He		ug/l	526.40
Se	78	72	2	H2		ug/l	51.22
Br	79	72	1	No Gas		ug/l	8429.10
Br	79	72	2	H2		ug/l	4305.45
Se	82	72	1	No Gas		ug/l	2072.32
Kr	84	72	1	No Gas		ug/l	57841.24
Sr	88	72	1	No Gas		ug/l	1181.05
Sr	88	72	3	He		ug/l	164.45
Mo	95	115	1	No Gas		ug/l	86.66
Mo	95	115	3	He		ug/l	31.11
Mo	98	115	1	No Gas		ug/l	128.40
Ag	107	115	1	No Gas		ug/l	60.69
Ag	109	115	1	No Gas		ug/l	62.69
Cd	111	115	1	No Gas		ug/l	19.02

ICPMS207-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Cd	111	115	3	He		ug/l	5.56
Cd	114	115	1	No Gas		ug/l	19.23
Cd	114	115	3	He		ug/l	6.47
Sn	118	115	1	No Gas		ug/l	1693.42
Sn	118	115	3	He		ug/l	431.12
Sb	121	115	1	No Gas		ug/l	870.78
Sb	121	115	3	He		ug/l	222.69
Sb	123	115	1	No Gas		ug/l	772.10
Sb	123	115	3	He		ug/l	161.69
Ba	135	115	1	No Gas		ug/l	23.29
Ba	137	115	1	No Gas		ug/l	36.59
La	139	115	3	He		ug/l	7.78
Ce	140	115	3	He		ug/l	17.78
Hg	201	209	1	No Gas		ug/l	20.33
Hg	202	209	1	No Gas		ug/l	54.32
Hg	202	209	3	He		ug/l	16.33
Tl	203	209	3	He		ug/l	400.17
Tl	205	209	1	No Gas		ug/l	1680.12
Tl	205	209	3	He		ug/l	1013.78
[Pb]	206	209	1	No Gas		ug/l	473.35
[Pb]	207	209	1	No Gas		ug/l	413.34
Pb	208	209	1	No Gas		ug/l	1907.85
Th	232	209	3	He		ug/l	360.15
U	238	209	1	No Gas		ug/l	277.97

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	3422270.03	
Sc	45	2	H2	1829254.24	
Sc	45	3	He	209498.67	
Ge	72	1	No Gas	1047561.25	
Ge	72	2	H2	725492.25	
Ge	72	3	He	147915.19	
In	115	1	No Gas	6841577.17	
In	115	3	He	1445107.72	
Tb	159	1	No Gas	8334521.36	
Tb	159	3	He	3145047.31	
Ho	165	1	No Gas	7525227.31	
Ho	165	3	He	2895768.11	
Lu	175	1	No Gas	7759718.98	
Lu	175	3	He	2517333.57	
Bi	209	1	No Gas	5159913.38	
Bi	209	3	He	2206155.20	

ICPMS207-B Analytical Data

Sample Name	Cal Blk
File Name	003CALB.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\211229DoD.b
Acq Time	2021-12-29 12:44:17
Sample Type	CalBlk
Total Dilution	1.0000
Comment	ICPMS-6020-W-D
Operator	CAR/SRH/JPV/AEM
Method	SW6020/ SW6020B

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	0.000	ug/l	10421.76
Be	9	45	1	No Gas	0.000	ug/l	91.31
B	11	45	1	No Gas	0.000	ug/l	4768.01
Na	23	45	3	He	0.000	ug/l	64122.80
Mg	24	45	3	He	0.000	ug/l	11884.51
Al	27	45	1	No Gas	0.000	ug/l	3380.84
Si	28	45	2	H2	0.000	ug/l	4622.58
K	39	72	3	He	0.000	ug/l	126471.58
Ca	40	72	2	H2	0.000	ug/l	186340.61
Ti	47	72	1	No Gas	0.000	ug/l	301.97
V	51	72	1	No Gas	0.000	ug/l	-67385.76
V	51	72	3	He	0.000	ug/l	22359.19
Cr	52	72	1	No Gas	0.000	ug/l	102802.52
Cr	52	72	3	He	0.000	ug/l	1308.96
Mn	55	72	1	No Gas	0.000	ug/l	25598.09
Mn	55	72	3	He	0.000	ug/l	963.17
Fe	56	72	2	H2	0.000	ug/l	14406.55
Fe	56	72	3	He	0.000	ug/l	7763.23
Co	59	72	1	No Gas	0.000	ug/l	658.71
Ni	60	72	1	No Gas	0.000	ug/l	951.48
Ni	60	72	3	He	0.000	ug/l	195.56
Cu	63	72	1	No Gas	0.000	ug/l	1743.48
Cu	63	72	3	He	0.000	ug/l	442.92
Cu	65	72	1	No Gas	0.000	ug/l	1167.19
Zn	66	72	1	No Gas	0.000	ug/l	1303.91
Zn	66	72	3	He	0.000	ug/l	193.34
As	75	72	1	No Gas	0.000	ug/l	35569.52
As	75	72	3	He	0.000	ug/l	533.07
Se	78	72	2	H2	0.000	ug/l	52.67
Br	79	72	1	No Gas	0.000	ug/l	8176.11
Br	79	72	2	H2	0.000	ug/l	4435.25
Se	82	72	1	No Gas	0.000	ug/l	2011.74
Kr	84	72	1	No Gas		ug/l	57841.35
Sr	88	72	1	No Gas	0.000	ug/l	1124.48
Sr	88	72	3	He	0.000	ug/l	155.56
Mo	95	115	1	No Gas	0.000	ug/l	84.45
Mo	95	115	3	He	0.000	ug/l	31.11
Mo	98	115	1	No Gas	0.000	ug/l	136.18
Ag	107	115	1	No Gas	0.000	ug/l	52.02
Ag	109	115	1	No Gas	0.000	ug/l	50.02
Cd	111	115	1	No Gas	0.000	ug/l	30.48

ICPMS207-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Cd	111	115	3	He	0.000	ug/l	4.67
Cd	114	115	1	No Gas	0.000	ug/l	28.52
Cd	114	115	3	He	0.000	ug/l	5.78
Sn	118	115	1	No Gas	0.000	ug/l	1779.93
Sn	118	115	3	He	0.000	ug/l	468.90
Sb	121	115	1	No Gas	0.000	ug/l	787.10
Sb	121	115	3	He	0.000	ug/l	199.02
Sb	123	115	1	No Gas	0.000	ug/l	693.75
Sb	123	115	3	He	0.000	ug/l	160.02
Ba	135	115	1	No Gas	0.000	ug/l	26.61
Ba	137	115	1	No Gas	0.000	ug/l	73.19
La	139	115	3	He	0.000	ug/l	15.56
Ce	140	115	3	He	0.000	ug/l	14.44
Hg	201	209	1	No Gas	0.000	ug/l	18.00
Hg	202	209	1	No Gas	0.000	ug/l	60.99
Hg	202	209	3	He	0.000	ug/l	20.00
Tl	203	209	3	He	0.000	ug/l	403.50
Tl	205	209	1	No Gas	0.000	ug/l	2000.16
Tl	205	209	3	He	0.000	ug/l	1020.45
[Pb]	206	209	1	No Gas	0.000	ug/l	490.01
[Pb]	207	209	1	No Gas	0.000	ug/l	460.01
Pb	208	209	1	No Gas	0.000	ug/l	1967.85
Th	232	209	3	He	0.000	ug/l	271.45
U	238	209	1	No Gas	0.000	ug/l	133.03

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	3375828.90	100.0
Sc	45	2	H2	1822845.24	100.0
Sc	45	3	He	212202.85	100.0
Ge	72	1	No Gas	1090776.52	100.0
Ge	72	2	H2	744172.98	100.0
Ge	72	3	He	151757.49	100.0
In	115	1	No Gas	6790152.53	100.0
In	115	3	He	1441769.84	100.0
Tb	159	1	No Gas	8240432.23	100.0
Tb	159	3	He	3155075.28	100.0
Ho	165	1	No Gas	7395969.56	100.0
Ho	165	3	He	2931984.72	100.0
Lu	175	1	No Gas	7536678.08	100.0
Lu	175	3	He	2502446.81	100.0
Bi	209	1	No Gas	5043601.04	100.0
Bi	209	3	He	2229921.18	100.0

ICPMS207-B Analytical Data

Sample Name	0.025 ppb STD
File Name	004CALS.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\211229DoD.b
Acq Time	2021-12-29 12:51:10
Sample Type	CalStd
Total Dilution	1.0000
Comment	ICPMS-6020B-Cal
Operator	CAR/SRH/JPV/AEM
Method	SW6020/ SW6020B

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	0.502	ug/l	12497.50
Be	9	45	1	No Gas	0.030	ug/l	153.64
B	11	45	1	No Gas	-0.013	ug/l	4739.98
Na	23	45	3	He	10.482	ug/l	69275.03
Mg	24	45	3	He	9.625	ug/l	14887.84
Al	27	45	1	No Gas	0.082	ug/l	4526.27
Si	28	45	2	H2	0.565	ug/l	5331.77
K	39	72	3	He	10.215	ug/l	128405.70
Ca	40	72	2	H2	12.906	ug/l	256616.72
Ti	47	72	1	No Gas	0.058	ug/l	400.41
V	51	72	1	No Gas	0.609	ug/l	-53272.05
V	51	72	3	He	0.507	ug/l	23878.25
Cr	52	72	1	No Gas	0.566	ug/l	112708.97
Cr	52	72	3	He	0.058	ug/l	1521.20
Mn	55	72	1	No Gas	0.112	ug/l	28317.68
Mn	55	72	3	He	0.038	ug/l	1050.16
Fe	56	72	2	H2	1.136	ug/l	30002.43
Fe	56	72	3	He	1.135	ug/l	11693.10
Co	59	72	1	No Gas	0.041	ug/l	1640.18
Ni	60	72	1	No Gas	0.106	ug/l	1517.08
Ni	60	72	3	He	0.107	ug/l	363.34
Cu	63	72	1	No Gas	0.068	ug/l	2636.64
Cu	63	72	3	He	0.070	ug/l	728.54
Cu	65	72	1	No Gas	0.069	ug/l	1594.06
Zn	66	72	1	No Gas	0.152	ug/l	1996.01
Zn	66	72	3	He	0.147	ug/l	334.45
As	75	72	1	No Gas	0.839	ug/l	40245.19
As	75	72	3	He	0.096	ug/l	625.73
Se	78	72	2	H2	0.033	ug/l	72.11
Br	79	72	1	No Gas	103.732	ug/l	10359.83
Br	79	72	2	H2	113.298	ug/l	5716.48
Se	82	72	1	No Gas	-0.435	ug/l	1812.83
Kr	84	72	1	No Gas		ug/l	57094.90
Sr	88	72	1	No Gas	0.040	ug/l	2628.37
Sr	88	72	3	He	0.033	ug/l	294.45
Mo	95	115	1	No Gas	0.027	ug/l	288.89
Mo	95	115	3	He	0.036	ug/l	121.11
Mo	98	115	1	No Gas	0.029	ug/l	492.99
Ag	107	115	1	No Gas	0.015	ug/l	354.81
Ag	109	115	1	No Gas	0.015	ug/l	336.14
Cd	111	115	1	No Gas	0.026	ug/l	147.64

ICPMS207-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Cd	111	115	3	He	0.033	ug/l	51.11
Cd	114	115	1	No Gas	0.030	ug/l	337.63
Cd	114	115	3	He	0.030	ug/l	109.32
Sn	118	115	1	No Gas	0.226	ug/l	4684.85
Sn	118	115	3	He	0.251	ug/l	1284.51
Sb	121	115	1	No Gas	0.032	ug/l	1469.56
Sb	121	115	3	He	0.030	ug/l	361.37
Sb	123	115	1	No Gas	0.033	ug/l	1213.18
Sb	123	115	3	He	0.031	ug/l	289.70
Ba	135	115	1	No Gas	0.050	ug/l	216.24
Ba	137	115	1	No Gas	0.039	ug/l	339.33
La	139	115	3	He	0.034	ug/l	630.02
Ce	140	115	3	He	0.035	ug/l	684.47
Hg	201	209	1	No Gas	0.001	ug/l	21.66
Hg	202	209	1	No Gas	0.001	ug/l	65.66
Hg	202	209	3	He	0.001	ug/l	22.00
Tl	203	209	3	He	0.035	ug/l	622.26
Tl	205	209	1	No Gas	0.019	ug/l	2663.62
Tl	205	209	3	He	0.026	ug/l	1404.64
[Pb]	206	209	1	No Gas	0.034	ug/l	894.48
[Pb]	207	209	1	No Gas	0.027	ug/l	740.02
Pb	208	209	1	No Gas	0.034	ug/l	3566.88
Th	232	209	3	He	0.015	ug/l	569.58
U	238	209	1	No Gas	0.029	ug/l	1337.80

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	3372912.59	99.9
Sc	45	2	H2	1748548.88	95.9
Sc	45	3	He	207272.54	97.7
Ge	72	1	No Gas	1070576.30	98.1
Ge	72	2	H2	714448.98	96.0
Ge	72	3	He	149235.06	98.3
In	115	1	No Gas	6680808.71	98.4
In	115	3	He	1444225.14	100.2
Tb	159	1	No Gas	8326003.37	101.0
Tb	159	3	He	3151119.73	99.9
Ho	165	1	No Gas	7691251.40	104.0
Ho	165	3	He	2937337.96	100.2
Lu	175	1	No Gas	7716302.02	102.4
Lu	175	3	He	2498801.47	99.9
Bi	209	1	No Gas	5146932.86	102.0
Bi	209	3	He	2215574.39	99.4

ICPMS207-B Analytical Data

Sample Name	0.05 ppb STD
File Name	005CALS.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\211229DoD.b
Acq Time	2021-12-29 12:57:46
Sample Type	CalStd
Total Dilution	1.0000
Comment	ICPMS-6020B-Cal
Operator	CAR/SRH/JPV/AEM
Method	SW6020/ SW6020B

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	1.084	ug/l	15101.56
Be	9	45	1	No Gas	0.064	ug/l	227.62
B	11	45	1	No Gas	-0.051	ug/l	4734.65
Na	23	45	3	He	20.908	ug/l	75772.76
Mg	24	45	3	He	20.557	ug/l	18587.93
Al	27	45	1	No Gas	0.129	ug/l	5258.75
Si	28	45	2	H2	0.880	ug/l	5814.80
K	39	72	3	He	20.512	ug/l	131330.11
Ca	40	72	2	H2	23.679	ug/l	322269.61
Ti	47	72	1	No Gas	0.168	ug/l	598.98
V	51	72	1	No Gas	0.293	ug/l	-59126.22
V	51	72	3	He	0.882	ug/l	25056.89
Cr	52	72	1	No Gas	0.916	ug/l	118642.27
Cr	52	72	3	He	0.107	ug/l	1701.22
Mn	55	72	1	No Gas	0.159	ug/l	29357.71
Mn	55	72	3	He	0.074	ug/l	1134.82
Fe	56	72	2	H2	2.313	ug/l	46863.11
Fe	56	72	3	He	2.396	ug/l	16059.93
Co	59	72	1	No Gas	0.076	ug/l	2455.34
Ni	60	72	1	No Gas	0.162	ug/l	1796.55
Ni	60	72	3	He	0.101	ug/l	351.12
Cu	63	72	1	No Gas	0.087	ug/l	2860.76
Cu	63	72	3	He	0.096	ug/l	829.19
Cu	65	72	1	No Gas	0.089	ug/l	1708.12
Zn	66	72	1	No Gas	0.119	ug/l	1819.57
Zn	66	72	3	He	0.157	ug/l	341.12
As	75	72	1	No Gas	2.160	ug/l	48105.52
As	75	72	3	He	0.160	ug/l	687.47
Se	78	72	2	H2	0.086	ug/l	107.22
Br	79	72	1	No Gas	117.316	ug/l	10546.32
Br	79	72	2	H2	93.136	ug/l	5473.54
Se	82	72	1	No Gas	0.366	ug/l	2088.23
Kr	84	72	1	No Gas		ug/l	58378.80
Sr	88	72	1	No Gas	0.082	ug/l	4202.30
Sr	88	72	3	He	0.080	ug/l	488.90
Mo	95	115	1	No Gas	0.068	ug/l	611.13
Mo	95	115	3	He	0.069	ug/l	200.00
Mo	98	115	1	No Gas	0.070	ug/l	1019.70
Ag	107	115	1	No Gas	0.031	ug/l	694.30
Ag	109	115	1	No Gas	0.031	ug/l	669.62
Cd	111	115	1	No Gas	0.070	ug/l	350.16

ICPMS207-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Cd	111	115	3	He	0.076	ug/l	110.11
Cd	114	115	1	No Gas	0.068	ug/l	747.56
Cd	114	115	3	He	0.072	ug/l	250.55
Sn	118	115	1	No Gas	0.380	ug/l	6814.85
Sn	118	115	3	He	0.385	ug/l	1683.44
Sb	121	115	1	No Gas	0.067	ug/l	2270.41
Sb	121	115	3	He	0.069	ug/l	557.07
Sb	123	115	1	No Gas	0.068	ug/l	1832.97
Sb	123	115	3	He	0.071	ug/l	450.39
Ba	135	115	1	No Gas	0.079	ug/l	332.68
Ba	137	115	1	No Gas	0.074	ug/l	585.53
La	139	115	3	He	0.077	ug/l	1386.75
Ce	140	115	3	He	0.075	ug/l	1425.64
Hg	201	209	1	No Gas	0.000	ug/l	19.33
Hg	202	209	1	No Gas	0.000	ug/l	63.32
Hg	202	209	3	He	0.002	ug/l	24.99
Tl	203	209	3	He	0.068	ug/l	824.36
Tl	205	209	1	No Gas	0.058	ug/l	3987.29
Tl	205	209	3	He	0.066	ug/l	1980.28
[Pb]	206	209	1	No Gas	0.074	ug/l	1376.75
[Pb]	207	209	1	No Gas	0.074	ug/l	1222.29
Pb	208	209	1	No Gas	0.072	ug/l	5356.01
Th	232	209	3	He	0.038	ug/l	996.44
U	238	209	1	No Gas	0.068	ug/l	2951.41

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	3405247.02	100.9
Sc	45	2	H2	1744285.13	95.7
Sc	45	3	He	206995.16	97.5
Ge	72	1	No Gas	1056786.06	96.9
Ge	72	2	H2	716177.05	96.2
Ge	72	3	He	147953.76	97.5
In	115	1	No Gas	6795069.01	100.1
In	115	3	He	1412202.93	97.9
Tb	159	1	No Gas	8135793.94	98.7
Tb	159	3	He	3108198.51	98.5
Ho	165	1	No Gas	7360270.32	99.5
Ho	165	3	He	2904221.23	99.1
Lu	175	1	No Gas	7597476.37	100.8
Lu	175	3	He	2494061.84	99.7
Bi	209	1	No Gas	5151512.28	102.1
Bi	209	3	He	2198179.78	98.6

ICPMS207-B Analytical Data

Sample Name	0.10 ppb STD
File Name	006CALS.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\211229DoD.b
Acq Time	2021-12-29 13:04:21
Sample Type	CalStd
Total Dilution	1.0000
Comment	ICPMS-6020B-Cal
Operator	CAR/SRH/JPV/AEM
Method	SW6020/ SW6020B

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	2.163	ug/l	19719.34
Be	9	45	1	No Gas	0.351	ug/l	833.19
B	11	45	1	No Gas	1.639	ug/l	7213.29
Na	23	45	3	He	43.355	ug/l	89499.36
Mg	24	45	3	He	139.512	ug/l	58700.93
Al	27	45	1	No Gas	0.253	ug/l	7051.70
Si	28	45	2	H2	1.408	ug/l	6822.97
K	39	72	3	He	40.769	ug/l	140639.13
Ca	40	72	2	H2	55.283	ug/l	518932.22
Ti	47	72	1	No Gas	0.214	ug/l	690.71
V	51	72	1	No Gas	1.436	ug/l	-33320.36
V	51	72	3	He	0.544	ug/l	24039.62
Cr	52	72	1	No Gas	0.618	ug/l	113955.79
Cr	52	72	3	He	0.239	ug/l	2247.96
Mn	55	72	1	No Gas	0.746	ug/l	46701.19
Mn	55	72	3	He	0.528	ug/l	2362.06
Fe	56	72	2	H2	16.047	ug/l	245593.62
Fe	56	72	3	He	13.718	ug/l	56718.91
Co	59	72	1	No Gas	0.308	ug/l	8046.29
Ni	60	72	1	No Gas	10.041	ug/l	55897.79
Ni	60	72	3	He	5.599	ug/l	9148.48
Cu	63	72	1	No Gas	0.186	ug/l	4262.34
Cu	63	72	3	He	0.207	ug/l	1301.80
Cu	65	72	1	No Gas	0.181	ug/l	2337.13
Zn	66	72	1	No Gas	0.251	ug/l	2468.56
Zn	66	72	3	He	0.287	ug/l	472.23
As	75	72	1	No Gas	0.686	ug/l	39198.73
As	75	72	3	He	0.238	ug/l	776.87
Se	78	72	2	H2	0.183	ug/l	172.44
Br	79	72	1	No Gas	96.731	ug/l	10213.41
Br	79	72	2	H2	89.410	ug/l	5486.84
Se	82	72	1	No Gas	-0.223	ug/l	1893.42
Kr	84	72	1	No Gas		ug/l	55756.72
Sr	88	72	1	No Gas	0.193	ug/l	8568.91
Sr	88	72	3	He	0.186	ug/l	942.26
Mo	95	115	1	No Gas	0.188	ug/l	1517.87
Mo	95	115	3	He	0.194	ug/l	504.46
Mo	98	115	1	No Gas	0.186	ug/l	2466.55
Ag	107	115	1	No Gas	0.065	ug/l	1379.29
Ag	109	115	1	No Gas	0.070	ug/l	1411.97
Cd	111	115	1	No Gas	0.176	ug/l	827.21

ICPMS207-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Cd	111	115	3	He	0.173	ug/l	245.00
Cd	114	115	1	No Gas	0.168	ug/l	1786.64
Cd	114	115	3	He	0.177	ug/l	603.61
Sn	118	115	1	No Gas	0.484	ug/l	8099.62
Sn	118	115	3	He	0.500	ug/l	2052.38
Sb	121	115	1	No Gas	0.163	ug/l	4357.11
Sb	121	115	3	He	0.170	ug/l	1088.82
Sb	123	115	1	No Gas	0.165	ug/l	3401.43
Sb	123	115	3	He	0.161	ug/l	823.44
Ba	135	115	1	No Gas	0.187	ug/l	745.22
Ba	137	115	1	No Gas	0.175	ug/l	1274.21
La	139	115	3	He	0.176	ug/l	3149.27
Ce	140	115	3	He	0.177	ug/l	3362.65
Hg	201	209	1	No Gas	0.004	ug/l	26.99
Hg	202	209	1	No Gas	0.001	ug/l	66.99
Hg	202	209	3	He	0.004	ug/l	30.66
Tl	203	209	3	He	0.156	ug/l	1387.30
Tl	205	209	1	No Gas	0.158	ug/l	6987.43
Tl	205	209	3	He	0.163	ug/l	3449.17
[Pb]	206	209	1	No Gas	0.173	ug/l	2441.35
[Pb]	207	209	1	No Gas	0.168	ug/l	2087.96
Pb	208	209	1	No Gas	0.169	ug/l	9488.05
Th	232	209	3	He	0.101	ug/l	2233.09
U	238	209	1	No Gas	0.165	ug/l	6694.38

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	3412221.92	101.1
Sc	45	2	H2	1789625.58	98.2
Sc	45	3	He	205859.25	97.0
Ge	72	1	No Gas	1070984.19	98.2
Ge	72	2	H2	724406.56	97.3
Ge	72	3	He	149393.84	98.4
In	115	1	No Gas	6715616.43	98.9
In	115	3	He	1414276.69	98.1
Tb	159	1	No Gas	8001512.32	97.1
Tb	159	3	He	3084767.91	97.8
Ho	165	1	No Gas	7209576.30	97.5
Ho	165	3	He	2848896.79	97.2
Lu	175	1	No Gas	7321424.71	97.1
Lu	175	3	He	2493943.67	99.7
Bi	209	1	No Gas	4931110.45	97.8
Bi	209	3	He	2215972.70	99.4

ICPMS207-B Analytical Data

Sample Name	0.5 ppb STD
File Name	007CALS.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\211229DoD.b
Acq Time	2021-12-29 13:10:55
Sample Type	CalStd
Total Dilution	1.0000
Comment	ICPMS-6020B-Cal
Operator	CAR/SRH/JPV/AEM
Method	SW6020/ SW6020B

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	8.428	ug/l	46057.99
Be	9	45	1	No Gas	0.697	ug/l	1555.44
B	11	45	1	No Gas	0.656	ug/l	5744.07
Na	23	45	3	He	170.451	ug/l	170279.70
Mg	24	45	3	He	218.758	ug/l	85907.36
Al	27	45	1	No Gas	0.755	ug/l	14172.33
Si	28	45	2	H2	4.135	ug/l	9506.85
K	39	72	3	He	177.380	ug/l	192921.00
Ca	40	72	2	H2	219.089	ug/l	1300946.98
Ti	47	72	1	No Gas	0.705	ug/l	1581.68
V	51	72	1	No Gas	-0.872	ug/l	-87101.17
V	51	72	3	He	0.847	ug/l	24934.45
Cr	52	72	1	No Gas	0.909	ug/l	118934.98
Cr	52	72	3	He	0.716	ug/l	4118.38
Mn	55	72	1	No Gas	0.813	ug/l	48176.33
Mn	55	72	3	He	0.786	ug/l	3024.04
Fe	56	72	2	H2	26.912	ug/l	343960.63
Fe	56	72	3	He	21.672	ug/l	84373.24
Co	59	72	1	No Gas	0.697	ug/l	17255.99
Ni	60	72	1	No Gas	2.638	ug/l	15247.67
Ni	60	72	3	He	2.620	ug/l	4341.78
Cu	63	72	1	No Gas	0.688	ug/l	11022.59
Cu	63	72	3	He	0.732	ug/l	3463.72
Cu	65	72	1	No Gas	0.673	ug/l	5511.27
Zn	66	72	1	No Gas	0.752	ug/l	4797.56
Zn	66	72	3	He	0.746	ug/l	915.59
As	75	72	1	No Gas	1.767	ug/l	45773.06
As	75	72	3	He	0.708	ug/l	1261.43
Se	78	72	2	H2	0.803	ug/l	498.90
Br	79	72	1	No Gas	85.348	ug/l	9863.84
Br	79	72	2	H2	163.534	ug/l	5533.44
Se	82	72	1	No Gas	0.227	ug/l	2042.58
Kr	84	72	1	No Gas		ug/l	55960.59
Sr	88	72	1	No Gas	0.699	ug/l	27831.84
Sr	88	72	3	He	0.697	ug/l	3082.57
Mo	95	115	1	No Gas	0.624	ug/l	4895.32
Mo	95	115	3	He	0.653	ug/l	1633.44
Mo	98	115	1	No Gas	0.622	ug/l	7991.94
Ag	107	115	1	No Gas	0.257	ug/l	5351.17
Ag	109	115	1	No Gas	0.254	ug/l	5068.94
Cd	111	115	1	No Gas	0.633	ug/l	2925.21

ICPMS207-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Cd	111	115	3	He	0.631	ug/l	884.47
Cd	114	115	1	No Gas	0.609	ug/l	6452.91
Cd	114	115	3	He	0.636	ug/l	2168.74
Sn	118	115	1	No Gas	0.874	ug/l	13336.59
Sn	118	115	3	He	0.853	ug/l	3189.27
Sb	121	115	1	No Gas	0.615	ug/l	14472.20
Sb	121	115	3	He	0.647	ug/l	3618.83
Sb	123	115	1	No Gas	0.625	ug/l	11069.47
Sb	123	115	3	He	0.632	ug/l	2779.22
Ba	135	115	1	No Gas	1.285	ug/l	5030.96
Ba	137	115	1	No Gas	1.291	ug/l	9025.06
La	139	115	3	He	0.658	ug/l	11759.48
Ce	140	115	3	He	0.646	ug/l	12308.84
Hg	201	209	1	No Gas	0.011	ug/l	44.66
Hg	202	209	1	No Gas	0.011	ug/l	121.98
Hg	202	209	3	He	0.012	ug/l	49.32
Tl	203	209	3	He	0.623	ug/l	4263.73
Tl	205	209	1	No Gas	0.615	ug/l	21972.61
Tl	205	209	3	He	0.634	ug/l	10325.49
[Pb]	206	209	1	No Gas	0.615	ug/l	7602.20
[Pb]	207	209	1	No Gas	0.630	ug/l	6716.18
Pb	208	209	1	No Gas	0.635	ug/l	30860.95
Th	232	209	3	He	0.493	ug/l	9702.17
U	238	209	1	No Gas	0.617	ug/l	25089.28

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	3391961.04	100.5
Sc	45	2	H2	1542958.21	84.6
Sc	45	3	He	206852.40	97.5
Ge	72	1	No Gas	1060754.32	97.2
Ge	72	2	H2	624771.73	84.0
Ge	72	3	He	147986.76	97.5
In	115	1	No Gas	6784583.29	99.9
In	115	3	He	1420558.99	98.5
Tb	159	1	No Gas	8114696.13	98.5
Tb	159	3	He	3103839.72	98.4
Ho	165	1	No Gas	7306457.24	98.8
Ho	165	3	He	2895384.92	98.8
Lu	175	1	No Gas	7409340.22	98.3
Lu	175	3	He	2464001.88	98.5
Bi	209	1	No Gas	5018709.55	99.5
Bi	209	3	He	2184941.88	98.0

ICPMS207-B Analytical Data

Sample Name	1 ppb STD
File Name	008CALS.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\211229DoD.b
Acq Time	2021-12-29 13:17:29
Sample Type	CalStd
Total Dilution	1.0000
Comment	ICPMS-6020B-Cal
Operator	CAR/SRH/JPV/AEM
Method	SW6020/ SW6020B

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	19.954	ug/l	93556.00
Be	9	45	1	No Gas	1.484	ug/l	3166.37
B	11	45	1	No Gas	1.267	ug/l	6548.06
Na	23	45	3	He	411.601	ug/l	323303.04
Mg	24	45	3	He	437.339	ug/l	160445.46
Al	27	45	1	No Gas	1.681	ug/l	27063.40
Si	28	45	2	H2	6.617	ug/l	15052.93
K	39	72	3	He	410.110	ug/l	288123.42
Ca	40	72	2	H2	419.912	ug/l	2742864.12
Ti	47	72	1	No Gas	1.599	ug/l	3213.60
V	51	72	1	No Gas	2.131	ug/l	-16281.16
V	51	72	3	He	1.853	ug/l	29050.84
Cr	52	72	1	No Gas	1.975	ug/l	141094.74
Cr	52	72	3	He	1.651	ug/l	7942.18
Mn	55	72	1	No Gas	1.675	ug/l	72831.87
Mn	55	72	3	He	1.617	ug/l	5295.90
Fe	56	72	2	H2	45.784	ug/l	674350.42
Fe	56	72	3	He	44.020	ug/l	165814.92
Co	59	72	1	No Gas	1.591	ug/l	38540.98
Ni	60	72	1	No Gas	3.228	ug/l	18438.40
Ni	60	72	3	He	3.175	ug/l	5292.09
Cu	63	72	1	No Gas	1.586	ug/l	23169.59
Cu	63	72	3	He	1.664	ug/l	7423.40
Cu	65	72	1	No Gas	1.550	ug/l	11210.82
Zn	66	72	1	No Gas	1.715	ug/l	9323.97
Zn	66	72	3	He	1.667	ug/l	1837.90
As	75	72	1	No Gas	2.237	ug/l	48758.94
As	75	72	3	He	1.546	ug/l	2168.45
Se	78	72	2	H2	1.558	ug/l	1084.37
Br	79	72	1	No Gas	110.982	ug/l	10436.47
Br	79	72	2	H2	101.741	ug/l	5643.24
Se	82	72	1	No Gas	2.145	ug/l	2756.48
Kr	84	72	1	No Gas		ug/l	58429.83
Sr	88	72	1	No Gas	1.598	ug/l	62141.00
Sr	88	72	3	He	1.572	ug/l	6849.45
Mo	95	115	1	No Gas	1.508	ug/l	11409.06
Mo	95	115	3	He	1.648	ug/l	4186.60
Mo	98	115	1	No Gas	1.457	ug/l	18060.42
Ag	107	115	1	No Gas	0.610	ug/l	12314.29
Ag	109	115	1	No Gas	0.608	ug/l	11726.89
Cd	111	115	1	No Gas	1.539	ug/l	6881.54

ICPMS207-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Cd	111	115	3	He	1.466	ug/l	2102.71
Cd	114	115	1	No Gas	1.481	ug/l	15241.73
Cd	114	115	3	He	1.437	ug/l	5021.15
Sn	118	115	1	No Gas	1.770	ug/l	24519.32
Sn	118	115	3	He	1.827	ug/l	6465.96
Sb	121	115	1	No Gas	1.473	ug/l	32683.36
Sb	121	115	3	He	1.471	ug/l	8176.20
Sb	123	115	1	No Gas	1.500	ug/l	24937.54
Sb	123	115	3	He	1.457	ug/l	6360.41
Ba	135	115	1	No Gas	1.570	ug/l	5979.45
Ba	137	115	1	No Gas	1.512	ug/l	10283.47
La	139	115	3	He	1.503	ug/l	27537.29
Ce	140	115	3	He	1.501	ug/l	29317.60
Hg	201	209	1	No Gas	0.025	ug/l	78.32
Hg	202	209	1	No Gas	0.028	ug/l	215.96
Hg	202	209	3	He	0.032	ug/l	98.65
Tl	203	209	3	He	1.419	ug/l	9268.28
Tl	205	209	1	No Gas	1.464	ug/l	48989.93
Tl	205	209	3	He	1.423	ug/l	22072.42
[Pb]	206	209	1	No Gas	1.463	ug/l	17236.76
[Pb]	207	209	1	No Gas	1.457	ug/l	14758.27
Pb	208	209	1	No Gas	1.471	ug/l	68197.58
Th	232	209	3	He	1.273	ug/l	24773.92
U	238	209	1	No Gas	1.446	ug/l	57987.19

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	3352313.45	99.3
Sc	45	2	H2	1763664.51	96.8
Sc	45	3	He	207206.16	97.6
Ge	72	1	No Gas	1060058.01	97.2
Ge	72	2	H2	724036.32	97.3
Ge	72	3	He	150015.23	98.9
In	115	1	No Gas	6608752.44	97.3
In	115	3	He	1457456.63	101.1
Tb	159	1	No Gas	8021337.10	97.3
Tb	159	3	He	3156618.69	100.0
Ho	165	1	No Gas	7288864.08	98.6
Ho	165	3	He	2954278.16	100.8
Lu	175	1	No Gas	7371067.84	97.8
Lu	175	3	He	2486141.39	99.3
Bi	209	1	No Gas	4968990.21	98.5
Bi	209	3	He	2198646.81	98.6

ICPMS207-B Analytical Data

Sample Name	10 ppb STD
File Name	009CALS.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\211229DoD.b
Acq Time	2021-12-29 13:24:03
Sample Type	CalStd
Total Dilution	1.0000
Comment	ICPMS-6020B-Cal
Operator	CAR/SRH/JPV/AEM
Method	SW6020/ SW6020B

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	158.088	ug/l	677858.57
Be	9	45	1	No Gas	11.805	ug/l	24859.31
B	11	45	1	No Gas	11.159	ug/l	20990.27
Na	23	45	3	He	3207.829	ug/l	2130633.25
Mg	24	45	3	He	3217.310	ug/l	1125565.22
Al	27	45	1	No Gas	12.411	ug/l	180476.68
Si	28	45	2	H2	48.120	ug/l	81908.29
K	39	72	3	He	3190.893	ug/l	1431445.41
Ca	40	72	2	H2	3129.689	ug/l	19788581.01
Ti	47	72	1	No Gas	12.027	ug/l	22538.14
V	51	72	1	No Gas	10.211	ug/l	174799.82
V	51	72	3	He	11.746	ug/l	67926.77
Cr	52	72	1	No Gas	12.183	ug/l	358636.92
Cr	52	72	3	He	12.218	ug/l	51840.93
Mn	55	72	1	No Gas	12.544	ug/l	388873.47
Mn	55	72	3	He	12.284	ug/l	34871.81
Fe	56	72	2	H2	328.060	ug/l	4871573.33
Fe	56	72	3	He	326.301	ug/l	1211498.80
Co	59	72	1	No Gas	12.276	ug/l	296895.60
Ni	60	72	1	No Gas	13.286	ug/l	73973.16
Ni	60	72	3	He	13.499	ug/l	22458.38
Cu	63	72	1	No Gas	12.355	ug/l	171204.94
Cu	63	72	3	He	12.654	ug/l	54979.27
Cu	65	72	1	No Gas	12.237	ug/l	81736.61
Zn	66	72	1	No Gas	12.315	ug/l	59875.98
Zn	66	72	3	He	11.936	ug/l	12301.90
As	75	72	1	No Gas	12.409	ug/l	115445.04
As	75	72	3	He	11.877	ug/l	13490.89
Se	78	72	2	H2	12.112	ug/l	8297.03
Br	79	72	1	No Gas	129.750	ug/l	11002.38
Br	79	72	2	H2	106.353	ug/l	5856.26
Se	82	72	1	No Gas	11.860	ug/l	6462.62
Kr	84	72	1	No Gas		ug/l	60324.48
Sr	88	72	1	No Gas	12.722	ug/l	493509.42
Sr	88	72	3	He	12.432	ug/l	54548.84
Mo	95	115	1	No Gas	11.469	ug/l	88286.10
Mo	95	115	3	He	11.892	ug/l	29877.92
Mo	98	115	1	No Gas	11.563	ug/l	145793.21
Ag	107	115	1	No Gas	4.664	ug/l	95991.44
Ag	109	115	1	No Gas	4.670	ug/l	91894.11
Cd	111	115	1	No Gas	11.908	ug/l	54295.14

ICPMS207-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Cd	111	115	3	He	11.642	ug/l	16597.67
Cd	114	115	1	No Gas	11.570	ug/l	121714.50
Cd	114	115	3	He	11.610	ug/l	40366.73
Sn	118	115	1	No Gas	11.774	ug/l	156951.46
Sn	118	115	3	He	11.655	ug/l	38547.06
Sb	121	115	1	No Gas	11.568	ug/l	257352.00
Sb	121	115	3	He	11.816	ug/l	64019.48
Sb	123	115	1	No Gas	11.741	ug/l	195041.91
Sb	123	115	3	He	11.789	ug/l	50138.19
Ba	135	115	1	No Gas	12.488	ug/l	48491.53
Ba	137	115	1	No Gas	12.257	ug/l	84800.10
La	139	115	3	He	11.832	ug/l	215788.93
Ce	140	115	3	He	11.858	ug/l	230595.74
Hg	201	209	1	No Gas	0.233	ug/l	589.23
Hg	202	209	1	No Gas	0.232	ug/l	1348.13
Hg	202	209	3	He	0.247	ug/l	623.22
Tl	203	209	3	He	11.482	ug/l	71256.55
Tl	205	209	1	No Gas	11.866	ug/l	381975.93
Tl	205	209	3	He	11.695	ug/l	171837.64
[Pb]	206	209	1	No Gas	11.719	ug/l	134304.34
[Pb]	207	209	1	No Gas	11.723	ug/l	115256.18
Pb	208	209	1	No Gas	11.893	ug/l	536234.72
Th	232	209	3	He	11.486	ug/l	218588.11
U	238	209	1	No Gas	11.684	ug/l	466251.91

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	3392969.30	100.5
Sc	45	2	H2	1775202.27	97.4
Sc	45	3	He	210776.20	99.3
Ge	72	1	No Gas	1074521.90	98.5
Ge	72	2	H2	743241.43	99.9
Ge	72	3	He	154041.71	101.5
In	115	1	No Gas	6763483.00	99.6
In	115	3	He	1451708.13	100.7
Tb	159	1	No Gas	8112844.75	98.5
Tb	159	3	He	3175907.67	100.7
Ho	165	1	No Gas	7437727.78	100.6
Ho	165	3	He	2962397.63	101.0
Lu	175	1	No Gas	7432448.96	98.6
Lu	175	3	He	2537640.08	101.4
Bi	209	1	No Gas	4952930.45	98.2
Bi	209	3	He	2170136.21	97.3

ICPMS207-B Analytical Data

Sample Name	50 ppb STD
File Name	010CALS.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\211229DoD.b
Acq Time	2021-12-29 13:30:35
Sample Type	CalStd
Total Dilution	1.0000
Comment	ICPMS-6020B-Cal
Operator	CAR/SRH/JPV/AEM
Method	SW6020/ SW6020B

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	609.229	ug/l	2593868.74
Be	9	45	1	No Gas	46.568	ug/l	98247.29
B	11	45	1	No Gas	45.643	ug/l	71362.54
Na	23	45	3	He	12138.448	ug/l	7853757.73
Mg	24	45	3	He	12122.652	ug/l	4192050.59
Al	27	45	1	No Gas	48.167	ug/l	693816.77
Si	28	45	2	H2	191.811	ug/l	317456.90
K	39	72	3	He	12385.138	ug/l	5222961.24
Ca	40	72	2	H2	12100.479	ug/l	76919565.19
Ti	47	72	1	No Gas	47.669	ug/l	91877.43
V	51	72	1	No Gas	47.465	ug/l	1099143.96
V	51	72	3	He	46.841	ug/l	204488.36
Cr	52	72	1	No Gas	47.623	ug/l	1150024.60
Cr	52	72	3	He	47.940	ug/l	200919.08
Mn	55	72	1	No Gas	45.863	ug/l	1407205.21
Mn	55	72	3	He	48.324	ug/l	135256.84
Fe	56	72	2	H2	1264.440	ug/l	18967338.13
Fe	56	72	3	He	1262.277	ug/l	4696879.53
Co	59	72	1	No Gas	46.708	ug/l	1171019.59
Ni	60	72	1	No Gas	47.683	ug/l	273121.75
Ni	60	72	3	He	48.896	ug/l	81397.29
Cu	63	72	1	No Gas	46.528	ug/l	664471.50
Cu	63	72	3	He	49.293	ug/l	214378.97
Cu	65	72	1	No Gas	46.900	ug/l	322001.32
Zn	66	72	1	No Gas	47.391	ug/l	235561.55
Zn	66	72	3	He	47.584	ug/l	48795.88
As	75	72	1	No Gas	49.699	ug/l	370956.79
As	75	72	3	He	47.437	ug/l	52630.10
Se	78	72	2	H2	48.239	ug/l	33295.99
Br	79	72	1	No Gas	57.308	ug/l	9717.37
Br	79	72	2	H2	130.380	ug/l	6255.63
Se	82	72	1	No Gas	47.390	ug/l	20628.33
Kr	84	72	1	No Gas		ug/l	78239.01
Sr	88	72	1	No Gas	47.302	ug/l	1902727.46
Sr	88	72	3	He	49.165	ug/l	216770.84
Mo	95	115	1	No Gas	47.461	ug/l	360056.34
Mo	95	115	3	He	48.033	ug/l	118609.05
Mo	98	115	1	No Gas	47.007	ug/l	584209.41
Ag	107	115	1	No Gas	18.921	ug/l	383941.38
Ag	109	115	1	No Gas	18.946	ug/l	367665.30
Cd	111	115	1	No Gas	48.425	ug/l	217713.26

ICPMS207-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Cd	111	115	3	He	47.059	ug/l	65986.59
Cd	114	115	1	No Gas	47.311	ug/l	490893.35
Cd	114	115	3	He	46.970	ug/l	160661.89
Sn	118	115	1	No Gas	46.612	ug/l	607832.22
Sn	118	115	3	He	47.896	ug/l	154368.68
Sb	121	115	1	No Gas	47.754	ug/l	1045533.09
Sb	121	115	3	He	47.984	ug/l	255202.72
Sb	123	115	1	No Gas	47.907	ug/l	782918.35
Sb	123	115	3	He	47.743	ug/l	199275.93
Ba	135	115	1	No Gas	50.186	ug/l	192150.83
Ba	137	115	1	No Gas	49.466	ug/l	337320.46
La	139	115	3	He	47.847	ug/l	858529.93
Ce	140	115	3	He	47.576	ug/l	910091.64
Hg	201	209	1	No Gas	0.920	ug/l	2276.07
Hg	202	209	1	No Gas	0.927	ug/l	5209.98
Hg	202	209	3	He	0.938	ug/l	2299.74
Tl	203	209	3	He	45.599	ug/l	280767.62
Tl	205	209	1	No Gas	47.373	ug/l	1518146.44
Tl	205	209	3	He	46.359	ug/l	675762.65
[Pb]	206	209	1	No Gas	46.009	ug/l	525559.51
[Pb]	207	209	1	No Gas	46.906	ug/l	459406.10
Pb	208	209	1	No Gas	47.157	ug/l	2118911.82
Th	232	209	3	He	47.267	ug/l	895315.81
U	238	209	1	No Gas	46.834	ug/l	1867095.81

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	3407640.07	100.9
Sc	45	2	H2	1800145.18	98.8
Sc	45	3	He	209978.57	99.0
Ge	72	1	No Gas	1115303.82	102.2
Ge	72	2	H2	752527.76	101.1
Ge	72	3	He	155128.51	102.2
In	115	1	No Gas	6671460.50	98.3
In	115	3	He	1427938.01	99.0
Tb	159	1	No Gas	8241283.60	100.0
Tb	159	3	He	3119630.74	98.9
Ho	165	1	No Gas	7560564.62	102.2
Ho	165	3	He	2898603.08	98.9
Lu	175	1	No Gas	7632370.95	101.3
Lu	175	3	He	2467773.13	98.6
Bi	209	1	No Gas	4946978.77	98.1
Bi	209	3	He	2162374.48	97.0

ICPMS207-B Analytical Data

Sample Name	100 ppb STD
File Name	011CALS.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\211229DoD.b
Acq Time	2021-12-29 13:37:01
Sample Type	CalStd
Total Dilution	1.0000
Comment	ICPMS-6020B-Cal
Operator	CAR/SRH/JPV/AEM
Method	SW6020/ SW6020B

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	1262.587	ug/l	5368258.51
Be	9	45	1	No Gas	98.920	ug/l	208719.08
B	11	45	1	No Gas	96.839	ug/l	146109.65
Na	23	45	3	He	25185.519	ug/l	16289112.95
Mg	24	45	3	He	24849.239	ug/l	8613243.84
Al	27	45	1	No Gas	101.334	ug/l	1457004.11
Si	28	45	2	H2	403.244	ug/l	637867.36
K	39	72	3	He	25460.938	ug/l	10601350.74
Ca	40	72	2	H2	24903.289	ug/l	156704799.28
Ti	47	72	1	No Gas	100.956	ug/l	193576.87
V	51	72	1	No Gas	93.713	ug/l	2230211.79
V	51	72	3	He	98.787	ug/l	405938.23
Cr	52	72	1	No Gas	95.440	ug/l	2191133.26
Cr	52	72	3	He	100.083	ug/l	418070.18
Mn	55	72	1	No Gas	95.612	ug/l	2894374.48
Mn	55	72	3	He	100.430	ug/l	280061.77
Fe	56	72	2	H2	2656.350	ug/l	39483450.39
Fe	56	72	3	He	2605.172	ug/l	9686787.38
Co	59	72	1	No Gas	95.887	ug/l	2395029.04
Ni	60	72	1	No Gas	97.403	ug/l	554822.53
Ni	60	72	3	He	100.195	ug/l	166604.98
Cu	63	72	1	No Gas	95.413	ug/l	1355759.68
Cu	63	72	3	He	101.267	ug/l	440018.83
Cu	65	72	1	No Gas	97.582	ug/l	666245.18
Zn	66	72	1	No Gas	99.690	ug/l	492311.23
Zn	66	72	3	He	97.695	ug/l	99989.02
As	75	72	1	No Gas	102.900	ug/l	726566.39
As	75	72	3	He	99.088	ug/l	109360.33
Se	78	72	2	H2	100.207	ug/l	68501.05
Br	79	72	1	No Gas	109.861	ug/l	10915.84
Br	79	72	2	H2	198.984	ug/l	7124.32
Se	82	72	1	No Gas	97.128	ug/l	39966.39
Kr	84	72	1	No Gas		ug/l	72103.43
Sr	88	72	1	No Gas	97.099	ug/l	3890742.03
Sr	88	72	3	He	101.477	ug/l	447341.96
Mo	95	115	1	No Gas	101.117	ug/l	747857.50
Mo	95	115	3	He	100.787	ug/l	246015.84
Mo	98	115	1	No Gas	101.335	ug/l	1227532.99
Ag	107	115	1	No Gas	40.471	ug/l	800517.36
Ag	109	115	1	No Gas	40.458	ug/l	765460.01
Cd	111	115	1	No Gas	103.291	ug/l	452699.42

ICPMS207-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Cd	111	115	3	He	98.222	ug/l	136148.10
Cd	114	115	1	No Gas	101.042	ug/l	1022021.40
Cd	114	115	3	He	98.344	ug/l	332527.69
Sn	118	115	1	No Gas	101.507	ug/l	1288449.51
Sn	118	115	3	He	100.876	ug/l	320913.81
Sb	121	115	1	No Gas	100.961	ug/l	2154170.12
Sb	121	115	3	He	100.821	ug/l	529863.98
Sb	123	115	1	No Gas	100.867	ug/l	1606442.46
Sb	123	115	3	He	100.944	ug/l	416346.19
Ba	135	115	1	No Gas	107.447	ug/l	401047.31
Ba	137	115	1	No Gas	107.373	ug/l	713700.28
La	139	115	3	He	100.888	ug/l	1789606.71
Ce	140	115	3	He	101.020	ug/l	1910454.10
Hg	201	209	1	No Gas	2.037	ug/l	4878.59
Hg	202	209	1	No Gas	2.033	ug/l	11039.35
Hg	202	209	3	He	2.026	ug/l	4793.91
Tl	203	209	3	He	97.969	ug/l	584402.93
Tl	205	209	1	No Gas	102.185	ug/l	3182605.65
Tl	205	209	3	He	99.851	ug/l	1409908.33
[Pb]	206	209	1	No Gas	99.242	ug/l	1101652.16
[Pb]	207	209	1	No Gas	100.529	ug/l	956960.41
Pb	208	209	1	No Gas	100.846	ug/l	4404631.30
Th	232	209	3	He	101.215	ug/l	1859071.48
U	238	209	1	No Gas	100.791	ug/l	3907657.84

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	3409088.63	101.0
Sc	45	2	H2	1732803.20	95.1
Sc	45	3	He	210760.51	99.3
Ge	72	1	No Gas	1111446.54	101.9
Ge	72	2	H2	745950.13	100.2
Ge	72	3	He	155175.87	102.3
In	115	1	No Gas	6505750.74	95.8
In	115	3	He	1411729.60	97.9
Tb	159	1	No Gas	8194526.01	99.4
Tb	159	3	He	3109330.86	98.6
Ho	165	1	No Gas	7430974.57	100.5
Ho	165	3	He	2858551.32	97.5
Lu	175	1	No Gas	7559794.84	100.3
Lu	175	3	He	2483771.50	99.3
Bi	209	1	No Gas	4813729.16	95.4
Bi	209	3	He	2096613.02	94.0

ICPMS207-B Analytical Data

Sample Name	1000 ppb STD
File Name	012CALS.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\211229DoD.b
Acq Time	2021-12-29 13:43:14
Sample Type	CalStd
Total Dilution	1.0000
Comment	ICPMS-6020B-Cal
Operator	CAR/SRH/JPV/AEM
Method	SW6020/ SW6020B

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	2495.952	ug/l	10371720.78
Be	9	45	1	No Gas	1000.261	ug/l	2062847.80
B	11	45	1	No Gas	1000.522	ug/l	1432141.03
Na	23	45	3	He	49961.304	ug/l	31744861.75
Mg	24	45	3	He	50132.621	ug/l	17095512.33
Al	27	45	1	No Gas	999.933	ug/l	14030634.79
Si	28	45	2	H2	2.119	ug/l	7889.34
K	39	72	3	He	49762.760	ug/l	20489422.06
Ca	40	72	2	H2	50115.648	ug/l	311278764.47
Ti	47	72	1	No Gas	6.781	ug/l	12461.15
V	51	72	1	No Gas	1000.753	ug/l	22949760.83
V	51	72	3	He	1000.261	ug/l	3881922.55
Cr	52	72	1	No Gas	1000.552	ug/l	20605403.68
Cr	52	72	3	He	1000.072	ug/l	4143218.17
Mn	55	72	1	No Gas	1000.619	ug/l	28171835.39
Mn	55	72	3	He	1000.017	ug/l	2765151.90
Fe	56	72	2	H2	5980.215	ug/l	87757841.42
Fe	56	72	3	He	6002.957	ug/l	22192162.63
Co	59	72	1	No Gas	1000.552	ug/l	23433658.08
Ni	60	72	1	No Gas	1000.338	ug/l	5336944.16
Ni	60	72	3	He	999.997	ug/l	1652216.87
Cu	63	72	1	No Gas	1000.608	ug/l	13323000.73
Cu	63	72	3	He	999.881	ug/l	4316780.46
Cu	65	72	1	No Gas	1000.374	ug/l	6396115.59
Zn	66	72	1	No Gas	1000.137	ug/l	4622382.42
Zn	66	72	3	He	1000.331	ug/l	1016572.51
As	75	72	1	No Gas	999.699	ug/l	6323836.90
As	75	72	3	He	1000.200	ug/l	1093004.65
Se	78	72	2	H2	1000.045	ug/l	674693.45
Br	79	72	1	No Gas	223.745	ug/l	12737.05
Br	79	72	2	H2	1156.524	ug/l	19787.63
Se	82	72	1	No Gas	1000.398	ug/l	368225.55
Kr	84	72	1	No Gas		ug/l	290905.24
Sr	88	72	1	No Gas	1000.397	ug/l	37593773.00
Sr	88	72	3	He	999.869	ug/l	4382524.76
Mo	95	115	1	No Gas	0.107	ug/l	863.37
Mo	95	115	3	He	0.079	ug/l	220.00
Mo	98	115	1	No Gas	0.139	ug/l	1799.72
Ag	107	115	1	No Gas	268.776	ug/l	5312347.82
Ag	109	115	1	No Gas	281.531	ug/l	5303285.36
Cd	111	115	1	No Gas	999.730	ug/l	4363723.11

ICPMS207-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Cd	111	115	3	He	1000.308	ug/l	1361619.75
Cd	114	115	1	No Gas	1000.014	ug/l	10081415.40
Cd	114	115	3	He	1000.301	ug/l	3321915.90
Sn	118	115	1	No Gas	0.163	ug/l	3759.73
Sn	118	115	3	He	0.160	ug/l	950.04
Sb	121	115	1	No Gas	0.175	ug/l	4447.49
Sb	121	115	3	He	0.140	ug/l	914.45
Sb	123	115	1	No Gas	0.211	ug/l	3991.64
Sb	123	115	3	He	0.147	ug/l	750.10
Ba	135	115	1	No Gas	999.220	ug/l	3714398.36
Ba	137	115	1	No Gas	999.266	ug/l	6612427.55
La	139	115	3	He	103.112	ug/l	1796639.51
Ce	140	115	3	He	104.583	ug/l	1942726.76
Hg	201	209	1	No Gas	0.010	ug/l	39.32
Hg	202	209	1	No Gas	0.010	ug/l	109.98
Hg	202	209	3	He	0.012	ug/l	45.32
Tl	203	209	3	He	1000.408	ug/l	5779893.07
Tl	205	209	1	No Gas	999.894	ug/l	30268731.21
Tl	205	209	3	He	1000.180	ug/l	13679567.35
[Pb]	206	209	1	No Gas	1000.258	ug/l	10797785.95
[Pb]	207	209	1	No Gas	1000.084	ug/l	9259131.25
Pb	208	209	1	No Gas	1000.038	ug/l	42465794.92
Th	232	209	3	He	1020.437	ug/l	18158041.80
U	238	209	1	No Gas	1000.062	ug/l	37716870.04

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	3337521.42	98.9
Sc	45	2	H2	1772699.27	97.2
Sc	45	3	He	207469.65	97.8
Ge	72	1	No Gas	1042835.08	95.6
Ge	72	2	H2	736938.93	99.0
Ge	72	3	He	154314.00	101.7
In	115	1	No Gas	6493581.68	95.6
In	115	3	He	1386444.08	96.2
Tb	159	1	No Gas	7910496.94	96.0
Tb	159	3	He	3057358.48	96.9
Ho	165	1	No Gas	7266947.52	98.3
Ho	165	3	He	2881273.28	98.3
Lu	175	1	No Gas	7380857.42	97.9
Lu	175	3	He	2459805.48	98.3
Bi	209	1	No Gas	4684006.05	92.9
Bi	209	3	He	2031396.42	91.1

ICPMS207-B Analytical Data

Sample Name	100 ppb Br STD
File Name	013CALS.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\211229DoD.b
Acq Time	2021-12-29 13:49:01
Sample Type	CalStd
Total Dilution	1.0000
Comment	ICPMS-6020-W-D
Operator	CAR/SRH/JPV/AEM
Method	SW6020/ SW6020B

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	2.684	ug/l	21589.28
Be	9	45	1	No Gas	0.864	ug/l	1884.41
B	11	45	1	No Gas	7.042	ug/l	14855.92
Na	23	45	3	He	-5.155	ug/l	57927.61
Mg	24	45	3	He	-13.277	ug/l	6921.24
Al	27	45	1	No Gas	0.118	ug/l	5037.54
Si	28	45	2	H2	1.053	ug/l	6125.72
K	39	72	3	He	1.274	ug/l	122804.23
Ca	40	72	2	H2	6.300	ug/l	221683.80
Ti	47	72	1	No Gas	0.145	ug/l	560.58
V	51	72	1	No Gas	-1.313	ug/l	-98812.04
V	51	72	3	He	-0.913	ug/l	18276.93
Cr	52	72	1	No Gas	-0.035	ug/l	99731.27
Cr	52	72	3	He	0.081	ug/l	1584.54
Mn	55	72	1	No Gas	0.117	ug/l	28414.31
Mn	55	72	3	He	-0.008	ug/l	910.52
Fe	56	72	2	H2	1.186	ug/l	31396.68
Fe	56	72	3	He	1.014	ug/l	11073.63
Co	59	72	1	No Gas	0.134	ug/l	3869.51
Ni	60	72	1	No Gas	0.487	ug/l	3586.69
Ni	60	72	3	He	0.421	ug/l	850.03
Cu	63	72	1	No Gas	0.083	ug/l	2842.09
Cu	63	72	3	He	0.072	ug/l	725.21
Cu	65	72	1	No Gas	0.045	ug/l	1436.65
Zn	66	72	1	No Gas	0.164	ug/l	2047.16
Zn	66	72	3	He	0.203	ug/l	382.23
As	75	72	1	No Gas	0.047	ug/l	34917.20
As	75	72	3	He	0.095	ug/l	614.13
Se	78	72	2	H2	0.173	ug/l	167.78
Br	79	72	1	No Gas	100.000	ug/l	10256.67
Br	79	72	2	H2	100.000	ug/l	5669.88
Se	82	72	1	No Gas	-0.694	ug/l	1709.50
Kr	84	72	1	No Gas		ug/l	48461.50
Sr	88	72	1	No Gas	0.031	ug/l	2302.30
Sr	88	72	3	He	0.036	ug/l	298.89
Mo	95	115	1	No Gas	0.011	ug/l	164.45
Mo	95	115	3	He	0.008	ug/l	50.00
Mo	98	115	1	No Gas	0.010	ug/l	259.52
Ag	107	115	1	No Gas	0.237	ug/l	4900.83
Ag	109	115	1	No Gas	0.245	ug/l	4836.11
Cd	111	115	1	No Gas	0.033	ug/l	181.05

ICPMS207-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Cd	111	115	3	He	0.022	ug/l	35.11
Cd	114	115	1	No Gas	0.034	ug/l	380.73
Cd	114	115	3	He	0.024	ug/l	86.25
Sn	118	115	1	No Gas	0.290	ug/l	5556.78
Sn	118	115	3	He	0.303	ug/l	1431.19
Sb	121	115	1	No Gas	0.031	ug/l	1455.89
Sb	121	115	3	He	0.031	ug/l	357.71
Sb	123	115	1	No Gas	0.042	ug/l	1370.54
Sb	123	115	3	He	0.028	ug/l	272.03
Ba	135	115	1	No Gas	0.041	ug/l	186.30
Ba	137	115	1	No Gas	0.030	ug/l	279.45
La	139	115	3	He	0.002	ug/l	52.22
Ce	140	115	3	He	0.006	ug/l	134.45
Hg	201	209	1	No Gas	0.002	ug/l	23.66
Hg	202	209	1	No Gas	0.003	ug/l	76.65
Hg	202	209	3	He	0.002	ug/l	24.33
Tl	203	209	3	He	0.309	ug/l	2252.44
Tl	205	209	1	No Gas	0.286	ug/l	11355.01
Tl	205	209	3	He	0.318	ug/l	5520.70
[Pb]	206	209	1	No Gas	0.053	ug/l	1107.83
[Pb]	207	209	1	No Gas	0.054	ug/l	996.71
Pb	208	209	1	No Gas	0.053	ug/l	4404.76
Th	232	209	3	He	0.115	ug/l	2393.85
U	238	209	1	No Gas	0.007	ug/l	441.58

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	3359779.67	99.5
Sc	45	2	H2	1754980.18	96.3
Sc	45	3	He	202248.43	95.3
Ge	72	1	No Gas	1066972.97	97.8
Ge	72	2	H2	730317.76	98.1
Ge	72	3	He	146906.93	96.8
In	115	1	No Gas	6718213.72	98.9
In	115	3	He	1421187.86	98.6
Tb	159	1	No Gas	8186230.63	99.3
Tb	159	3	He	3061856.91	97.0
Ho	165	1	No Gas	7385484.70	99.9
Ho	165	3	He	2817611.24	96.1
Lu	175	1	No Gas	7522744.04	99.8
Lu	175	3	He	2414109.34	96.5
Bi	209	1	No Gas	5060857.57	100.3
Bi	209	3	He	2126436.74	95.4

ICPMS207-B Analytical Data

Sample Name	Rinse
File Name	014BLKV.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\211229DoD.b
Acq Time	2021-12-29 14:33:40
Sample Type	BlkVrfy
Total Dilution	1.0000
Comment	ICPMS-6020-W-D
Operator	CAR/SRH/JPV/AEM
Method	SW6020/ SW6020B

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	-0.138	ug/l	10413.74
Be	9	45	1	No Gas	0.080	ug/l	273.62
B	11	45	1	No Gas	0.127	ug/l	5241.02
Na	23	45	3	He	-31.788	ug/l	43437.96
Mg	24	45	3	He	-12.713	ug/l	7443.78
Al	27	45	1	No Gas	-0.028	ug/l	3151.46
Si	28	45	2	H2	0.460	ug/l	5664.03
K	39	72	3	He	-15.478	ug/l	118937.31
Ca	40	72	2	H2	2.235	ug/l	198362.59
Ti	47	72	1	No Gas	-0.026	ug/l	248.59
V	51	72	1	No Gas	-2.796	ug/l	-132781.96
V	51	72	3	He	-0.897	ug/l	18747.52
Cr	52	72	1	No Gas	-0.929	ug/l	81275.68
Cr	52	72	3	He	-0.018	ug/l	1221.17
Mn	55	72	1	No Gas	-0.184	ug/l	19794.05
Mn	55	72	3	He	-0.179	ug/l	470.58
Fe	56	72	2	H2	0.379	ug/l	19834.98
Fe	56	72	3	He	0.267	ug/l	8637.89
Co	59	72	1	No Gas	0.022	ug/l	1177.71
Ni	60	72	1	No Gas	0.121	ug/l	1593.59
Ni	60	72	3	He	0.099	ug/l	353.34
Cu	63	72	1	No Gas	-0.045	ug/l	1100.49
Cu	63	72	3	He	-0.031	ug/l	307.28
Cu	65	72	1	No Gas	-0.072	ug/l	671.62
Zn	66	72	1	No Gas	-0.113	ug/l	745.48
Zn	66	72	3	He	-0.031	ug/l	161.11
As	75	72	1	No Gas	-0.624	ug/l	30789.36
As	75	72	3	He	-0.095	ug/l	426.60
Se	78	72	2	H2	0.002	ug/l	53.33
Br	79	72	1	No Gas	-64.309	ug/l	6571.84
Br	79	72	2	H2	-56.413	ug/l	3636.60
Se	82	72	1	No Gas	0.014	ug/l	1980.93
Kr	84	72	1	No Gas		ug/l	55836.94
Sr	88	72	1	No Gas	-0.006	ug/l	864.98
Sr	88	72	3	He	-0.005	ug/l	134.44
Mo	95	115	1	No Gas	-0.004	ug/l	54.44
Mo	95	115	3	He	-0.003	ug/l	24.45
Mo	98	115	1	No Gas	-0.004	ug/l	87.29
Ag	107	115	1	No Gas	0.000	ug/l	60.02
Ag	109	115	1	No Gas	0.000	ug/l	48.02
Cd	111	115	1	No Gas	-0.002	ug/l	21.26

ICPMS207-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Cd	111	115	3	He	0.000	ug/l	4.89
Cd	114	115	1	No Gas	0.000	ug/l	26.75
Cd	114	115	3	He	0.001	ug/l	9.23
Sn	118	115	1	No Gas	-0.011	ug/l	1656.82
Sn	118	115	3	He	-0.010	ug/l	440.01
Sb	121	115	1	No Gas	-0.018	ug/l	393.05
Sb	121	115	3	He	-0.022	ug/l	84.01
Sb	123	115	1	No Gas	-0.020	ug/l	361.04
Sb	123	115	3	He	-0.020	ug/l	75.34
Ba	135	115	1	No Gas	0.006	ug/l	49.90
Ba	137	115	1	No Gas	-0.003	ug/l	56.55
La	139	115	3	He	0.000	ug/l	10.00
Ce	140	115	3	He	0.000	ug/l	16.67
Hg	201	209	1	No Gas	0.001	ug/l	20.00
Hg	202	209	1	No Gas	-0.001	ug/l	54.66
Hg	202	209	3	He	-0.002	ug/l	15.00
Tl	203	209	3	He	-0.001	ug/l	400.17
Tl	205	209	1	No Gas	-0.002	ug/l	1953.49
Tl	205	209	3	He	0.000	ug/l	1019.79
[Pb]	206	209	1	No Gas	0.011	ug/l	625.58
[Pb]	207	209	1	No Gas	0.011	ug/l	568.90
Pb	208	209	1	No Gas	0.012	ug/l	2534.56
Th	232	209	3	He	0.000	ug/l	263.44
U	238	209	1	No Gas	-0.002	ug/l	55.99

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	3573096.61	105.8
Sc	45	2	H2	1916263.13	105.1
Sc	45	3	He	211826.91	99.8
Ge	72	1	No Gas	1069689.93	98.1
Ge	72	2	H2	736851.79	99.0
Ge	72	3	He	150101.99	98.9
In	115	1	No Gas	6878395.00	101.3
In	115	3	He	1453562.85	100.8
Tb	159	1	No Gas	8462347.00	102.7
Tb	159	3	He	3215393.01	101.9
Ho	165	1	No Gas	7718414.24	104.4
Ho	165	3	He	2981994.96	101.7
Lu	175	1	No Gas	7771973.73	103.1
Lu	175	3	He	2525751.49	100.9
Bi	209	1	No Gas	5079622.00	100.7
Bi	209	3	He	2232541.48	100.1

ICPMS207-B Analytical Data

Sample Name	Cal Blk
File Name	015CALB.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\211229DoD.b
Acq Time	2021-12-29 14:39:51
Sample Type	CalBlk
Total Dilution	1.0000
Comment	ICPMS-6020-W-D
Operator	CAR/SRH/JPV/AEM
Method	SW6020/ SW6020B

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	0.000	ug/l	9688.98
Be	9	45	1	No Gas	0.000	ug/l	249.95
B	11	45	1	No Gas	0.000	ug/l	4741.99
Na	23	45	3	He	0.000	ug/l	43647.49
Mg	24	45	3	He	0.000	ug/l	7623.49
Al	27	45	1	No Gas	0.000	ug/l	3269.26
Si	28	45	2	H2	0.000	ug/l	5007.53
K	39	72	3	He	0.000	ug/l	119034.33
Ca	40	72	2	H2	0.000	ug/l	194003.55
Ti	47	72	1	No Gas	0.000	ug/l	246.92
V	51	72	1	No Gas	0.000	ug/l	-148701.93
V	51	72	3	He	0.000	ug/l	18898.84
Cr	52	72	1	No Gas	0.000	ug/l	83697.36
Cr	52	72	3	He	0.000	ug/l	1358.96
Mn	55	72	1	No Gas	0.000	ug/l	19770.69
Mn	55	72	3	He	0.000	ug/l	477.91
Fe	56	72	2	H2	0.000	ug/l	19843.33
Fe	56	72	3	He	0.000	ug/l	8749.76
Co	59	72	1	No Gas	0.000	ug/l	1174.39
Ni	60	72	1	No Gas	0.000	ug/l	1470.50
Ni	60	72	3	He	0.000	ug/l	330.01
Cu	63	72	1	No Gas	0.000	ug/l	1182.52
Cu	63	72	3	He	0.000	ug/l	301.61
Cu	65	72	1	No Gas	0.000	ug/l	670.29
Zn	66	72	1	No Gas	0.000	ug/l	802.24
Zn	66	72	3	He	0.000	ug/l	138.89
As	75	72	1	No Gas	0.000	ug/l	34899.62
As	75	72	3	He	0.000	ug/l	428.53
Se	78	72	2	H2	0.000	ug/l	53.44
Br	79	72	1	No Gas	0.000	ug/l	6448.67
Br	79	72	2	H2	0.000	ug/l	3802.96
Se	82	72	1	No Gas	0.000	ug/l	1844.73
Kr	84	72	1	No Gas		ug/l	54891.74
Sr	88	72	1	No Gas	0.000	ug/l	934.85
Sr	88	72	3	He	0.000	ug/l	133.33
Mo	95	115	1	No Gas	0.000	ug/l	58.89
Mo	95	115	3	He	0.000	ug/l	25.56
Mo	98	115	1	No Gas	0.000	ug/l	89.51
Ag	107	115	1	No Gas	0.000	ug/l	53.35
Ag	109	115	1	No Gas	0.000	ug/l	40.68
Cd	111	115	1	No Gas	0.000	ug/l	23.42

ICPMS207-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Cd	111	115	3	He	0.000	ug/l	4.89
Cd	114	115	1	No Gas	0.000	ug/l	21.94
Cd	114	115	3	He	0.000	ug/l	13.12
Sn	118	115	1	No Gas	0.000	ug/l	1799.88
Sn	118	115	3	He	0.000	ug/l	415.57
Sb	121	115	1	No Gas	0.000	ug/l	358.71
Sb	121	115	3	He	0.000	ug/l	82.68
Sb	123	115	1	No Gas	0.000	ug/l	359.37
Sb	123	115	3	He	0.000	ug/l	70.34
Ba	135	115	1	No Gas	0.000	ug/l	29.94
Ba	137	115	1	No Gas	0.000	ug/l	69.86
La	139	115	3	He	0.000	ug/l	6.67
Ce	140	115	3	He	0.000	ug/l	11.11
Hg	201	209	1	No Gas	0.000	ug/l	16.67
Hg	202	209	1	No Gas	0.000	ug/l	60.32
Hg	202	209	3	He	0.000	ug/l	19.67
Tl	203	209	3	He	0.000	ug/l	492.21
Tl	205	209	1	No Gas	0.000	ug/l	2009.05
Tl	205	209	3	He	0.000	ug/l	1068.47
[Pb]	206	209	1	No Gas	0.000	ug/l	604.46
[Pb]	207	209	1	No Gas	0.000	ug/l	502.24
Pb	208	209	1	No Gas	0.000	ug/l	2395.66
Th	232	209	3	He	0.000	ug/l	314.80
U	238	209	1	No Gas	0.000	ug/l	75.65

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	3555490.44	100.0
Sc	45	2	H2	1828208.49	100.0
Sc	45	3	He	207700.54	100.0
Ge	72	1	No Gas	1066278.10	100.0
Ge	72	2	H2	718594.58	100.0
Ge	72	3	He	150243.91	100.0
In	115	1	No Gas	6855677.99	100.0
In	115	3	He	1468366.27	100.0
Tb	159	1	No Gas	8276839.99	100.0
Tb	159	3	He	3129364.44	100.0
Ho	165	1	No Gas	7497923.33	100.0
Ho	165	3	He	2918925.04	100.0
Lu	175	1	No Gas	7602922.03	100.0
Lu	175	3	He	2496226.92	100.0
Bi	209	1	No Gas	5084424.81	100.0
Bi	209	3	He	2235800.58	100.0

ICPMS207-B Analytical Data

Sample Name	0.025 ppb STD
File Name	016CALS.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\211229DoD.b
Acq Time	2021-12-29 14:46:11
Sample Type	CalStd
Total Dilution	1.0000
Comment	ICPMS-6020B-Cal
Operator	CAR/SRH/JPV/AEM
Method	SW6020/ SW6020B

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	0.274	ug/l	10644.67
Be	9	45	1	No Gas	0.017	ug/l	280.62
B	11	45	1	No Gas	-0.044	ug/l	4563.86
Na	23	45	3	He	8.176	ug/l	48934.22
Mg	24	45	3	He	7.259	ug/l	10120.03
Al	27	45	1	No Gas	-0.005	ug/l	3114.79
Si	28	45	2	H2	0.204	ug/l	5383.13
K	39	72	3	He	13.037	ug/l	123265.15
Ca	40	72	2	H2	8.492	ug/l	248139.00
Ti	47	72	1	No Gas	0.046	ug/l	323.66
V	51	72	1	No Gas	0.141	ug/l	-142042.73
V	51	72	3	He	0.054	ug/l	18956.67
Cr	52	72	1	No Gas	0.219	ug/l	86175.81
Cr	52	72	3	He	-0.023	ug/l	1257.84
Mn	55	72	1	No Gas	0.060	ug/l	20979.94
Mn	55	72	3	He	0.022	ug/l	533.24
Fe	56	72	2	H2	0.684	ug/l	29962.19
Fe	56	72	3	He	0.699	ug/l	11177.17
Co	59	72	1	No Gas	0.026	ug/l	1743.32
Ni	60	72	1	No Gas	0.043	ug/l	1663.47
Ni	60	72	3	He	0.060	ug/l	423.34
Cu	63	72	1	No Gas	0.033	ug/l	1584.73
Cu	63	72	3	He	0.032	ug/l	431.92
Cu	65	72	1	No Gas	0.036	ug/l	880.38
Zn	66	72	1	No Gas	0.054	ug/l	1031.52
Zn	66	72	3	He	0.054	ug/l	191.11
As	75	72	1	No Gas	-0.311	ug/l	32112.40
As	75	72	3	He	0.048	ug/l	475.60
Se	78	72	2	H2	0.027	ug/l	71.78
Br	79	72	1	No Gas	67.459	ug/l	8791.95
Br	79	72	2	H2	48.806	ug/l	4721.43
Se	82	72	1	No Gas	-0.175	ug/l	1738.41
Kr	84	72	1	No Gas		ug/l	54768.15
Sr	88	72	1	No Gas	0.033	ug/l	2162.55
Sr	88	72	3	He	0.029	ug/l	255.56
Mo	95	115	1	No Gas	0.022	ug/l	226.67
Mo	95	115	3	He	0.025	ug/l	88.89
Mo	98	115	1	No Gas	0.026	ug/l	415.56
Ag	107	115	1	No Gas	0.016	ug/l	394.83
Ag	109	115	1	No Gas	0.016	ug/l	368.16
Cd	111	115	1	No Gas	0.023	ug/l	130.92

ICPMS207-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Cd	111	115	3	He	0.026	ug/l	41.44
Cd	114	115	1	No Gas	0.022	ug/l	254.76
Cd	114	115	3	He	0.025	ug/l	99.03
Sn	118	115	1	No Gas	0.030	ug/l	2205.89
Sn	118	115	3	He	0.028	ug/l	501.12
Sb	121	115	1	No Gas	0.022	ug/l	849.11
Sb	121	115	3	He	0.026	ug/l	223.02
Sb	123	115	1	No Gas	0.023	ug/l	747.43
Sb	123	115	3	He	0.026	ug/l	179.35
Ba	135	115	1	No Gas	0.024	ug/l	123.09
Ba	137	115	1	No Gas	0.026	ug/l	249.51
La	139	115	3	He	0.022	ug/l	412.23
Ce	140	115	3	He	0.027	ug/l	528.90
Hg	201	209	1	No Gas	0.001	ug/l	17.33
Hg	202	209	1	No Gas	0.000	ug/l	55.99
Hg	202	209	3	He	-0.002	ug/l	14.00
Tl	203	209	3	He	0.018	ug/l	606.93
Tl	205	209	1	No Gas	0.025	ug/l	2743.63
Tl	205	209	3	He	0.023	ug/l	1419.98
[Pb]	206	209	1	No Gas	0.023	ug/l	853.36
[Pb]	207	209	1	No Gas	0.025	ug/l	726.69
Pb	208	209	1	No Gas	0.027	ug/l	3513.54
Th	232	209	3	He	0.012	ug/l	556.90
U	238	209	1	No Gas	0.025	ug/l	1065.16

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	3470037.26	97.6
Sc	45	2	H2	1840690.28	100.7
Sc	45	3	He	208093.80	100.2
Ge	72	1	No Gas	1039875.93	97.5
Ge	72	2	H2	726592.09	101.1
Ge	72	3	He	149096.50	99.2
In	115	1	No Gas	6840533.43	99.8
In	115	3	He	1451852.10	98.9
Tb	159	1	No Gas	8167327.66	98.7
Tb	159	3	He	3163630.06	101.1
Ho	165	1	No Gas	7438753.33	99.2
Ho	165	3	He	2943766.53	100.9
Lu	175	1	No Gas	7717148.49	101.5
Lu	175	3	He	2508792.61	100.5
Bi	209	1	No Gas	4925533.67	96.9
Bi	209	3	He	2233560.45	99.9

ICPMS207-B Analytical Data

Sample Name	Rinse
File Name	017BLKV.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\211229DoD.b
Acq Time	2021-12-29 14:52:32
Sample Type	BlkVrfy
Total Dilution	1.0000
Comment	ICPMS-6020-W-D
Operator	CAR/SRH/JPV/AEM
Method	SW6020/ SW6020B

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	-0.100	ug/l	9213.16
Be	9	45	1	No Gas	0.087	ug/l	439.25
B	11	45	1	No Gas	0.791	ug/l	5918.87
Na	23	45	3	He	-1.262	ug/l	42929.91
Mg	24	45	3	He	30.568	ug/l	18091.72
Al	27	45	1	No Gas	-0.092	ug/l	1886.80
Si	28	45	2	H2	-0.216	ug/l	4659.99
K	39	72	3	He	2.135	ug/l	120299.87
Ca	40	72	2	H2	0.193	ug/l	196997.52
Ti	47	72	1	No Gas	0.002	ug/l	251.92
V	51	72	1	No Gas	1.630	ug/l	-112356.96
V	51	72	3	He	-0.152	ug/l	18393.73
Cr	52	72	1	No Gas	-0.164	ug/l	80740.71
Cr	52	72	3	He	-0.042	ug/l	1194.50
Mn	55	72	1	No Gas	0.098	ug/l	22705.87
Mn	55	72	3	He	0.055	ug/l	628.55
Fe	56	72	2	H2	2.549	ug/l	56868.18
Fe	56	72	3	He	1.763	ug/l	15153.11
Co	59	72	1	No Gas	0.024	ug/l	1753.30
Ni	60	72	1	No Gas	1.822	ug/l	11425.54
Ni	60	72	3	He	0.770	ug/l	1574.54
Cu	63	72	1	No Gas	-0.009	ug/l	1063.80
Cu	63	72	3	He	-0.012	ug/l	252.95
Cu	65	72	1	No Gas	-0.013	ug/l	590.92
Zn	66	72	1	No Gas	-0.016	ug/l	732.12
Zn	66	72	3	He	-0.027	ug/l	112.22
As	75	72	1	No Gas	-0.831	ug/l	29780.98
As	75	72	3	He	-0.005	ug/l	424.93
Se	78	72	2	H2	-0.005	ug/l	50.89
Br	79	72	1	No Gas	17.103	ug/l	7140.93
Br	79	72	2	H2	-9.239	ug/l	3673.20
Se	82	72	1	No Gas	-0.258	ug/l	1760.69
Kr	84	72	1	No Gas		ug/l	55663.19
Sr	88	72	1	No Gas	0.002	ug/l	1004.71
Sr	88	72	3	He	0.001	ug/l	137.78
Mo	95	115	1	No Gas	0.002	ug/l	76.67
Mo	95	115	3	He	-0.001	ug/l	22.22
Mo	98	115	1	No Gas	0.002	ug/l	116.32
Ag	107	115	1	No Gas	0.000	ug/l	50.69
Ag	109	115	1	No Gas	0.001	ug/l	54.02
Cd	111	115	1	No Gas	0.001	ug/l	26.29

ICPMS207-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Cd	111	115	3	He	0.000	ug/l	4.89
Cd	114	115	1	No Gas	0.002	ug/l	42.64
Cd	114	115	3	He	-0.001	ug/l	10.66
Sn	118	115	1	No Gas	0.221	ug/l	4771.38
Sn	118	115	3	He	0.242	ug/l	1226.73
Sb	121	115	1	No Gas	0.010	ug/l	582.34
Sb	121	115	3	He	0.003	ug/l	99.01
Sb	123	115	1	No Gas	0.001	ug/l	369.04
Sb	123	115	3	He	-0.002	ug/l	62.01
Ba	135	115	1	No Gas	0.000	ug/l	29.94
Ba	137	115	1	No Gas	0.000	ug/l	69.86
La	139	115	3	He	0.000	ug/l	8.89
Ce	140	115	3	He	0.000	ug/l	17.78
Hg	201	209	1	No Gas	0.003	ug/l	23.99
Hg	202	209	1	No Gas	-0.001	ug/l	53.66
Hg	202	209	3	He	-0.002	ug/l	15.67
Tl	203	209	3	He	-0.009	ug/l	430.85
Tl	205	209	1	No Gas	-0.003	ug/l	1914.60
Tl	205	209	3	He	0.000	ug/l	1064.47
[Pb]	206	209	1	No Gas	-0.004	ug/l	558.90
[Pb]	207	209	1	No Gas	-0.001	ug/l	495.57
Pb	208	209	1	No Gas	-0.003	ug/l	2270.09
Th	232	209	3	He	-0.004	ug/l	240.10
U	238	209	1	No Gas	0.001	ug/l	101.65

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	3541023.80	99.6
Sc	45	2	H2	1831491.91	100.2
Sc	45	3	He	208108.91	100.2
Ge	72	1	No Gas	1072468.81	100.6
Ge	72	2	H2	725365.38	100.9
Ge	72	3	He	150753.85	100.3
In	115	1	No Gas	6877555.03	100.3
In	115	3	He	1480490.32	100.8
Tb	159	1	No Gas	8299187.75	100.3
Tb	159	3	He	3129030.93	100.0
Ho	165	1	No Gas	7584106.39	101.1
Ho	165	3	He	2925306.84	100.2
Lu	175	1	No Gas	7682253.65	101.0
Lu	175	3	He	2512059.99	100.6
Bi	209	1	No Gas	5072497.46	99.8
Bi	209	3	He	2225093.09	99.5

ICPMS207-B Analytical Data

Sample Name	Cal Blk
File Name	018CALB.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\211229DoD.b
Acq Time	2021-12-29 14:58:43
Sample Type	CalBlk
Total Dilution	1.0000
Comment	ICPMS-6020-W-D
Operator	CAR/SRH/JPV/AEM
Method	SW6020/ SW6020B

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	0.000	ug/l	8952.22
Be	9	45	1	No Gas	0.000	ug/l	260.95
B	11	45	1	No Gas	0.000	ug/l	4385.74
Na	23	45	3	He	0.000	ug/l	42699.20
Mg	24	45	3	He	0.000	ug/l	15497.30
Al	27	45	1	No Gas	0.000	ug/l	2082.44
Si	28	45	2	H2	0.000	ug/l	4671.28
K	39	72	3	He	0.000	ug/l	120520.99
Ca	40	72	2	H2	0.000	ug/l	194614.27
Ti	47	72	1	No Gas	0.000	ug/l	243.58
V	51	72	1	No Gas	0.000	ug/l	-127206.26
V	51	72	3	He	0.000	ug/l	18716.37
Cr	52	72	1	No Gas	0.000	ug/l	80502.81
Cr	52	72	3	He	0.000	ug/l	1113.38
Mn	55	72	1	No Gas	0.000	ug/l	18418.32
Mn	55	72	3	He	0.000	ug/l	488.24
Fe	56	72	2	H2	0.000	ug/l	26329.98
Fe	56	72	3	He	0.000	ug/l	9990.13
Co	59	72	1	No Gas	0.000	ug/l	1081.23
Ni	60	72	1	No Gas	0.000	ug/l	3070.90
Ni	60	72	3	He	0.000	ug/l	753.36
Cu	63	72	1	No Gas	0.000	ug/l	1102.48
Cu	63	72	3	He	0.000	ug/l	240.95
Cu	65	72	1	No Gas	0.000	ug/l	614.26
Zn	66	72	1	No Gas	0.000	ug/l	612.41
Zn	66	72	3	He	0.000	ug/l	105.56
As	75	72	1	No Gas	0.000	ug/l	33498.65
As	75	72	3	He	0.000	ug/l	422.87
Se	78	72	2	H2	0.000	ug/l	52.56
Br	79	72	1	No Gas	0.000	ug/l	7180.91
Br	79	72	2	H2	0.000	ug/l	3802.97
Se	82	72	1	No Gas	0.000	ug/l	1736.42
Kr	84	72	1	No Gas		ug/l	54758.06
Sr	88	72	1	No Gas	0.000	ug/l	1018.02
Sr	88	72	3	He	0.000	ug/l	132.23
Mo	95	115	1	No Gas	0.000	ug/l	68.89
Mo	95	115	3	He	0.000	ug/l	24.45
Mo	98	115	1	No Gas	0.000	ug/l	72.85
Ag	107	115	1	No Gas	0.000	ug/l	52.69
Ag	109	115	1	No Gas	0.000	ug/l	46.02
Cd	111	115	1	No Gas	0.000	ug/l	20.41

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Cd	111	115	3	He	0.000	ug/l	6.00
Cd	114	115	1	No Gas	0.000	ug/l	36.17
Cd	114	115	3	He	0.000	ug/l	9.50
Sn	118	115	1	No Gas	0.000	ug/l	5080.88
Sn	118	115	3	He	0.000	ug/l	1236.73
Sb	121	115	1	No Gas	0.000	ug/l	391.71
Sb	121	115	3	He	0.000	ug/l	97.68
Sb	123	115	1	No Gas	0.000	ug/l	336.04
Sb	123	115	3	He	0.000	ug/l	77.34
Ba	135	115	1	No Gas	0.000	ug/l	19.96
Ba	137	115	1	No Gas	0.000	ug/l	49.90
La	139	115	3	He	0.000	ug/l	17.78
Ce	140	115	3	He	0.000	ug/l	12.22
Hg	201	209	1	No Gas	0.000	ug/l	18.67
Hg	202	209	1	No Gas	0.000	ug/l	47.99
Hg	202	209	3	He	0.000	ug/l	13.67
Tl	203	209	3	He	0.000	ug/l	432.85
Tl	205	209	1	No Gas	0.000	ug/l	1906.82
Tl	205	209	3	He	0.000	ug/l	1024.45
[Pb]	206	209	1	No Gas	0.000	ug/l	555.57
[Pb]	207	209	1	No Gas	0.000	ug/l	505.57
Pb	208	209	1	No Gas	0.000	ug/l	2228.98
Th	232	209	3	He	0.000	ug/l	228.76
U	238	209	1	No Gas	0.000	ug/l	103.31

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	3435877.68	100.0
Sc	45	2	H2	1832370.51	100.0
Sc	45	3	He	209475.73	100.0
Ge	72	1	No Gas	1061075.79	100.0
Ge	72	2	H2	734341.42	100.0
Ge	72	3	He	150343.69	100.0
In	115	1	No Gas	6892618.33	100.0
In	115	3	He	1465833.53	100.0
Tb	159	1	No Gas	8077952.30	100.0
Tb	159	3	He	3145101.14	100.0
Ho	165	1	No Gas	7313494.49	100.0
Ho	165	3	He	2948239.26	100.0
Lu	175	1	No Gas	7499268.01	100.0
Lu	175	3	He	2535829.23	100.0
Bi	209	1	No Gas	4950768.25	100.0
Bi	209	3	He	2183708.67	100.0

ICPMS207-B Analytical Data

Sample Name	0.025 ppb STD
File Name	019CALS.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\211229DoD.b
Acq Time	2021-12-29 15:05:04
Sample Type	CalStd
Total Dilution	1.0000
Comment	ICPMS-6020B-Cal
Operator	CAR/SRH/JPV/AEM
Method	SW6020/ SW6020B

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	0.418	ug/l	10341.67
Be	9	45	1	No Gas	-0.006	ug/l	240.95
B	11	45	1	No Gas	0.048	ug/l	4299.01
Na	23	45	3	He	8.513	ug/l	47773.25
Mg	24	45	3	He	4.388	ug/l	16872.72
Al	27	45	1	No Gas	0.093	ug/l	3261.48
Si	28	45	2	H2	24.457	ug/l	45908.57
K	39	72	3	He	11.562	ug/l	124285.83
Ca	40	72	2	H2	13.594	ug/l	271119.33
Ti	47	72	1	No Gas	0.060	ug/l	337.01
V	51	72	1	No Gas	-1.192	ug/l	-145164.91
V	51	72	3	He	0.275	ug/l	19605.32
Cr	52	72	1	No Gas	0.428	ug/l	84603.72
Cr	52	72	3	He	0.041	ug/l	1266.73
Mn	55	72	1	No Gas	0.096	ug/l	20034.06
Mn	55	72	3	He	0.018	ug/l	531.57
Fe	56	72	2	H2	0.623	ug/l	34478.23
Fe	56	72	3	He	0.650	ug/l	12125.55
Co	59	72	1	No Gas	0.029	ug/l	1633.52
Ni	60	72	1	No Gas	-0.009	ug/l	2874.59
Ni	60	72	3	He	-0.090	ug/l	610.02
Cu	63	72	1	No Gas	0.038	ug/l	1514.03
Cu	63	72	3	He	0.039	ug/l	394.26
Cu	65	72	1	No Gas	0.041	ug/l	826.36
Zn	66	72	1	No Gas	0.116	ug/l	1078.19
Zn	66	72	3	He	0.124	ug/l	221.12
As	75	72	1	No Gas	0.014	ug/l	32022.68
As	75	72	3	He	0.054	ug/l	475.60
Se	78	72	2	H2	0.028	ug/l	69.11
Br	79	72	1	No Gas	141.778	ug/l	9021.60
Br	79	72	2	H2	56.545	ug/l	4678.16
Se	82	72	1	No Gas	0.934	ug/l	1964.68
Kr	84	72	1	No Gas		ug/l	52731.20
Sr	88	72	1	No Gas	0.038	ug/l	2269.03
Sr	88	72	3	He	0.033	ug/l	267.78
Mo	95	115	1	No Gas	0.027	ug/l	272.22
Mo	95	115	3	He	0.022	ug/l	81.11
Mo	98	115	1	No Gas	0.029	ug/l	424.11
Ag	107	115	1	No Gas	0.017	ug/l	369.49
Ag	109	115	1	No Gas	0.017	ug/l	350.15
Cd	111	115	1	No Gas	0.028	ug/l	138.64

ICPMS207-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Cd	111	115	3	He	0.028	ug/l	43.56
Cd	114	115	1	No Gas	0.025	ug/l	274.39
Cd	114	115	3	He	0.027	ug/l	98.64
Sn	118	115	1	No Gas	-0.220	ug/l	1979.56
Sn	118	115	3	He	-0.207	ug/l	544.46
Sb	121	115	1	No Gas	0.024	ug/l	880.11
Sb	121	115	3	He	0.025	ug/l	234.36
Sb	123	115	1	No Gas	0.028	ug/l	763.77
Sb	123	115	3	He	0.023	ug/l	177.69
Ba	135	115	1	No Gas	0.028	ug/l	119.76
Ba	137	115	1	No Gas	0.037	ug/l	286.10
La	139	115	3	He	0.026	ug/l	458.90
Ce	140	115	3	He	0.027	ug/l	511.12
Hg	201	209	1	No Gas	0.001	ug/l	20.00
Hg	202	209	1	No Gas	0.001	ug/l	50.99
Hg	202	209	3	He	0.002	ug/l	18.00
Tl	203	209	3	He	0.029	ug/l	601.59
Tl	205	209	1	No Gas	0.025	ug/l	2586.94
Tl	205	209	3	He	0.030	ug/l	1443.33
[Pb]	206	209	1	No Gas	0.027	ug/l	822.25
[Pb]	207	209	1	No Gas	0.020	ug/l	668.91
Pb	208	209	1	No Gas	0.028	ug/l	3316.86
Th	232	209	3	He	0.013	ug/l	468.20
U	238	209	1	No Gas	0.026	ug/l	1075.16

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	3323188.84	96.7
Sc	45	2	H2	1818697.35	99.3
Sc	45	3	He	209100.17	99.8
Ge	72	1	No Gas	1013283.75	95.5
Ge	72	2	H2	720743.22	98.1
Ge	72	3	He	149426.44	99.4
In	115	1	No Gas	6498700.04	94.3
In	115	3	He	1463851.82	99.9
Tb	159	1	No Gas	7750805.53	96.0
Tb	159	3	He	3155315.67	100.3
Ho	165	1	No Gas	7089516.50	96.9
Ho	165	3	He	2937821.05	99.6
Lu	175	1	No Gas	7154017.77	95.4
Lu	175	3	He	2534561.66	100.0
Bi	209	1	No Gas	4786212.95	96.7
Bi	209	3	He	2187390.35	100.2

ICPMS207-B Analytical Data

Sample Name	0.05 ppb STD
File Name	020CALS.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\211229DoD.b
Acq Time	2021-12-29 15:11:24
Sample Type	CalStd
Total Dilution	1.0000
Comment	ICPMS-6020B-Cal
Operator	CAR/SRH/JPV/AEM
Method	SW6020/ SW6020B

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	0.741	ug/l	11935.48
Be	9	45	1	No Gas	0.006	ug/l	269.62
B	11	45	1	No Gas	-0.163	ug/l	4098.87
Na	23	45	3	He	15.223	ug/l	51815.44
Mg	24	45	3	He	6.383	ug/l	17505.44
Al	27	45	1	No Gas	0.442	ug/l	8124.94
Si	28	45	2	H2	0.680	ug/l	5726.74
K	39	72	3	He	15.400	ug/l	126925.47
Ca	40	72	2	H2	16.375	ug/l	287621.20
Ti	47	72	1	No Gas	0.105	ug/l	425.44
V	51	72	1	No Gas	-3.299	ug/l	-194494.98
V	51	72	3	He	0.407	ug/l	20272.86
Cr	52	72	1	No Gas	0.516	ug/l	88318.04
Cr	52	72	3	He	0.065	ug/l	1376.74
Mn	55	72	1	No Gas	0.121	ug/l	21163.27
Mn	55	72	3	He	0.053	ug/l	625.56
Fe	56	72	2	H2	1.264	ug/l	43410.69
Fe	56	72	3	He	1.363	ug/l	14665.42
Co	59	72	1	No Gas	0.052	ug/l	2169.20
Ni	60	72	1	No Gas	-0.172	ug/l	2142.59
Ni	60	72	3	He	-0.131	ug/l	552.24
Cu	63	72	1	No Gas	0.082	ug/l	2095.00
Cu	63	72	3	He	0.091	ug/l	608.23
Cu	65	72	1	No Gas	0.086	ug/l	1122.49
Zn	66	72	1	No Gas	0.148	ug/l	1241.14
Zn	66	72	3	He	0.129	ug/l	227.78
As	75	72	1	No Gas	0.378	ug/l	34994.21
As	75	72	3	He	0.073	ug/l	499.07
Se	78	72	2	H2	0.059	ug/l	88.89
Br	79	72	1	No Gas	154.841	ug/l	9451.04
Br	79	72	2	H2	85.500	ug/l	5164.03
Se	82	72	1	No Gas	0.737	ug/l	1943.20
Kr	84	72	1	No Gas		ug/l	52040.22
Sr	88	72	1	No Gas	0.066	ug/l	3307.17
Sr	88	72	3	He	0.075	ug/l	446.68
Mo	95	115	1	No Gas	0.053	ug/l	480.01
Mo	95	115	3	He	0.056	ug/l	168.89
Mo	98	115	1	No Gas	0.051	ug/l	724.61
Ag	107	115	1	No Gas	0.026	ug/l	570.91
Ag	109	115	1	No Gas	0.027	ug/l	564.24
Cd	111	115	1	No Gas	0.057	ug/l	268.48

ICPMS207-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Cd	111	115	3	He	0.053	ug/l	77.33
Cd	114	115	1	No Gas	0.053	ug/l	557.78
Cd	114	115	3	He	0.055	ug/l	190.04
Sn	118	115	1	No Gas	-0.183	ug/l	2545.19
Sn	118	115	3	He	-0.179	ug/l	632.24
Sb	121	115	1	No Gas	0.051	ug/l	1527.91
Sb	121	115	3	He	0.048	ug/l	359.37
Sb	123	115	1	No Gas	0.052	ug/l	1196.51
Sb	123	115	3	He	0.049	ug/l	286.03
Ba	135	115	1	No Gas	0.061	ug/l	246.18
Ba	137	115	1	No Gas	0.065	ug/l	485.71
La	139	115	3	He	0.055	ug/l	947.82
Ce	140	115	3	He	0.053	ug/l	965.60
Hg	201	209	1	No Gas	0.002	ug/l	23.33
Hg	202	209	1	No Gas	0.001	ug/l	50.66
Hg	202	209	3	He	0.004	ug/l	22.00
Tl	203	209	3	He	0.047	ug/l	704.97
Tl	205	209	1	No Gas	0.048	ug/l	3376.01
Tl	205	209	3	He	0.050	ug/l	1708.80
[Pb]	206	209	1	No Gas	0.048	ug/l	1082.27
[Pb]	207	209	1	No Gas	0.050	ug/l	977.82
Pb	208	209	1	No Gas	0.050	ug/l	4380.31
Th	232	209	3	He	0.031	ug/l	802.35
U	238	209	1	No Gas	0.052	ug/l	2080.08

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	3396727.93	98.9
Sc	45	2	H2	1809932.20	98.8
Sc	45	3	He	209014.09	99.8
Ge	72	1	No Gas	1037203.78	97.8
Ge	72	2	H2	721478.30	98.2
Ge	72	3	He	150815.63	100.3
In	115	1	No Gas	6728937.53	97.6
In	115	3	He	1444854.08	98.6
Tb	159	1	No Gas	8044723.76	99.6
Tb	159	3	He	3124772.92	99.4
Ho	165	1	No Gas	7171242.03	98.1
Ho	165	3	He	2918823.77	99.0
Lu	175	1	No Gas	7310109.85	97.5
Lu	175	3	He	2478520.05	97.7
Bi	209	1	No Gas	4938737.48	99.8
Bi	209	3	He	2175976.15	99.6

ICPMS207-B Analytical Data

Sample Name	0.10 ppb STD
File Name	021CALS.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\211229DoD.b
Acq Time	2021-12-29 15:17:46
Sample Type	CalStd
Total Dilution	1.0000
Comment	ICPMS-6020B-Cal
Operator	CAR/SRH/JPV/AEM
Method	SW6020/ SW6020B

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	1.615	ug/l	15747.80
Be	9	45	1	No Gas	0.058	ug/l	381.26
B	11	45	1	No Gas	-0.232	ug/l	4049.51
Na	23	45	3	He	35.261	ug/l	63567.95
Mg	24	45	3	He	23.634	ug/l	22902.03
Al	27	45	1	No Gas	0.194	ug/l	4769.67
Si	28	45	2	H2	1.116	ug/l	6497.36
K	39	72	3	He	34.590	ug/l	133723.44
Ca	40	72	2	H2	35.827	ug/l	402474.83
Ti	47	72	1	No Gas	0.175	ug/l	570.59
V	51	72	1	No Gas	-0.630	ug/l	-142562.83
V	51	72	3	He	0.447	ug/l	20318.50
Cr	52	72	1	No Gas	0.365	ug/l	88455.93
Cr	52	72	3	He	0.137	ug/l	1652.32
Mn	55	72	1	No Gas	0.130	ug/l	22166.13
Mn	55	72	3	He	0.124	ug/l	805.86
Fe	56	72	2	H2	3.273	ug/l	71348.59
Fe	56	72	3	He	3.189	ug/l	20775.56
Co	59	72	1	No Gas	0.136	ug/l	4109.11
Ni	60	72	1	No Gas	-0.045	ug/l	2874.59
Ni	60	72	3	He	-0.027	ug/l	710.02
Cu	63	72	1	No Gas	0.134	ug/l	2845.42
Cu	63	72	3	He	0.152	ug/l	846.86
Cu	65	72	1	No Gas	0.134	ug/l	1467.33
Zn	66	72	1	No Gas	0.235	ug/l	1676.79
Zn	66	72	3	He	0.190	ug/l	283.34
As	75	72	1	No Gas	-0.411	ug/l	31287.30
As	75	72	3	He	0.153	ug/l	578.27
Se	78	72	2	H2	0.116	ug/l	125.55
Br	79	72	1	No Gas	143.459	ug/l	9604.18
Br	79	72	2	H2	89.910	ug/l	5240.57
Se	82	72	1	No Gas	0.072	ug/l	1778.05
Kr	84	72	1	No Gas		ug/l	50504.38
Sr	88	72	1	No Gas	0.139	ug/l	6085.90
Sr	88	72	3	He	0.135	ug/l	692.24
Mo	95	115	1	No Gas	0.125	ug/l	1078.94
Mo	95	115	3	He	0.128	ug/l	354.45
Mo	98	115	1	No Gas	0.119	ug/l	1646.43
Ag	107	115	1	No Gas	0.055	ug/l	1198.54
Ag	109	115	1	No Gas	0.055	ug/l	1134.50
Cd	111	115	1	No Gas	0.113	ug/l	533.09

ICPMS207-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Cd	111	115	3	He	0.123	ug/l	169.89
Cd	114	115	1	No Gas	0.116	ug/l	1221.60
Cd	114	115	3	He	0.127	ug/l	423.04
Sn	118	115	1	No Gas	-0.130	ug/l	3343.79
Sn	118	115	3	He	-0.110	ug/l	858.92
Sb	121	115	1	No Gas	0.114	ug/l	3026.97
Sb	121	115	3	He	0.117	ug/l	733.43
Sb	123	115	1	No Gas	0.117	ug/l	2362.11
Sb	123	115	3	He	0.117	ug/l	574.74
Ba	135	115	1	No Gas	0.117	ug/l	472.40
Ba	137	115	1	No Gas	0.124	ug/l	904.90
La	139	115	3	He	0.128	ug/l	2207.97
Ce	140	115	3	He	0.130	ug/l	2361.33
Hg	201	209	1	No Gas	0.003	ug/l	26.66
Hg	202	209	1	No Gas	0.003	ug/l	65.99
Hg	202	209	3	He	0.005	ug/l	25.99
Tl	203	209	3	He	0.099	ug/l	1033.79
Tl	205	209	1	No Gas	0.114	ug/l	5410.03
Tl	205	209	3	He	0.115	ug/l	2666.68
[Pb]	206	209	1	No Gas	0.117	ug/l	1844.58
[Pb]	207	209	1	No Gas	0.124	ug/l	1687.90
Pb	208	209	1	No Gas	0.119	ug/l	7419.74
Th	232	209	3	He	0.083	ug/l	1807.52
U	238	209	1	No Gas	0.121	ug/l	4752.58

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	3432144.60	99.9
Sc	45	2	H2	1826167.61	99.7
Sc	45	3	He	207853.57	99.2
Ge	72	1	No Gas	1072227.29	101.1
Ge	72	2	H2	722067.23	98.3
Ge	72	3	He	150059.17	99.8
In	115	1	No Gas	6934000.60	100.6
In	115	3	He	1444742.16	98.6
Tb	159	1	No Gas	8266521.44	102.3
Tb	159	3	He	3188518.82	101.4
Ho	165	1	No Gas	7454169.07	101.9
Ho	165	3	He	2945652.24	99.9
Lu	175	1	No Gas	7506422.57	100.1
Lu	175	3	He	2490991.19	98.2
Bi	209	1	No Gas	4948398.88	100.0
Bi	209	3	He	2227583.99	102.0

ICPMS207-B Analytical Data

Sample Name	0.5 ppb STD
File Name	022CALS.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\211229DoD.b
Acq Time	2021-12-29 15:24:06
Sample Type	CalStd
Total Dilution	1.0000
Comment	ICPMS-6020B-Cal
Operator	CAR/SRH/JPV/AEM
Method	SW6020/ SW6020B

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	6.946	ug/l	38710.60
Be	9	45	1	No Gas	0.463	ug/l	1232.47
B	11	45	1	No Gas	-0.026	ug/l	4403.75
Na	23	45	3	He	147.125	ug/l	131332.04
Mg	24	45	3	He	139.895	ug/l	60160.50
Al	27	45	1	No Gas	0.628	ug/l	10930.52
Si	28	45	2	H2	9.139	ug/l	19911.56
K	39	72	3	He	150.060	ug/l	178111.26
Ca	40	72	2	H2	141.642	ug/l	1055917.29
Ti	47	72	1	No Gas	0.585	ug/l	1323.06
V	51	72	1	No Gas	0.792	ug/l	-110834.38
V	51	72	3	He	0.889	ug/l	21897.39
Cr	52	72	1	No Gas	0.827	ug/l	96948.08
Cr	52	72	3	He	0.573	ug/l	3363.74
Mn	55	72	1	No Gas	0.603	ug/l	34862.01
Mn	55	72	3	He	0.589	ug/l	1993.41
Fe	56	72	2	H2	14.221	ug/l	229940.92
Fe	56	72	3	He	14.784	ug/l	59943.49
Co	59	72	1	No Gas	0.579	ug/l	13875.71
Ni	60	72	1	No Gas	0.334	ug/l	4794.62
Ni	60	72	3	He	0.394	ug/l	1358.96
Cu	63	72	1	No Gas	0.579	ug/l	8539.26
Cu	63	72	3	He	0.604	ug/l	2650.71
Cu	65	72	1	No Gas	0.594	ug/l	4351.74
Zn	66	72	1	No Gas	0.629	ug/l	3433.78
Zn	66	72	3	He	0.664	ug/l	725.58
As	75	72	1	No Gas	0.327	ug/l	35709.17
As	75	72	3	He	0.572	ug/l	1004.08
Se	78	72	2	H2	0.523	ug/l	395.56
Br	79	72	1	No Gas	114.715	ug/l	9091.55
Br	79	72	2	H2	65.323	ug/l	4974.34
Se	82	72	1	No Gas	1.103	ug/l	2137.56
Kr	84	72	1	No Gas		ug/l	52384.08
Sr	88	72	1	No Gas	0.579	ug/l	21993.35
Sr	88	72	3	He	0.586	ug/l	2562.47
Mo	95	115	1	No Gas	0.505	ug/l	4081.72
Mo	95	115	3	He	0.498	ug/l	1316.74
Mo	98	115	1	No Gas	0.506	ug/l	6646.79
Ag	107	115	1	No Gas	0.219	ug/l	4519.21
Ag	109	115	1	No Gas	0.219	ug/l	4309.06
Cd	111	115	1	No Gas	0.533	ug/l	2389.76

ICPMS207-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Cd	111	115	3	He	0.525	ug/l	712.24
Cd	114	115	1	No Gas	0.532	ug/l	5367.63
Cd	114	115	3	He	0.540	ug/l	1779.80
Sn	118	115	1	No Gas	0.242	ug/l	8276.06
Sn	118	115	3	He	0.261	ug/l	2090.17
Sb	121	115	1	No Gas	0.505	ug/l	11844.84
Sb	121	115	3	He	0.518	ug/l	2927.60
Sb	123	115	1	No Gas	0.506	ug/l	8926.07
Sb	123	115	3	He	0.526	ug/l	2335.43
Ba	135	115	1	No Gas	0.540	ug/l	2069.40
Ba	137	115	1	No Gas	0.540	ug/l	3706.50
La	139	115	3	He	0.529	ug/l	9114.14
Ce	140	115	3	He	0.540	ug/l	9827.97
Hg	201	209	1	No Gas	0.011	ug/l	45.32
Hg	202	209	1	No Gas	0.011	ug/l	106.65
Hg	202	209	3	He	0.010	ug/l	36.99
Tl	203	209	3	He	0.499	ug/l	3383.80
Tl	205	209	1	No Gas	0.515	ug/l	17888.72
Tl	205	209	3	He	0.515	ug/l	8197.82
[Pb]	206	209	1	No Gas	0.504	ug/l	6151.46
[Pb]	207	209	1	No Gas	0.509	ug/l	5373.35
Pb	208	209	1	No Gas	0.517	ug/l	24869.35
Th	232	209	3	He	0.423	ug/l	8181.18
U	238	209	1	No Gas	0.514	ug/l	19980.56

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	3479200.91	101.3
Sc	45	2	H2	1865176.05	101.8
Sc	45	3	He	208691.60	99.6
Ge	72	1	No Gas	1067013.83	100.6
Ge	72	2	H2	743322.03	101.2
Ge	72	3	He	149813.65	99.6
In	115	1	No Gas	6821308.52	99.0
In	115	3	He	1455352.43	99.3
Tb	159	1	No Gas	8128631.05	100.6
Tb	159	3	He	3124532.47	99.3
Ho	165	1	No Gas	7352822.77	100.5
Ho	165	3	He	2888753.76	98.0
Lu	175	1	No Gas	7549541.93	100.7
Lu	175	3	He	2464757.69	97.2
Bi	209	1	No Gas	4973976.61	100.5
Bi	209	3	He	2201027.48	100.8

ICPMS207-B Analytical Data

Sample Name	1 ppb STD
File Name	023CALS.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\211229DoD.b
Acq Time	2021-12-29 15:30:26
Sample Type	CalStd
Total Dilution	1.0000
Comment	ICPMS-6020B-Cal
Operator	CAR/SRH/JPV/AEM
Method	SW6020/ SW6020B

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	15.391	ug/l	74132.06
Be	9	45	1	No Gas	1.075	ug/l	2493.71
B	11	45	1	No Gas	0.528	ug/l	5166.96
Na	23	45	3	He	315.727	ug/l	236846.43
Mg	24	45	3	He	316.269	ug/l	118419.33
Al	27	45	1	No Gas	1.296	ug/l	20133.56
Si	28	45	2	H2	5.307	ug/l	13253.19
K	39	72	3	He	318.534	ug/l	245350.32
Ca	40	72	2	H2	317.856	ug/l	2089352.22
Ti	47	72	1	No Gas	1.228	ug/l	2537.78
V	51	72	1	No Gas	-0.510	ug/l	-140359.30
V	51	72	3	He	1.515	ug/l	24394.62
Cr	52	72	1	No Gas	1.605	ug/l	113298.13
Cr	52	72	3	He	1.221	ug/l	5969.02
Mn	55	72	1	No Gas	1.263	ug/l	53323.95
Mn	55	72	3	He	1.216	ug/l	3633.06
Fe	56	72	2	H2	32.790	ug/l	487139.06
Fe	56	72	3	He	31.972	ug/l	119107.81
Co	59	72	1	No Gas	1.287	ug/l	29841.21
Ni	60	72	1	No Gas	0.989	ug/l	8239.37
Ni	60	72	3	He	1.081	ug/l	2442.44
Cu	63	72	1	No Gas	1.288	ug/l	17828.01
Cu	63	72	3	He	1.337	ug/l	5622.96
Cu	65	72	1	No Gas	1.250	ug/l	8567.29
Zn	66	72	1	No Gas	1.474	ug/l	7297.02
Zn	66	72	3	He	1.382	ug/l	1408.97
As	75	72	1	No Gas	1.312	ug/l	42138.06
As	75	72	3	He	1.213	ug/l	1672.26
Se	78	72	2	H2	1.169	ug/l	805.47
Br	79	72	1	No Gas	197.467	ug/l	10559.63
Br	79	72	2	H2	115.173	ug/l	5733.12
Se	82	72	1	No Gas	1.202	ug/l	2196.94
Kr	84	72	1	No Gas		ug/l	52898.25
Sr	88	72	1	No Gas	1.315	ug/l	49186.77
Sr	88	72	3	He	1.212	ug/l	5206.53
Mo	95	115	1	No Gas	1.086	ug/l	8763.85
Mo	95	115	3	He	1.086	ug/l	2901.42
Mo	98	115	1	No Gas	1.095	ug/l	14387.48
Ag	107	115	1	No Gas	0.455	ug/l	9398.89
Ag	109	115	1	No Gas	0.456	ug/l	8975.12
Cd	111	115	1	No Gas	1.132	ug/l	5083.47

ICPMS207-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Cd	111	115	3	He	1.140	ug/l	1571.42
Cd	114	115	1	No Gas	1.141	ug/l	11553.73
Cd	114	115	3	He	1.133	ug/l	3802.74
Sn	118	115	1	No Gas	0.845	ug/l	16477.05
Sn	118	115	3	He	0.885	ug/l	4239.56
Sb	121	115	1	No Gas	1.087	ug/l	25232.71
Sb	121	115	3	He	1.125	ug/l	6374.09
Sb	123	115	1	No Gas	1.108	ug/l	19272.12
Sb	123	115	3	He	1.091	ug/l	4854.67
Ba	135	115	1	No Gas	1.182	ug/l	4525.10
Ba	137	115	1	No Gas	1.144	ug/l	7866.65
La	139	115	3	He	1.133	ug/l	19879.86
Ce	140	115	3	He	1.135	ug/l	21071.60
Hg	201	209	1	No Gas	0.021	ug/l	68.32
Hg	202	209	1	No Gas	0.022	ug/l	168.97
Hg	202	209	3	He	0.023	ug/l	68.32
Tl	203	209	3	He	1.105	ug/l	7084.07
Tl	205	209	1	No Gas	1.092	ug/l	36540.04
Tl	205	209	3	He	1.085	ug/l	16405.97
[Pb]	206	209	1	No Gas	1.093	ug/l	12966.36
[Pb]	207	209	1	No Gas	1.096	ug/l	11222.58
Pb	208	209	1	No Gas	1.103	ug/l	51651.73
Th	232	209	3	He	0.988	ug/l	19148.29
U	238	209	1	No Gas	1.093	ug/l	43344.10

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	3448972.30	100.4
Sc	45	2	H2	1807053.53	98.6
Sc	45	3	He	212054.57	101.2
Ge	72	1	No Gas	1079129.55	101.7
Ge	72	2	H2	730914.93	99.5
Ge	72	3	He	151153.90	100.5
In	115	1	No Gas	6870844.59	99.7
In	115	3	He	1484516.29	101.3
Tb	159	1	No Gas	8137152.91	100.7
Tb	159	3	He	3153221.57	100.3
Ho	165	1	No Gas	7488156.33	102.4
Ho	165	3	He	2948208.05	100.0
Lu	175	1	No Gas	7604367.44	101.4
Lu	175	3	He	2505997.60	98.8
Bi	209	1	No Gas	5082414.32	102.7
Bi	209	3	He	2240120.20	102.6

ICPMS207-B Analytical Data

Sample Name	10 ppb STD
File Name	024CALS.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\211229DoD.b
Acq Time	2021-12-29 15:36:47
Sample Type	CalStd
Total Dilution	1.0000
Comment	ICPMS-6020B-Cal
Operator	CAR/SRH/JPV/AEM
Method	SW6020/ SW6020B

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	139.778	ug/l	606872.29
Be	9	45	1	No Gas	10.620	ug/l	22538.51
B	11	45	1	No Gas	9.878	ug/l	18878.64
Na	23	45	3	He	2889.299	ug/l	1827987.24
Mg	24	45	3	He	2989.542	ug/l	993592.79
Al	27	45	1	No Gas	11.009	ug/l	156917.13
Si	28	45	2	H2	44.431	ug/l	76090.48
K	39	72	3	He	2857.465	ug/l	1260959.45
Ca	40	72	2	H2	2818.900	ug/l	17181803.07
Ti	47	72	1	No Gas	11.535	ug/l	21402.01
V	51	72	1	No Gas	5.948	ug/l	1329.34
V	51	72	3	He	11.012	ug/l	60605.01
Cr	52	72	1	No Gas	12.299	ug/l	317436.23
Cr	52	72	3	He	10.868	ug/l	45211.54
Mn	55	72	1	No Gas	11.920	ug/l	339729.31
Mn	55	72	3	He	11.124	ug/l	29839.13
Fe	56	72	2	H2	293.102	ug/l	4191351.52
Fe	56	72	3	He	293.717	ug/l	1033320.53
Co	59	72	1	No Gas	11.773	ug/l	259855.18
Ni	60	72	1	No Gas	11.541	ug/l	61817.72
Ni	60	72	3	He	11.001	ug/l	18279.25
Cu	63	72	1	No Gas	11.517	ug/l	148146.14
Cu	63	72	3	He	11.688	ug/l	48257.79
Cu	65	72	1	No Gas	11.352	ug/l	71610.49
Zn	66	72	1	No Gas	11.762	ug/l	53023.49
Zn	66	72	3	He	11.343	ug/l	11020.89
As	75	72	1	No Gas	12.095	ug/l	106876.20
As	75	72	3	He	10.839	ug/l	11815.54
Se	78	72	2	H2	10.949	ug/l	7180.77
Br	79	72	1	No Gas	126.151	ug/l	9227.99
Br	79	72	2	H2	81.940	ug/l	5223.94
Se	82	72	1	No Gas	11.044	ug/l	5656.02
Kr	84	72	1	No Gas		ug/l	55412.54
Sr	88	72	1	No Gas	11.979	ug/l	432640.79
Sr	88	72	3	He	11.015	ug/l	47213.98
Mo	95	115	1	No Gas	10.218	ug/l	80942.44
Mo	95	115	3	He	10.240	ug/l	26748.36
Mo	98	115	1	No Gas	10.150	ug/l	131352.76
Ag	107	115	1	No Gas	4.151	ug/l	84386.67
Ag	109	115	1	No Gas	4.186	ug/l	81054.65
Cd	111	115	1	No Gas	10.665	ug/l	47219.27

ICPMS207-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Cd	111	115	3	He	10.585	ug/l	14322.43
Cd	114	115	1	No Gas	10.598	ug/l	105847.78
Cd	114	115	3	He	10.600	ug/l	34973.46
Sn	118	115	1	No Gas	10.103	ug/l	139844.42
Sn	118	115	3	He	10.441	ug/l	35942.41
Sb	121	115	1	No Gas	10.197	ug/l	230822.89
Sb	121	115	3	He	10.396	ug/l	57239.24
Sb	123	115	1	No Gas	10.265	ug/l	173917.18
Sb	123	115	3	He	10.436	ug/l	45108.79
Ba	135	115	1	No Gas	11.016	ug/l	41596.39
Ba	137	115	1	No Gas	10.729	ug/l	72557.45
La	139	115	3	He	10.639	ug/l	183815.27
Ce	140	115	3	He	10.669	ug/l	195004.93
Hg	201	209	1	No Gas	0.209	ug/l	506.58
Hg	202	209	1	No Gas	0.201	ug/l	1127.82
Hg	202	209	3	He	0.205	ug/l	487.25
Tl	203	209	3	He	10.451	ug/l	61847.15
Tl	205	209	1	No Gas	10.582	ug/l	331163.03
Tl	205	209	3	He	10.701	ug/l	149098.84
[Pb]	206	209	1	No Gas	10.183	ug/l	113994.37
[Pb]	207	209	1	No Gas	10.171	ug/l	98085.47
Pb	208	209	1	No Gas	10.333	ug/l	456280.54
Th	232	209	3	He	10.168	ug/l	190412.82
U	238	209	1	No Gas	10.272	ug/l	398965.35

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	3484669.76	101.4
Sc	45	2	H2	1785719.31	97.5
Sc	45	3	He	213520.01	101.9
Ge	72	1	No Gas	1061752.24	100.1
Ge	72	2	H2	738711.16	100.6
Ge	72	3	He	154336.91	102.7
In	115	1	No Gas	6795024.45	98.6
In	115	3	He	1462715.10	99.8
Tb	159	1	No Gas	8005941.29	99.1
Tb	159	3	He	3119382.55	99.2
Ho	165	1	No Gas	7374305.45	100.8
Ho	165	3	He	2882426.52	97.8
Lu	175	1	No Gas	7500242.22	100.0
Lu	175	3	He	2509257.11	99.0
Bi	209	1	No Gas	4989677.33	100.8
Bi	209	3	He	2189434.41	100.3

ICPMS207-B Analytical Data

Sample Name	50 ppb STD
File Name	025CALS.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\211229DoD.b
Acq Time	2021-12-29 15:43:05
Sample Type	CalStd
Total Dilution	1.0000
Comment	ICPMS-6020B-Cal
Operator	CAR/SRH/JPV/AEM
Method	SW6020/ SW6020B

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	625.612	ug/l	2660080.85
Be	9	45	1	No Gas	49.488	ug/l	103096.38
B	11	45	1	No Gas	48.352	ug/l	74391.28
Na	23	45	3	He	12474.751	ug/l	7730863.50
Mg	24	45	3	He	12462.343	ug/l	4083571.09
Al	27	45	1	No Gas	49.687	ug/l	694370.01
Si	28	45	2	H2	198.328	ug/l	328003.23
K	39	72	3	He	12661.624	ug/l	5100656.00
Ca	40	72	2	H2	12131.408	ug/l	75099254.94
Ti	47	72	1	No Gas	49.844	ug/l	93921.04
V	51	72	1	No Gas	46.423	ug/l	898505.25
V	51	72	3	He	49.409	ug/l	202441.68
Cr	52	72	1	No Gas	53.166	ug/l	1131882.93
Cr	52	72	3	He	50.421	ug/l	203068.99
Mn	55	72	1	No Gas	50.916	ug/l	1424897.61
Mn	55	72	3	He	51.342	ug/l	134287.03
Fe	56	72	2	H2	1268.572	ug/l	18488844.65
Fe	56	72	3	He	1312.443	ug/l	4527095.84
Co	59	72	1	No Gas	52.704	ug/l	1187416.16
Ni	60	72	1	No Gas	51.228	ug/l	270210.02
Ni	60	72	3	He	50.864	ug/l	80738.12
Cu	63	72	1	No Gas	51.150	ug/l	670229.27
Cu	63	72	3	He	52.356	ug/l	212736.55
Cu	65	72	1	No Gas	50.175	ug/l	322020.65
Zn	66	72	1	No Gas	51.483	ug/l	235643.19
Zn	66	72	3	He	51.555	ug/l	49106.77
As	75	72	1	No Gas	52.193	ug/l	358803.38
As	75	72	3	He	50.120	ug/l	52420.99
Se	78	72	2	H2	49.312	ug/l	32939.96
Br	79	72	1	No Gas	135.706	ug/l	9614.18
Br	79	72	2	H2	109.924	ug/l	5846.29
Se	82	72	1	No Gas	50.494	ug/l	20141.34
Kr	84	72	1	No Gas		ug/l	65745.25
Sr	88	72	1	No Gas	50.165	ug/l	1852940.60
Sr	88	72	3	He	50.767	ug/l	214494.01
Mo	95	115	1	No Gas	48.492	ug/l	373433.59
Mo	95	115	3	He	47.956	ug/l	122506.03
Mo	98	115	1	No Gas	47.865	ug/l	602331.79
Ag	107	115	1	No Gas	19.441	ug/l	384285.44
Ag	109	115	1	No Gas	19.361	ug/l	364552.56
Cd	111	115	1	No Gas	50.120	ug/l	215798.20

ICPMS207-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Cd	111	115	3	He	49.388	ug/l	65352.35
Cd	114	115	1	No Gas	49.929	ug/l	485003.55
Cd	114	115	3	He	49.373	ug/l	159350.75
Sn	118	115	1	No Gas	47.872	ug/l	626403.89
Sn	118	115	3	He	48.584	ug/l	159217.99
Sb	121	115	1	No Gas	48.339	ug/l	1063005.65
Sb	121	115	3	He	48.755	ug/l	262245.40
Sb	123	115	1	No Gas	48.727	ug/l	801941.39
Sb	123	115	3	He	48.612	ug/l	205288.30
Ba	135	115	1	No Gas	51.637	ug/l	189621.75
Ba	137	115	1	No Gas	50.695	ug/l	333378.13
La	139	115	3	He	47.245	ug/l	798644.37
Ce	140	115	3	He	47.719	ug/l	853383.56
Hg	201	209	1	No Gas	0.976	ug/l	2224.75
Hg	202	209	1	No Gas	0.968	ug/l	5071.29
Hg	202	209	3	He	0.970	ug/l	2213.74
Tl	203	209	3	He	47.705	ug/l	276039.17
Tl	205	209	1	No Gas	48.409	ug/l	1461036.02
Tl	205	209	3	He	49.564	ug/l	675302.03
[Pb]	206	209	1	No Gas	47.681	ug/l	515114.25
[Pb]	207	209	1	No Gas	48.581	ug/l	452006.22
Pb	208	209	1	No Gas	48.769	ug/l	2078260.57
Th	232	209	3	He	48.229	ug/l	887156.83
U	238	209	1	No Gas	49.025	ug/l	1844331.72

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	3453030.93	100.5
Sc	45	2	H2	1808411.34	98.7
Sc	45	3	He	213090.74	101.7
Ge	72	1	No Gas	1088366.37	102.6
Ge	72	2	H2	756673.40	103.0
Ge	72	3	He	152480.58	101.4
In	115	1	No Gas	6611238.83	95.9
In	115	3	He	1432206.83	97.7
Tb	159	1	No Gas	8195806.98	101.5
Tb	159	3	He	3128550.03	99.5
Ho	165	1	No Gas	7428213.27	101.6
Ho	165	3	He	2906979.64	98.6
Lu	175	1	No Gas	7511788.56	100.2
Lu	175	3	He	2472875.00	97.5
Bi	209	1	No Gas	4834177.04	97.6
Bi	209	3	He	2152741.55	98.6

ICPMS207-B Analytical Data

Sample Name	100 ppb STD
File Name	026CALS.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\211229DoD.b
Acq Time	2021-12-29 15:49:19
Sample Type	CalStd
Total Dilution	1.0000
Comment	ICPMS-6020B-Cal
Operator	CAR/SRH/JPV/AEM
Method	SW6020/ SW6020B

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	1234.659	ug/l	5173001.33
Be	9	45	1	No Gas	100.363	ug/l	206104.88
B	11	45	1	No Gas	98.412	ug/l	144927.69
Na	23	45	3	He	25027.471	ug/l	15516168.80
Mg	24	45	3	He	25198.306	ug/l	8267336.27
Al	27	45	1	No Gas	102.660	ug/l	1414023.54
Si	28	45	2	H2	400.343	ug/l	650054.37
K	39	72	3	He	24837.037	ug/l	10015569.37
Ca	40	72	2	H2	24535.940	ug/l	147592390.52
Ti	47	72	1	No Gas	99.921	ug/l	190123.68
V	51	72	1	No Gas	99.381	ug/l	2092725.30
V	51	72	3	He	99.516	ug/l	393558.68
Cr	52	72	1	No Gas	102.996	ug/l	2138184.18
Cr	52	72	3	He	98.902	ug/l	402492.91
Mn	55	72	1	No Gas	100.946	ug/l	2837783.85
Mn	55	72	3	He	100.862	ug/l	266746.19
Fe	56	72	2	H2	2583.389	ug/l	36618650.70
Fe	56	72	3	He	2601.726	ug/l	9080392.99
Co	59	72	1	No Gas	100.612	ug/l	2292183.11
Ni	60	72	1	No Gas	103.764	ug/l	550336.18
Ni	60	72	3	He	99.745	ug/l	159639.89
Cu	63	72	1	No Gas	99.802	ug/l	1321275.50
Cu	63	72	3	He	102.795	ug/l	422907.71
Cu	65	72	1	No Gas	98.527	ug/l	638913.89
Zn	66	72	1	No Gas	102.552	ug/l	474047.20
Zn	66	72	3	He	99.617	ug/l	96027.18
As	75	72	1	No Gas	105.058	ug/l	694883.84
As	75	72	3	He	99.211	ug/l	104699.83
Se	78	72	2	H2	100.275	ug/l	65137.13
Br	79	72	1	No Gas	194.745	ug/l	10716.07
Br	79	72	2	H2	171.284	ug/l	6734.91
Se	82	72	1	No Gas	99.607	ug/l	38421.48
Kr	84	72	1	No Gas		ug/l	78821.15
Sr	88	72	1	No Gas	98.016	ug/l	3659770.37
Sr	88	72	3	He	100.621	ug/l	430589.27
Mo	95	115	1	No Gas	100.731	ug/l	751164.59
Mo	95	115	3	He	100.997	ug/l	252223.57
Mo	98	115	1	No Gas	101.051	ug/l	1231450.31
Ag	107	115	1	No Gas	40.264	ug/l	770589.49
Ag	109	115	1	No Gas	40.300	ug/l	734770.75
Cd	111	115	1	No Gas	103.430	ug/l	431237.59

ICPMS207-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Cd	111	115	3	He	101.184	ug/l	130960.04
Cd	114	115	1	No Gas	103.492	ug/l	973474.21
Cd	114	115	3	He	101.451	ug/l	320223.90
Sn	118	115	1	No Gas	101.057	ug/l	1275346.93
Sn	118	115	3	He	100.666	ug/l	321414.60
Sb	121	115	1	No Gas	100.810	ug/l	2146550.92
Sb	121	115	3	He	100.581	ug/l	529054.30
Sb	123	115	1	No Gas	100.609	ug/l	1602905.25
Sb	123	115	3	He	100.649	ug/l	415683.57
Ba	135	115	1	No Gas	106.938	ug/l	380213.54
Ba	137	115	1	No Gas	103.972	ug/l	662126.38
La	139	115	3	He	101.312	ug/l	1674877.14
Ce	140	115	3	He	101.072	ug/l	1767523.74
Hg	201	209	1	No Gas	2.011	ug/l	4431.19
Hg	202	209	1	No Gas	2.016	ug/l	10204.19
Hg	202	209	3	He	2.014	ug/l	4488.86
Tl	203	209	3	He	98.334	ug/l	556843.11
Tl	205	209	1	No Gas	102.982	ug/l	3014867.21
Tl	205	209	3	He	100.166	ug/l	1335429.89
[Pb]	206	209	1	No Gas	98.332	ug/l	1030280.89
[Pb]	207	209	1	No Gas	100.219	ug/l	904371.92
Pb	208	209	1	No Gas	99.846	ug/l	4126947.67
Th	232	209	3	He	100.241	ug/l	1805689.38
U	238	209	1	No Gas	99.007	ug/l	3614354.68

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	3408456.90	99.2
Sc	45	2	H2	1788688.66	97.6
Sc	45	3	He	213776.06	102.1
Ge	72	1	No Gas	1099912.68	103.7
Ge	72	2	H2	736285.82	100.3
Ge	72	3	He	154459.75	102.7
In	115	1	No Gas	6402519.81	92.9
In	115	3	He	1399746.27	95.5
Tb	159	1	No Gas	7977141.60	98.8
Tb	159	3	He	3105763.15	98.7
Ho	165	1	No Gas	7208456.02	98.6
Ho	165	3	He	2933083.47	99.5
Lu	175	1	No Gas	7358155.92	98.1
Lu	175	3	He	2503549.03	98.7
Bi	209	1	No Gas	4692287.24	94.8
Bi	209	3	He	2108544.76	96.6

ICPMS207-B Analytical Data

Sample Name	1000 ppb STD
File Name	027CALS.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\211229DoD.b
Acq Time	2021-12-29 15:55:26
Sample Type	CalStd
Total Dilution	1.0000
Comment	ICPMS-6020B-Cal
Operator	CAR/SRH/JPV/AEM
Method	SW6020/ SW6020B

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	2506.762	ug/l	10465738.39
Be	9	45	1	No Gas	999.983	ug/l	2045909.09
B	11	45	1	No Gas	1000.243	ug/l	1429822.05
Na	23	45	3	He	49972.722	ug/l	30533695.94
Mg	24	45	3	He	49885.418	ug/l	16135684.78
Al	27	45	1	No Gas	999.739	ug/l	13715299.52
Si	28	45	2	H2	2.171	ug/l	7625.01
K	39	72	3	He	50022.791	ug/l	19666641.37
Ca	40	72	2	H2	50307.845	ug/l	290956356.11
Ti	47	72	1	No Gas	6.623	ug/l	12290.93
V	51	72	1	No Gas	1000.283	ug/l	21306895.78
V	51	72	3	He	1000.067	ug/l	3709941.30
Cr	52	72	1	No Gas	999.518	ug/l	19168271.45
Cr	52	72	3	He	1000.080	ug/l	3982714.91
Mn	55	72	1	No Gas	999.840	ug/l	26742431.04
Mn	55	72	3	He	999.835	ug/l	2589771.65
Fe	56	72	2	H2	6012.541	ug/l	81975387.50
Fe	56	72	3	He	5995.065	ug/l	20514736.93
Co	59	72	1	No Gas	999.786	ug/l	21792084.31
Ni	60	72	1	No Gas	999.547	ug/l	5049970.19
Ni	60	72	3	He	999.972	ug/l	1563194.46
Cu	63	72	1	No Gas	999.947	ug/l	12660648.64
Cu	63	72	3	He	999.585	ug/l	4032322.69
Cu	65	72	1	No Gas	1000.125	ug/l	6201282.54
Zn	66	72	1	No Gas	999.652	ug/l	4417230.62
Zn	66	72	3	He	999.947	ug/l	944783.52
As	75	72	1	No Gas	999.363	ug/l	6044016.17
As	75	72	3	He	1000.064	ug/l	1031584.26
Se	78	72	2	H2	999.997	ug/l	624589.39
Br	79	72	1	No Gas	309.795	ug/l	12111.12
Br	79	72	2	H2	880.524	ug/l	18122.10
Se	82	72	1	No Gas	1000.004	ug/l	353692.13
Kr	84	72	1	No Gas		ug/l	284601.73
Sr	88	72	1	No Gas	1000.170	ug/l	35733199.93
Sr	88	72	3	He	999.889	ug/l	4197078.62
Mo	95	115	1	No Gas	0.090	ug/l	735.58
Mo	95	115	3	He	0.106	ug/l	284.45
Mo	98	115	1	No Gas	0.134	ug/l	1701.86
Ag	107	115	1	No Gas	357.217	ug/l	6833570.94
Ag	109	115	1	No Gas	375.092	ug/l	6834263.21
Cd	111	115	1	No Gas	999.644	ug/l	4166174.24

ICPMS207-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Cd	111	115	3	He	999.906	ug/l	1282075.93
Cd	114	115	1	No Gas	999.648	ug/l	9397604.95
Cd	114	115	3	He	999.880	ug/l	3126823.89
Sn	118	115	1	No Gas	0.007	ug/l	4807.98
Sn	118	115	3	He	0.008	ug/l	1195.61
Sb	121	115	1	No Gas	0.231	ug/l	5276.86
Sb	121	115	3	He	0.194	ug/l	1102.49
Sb	123	115	1	No Gas	0.250	ug/l	4287.75
Sb	123	115	3	He	0.194	ug/l	865.12
Ba	135	115	1	No Gas	999.214	ug/l	3550523.83
Ba	137	115	1	No Gas	999.561	ug/l	6360189.06
La	139	115	3	He	0.022	ug/l	371.12
Ce	140	115	3	He	0.041	ug/l	715.58
Hg	201	209	1	No Gas	0.008	ug/l	34.99
Hg	202	209	1	No Gas	0.014	ug/l	113.31
Hg	202	209	3	He	0.018	ug/l	51.99
Tl	203	209	3	He	1000.277	ug/l	5466159.76
Tl	205	209	1	No Gas	999.775	ug/l	28518967.63
Tl	205	209	3	He	999.998	ug/l	12868204.32
[Pb]	206	209	1	No Gas	1000.281	ug/l	10214135.19
[Pb]	207	209	1	No Gas	1000.047	ug/l	8793267.65
Pb	208	209	1	No Gas	1000.074	ug/l	40283584.47
Th	232	209	3	He	1000.063	ug/l	17397641.99
U	238	209	1	No Gas	1000.145	ug/l	35599776.20

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	3399395.31	98.9
Sc	45	2	H2	1692621.15	92.4
Sc	45	3	He	211034.65	100.7
Ge	72	1	No Gas	1052986.14	99.2
Ge	72	2	H2	708532.53	96.5
Ge	72	3	He	151555.80	100.8
In	115	1	No Gas	6397592.64	92.8
In	115	3	He	1386923.97	94.6
Tb	159	1	No Gas	7997184.98	99.0
Tb	159	3	He	3068371.91	97.6
Ho	165	1	No Gas	7331884.54	100.3
Ho	165	3	He	2834091.67	96.1
Lu	175	1	No Gas	7479536.88	99.7
Lu	175	3	He	2438571.38	96.2
Bi	209	1	No Gas	4574499.11	92.4
Bi	209	3	He	2036041.54	93.2

ICPMS207-B Analytical Data

Sample Name	100 ppb Br STD
File Name	028CALS.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\211229DoD.b
Acq Time	2021-12-29 16:01:04
Sample Type	CalStd
Total Dilution	1.0000
Comment	ICPMS-6020-W-D
Operator	CAR/SRH/JPV/AEM
Method	SW6020/ SW6020B

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	3.759	ug/l	24657.82
Be	9	45	1	No Gas	0.802	ug/l	1909.41
B	11	45	1	No Gas	7.872	ug/l	15632.30
Na	23	45	3	He	13.091	ug/l	48366.27
Mg	24	45	3	He	-27.037	ug/l	6505.20
Al	27	45	1	No Gas	0.254	ug/l	5574.39
Si	28	45	2	H2	1.094	ug/l	6251.82
K	39	72	3	He	13.928	ug/l	122618.67
Ca	40	72	2	H2	5.038	ug/l	218328.01
Ti	47	72	1	No Gas	0.183	ug/l	583.94
V	51	72	1	No Gas	-1.288	ug/l	-155867.91
V	51	72	3	He	-0.189	ug/l	17546.05
Cr	52	72	1	No Gas	0.548	ug/l	91692.59
Cr	52	72	3	He	0.110	ug/l	1508.98
Mn	55	72	1	No Gas	0.239	ug/l	25031.61
Mn	55	72	3	He	0.081	ug/l	678.55
Fe	56	72	2	H2	0.043	ug/l	26164.51
Fe	56	72	3	He	0.120	ug/l	10120.36
Co	59	72	1	No Gas	0.156	ug/l	4548.38
Ni	60	72	1	No Gas	0.041	ug/l	3300.50
Ni	60	72	3	He	-0.034	ug/l	681.13
Cu	63	72	1	No Gas	0.107	ug/l	2489.22
Cu	63	72	3	He	0.096	ug/l	607.89
Cu	65	72	1	No Gas	0.088	ug/l	1175.86
Zn	66	72	1	No Gas	0.277	ug/l	1860.74
Zn	66	72	3	He	0.247	ug/l	327.79
As	75	72	1	No Gas	0.498	ug/l	36819.47
As	75	72	3	He	0.202	ug/l	612.67
Se	78	72	2	H2	0.252	ug/l	209.22
Br	79	72	1	No Gas	100.000	ug/l	8861.85
Br	79	72	2	H2	100.000	ug/l	5343.72
Se	82	72	1	No Gas	-0.356	ug/l	1617.16
Kr	84	72	1	No Gas		ug/l	51976.98
Sr	88	72	1	No Gas	0.046	ug/l	2681.61
Sr	88	72	3	He	0.048	ug/l	322.23
Mo	95	115	1	No Gas	0.013	ug/l	163.34
Mo	95	115	3	He	0.016	ug/l	62.22
Mo	98	115	1	No Gas	0.016	ug/l	266.81
Ag	107	115	1	No Gas	0.098	ug/l	1972.27
Ag	109	115	1	No Gas	0.105	ug/l	2018.29
Cd	111	115	1	No Gas	0.046	ug/l	216.37

ICPMS207-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Cd	111	115	3	He	0.032	ug/l	47.56
Cd	114	115	1	No Gas	0.043	ug/l	448.63
Cd	114	115	3	He	0.030	ug/l	104.14
Sn	118	115	1	No Gas	0.105	ug/l	6212.41
Sn	118	115	3	He	0.139	ug/l	1612.34
Sb	121	115	1	No Gas	0.055	ug/l	1579.25
Sb	121	115	3	He	0.054	ug/l	373.71
Sb	123	115	1	No Gas	0.074	ug/l	1528.57
Sb	123	115	3	He	0.053	ug/l	292.70
Ba	135	115	1	No Gas	0.098	ug/l	375.93
Ba	137	115	1	No Gas	0.092	ug/l	652.06
La	139	115	3	He	0.002	ug/l	53.33
Ce	140	115	3	He	0.007	ug/l	132.22
Hg	201	209	1	No Gas	0.003	ug/l	25.99
Hg	202	209	1	No Gas	0.005	ug/l	72.65
Hg	202	209	3	He	0.006	ug/l	27.66
Tl	203	209	3	He	0.242	ug/l	1809.52
Tl	205	209	1	No Gas	0.247	ug/l	9594.63
Tl	205	209	3	He	0.246	ug/l	4311.77
[Pb]	206	209	1	No Gas	0.062	ug/l	1242.29
[Pb]	207	209	1	No Gas	0.062	ug/l	1102.28
Pb	208	209	1	No Gas	0.062	ug/l	4964.84
Th	232	209	3	He	0.210	ug/l	4046.93
U	238	209	1	No Gas	0.014	ug/l	660.55

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	3415418.96	99.4
Sc	45	2	H2	1768185.19	96.5
Sc	45	3	He	200156.37	95.6
Ge	72	1	No Gas	1068789.99	100.7
Ge	72	2	H2	713140.07	97.1
Ge	72	3	He	146487.84	97.4
In	115	1	No Gas	6577212.03	95.4
In	115	3	He	1393896.06	95.1
Tb	159	1	No Gas	7953973.59	98.5
Tb	159	3	He	3000709.28	95.4
Ho	165	1	No Gas	7247839.51	99.1
Ho	165	3	He	2807146.32	95.2
Lu	175	1	No Gas	7331645.45	97.8
Lu	175	3	He	2405677.05	94.9
Bi	209	1	No Gas	4972484.65	100.4
Bi	209	3	He	2135223.56	97.8

ICPMS207-B Analytical Data

Sample Name	QCS
File Name	029_QC1.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\211229DoD.b
Acq Time	2021-12-29 16:07:25
Sample Type	QC1
Total Dilution	1.0000
Comment	ICPMS-6020-W-D
Operator	CAR/SRH/JPV/AEM
Method	SW6020/ SW6020B

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	52.468	ug/l	234336.65
Be	9	45	1	No Gas	24.557	ug/l	51956.79
B	11	45	1	No Gas	52.213	ug/l	80995.11
Na	23	45	3	He	2719.546	ug/l	1731690.55
Mg	24	45	3	He	2739.517	ug/l	916549.12
Al	27	45	1	No Gas	254.484	ug/l	3593961.13
Si	28	45	2	H2	479.531	ug/l	782757.26
K	39	72	3	He	2651.452	ug/l	1177819.21
Ca	40	72	2	H2	2550.999	ug/l	15735676.48
Ti	47	72	1	No Gas	48.738	ug/l	91611.09
V	51	72	1	No Gas	49.480	ug/l	962035.82
V	51	72	3	He	49.108	ug/l	203588.85
Cr	52	72	1	No Gas	54.710	ug/l	1159185.58
Cr	52	72	3	He	50.448	ug/l	205508.93
Mn	55	72	1	No Gas	252.789	ug/l	6983810.27
Mn	55	72	3	He	258.774	ug/l	682433.76
Fe	56	72	2	H2	253.334	ug/l	3664525.62
Fe	56	72	3	He	260.341	ug/l	916290.98
Co	59	72	1	No Gas	53.247	ug/l	1197403.86
Ni	60	72	1	No Gas	52.915	ug/l	278438.35
Ni	60	72	3	He	51.100	ug/l	82029.69
Cu	63	72	1	No Gas	52.403	ug/l	685018.97
Cu	63	72	3	He	53.420	ug/l	219514.53
Cu	65	72	1	No Gas	51.370	ug/l	329037.33
Zn	66	72	1	No Gas	52.638	ug/l	240334.89
Zn	66	72	3	He	50.783	ug/l	48920.70
As	75	72	1	No Gas	51.931	ug/l	356291.17
As	75	72	3	He	49.273	ug/l	52127.76
Se	78	72	2	H2	49.960	ug/l	32927.49
Br	79	72	1	No Gas	129.948	ug/l	9497.63
Br	79	72	2	H2	114.885	ug/l	5849.61
Se	82	72	1	No Gas	51.002	ug/l	20275.85
Kr	84	72	1	No Gas		ug/l	65785.20
Sr	88	72	1	No Gas	51.451	ug/l	1896331.57
Sr	88	72	3	He	50.810	ug/l	217121.02
Mo	95	115	1	No Gas	45.482	ug/l	354960.84
Mo	95	115	3	He	45.603	ug/l	117572.39
Mo	98	115	1	No Gas	45.096	ug/l	575201.40
Ag	107	115	1	No Gas	24.497	ug/l	490733.71
Ag	109	115	1	No Gas	24.448	ug/l	466561.68
Cd	111	115	1	No Gas	24.721	ug/l	107884.31

ICPMS207-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Cd	111	115	3	He	24.715	ug/l	33016.98
Cd	114	115	1	No Gas	24.608	ug/l	242266.62
Cd	114	115	3	He	24.676	ug/l	80387.97
Sn	118	115	1	No Gas	45.744	ug/l	606849.40
Sn	118	115	3	He	46.438	ug/l	153687.84
Sb	121	115	1	No Gas	44.781	ug/l	997980.87
Sb	121	115	3	He	45.965	ug/l	249568.29
Sb	123	115	1	No Gas	45.450	ug/l	758046.19
Sb	123	115	3	He	45.790	ug/l	195207.51
Ba	135	115	1	No Gas	51.491	ug/l	191611.20
Ba	137	115	1	No Gas	49.998	ug/l	333173.26
La	139	115	3	He	50.283	ug/l	857929.57
Ce	140	115	3	He	51.208	ug/l	924316.92
Hg	201	209	1	No Gas	0.959	ug/l	2266.74
Hg	202	209	1	No Gas	0.949	ug/l	5154.30
Hg	202	209	3	He	1.004	ug/l	2314.07
Tl	203	209	3	He	48.182	ug/l	281888.68
Tl	205	209	1	No Gas	47.459	ug/l	1485313.63
Tl	205	209	3	He	48.920	ug/l	674022.17
[Pb]	206	209	1	No Gas	47.171	ug/l	528215.58
[Pb]	207	209	1	No Gas	47.687	ug/l	459900.42
Pb	208	209	1	No Gas	47.624	ug/l	2103677.00
Th	232	209	3	He	48.042	ug/l	893637.29
U	238	209	1	No Gas	49.804	ug/l	1942382.85

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	3499085.30	101.8
Sc	45	2	H2	1799666.80	98.2
Sc	45	3	He	214606.38	102.4
Ge	72	1	No Gas	1085639.26	102.3
Ge	72	2	H2	746428.09	101.6
Ge	72	3	He	154200.99	102.6
In	115	1	No Gas	6700597.88	97.2
In	115	3	He	1444536.09	98.5
Tb	159	1	No Gas	8263240.66	102.3
Tb	159	3	He	3146791.97	100.1
Ho	165	1	No Gas	7440899.28	101.7
Ho	165	3	He	2933706.83	99.5
Lu	175	1	No Gas	7489502.21	99.9
Lu	175	3	He	2493337.47	98.3
Bi	209	1	No Gas	5013092.92	101.3
Bi	209	3	He	2176925.47	99.7

ICPMS207-B Analytical Data

Sample Name	CCV
File Name	030_CCV.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\211229DoD.b
Acq Time	2021-12-29 16:13:31
Sample Type	CCV
Total Dilution	1.0000
Comment	ICPMS-6020-W-D
Operator	CAR/SRH/JPV/AEM
Method	SW6020/ SW6020B

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	641.808	ug/l	2693754.75
Be	9	45	1	No Gas	50.626	ug/l	104111.14
B	11	45	1	No Gas	52.194	ug/l	78929.74
Na	23	45	3	He	12596.428	ug/l	7772606.06
Mg	24	45	3	He	12624.049	ug/l	4118715.54
Al	27	45	1	No Gas	50.585	ug/l	697847.94
Si	28	45	2	H2	200.665	ug/l	324365.54
K	39	72	3	He	12323.821	ug/l	5056044.30
Ca	40	72	2	H2	12518.903	ug/l	75553176.35
Ti	47	72	1	No Gas	50.405	ug/l	95887.81
V	51	72	1	No Gas	46.480	ug/l	907134.67
V	51	72	3	He	47.984	ug/l	200673.24
Cr	52	72	1	No Gas	52.245	ug/l	1123993.60
Cr	52	72	3	He	49.001	ug/l	200933.14
Mn	55	72	1	No Gas	49.812	ug/l	1407901.00
Mn	55	72	3	He	50.779	ug/l	135178.41
Fe	56	72	2	H2	1286.753	ug/l	18282924.16
Fe	56	72	3	He	1291.251	ug/l	4533252.26
Co	59	72	1	No Gas	52.028	ug/l	1184098.72
Ni	60	72	1	No Gas	51.622	ug/l	275007.33
Ni	60	72	3	He	50.657	ug/l	81842.95
Cu	63	72	1	No Gas	50.939	ug/l	673896.42
Cu	63	72	3	He	51.666	ug/l	213696.07
Cu	65	72	1	No Gas	49.540	ug/l	321072.90
Zn	66	72	1	No Gas	51.548	ug/l	238245.05
Zn	66	72	3	He	49.915	ug/l	48401.19
As	75	72	1	No Gas	52.666	ug/l	365117.02
As	75	72	3	He	49.057	ug/l	52236.37
Se	78	72	2	H2	50.231	ug/l	32714.12
Br	79	72	1	No Gas	140.594	ug/l	9790.63
Br	79	72	2	H2	106.623	ug/l	5636.60
Se	82	72	1	No Gas	50.023	ug/l	20159.82
Kr	84	72	1	No Gas		ug/l	66139.44
Sr	88	72	1	No Gas	50.690	ug/l	1890457.99
Sr	88	72	3	He	50.229	ug/l	216015.35
Mo	95	115	1	No Gas	49.521	ug/l	375917.80
Mo	95	115	3	He	48.491	ug/l	123188.16
Mo	98	115	1	No Gas	48.555	ug/l	602493.95
Ag	107	115	1	No Gas	19.417	ug/l	378398.81
Ag	109	115	1	No Gas	19.843	ug/l	368335.50
Cd	111	115	1	No Gas	50.844	ug/l	215833.11

ICPMS207-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Cd	111	115	3	He	49.582	ug/l	65279.31
Cd	114	115	1	No Gas	50.604	ug/l	484625.84
Cd	114	115	3	He	49.448	ug/l	158766.07
Sn	118	115	1	No Gas	48.109	ug/l	620757.22
Sn	118	115	3	He	48.048	ug/l	156674.88
Sb	121	115	1	No Gas	49.113	ug/l	1064762.29
Sb	121	115	3	He	48.704	ug/l	260632.82
Sb	123	115	1	No Gas	49.530	ug/l	803478.94
Sb	123	115	3	He	48.819	ug/l	205122.82
Ba	135	115	1	No Gas	52.799	ug/l	191156.57
Ba	137	115	1	No Gas	51.795	ug/l	335709.10
La	139	115	3	He	47.510	ug/l	798927.02
Ce	140	115	3	He	47.796	ug/l	850322.74
Hg	201	209	1	No Gas	0.971	ug/l	2228.41
Hg	202	209	1	No Gas	0.960	ug/l	5066.62
Hg	202	209	3	He	1.006	ug/l	2299.74
Tl	203	209	3	He	48.021	ug/l	278282.42
Tl	205	209	1	No Gas	48.921	ug/l	1486021.42
Tl	205	209	3	He	48.876	ug/l	666884.84
[Pb]	206	209	1	No Gas	47.064	ug/l	511704.77
[Pb]	207	209	1	No Gas	47.786	ug/l	447438.79
Pb	208	209	1	No Gas	48.067	ug/l	2061468.06
Th	232	209	3	He	48.079	ug/l	885711.79
U	238	209	1	No Gas	47.865	ug/l	1812160.05

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	3409018.45	99.2
Sc	45	2	H2	1767384.08	96.5
Sc	45	3	He	212182.21	101.3
Ge	72	1	No Gas	1098233.34	103.5
Ge	72	2	H2	737620.42	100.4
Ge	72	3	He	155198.18	103.2
In	115	1	No Gas	6519827.08	94.6
In	115	3	He	1424206.04	97.2
Tb	159	1	No Gas	8248946.26	102.1
Tb	159	3	He	3149909.83	100.2
Ho	165	1	No Gas	7514585.67	102.7
Ho	165	3	He	2924675.69	99.2
Lu	175	1	No Gas	7546563.54	100.6
Lu	175	3	He	2486023.28	98.0
Bi	209	1	No Gas	4866695.56	98.3
Bi	209	3	He	2155950.19	98.7

ICPMS207-B Analytical Data

Sample Name	CCB
File Name	031_CCB.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\211229DoD.b
Acq Time	2021-12-29 16:19:36
Sample Type	CCB
Total Dilution	1.0000
Comment	ICPMS-6020-W-D
Operator	CAR/SRH/JPV/AEM
Method	SW6020/ SW6020B

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	1.592	ug/l	15869.32
Be	9	45	1	No Gas	0.197	ug/l	677.22
B	11	45	1	No Gas	2.160	ug/l	7593.63
Na	23	45	3	He	-3.747	ug/l	41561.62
Mg	24	45	3	He	-25.636	ug/l	7470.42
Al	27	45	1	No Gas	-0.006	ug/l	2027.93
Si	28	45	2	H2	0.190	ug/l	4995.51
K	39	72	3	He	-2.332	ug/l	121902.08
Ca	40	72	2	H2	-0.779	ug/l	190288.14
Ti	47	72	1	No Gas	0.063	ug/l	363.70
V	51	72	1	No Gas	-1.404	ug/l	-160029.68
V	51	72	3	He	-0.774	ug/l	16183.37
Cr	52	72	1	No Gas	-0.220	ug/l	77409.09
Cr	52	72	3	He	0.000	ug/l	1136.72
Mn	55	72	1	No Gas	0.011	ug/l	19007.96
Mn	55	72	3	He	-0.025	ug/l	431.92
Fe	56	72	2	H2	-0.359	ug/l	21285.08
Fe	56	72	3	He	-0.397	ug/l	8808.19
Co	59	72	1	No Gas	0.030	ug/l	1766.61
Ni	60	72	1	No Gas	0.136	ug/l	3816.28
Ni	60	72	3	He	0.060	ug/l	862.25
Cu	63	72	1	No Gas	0.001	ug/l	1137.84
Cu	63	72	3	He	0.005	ug/l	264.28
Cu	65	72	1	No Gas	-0.003	ug/l	602.92
Zn	66	72	1	No Gas	0.021	ug/l	716.04
Zn	66	72	3	He	0.014	ug/l	121.11
As	75	72	1	No Gas	0.083	ug/l	34526.35
As	75	72	3	He	0.004	ug/l	435.47
Se	78	72	2	H2	0.046	ug/l	82.33
Br	79	72	1	No Gas	-25.435	ug/l	6868.06
Br	79	72	2	H2	-13.807	ug/l	3573.37
Se	82	72	1	No Gas	0.421	ug/l	1911.58
Kr	84	72	1	No Gas		ug/l	53265.83
Sr	88	72	1	No Gas	0.010	ug/l	1380.68
Sr	88	72	3	He	0.010	ug/l	178.89
Mo	95	115	1	No Gas	0.028	ug/l	287.78
Mo	95	115	3	He	0.032	ug/l	110.00
Mo	98	115	1	No Gas	0.030	ug/l	456.68
Ag	107	115	1	No Gas	0.002	ug/l	93.37
Ag	109	115	1	No Gas	0.003	ug/l	97.38
Cd	111	115	1	No Gas	0.008	ug/l	55.20

ICPMS207-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Cd	111	115	3	He	0.005	ug/l	12.56
Cd	114	115	1	No Gas	0.008	ug/l	110.96
Cd	114	115	3	He	0.007	ug/l	34.03
Sn	118	115	1	No Gas	0.052	ug/l	5643.33
Sn	118	115	3	He	0.059	ug/l	1455.64
Sb	121	115	1	No Gas	0.091	ug/l	2422.12
Sb	121	115	3	He	0.068	ug/l	478.39
Sb	123	115	1	No Gas	0.097	ug/l	1952.34
Sb	123	115	3	He	0.071	ug/l	388.71
Ba	135	115	1	No Gas	0.021	ug/l	96.47
Ba	137	115	1	No Gas	0.013	ug/l	133.07
La	139	115	3	He	0.001	ug/l	27.78
Ce	140	115	3	He	0.001	ug/l	31.11
Hg	201	209	1	No Gas	0.008	ug/l	37.99
Hg	202	209	1	No Gas	0.007	ug/l	89.31
Hg	202	209	3	He	0.006	ug/l	28.99
Tl	203	209	3	He	0.059	ug/l	803.02
Tl	205	209	1	No Gas	0.054	ug/l	3659.42
Tl	205	209	3	He	0.057	ug/l	1869.55
[Pb]	206	209	1	No Gas	0.024	ug/l	840.04
[Pb]	207	209	1	No Gas	0.021	ug/l	725.58
Pb	208	209	1	No Gas	0.020	ug/l	3203.51
Th	232	209	3	He	0.056	ug/l	1323.27
U	238	209	1	No Gas	0.003	ug/l	237.29

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	3481013.27	101.3
Sc	45	2	H2	1834624.54	100.1
Sc	45	3	He	215439.82	102.8
Ge	72	1	No Gas	1076870.32	101.5
Ge	72	2	H2	735641.52	100.2
Ge	72	3	He	153181.47	101.9
In	115	1	No Gas	6730081.00	97.6
In	115	3	He	1489015.14	101.6
Tb	159	1	No Gas	8145182.86	100.8
Tb	159	3	He	3235170.63	102.9
Ho	165	1	No Gas	7493315.92	102.5
Ho	165	3	He	2965475.55	100.6
Lu	175	1	No Gas	7571484.92	101.0
Lu	175	3	He	2570447.75	101.4
Bi	209	1	No Gas	5086937.94	102.8
Bi	209	3	He	2255137.28	103.3

ICPMS207-B Analytical Data

Sample Name	LRB
File Name	032MBLK.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\211229DoD.b
Acq Time	2021-12-29 16:25:46
Sample Type	MBLK
Total Dilution	1.0000
Comment	ICPMS-6020-W-D
Operator	CAR/SRH/JPV/AEM
Method	SW6020/ SW6020B

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	0.245	ug/l	10692.72
Be	9	45	1	No Gas	0.113	ug/l	528.57
B	11	45	1	No Gas	1.100	ug/l	6392.59
Na	23	45	3	He	0.918	ug/l	44166.75
Mg	24	45	3	He	-21.770	ug/l	8685.28
Al	27	45	1	No Gas	1.067	ug/l	18086.54
Si	28	45	2	H2	1.056	ug/l	4933.47
K	39	72	3	He	-4.582	ug/l	122009.58
Ca	40	72	2	H2	124.514	ug/l	740998.14
Ti	47	72	1	No Gas	0.002	ug/l	253.59
V	51	72	1	No Gas	2.305	ug/l	-79965.61
V	51	72	3	He	-1.779	ug/l	12536.49
Cr	52	72	1	No Gas	-1.078	ug/l	61529.73
Cr	52	72	3	He	0.009	ug/l	1180.06
Mn	55	72	1	No Gas	-0.135	ug/l	15231.06
Mn	55	72	3	He	-0.018	ug/l	454.59
Fe	56	72	2	H2	0.397	ug/l	25170.16
Fe	56	72	3	He	-0.112	ug/l	9873.26
Co	59	72	1	No Gas	0.023	ug/l	1626.87
Ni	60	72	1	No Gas	0.189	ug/l	4152.39
Ni	60	72	3	He	0.049	ug/l	851.14
Cu	63	72	1	No Gas	0.065	ug/l	1990.94
Cu	63	72	3	He	0.070	ug/l	533.57
Cu	65	72	1	No Gas	0.060	ug/l	1018.45
Zn	66	72	1	No Gas	0.499	ug/l	2919.13
Zn	66	72	3	He	0.458	ug/l	550.01
As	75	72	1	No Gas	-0.675	ug/l	30277.76
As	75	72	3	He	-0.116	ug/l	312.87
Se	78	72	2	H2	0.029	ug/l	56.11
Br	79	72	1	No Gas	-36.030	ug/l	6791.46
Br	79	72	2	H2	59.431	ug/l	3796.31
Se	82	72	1	No Gas	0.114	ug/l	1827.81
Kr	84	72	1	No Gas		ug/l	52928.40
Sr	88	72	1	No Gas	0.049	ug/l	2881.26
Sr	88	72	3	He	0.057	ug/l	381.12
Mo	95	115	1	No Gas	0.008	ug/l	141.11
Mo	95	115	3	He	0.014	ug/l	63.33
Mo	98	115	1	No Gas	0.011	ug/l	221.11
Ag	107	115	1	No Gas	0.006	ug/l	182.08
Ag	109	115	1	No Gas	0.007	ug/l	182.74
Cd	111	115	1	No Gas	0.005	ug/l	44.97

ICPMS207-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Cd	111	115	3	He	0.004	ug/l	12.22
Cd	114	115	1	No Gas	0.004	ug/l	83.79
Cd	114	115	3	He	0.006	ug/l	30.25
Sn	118	115	1	No Gas	-0.240	ug/l	1916.34
Sn	118	115	3	He	-0.249	ug/l	418.90
Sb	121	115	1	No Gas	0.014	ug/l	739.09
Sb	121	115	3	He	0.019	ug/l	206.02
Sb	123	115	1	No Gas	0.015	ug/l	625.08
Sb	123	115	3	He	0.015	ug/l	148.02
Ba	135	115	1	No Gas	0.015	ug/l	79.84
Ba	137	115	1	No Gas	0.012	ug/l	136.39
La	139	115	3	He	0.001	ug/l	33.33
Ce	140	115	3	He	0.003	ug/l	75.55
Hg	201	209	1	No Gas	0.005	ug/l	29.99
Hg	202	209	1	No Gas	0.003	ug/l	65.65
Hg	202	209	3	He	0.006	ug/l	28.32
Tl	203	209	3	He	0.046	ug/l	717.64
Tl	205	209	1	No Gas	0.039	ug/l	3175.97
Tl	205	209	3	He	0.055	ug/l	1822.86
[Pb]	206	209	1	No Gas	0.015	ug/l	744.47
[Pb]	207	209	1	No Gas	0.009	ug/l	608.91
Pb	208	209	1	No Gas	0.016	ug/l	3020.16
Th	232	209	3	He	0.002	ug/l	278.12
U	238	209	1	No Gas	0.002	ug/l	184.96

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	3678019.34	107.0
Sc	45	2	H2	1475686.52	80.5
Sc	45	3	He	213858.48	102.1
Ge	72	1	No Gas	1092411.25	103.0
Ge	72	2	H2	591689.46	80.6
Ge	72	3	He	154431.10	102.7
In	115	1	No Gas	7173458.17	104.1
In	115	3	He	1506495.98	102.8
Tb	159	1	No Gas	8436867.09	104.4
Tb	159	3	He	3167686.40	100.7
Ho	165	1	No Gas	7607711.25	104.0
Ho	165	3	He	2920810.71	99.1
Lu	175	1	No Gas	7788047.88	103.9
Lu	175	3	He	2551418.18	100.6
Bi	209	1	No Gas	5078648.58	102.6
Bi	209	3	He	2227691.16	102.0

ICPMS207-B Analytical Data

Sample Name	LFB
File Name	033_LFB.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\211229DoD.b
Acq Time	2021-12-29 16:31:58
Sample Type	LFB
Total Dilution	1.0300
Comment	ICPMS-6020-W-D
Operator	CAR/SRH/JPV/AEM
Method	SW6020/ SW6020B

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	2481.632	ug/l	9844486.06
Be	9	45	1	No Gas	49.111	ug/l	95705.33
B	11	45	1	No Gas	49.691	ug/l	71513.67
Na	23	45	3	He	51359.278	ug/l	29126582.35
Mg	24	45	3	He	51850.579	ug/l	15567989.32
Al	27	45	1	No Gas	50.105	ug/l	654962.13
Si	28	45	2	H2	193.792	ug/l	288794.67
K	39	72	3	He	50492.092	ug/l	18779402.36
Ca	40	72	2	H2	49371.873	ug/l	278722489.34
Ti	47	72	1	No Gas	52.608	ug/l	94951.78
V	51	72	1	No Gas	52.402	ug/l	982214.41
V	51	72	3	He	50.491	ug/l	194590.16
Cr	52	72	1	No Gas	53.776	ug/l	1097715.36
Cr	52	72	3	He	49.885	ug/l	188922.70
Mn	55	72	1	No Gas	48.260	ug/l	1295259.61
Mn	55	72	3	He	50.966	ug/l	125318.02
Fe	56	72	2	H2	5100.869	ug/l	67894927.53
Fe	56	72	3	He	5115.435	ug/l	16558819.90
Co	59	72	1	No Gas	50.896	ug/l	1099020.30
Ni	60	72	1	No Gas	51.876	ug/l	262280.62
Ni	60	72	3	He	51.637	ug/l	77052.61
Cu	63	72	1	No Gas	49.566	ug/l	622220.37
Cu	63	72	3	He	52.247	ug/l	199554.94
Cu	65	72	1	No Gas	48.256	ug/l	296748.07
Zn	66	72	1	No Gas	54.229	ug/l	237745.48
Zn	66	72	3	He	55.010	ug/l	49258.48
As	75	72	1	No Gas	50.445	ug/l	334182.19
As	75	72	3	He	49.892	ug/l	49067.32
Se	78	72	2	H2	49.959	ug/l	30502.34
Br	79	72	1	No Gas	150.589	ug/l	9657.47
Br	79	72	2	H2	88.965	ug/l	5110.77
Se	82	72	1	No Gas	48.977	ug/l	18813.68
Kr	84	72	1	No Gas		ug/l	63800.61
Sr	88	72	1	No Gas	50.034	ug/l	1770169.02
Sr	88	72	3	He	50.774	ug/l	201652.27
Mo	95	115	1	No Gas	47.316	ug/l	337794.20
Mo	95	115	3	He	47.624	ug/l	112447.53
Mo	98	115	1	No Gas	47.170	ug/l	550417.22
Ag	107	115	1	No Gas	19.319	ug/l	354046.82
Ag	109	115	1	No Gas	19.396	ug/l	338575.89
Cd	111	115	1	No Gas	50.979	ug/l	203481.67

ICPMS207-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Cd	111	115	3	He	50.032	ug/l	61219.21
Cd	114	115	1	No Gas	50.284	ug/l	452930.90
Cd	114	115	3	He	49.921	ug/l	148966.20
Sn	118	115	1	No Gas	46.969	ug/l	570223.31
Sn	118	115	3	He	47.922	ug/l	145253.07
Sb	121	115	1	No Gas	47.756	ug/l	973851.86
Sb	121	115	3	He	48.120	ug/l	239327.95
Sb	123	115	1	No Gas	48.268	ug/l	736739.16
Sb	123	115	3	He	47.866	ug/l	186910.01
Ba	135	115	1	No Gas	52.528	ug/l	178755.57
Ba	137	115	1	No Gas	51.968	ug/l	316767.34
La	139	115	3	He	51.364	ug/l	802762.16
Ce	140	115	3	He	51.331	ug/l	848625.51
Hg	201	209	1	No Gas	0.997	ug/l	2127.42
Hg	202	209	1	No Gas	1.005	ug/l	4924.27
Hg	202	209	3	He	1.019	ug/l	2115.75
Tl	203	209	3	He	48.712	ug/l	256519.04
Tl	205	209	1	No Gas	49.625	ug/l	1400444.82
Tl	205	209	3	He	49.645	ug/l	615683.02
[Pb]	206	209	1	No Gas	48.290	ug/l	487827.13
[Pb]	207	209	1	No Gas	49.095	ug/l	427126.19
Pb	208	209	1	No Gas	49.319	ug/l	1965312.14
Th	232	209	3	He	50.319	ug/l	842550.63
U	238	209	1	No Gas	50.225	ug/l	1767242.39

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	3326743.27	96.8
Sc	45	2	H2	1678277.25	91.6
Sc	45	3	He	201708.90	96.3
Ge	72	1	No Gas	1073281.49	101.2
Ge	72	2	H2	712226.22	97.0
Ge	72	3	He	147644.78	98.2
In	115	1	No Gas	6319487.55	91.7
In	115	3	He	1362813.09	93.0
Tb	159	1	No Gas	7969260.12	98.7
Tb	159	3	He	2995474.04	95.2
Ho	165	1	No Gas	7291357.04	99.7
Ho	165	3	He	2804006.07	95.1
Lu	175	1	No Gas	7341411.31	97.9
Lu	175	3	He	2390993.51	94.3
Bi	209	1	No Gas	4657758.14	94.1
Bi	209	3	He	2018334.50	92.4

ICPMS207-B Analytical Data

Sample Name	ICSA
File Name	034ICSA.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\211229DoD.b
Acq Time	2021-12-29 16:38:04
Sample Type	ICSA
Total Dilution	1.0000
Comment	ICPMS-6020-W-D
Operator	CAR/SRH/JPV/AEM
Method	SW6020/ SW6020B

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	3.290	ug/l	22820.22
Be	9	45	1	No Gas	0.122	ug/l	514.57
B	11	45	1	No Gas	1.342	ug/l	6322.53
Na	23	45	3	He	102291.110	ug/l	59050375.79
Mg	24	45	3	He	40878.748	ug/l	12505087.65
Al	27	45	1	No Gas	36603.311	ug/l	507869050.21
Si	28	45	2	H2	1.070	ug/l	5835.50
K	39	72	3	He	39958.268	ug/l	15058337.14
Ca	40	72	2	H2	115269.172	ug/l	655030100.36
Ti	47	72	1	No Gas	756.200	ug/l	1402247.12
V	51	72	1	No Gas	3.822	ug/l	-45565.78
V	51	72	3	He	-2.862	ug/l	7948.85
Cr	52	72	1	No Gas	0.615	ug/l	93345.70
Cr	52	72	3	He	0.883	ug/l	4439.58
Mn	55	72	1	No Gas	0.043	ug/l	19794.06
Mn	55	72	3	He	0.129	ug/l	791.20
Fe	56	72	2	H2	98603.665	ug/l	1320841261.40
Fe	56	72	3	He	102132.977	ug/l	334325914.14
Co	59	72	1	No Gas	0.316	ug/l	8116.23
Ni	60	72	1	No Gas	1.191	ug/l	9231.27
Ni	60	72	3	He	0.534	ug/l	1525.65
Cu	63	72	1	No Gas	0.935	ug/l	13184.57
Cu	63	72	3	He	0.197	ug/l	991.17
Cu	65	72	1	No Gas	0.697	ug/l	5024.89
Zn	66	72	1	No Gas	1.256	ug/l	6276.05
Zn	66	72	3	He	0.948	ug/l	958.93
As	75	72	1	No Gas	-0.851	ug/l	28740.69
As	75	72	3	He	0.038	ug/l	445.27
Se	78	72	2	H2	0.114	ug/l	119.78
Br	79	72	1	No Gas	220.935	ug/l	10885.96
Br	79	72	2	H2	76.722	ug/l	4844.55
Se	82	72	1	No Gas	-0.278	ug/l	1653.72
Kr	84	72	1	No Gas		ug/l	52714.63
Sr	88	72	1	No Gas	1.266	ug/l	47113.67
Sr	88	72	3	He	1.219	ug/l	5023.13
Mo	95	115	1	No Gas	730.974	ug/l	5584865.89
Mo	95	115	3	He	788.021	ug/l	1857720.49
Mo	98	115	1	No Gas	717.355	ug/l	8952328.68
Ag	107	115	1	No Gas	0.013	ug/l	298.12
Ag	109	115	1	No Gas	0.013	ug/l	292.79
Cd	111	115	1	No Gas	0.061	ug/l	283.20

ICPMS207-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Cd	111	115	3	He	0.231	ug/l	287.56
Cd	114	115	1	No Gas	0.065	ug/l	668.71
Cd	114	115	3	He	0.175	ug/l	530.85
Sn	118	115	1	No Gas	-0.102	ug/l	3530.13
Sn	118	115	3	He	-0.066	ug/l	915.59
Sb	121	115	1	No Gas	0.116	ug/l	2890.59
Sb	121	115	3	He	0.099	ug/l	579.41
Sb	123	115	1	No Gas	0.119	ug/l	2263.41
Sb	123	115	3	He	0.096	ug/l	443.38
Ba	135	115	1	No Gas	0.097	ug/l	375.93
Ba	137	115	1	No Gas	0.080	ug/l	568.89
La	139	115	3	He	0.012	ug/l	206.67
Ce	140	115	3	He	0.008	ug/l	143.33
Hg	201	209	1	No Gas	0.005	ug/l	29.66
Hg	202	209	1	No Gas	0.007	ug/l	83.65
Hg	202	209	3	He	0.007	ug/l	26.66
Tl	203	209	3	He	0.187	ug/l	1395.31
Tl	205	209	1	No Gas	0.174	ug/l	7119.88
Tl	205	209	3	He	0.191	ug/l	3344.43
[Pb]	206	209	1	No Gas	0.027	ug/l	834.48
[Pb]	207	209	1	No Gas	0.023	ug/l	706.69
Pb	208	209	1	No Gas	0.024	ug/l	3190.17
Th	232	209	3	He	0.088	ug/l	1715.47
U	238	209	1	No Gas	0.003	ug/l	214.63

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	3441231.71	100.2
Sc	45	2	H2	1663206.41	90.8
Sc	45	3	He	199479.40	95.2
Ge	72	1	No Gas	1073639.88	101.2
Ge	72	2	H2	697134.99	94.9
Ge	72	3	He	145025.98	96.5
In	115	1	No Gas	6568214.02	95.3
In	115	3	He	1321305.32	90.1
Tb	159	1	No Gas	8181973.51	101.3
Tb	159	3	He	3007433.68	95.6
Ho	165	1	No Gas	7541070.08	103.1
Ho	165	3	He	2840489.03	96.3
Lu	175	1	No Gas	7678883.98	102.4
Lu	175	3	He	2429343.97	95.8
Bi	209	1	No Gas	4818196.93	97.3
Bi	209	3	He	1993137.66	91.3

ICPMS207-B Analytical Data

Sample Name	ICSAB
File Name	035ICSB.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\211229DoD.b
Acq Time	2021-12-29 16:44:14
Sample Type	ICSAB
Total Dilution	1.0000
Comment	ICPMS-6020-W-D
Operator	CAR/SRH/JPV/AEM
Method	SW6020/ SW6020B

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	2.455	ug/l	18307.00
Be	9	45	1	No Gas	0.246	ug/l	730.21
B	11	45	1	No Gas	0.878	ug/l	5359.11
Na	23	45	3	He	100128.301	ug/l	57666255.25
Mg	24	45	3	He	40794.534	ug/l	12450189.42
Al	27	45	1	No Gas	38048.535	ug/l	500139388.10
Si	28	45	2	H2	1.260	ug/l	6242.48
K	39	72	3	He	39075.057	ug/l	14773978.81
Ca	40	72	2	H2	113378.192	ug/l	646177608.18
Ti	47	72	1	No Gas	762.112	ug/l	1359785.62
V	51	72	1	No Gas	23.770	ug/l	375918.98
V	51	72	3	He	16.381	ug/l	76141.27
Cr	52	72	1	No Gas	21.372	ug/l	478572.76
Cr	52	72	3	He	20.430	ug/l	79159.36
Mn	55	72	1	No Gas	20.375	ug/l	551800.43
Mn	55	72	3	He	19.887	ug/l	49913.82
Fe	56	72	2	H2	98282.794	ug/l	1320398365.19
Fe	56	72	3	He	100012.907	ug/l	328377866.30
Co	59	72	1	No Gas	20.576	ug/l	440698.12
Ni	60	72	1	No Gas	21.237	ug/l	108108.96
Ni	60	72	3	He	20.699	ug/l	31783.43
Cu	63	72	1	No Gas	20.715	ug/l	258259.03
Cu	63	72	3	He	20.398	ug/l	79220.75
Cu	65	72	1	No Gas	20.141	ug/l	123073.55
Zn	66	72	1	No Gas	11.854	ug/l	51957.62
Zn	66	72	3	He	11.062	ug/l	10132.47
As	75	72	1	No Gas	10.034	ug/l	91779.87
As	75	72	3	He	9.715	ug/l	10024.51
Se	78	72	2	H2	9.780	ug/l	6070.71
Br	79	72	1	No Gas	290.183	ug/l	11565.01
Br	79	72	2	H2	109.868	ug/l	5393.67
Se	82	72	1	No Gas	10.159	ug/l	5194.71
Kr	84	72	1	No Gas		ug/l	51502.56
Sr	88	72	1	No Gas	1.294	ug/l	46335.88
Sr	88	72	3	He	1.238	ug/l	5114.27
Mo	95	115	1	No Gas	742.955	ug/l	5502576.10
Mo	95	115	3	He	746.610	ug/l	1765136.52
Mo	98	115	1	No Gas	724.360	ug/l	8766383.62
Ag	107	115	1	No Gas	4.680	ug/l	89044.79
Ag	109	115	1	No Gas	4.704	ug/l	85229.79
Cd	111	115	1	No Gas	9.643	ug/l	39955.70

ICPMS207-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Cd	111	115	3	He	9.926	ug/l	12167.64
Cd	114	115	1	No Gas	9.629	ug/l	90005.48
Cd	114	115	3	He	9.936	ug/l	29698.51
Sn	118	115	1	No Gas	-0.047	ug/l	4102.47
Sn	118	115	3	He	-0.041	ug/l	994.49
Sb	121	115	1	No Gas	0.057	ug/l	1565.58
Sb	121	115	3	He	0.059	ug/l	380.04
Sb	123	115	1	No Gas	0.059	ug/l	1242.18
Sb	123	115	3	He	0.056	ug/l	288.70
Ba	135	115	1	No Gas	0.109	ug/l	402.54
Ba	137	115	1	No Gas	0.106	ug/l	718.60
La	139	115	3	He	0.010	ug/l	180.00
Ce	140	115	3	He	0.010	ug/l	184.45
Hg	201	209	1	No Gas	0.005	ug/l	29.32
Hg	202	209	1	No Gas	0.003	ug/l	61.99
Hg	202	209	3	He	0.007	ug/l	26.66
Tl	203	209	3	He	0.084	ug/l	852.37
Tl	205	209	1	No Gas	0.066	ug/l	3702.79
Tl	205	209	3	He	0.094	ug/l	2139.70
[Pb]	206	209	1	No Gas	0.030	ug/l	831.14
[Pb]	207	209	1	No Gas	0.028	ug/l	726.69
Pb	208	209	1	No Gas	0.027	ug/l	3191.28
Th	232	209	3	He	0.035	ug/l	812.35
U	238	209	1	No Gas	0.003	ug/l	191.96

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	3257760.50	94.8
Sc	45	2	H2	1693699.53	92.4
Sc	45	3	He	198999.29	95.0
Ge	72	1	No Gas	1032821.34	97.3
Ge	72	2	H2	698357.06	95.1
Ge	72	3	He	145477.30	96.8
In	115	1	No Gas	6359766.63	92.3
In	115	3	He	1325073.52	90.4
Tb	159	1	No Gas	7972025.13	98.7
Tb	159	3	He	2975130.26	94.6
Ho	165	1	No Gas	7235634.75	98.9
Ho	165	3	He	2778743.88	94.3
Lu	175	1	No Gas	7555163.44	100.7
Lu	175	3	He	2401252.31	94.7
Bi	209	1	No Gas	4656122.69	94.0
Bi	209	3	He	2011395.68	92.1

ICPMS207-B Analytical Data

Sample Name	Rinse
File Name	036BLKV.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\211229DoD.b
Acq Time	2021-12-29 16:50:23
Sample Type	BlkVrfy
Total Dilution	1.0000
Comment	ICPMS-6020-W-D
Operator	CAR/SRH/JPV/AEM
Method	SW6020/ SW6020B

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	1.095	ug/l	13724.38
Be	9	45	1	No Gas	0.062	ug/l	393.60
B	11	45	1	No Gas	0.100	ug/l	4581.87
Na	23	45	3	He	10.016	ug/l	48332.93
Mg	24	45	3	He	-25.283	ug/l	7317.28
Al	27	45	1	No Gas	0.449	ug/l	8406.84
Si	28	45	2	H2	-0.187	ug/l	4200.28
K	39	72	3	He	-6.215	ug/l	118511.14
Ca	40	72	2	H2	1.634	ug/l	200229.18
Ti	47	72	1	No Gas	0.110	ug/l	435.45
V	51	72	1	No Gas	5.921	ug/l	664.05
V	51	72	3	He	-3.406	ug/l	6269.15
Cr	52	72	1	No Gas	-1.909	ug/l	42823.83
Cr	52	72	3	He	-0.019	ug/l	1040.04
Mn	55	72	1	No Gas	-0.253	ug/l	11358.58
Mn	55	72	3	He	-0.111	ug/l	203.96
Fe	56	72	2	H2	7.158	ug/l	124824.34
Fe	56	72	3	He	6.268	ug/l	31353.24
Co	59	72	1	No Gas	-0.013	ug/l	785.13
Ni	60	72	1	No Gas	0.448	ug/l	5233.93
Ni	60	72	3	He	0.238	ug/l	1125.61
Cu	63	72	1	No Gas	0.072	ug/l	1979.60
Cu	63	72	3	He	0.035	ug/l	382.93
Cu	65	72	1	No Gas	0.057	ug/l	947.75
Zn	66	72	1	No Gas	0.073	ug/l	917.33
Zn	66	72	3	He	0.083	ug/l	184.45
As	75	72	1	No Gas	-0.735	ug/l	28419.01
As	75	72	3	He	-0.171	ug/l	249.13
Se	78	72	2	H2	-0.006	ug/l	47.78
Br	79	72	1	No Gas	5.837	ug/l	7117.68
Br	79	72	2	H2	4.093	ug/l	3789.65
Se	82	72	1	No Gas	-0.132	ug/l	1652.39
Kr	84	72	1	No Gas		ug/l	51926.83
Sr	88	72	1	No Gas	-0.002	ug/l	941.50
Sr	88	72	3	He	0.002	ug/l	140.00
Mo	95	115	1	No Gas	0.242	ug/l	1984.60
Mo	95	115	3	He	0.268	ug/l	722.25
Mo	98	115	1	No Gas	0.239	ug/l	3175.46
Ag	107	115	1	No Gas	0.005	ug/l	144.72
Ag	109	115	1	No Gas	0.004	ug/l	118.05
Cd	111	115	1	No Gas	0.005	ug/l	43.40

ICPMS207-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Cd	111	115	3	He	0.002	ug/l	8.56
Cd	114	115	1	No Gas	0.004	ug/l	78.53
Cd	114	115	3	He	0.005	ug/l	24.67
Sn	118	115	1	No Gas	-0.181	ug/l	2601.77
Sn	118	115	3	He	-0.170	ug/l	666.68
Sb	121	115	1	No Gas	0.012	ug/l	669.75
Sb	121	115	3	He	0.012	ug/l	165.35
Sb	123	115	1	No Gas	0.015	ug/l	580.07
Sb	123	115	3	He	0.015	ug/l	140.35
Ba	135	115	1	No Gas	0.009	ug/l	53.23
Ba	137	115	1	No Gas	0.007	ug/l	99.80
La	139	115	3	He	0.000	ug/l	24.44
Ce	140	115	3	He	0.001	ug/l	26.67
Hg	201	209	1	No Gas	0.001	ug/l	21.67
Hg	202	209	1	No Gas	0.005	ug/l	73.98
Hg	202	209	3	He	0.004	ug/l	24.00
Tl	203	209	3	He	0.059	ug/l	788.34
Tl	205	209	1	No Gas	0.048	ug/l	3483.83
Tl	205	209	3	He	0.068	ug/l	1982.28
[Pb]	206	209	1	No Gas	0.007	ug/l	648.91
[Pb]	207	209	1	No Gas	0.007	ug/l	588.91
Pb	208	209	1	No Gas	0.008	ug/l	2631.23
Th	232	209	3	He	0.004	ug/l	305.46
U	238	209	1	No Gas	0.001	ug/l	153.97

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	3474472.32	101.1
Sc	45	2	H2	1763337.73	96.2
Sc	45	3	He	207597.36	99.1
Ge	72	1	No Gas	1038423.21	97.9
Ge	72	2	H2	719252.13	97.9
Ge	72	3	He	150785.44	100.3
In	115	1	No Gas	6814000.72	98.9
In	115	3	He	1460145.04	99.6
Tb	159	1	No Gas	8259999.08	102.3
Tb	159	3	He	3132715.02	99.6
Ho	165	1	No Gas	7590275.79	103.8
Ho	165	3	He	2908241.97	98.6
Lu	175	1	No Gas	7714281.92	102.9
Lu	175	3	He	2447373.62	96.5
Bi	209	1	No Gas	5072042.83	102.4
Bi	209	3	He	2212424.42	101.3

ICPMS207-B Analytical Data

Sample Name	CCV
File Name	037_CCV.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\211229DoD.b
Acq Time	2021-12-29 16:56:33
Sample Type	CCV
Total Dilution	1.0000
Comment	ICPMS-6020-W-D
Operator	CAR/SRH/JPV/AEM
Method	SW6020/ SW6020B

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	605.693	ug/l	2554074.38
Be	9	45	1	No Gas	49.343	ug/l	101954.19
B	11	45	1	No Gas	47.758	ug/l	72923.67
Na	23	45	3	He	12293.712	ug/l	7506893.50
Mg	24	45	3	He	12226.807	ug/l	3947696.04
Al	27	45	1	No Gas	48.927	ug/l	678253.80
Si	28	45	2	H2	195.991	ug/l	319961.97
K	39	72	3	He	12190.415	ug/l	4880961.46
Ca	40	72	2	H2	12539.408	ug/l	74997268.80
Ti	47	72	1	No Gas	50.770	ug/l	93018.86
V	51	72	1	No Gas	51.560	ug/l	982595.81
V	51	72	3	He	46.281	ug/l	189494.76
Cr	52	72	1	No Gas	52.812	ug/l	1093312.66
Cr	52	72	3	He	49.751	ug/l	199029.97
Mn	55	72	1	No Gas	50.875	ug/l	1384796.98
Mn	55	72	3	He	50.741	ug/l	131785.60
Fe	56	72	2	H2	1304.588	ug/l	18372367.35
Fe	56	72	3	He	1305.962	ug/l	4472773.29
Co	59	72	1	No Gas	53.563	ug/l	1174199.47
Ni	60	72	1	No Gas	53.155	ug/l	272651.37
Ni	60	72	3	He	50.644	ug/l	79827.49
Cu	63	72	1	No Gas	51.718	ug/l	658948.92
Cu	63	72	3	He	52.306	ug/l	211055.12
Cu	65	72	1	No Gas	50.851	ug/l	317381.66
Zn	66	72	1	No Gas	51.665	ug/l	229932.76
Zn	66	72	3	He	50.379	ug/l	47655.55
As	75	72	1	No Gas	53.206	ug/l	354892.57
As	75	72	3	He	49.461	ug/l	51380.83
Se	78	72	2	H2	49.940	ug/l	32231.51
Br	79	72	1	No Gas	56.543	ug/l	8072.92
Br	79	72	2	H2	70.823	ug/l	4984.33
Se	82	72	1	No Gas	51.167	ug/l	19820.86
Kr	84	72	1	No Gas		ug/l	64899.79
Sr	88	72	1	No Gas	52.521	ug/l	1886338.87
Sr	88	72	3	He	49.855	ug/l	209200.26
Mo	95	115	1	No Gas	47.530	ug/l	370106.46
Mo	95	115	3	He	48.773	ug/l	121931.81
Mo	98	115	1	No Gas	47.108	ug/l	599393.47
Ag	107	115	1	No Gas	19.181	ug/l	383355.46
Ag	109	115	1	No Gas	19.066	ug/l	363036.94
Cd	111	115	1	No Gas	49.484	ug/l	215454.33

ICPMS207-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Cd	111	115	3	He	49.741	ug/l	64443.89
Cd	114	115	1	No Gas	49.353	ug/l	484790.13
Cd	114	115	3	He	49.329	ug/l	155861.83
Sn	118	115	1	No Gas	47.670	ug/l	630791.36
Sn	118	115	3	He	48.440	ug/l	155405.06
Sb	121	115	1	No Gas	47.695	ug/l	1060622.66
Sb	121	115	3	He	48.733	ug/l	256641.05
Sb	123	115	1	No Gas	47.956	ug/l	798082.38
Sb	123	115	3	He	48.625	ug/l	201041.62
Ba	135	115	1	No Gas	51.404	ug/l	190861.51
Ba	137	115	1	No Gas	50.979	ug/l	338939.02
La	139	115	3	He	47.887	ug/l	792471.10
Ce	140	115	3	He	47.679	ug/l	834649.52
Hg	201	209	1	No Gas	0.963	ug/l	2240.41
Hg	202	209	1	No Gas	0.937	ug/l	5008.61
Hg	202	209	3	He	0.990	ug/l	2242.08
Tl	203	209	3	He	48.248	ug/l	277321.03
Tl	205	209	1	No Gas	48.851	ug/l	1503584.99
Tl	205	209	3	He	49.211	ug/l	666006.69
[Pb]	206	209	1	No Gas	47.434	ug/l	522546.51
[Pb]	207	209	1	No Gas	47.764	ug/l	453205.80
Pb	208	209	1	No Gas	48.235	ug/l	2096255.96
Th	232	209	3	He	48.550	ug/l	887125.38
U	238	209	1	No Gas	48.202	ug/l	1848931.86

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	3426446.05	99.7
Sc	45	2	H2	1784970.34	97.4
Sc	45	3	He	209944.45	100.2
Ge	72	1	No Gas	1058027.74	99.7
Ge	72	2	H2	731050.43	99.6
Ge	72	3	He	151416.81	100.7
In	115	1	No Gas	6686548.92	97.0
In	115	3	He	1401277.24	95.6
Tb	159	1	No Gas	8163078.26	101.1
Tb	159	3	He	3094749.77	98.4
Ho	165	1	No Gas	7468527.69	102.1
Ho	165	3	He	2903021.20	98.5
Lu	175	1	No Gas	7543297.66	100.6
Lu	175	3	He	2477969.00	97.7
Bi	209	1	No Gas	4930033.44	99.6
Bi	209	3	He	2140356.90	98.0

ICPMS207-B Analytical Data

Sample Name	CCB
File Name	038_CCB.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\211229DoD.b
Acq Time	2021-12-29 17:02:37
Sample Type	CCB
Total Dilution	1.0000
Comment	ICPMS-6020-W-D
Operator	CAR/SRH/JPV/AEM
Method	SW6020/ SW6020B

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	1.942	ug/l	16459.50
Be	9	45	1	No Gas	0.072	ug/l	394.26
B	11	45	1	No Gas	0.422	ug/l	4800.70
Na	23	45	3	He	2.622	ug/l	42897.60
Mg	24	45	3	He	-21.431	ug/l	8349.11
Al	27	45	1	No Gas	0.283	ug/l	5761.57
Si	28	45	2	H2	-0.185	ug/l	4216.30
K	39	72	3	He	3.867	ug/l	119108.24
Ca	40	72	2	H2	0.501	ug/l	192239.05
Ti	47	72	1	No Gas	0.098	ug/l	410.42
V	51	72	1	No Gas	2.799	ug/l	-63999.99
V	51	72	3	He	-2.766	ug/l	8382.42
Cr	52	72	1	No Gas	-1.366	ug/l	52726.46
Cr	52	72	3	He	-0.021	ug/l	1003.38
Mn	55	72	1	No Gas	-0.194	ug/l	12830.16
Mn	55	72	3	He	-0.112	ug/l	195.96
Fe	56	72	2	H2	3.064	ug/l	67711.05
Fe	56	72	3	He	2.779	ug/l	18956.27
Co	59	72	1	No Gas	-0.004	ug/l	971.44
Ni	60	72	1	No Gas	0.063	ug/l	3293.84
Ni	60	72	3	He	0.006	ug/l	743.35
Cu	63	72	1	No Gas	0.020	ug/l	1319.93
Cu	63	72	3	He	0.008	ug/l	268.28
Cu	65	72	1	No Gas	0.010	ug/l	655.61
Zn	66	72	1	No Gas	0.006	ug/l	617.78
Zn	66	72	3	He	0.002	ug/l	104.45
As	75	72	1	No Gas	-1.326	ug/l	24769.47
As	75	72	3	He	-0.096	ug/l	317.00
Se	78	72	2	H2	0.018	ug/l	62.33
Br	79	72	1	No Gas	-13.940	ug/l	6754.88
Br	79	72	2	H2	-17.076	ug/l	3416.98
Se	82	72	1	No Gas	0.597	ug/l	1888.90
Kr	84	72	1	No Gas		ug/l	52344.19
Sr	88	72	1	No Gas	0.003	ug/l	1101.20
Sr	88	72	3	He	0.005	ug/l	148.89
Mo	95	115	1	No Gas	0.053	ug/l	485.57
Mo	95	115	3	He	0.078	ug/l	220.00
Mo	98	115	1	No Gas	0.058	ug/l	810.17
Ag	107	115	1	No Gas	0.001	ug/l	72.03
Ag	109	115	1	No Gas	0.001	ug/l	64.03
Cd	111	115	1	No Gas	0.002	ug/l	29.74

ICPMS207-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Cd	111	115	3	He	0.002	ug/l	8.44
Cd	114	115	1	No Gas	0.001	ug/l	41.56
Cd	114	115	3	He	0.003	ug/l	19.96
Sn	118	115	1	No Gas	0.054	ug/l	5679.89
Sn	118	115	3	He	0.025	ug/l	1268.95
Sb	121	115	1	No Gas	0.065	ug/l	1823.97
Sb	121	115	3	He	0.049	ug/l	354.04
Sb	123	115	1	No Gas	0.067	ug/l	1441.56
Sb	123	115	3	He	0.049	ug/l	276.70
Ba	135	115	1	No Gas	0.009	ug/l	53.23
Ba	137	115	1	No Gas	0.004	ug/l	79.84
La	139	115	3	He	0.000	ug/l	12.22
Ce	140	115	3	He	0.001	ug/l	28.89
Hg	201	209	1	No Gas	0.006	ug/l	33.99
Hg	202	209	1	No Gas	0.006	ug/l	83.31
Hg	202	209	3	He	0.005	ug/l	24.66
Tl	203	209	3	He	0.041	ug/l	652.95
Tl	205	209	1	No Gas	0.033	ug/l	3021.48
Tl	205	209	3	He	0.045	ug/l	1602.75
[Pb]	206	209	1	No Gas	0.012	ug/l	712.25
[Pb]	207	209	1	No Gas	0.004	ug/l	561.13
Pb	208	209	1	No Gas	0.009	ug/l	2723.47
Th	232	209	3	He	0.036	ug/l	871.71
U	238	209	1	No Gas	0.001	ug/l	151.30

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	3302328.14	96.1
Sc	45	2	H2	1769015.61	96.5
Sc	45	3	He	202952.64	96.9
Ge	72	1	No Gas	1032019.13	97.3
Ge	72	2	H2	714450.27	97.3
Ge	72	3	He	146912.07	97.7
In	115	1	No Gas	6735844.25	97.7
In	115	3	He	1412288.44	96.3
Tb	159	1	No Gas	7958504.21	98.5
Tb	159	3	He	3082821.18	98.0
Ho	165	1	No Gas	7284532.71	99.6
Ho	165	3	He	2836795.55	96.2
Lu	175	1	No Gas	7338329.11	97.9
Lu	175	3	He	2429753.34	95.8
Bi	209	1	No Gas	5116855.52	103.4
Bi	209	3	He	2126222.47	97.4

ICPMS207-B Analytical Data

Sample Name	Rinse
File Name	039BLKV.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\211229DoD.b
Acq Time	2021-12-29 17:08:48
Sample Type	BlkVrfy
Total Dilution	1.0000
Comment	ICPMS-6020-W-D
Operator	CAR/SRH/JPV/AEM
Method	SW6020/ SW6020B

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	1.013	ug/l	13002.77
Be	9	45	1	No Gas	0.027	ug/l	310.61
B	11	45	1	No Gas	0.190	ug/l	4581.21
Na	23	45	3	He	-1.091	ug/l	41840.42
Mg	24	45	3	He	-15.146	ug/l	10586.09
Al	27	45	1	No Gas	0.245	ug/l	5381.00
Si	28	45	2	H2	-0.146	ug/l	4347.06
K	39	72	3	He	0.674	ug/l	119847.46
Ca	40	72	2	H2	0.211	ug/l	192262.03
Ti	47	72	1	No Gas	0.085	ug/l	388.73
V	51	72	1	No Gas	4.639	ug/l	-26493.58
V	51	72	3	He	-2.977	ug/l	7756.53
Cr	52	72	1	No Gas	-1.470	ug/l	50916.66
Cr	52	72	3	He	-0.002	ug/l	1097.83
Mn	55	72	1	No Gas	-0.225	ug/l	12061.10
Mn	55	72	3	He	-0.102	ug/l	224.29
Fe	56	72	2	H2	2.494	ug/l	60429.19
Fe	56	72	3	He	2.046	ug/l	16798.14
Co	59	72	1	No Gas	-0.003	ug/l	1001.39
Ni	60	72	1	No Gas	0.239	ug/l	4178.99
Ni	60	72	3	He	0.059	ug/l	837.81
Cu	63	72	1	No Gas	0.029	ug/l	1433.31
Cu	63	72	3	He	0.022	ug/l	326.94
Cu	65	72	1	No Gas	0.006	ug/l	636.94
Zn	66	72	1	No Gas	0.068	ug/l	893.84
Zn	66	72	3	He	0.034	ug/l	136.67
As	75	72	1	No Gas	-0.917	ug/l	27258.99
As	75	72	3	He	-0.135	ug/l	282.73
Se	78	72	2	H2	-0.009	ug/l	45.89
Br	79	72	1	No Gas	-27.543	ug/l	6565.15
Br	79	72	2	H2	-12.031	ug/l	3530.12
Se	82	72	1	No Gas	0.213	ug/l	1764.84
Kr	84	72	1	No Gas		ug/l	51278.92
Sr	88	72	1	No Gas	-0.004	ug/l	845.02
Sr	88	72	3	He	0.006	ug/l	156.67
Mo	95	115	1	No Gas	0.031	ug/l	313.34
Mo	95	115	3	He	0.041	ug/l	132.22
Mo	98	115	1	No Gas	0.034	ug/l	509.82
Ag	107	115	1	No Gas	0.003	ug/l	122.05
Ag	109	115	1	No Gas	0.004	ug/l	114.04
Cd	111	115	1	No Gas	0.002	ug/l	27.66

ICPMS207-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Cd	111	115	3	He	0.001	ug/l	8.00
Cd	114	115	1	No Gas	0.001	ug/l	42.35
Cd	114	115	3	He	0.003	ug/l	18.34
Sn	118	115	1	No Gas	-0.169	ug/l	2751.50
Sn	118	115	3	He	-0.151	ug/l	732.25
Sb	121	115	1	No Gas	0.016	ug/l	740.76
Sb	121	115	3	He	0.014	ug/l	176.35
Sb	123	115	1	No Gas	0.017	ug/l	620.41
Sb	123	115	3	He	0.017	ug/l	148.02
Ba	135	115	1	No Gas	0.006	ug/l	43.25
Ba	137	115	1	No Gas	0.005	ug/l	79.84
La	139	115	3	He	0.000	ug/l	25.55
Ce	140	115	3	He	0.001	ug/l	26.66
Hg	201	209	1	No Gas	0.005	ug/l	31.99
Hg	202	209	1	No Gas	0.004	ug/l	69.65
Hg	202	209	3	He	0.007	ug/l	29.66
Tl	203	209	3	He	0.035	ug/l	647.61
Tl	205	209	1	No Gas	0.022	ug/l	2634.73
Tl	205	209	3	He	0.034	ug/l	1521.37
[Pb]	206	209	1	No Gas	0.006	ug/l	638.91
[Pb]	207	209	1	No Gas	0.005	ug/l	571.13
Pb	208	209	1	No Gas	0.006	ug/l	2549.01
Th	232	209	3	He	0.009	ug/l	400.17
U	238	209	1	No Gas	0.001	ug/l	126.98

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	3376856.27	98.3
Sc	45	2	H2	1797865.08	98.1
Sc	45	3	He	208482.83	99.5
Ge	72	1	No Gas	1034753.31	97.5
Ge	72	2	H2	720802.72	98.2
Ge	72	3	He	149115.40	99.2
In	115	1	No Gas	6790020.81	98.5
In	115	3	He	1461368.43	99.7
Tb	159	1	No Gas	8250922.40	102.1
Tb	159	3	He	3179141.87	101.1
Ho	165	1	No Gas	7398075.94	101.2
Ho	165	3	He	2974911.84	100.9
Lu	175	1	No Gas	7608192.25	101.5
Lu	175	3	He	2534057.75	99.9
Bi	209	1	No Gas	5089044.02	102.8
Bi	209	3	He	2221683.33	101.7

ICPMS207-B Analytical Data

Sample Name	MB-162518
File Name	040ARef.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\211229DoD.b
Acq Time	2021-12-29 17:14:58
Sample Type	AllRef
Total Dilution	1.0000
Comment	ICPMS-6020-W-T
Operator	CAR/SRH/JPV/AEM
Method	SW6020/ SW6020B

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	2.586	ug/l	16836.06
Be	9	45	1	No Gas	0.039	ug/l	289.28
B	11	45	1	No Gas	1.376	ug/l	5410.48
Na	23	45	3	He	10.818	ug/l	45141.90
Mg	24	45	3	He	-20.838	ug/l	8072.83
Al	27	45	1	No Gas	1.809	ug/l	23129.06
Si	28	45	2	H2	12.962	ug/l	22932.73
K	39	72	3	He	11.350	ug/l	114751.01
Ca	40	72	2	H2	46.865	ug/l	429819.81
Ti	47	72	1	No Gas	0.349	ug/l	785.81
V	51	72	1	No Gas	3.546	ug/l	-44595.91
V	51	72	3	He	-1.014	ug/l	13778.70
Cr	52	72	1	No Gas	0.975	ug/l	88221.10
Cr	52	72	3	He	0.154	ug/l	1581.21
Mn	55	72	1	No Gas	0.845	ug/l	36646.18
Mn	55	72	3	He	0.015	ug/l	482.91
Fe	56	72	2	H2	2.593	ug/l	56923.18
Fe	56	72	3	He	2.625	ug/l	17354.37
Co	59	72	1	No Gas	0.099	ug/l	2897.88
Ni	60	72	1	No Gas	0.299	ug/l	4072.53
Ni	60	72	3	He	0.291	ug/l	1106.72
Cu	63	72	1	No Gas	0.163	ug/l	2841.42
Cu	63	72	3	He	0.198	ug/l	949.84
Cu	65	72	1	No Gas	0.162	ug/l	1449.99
Zn	66	72	1	No Gas	0.391	ug/l	2091.18
Zn	66	72	3	He	0.363	ug/l	410.01
As	75	72	1	No Gas	-0.670	ug/l	26198.77
As	75	72	3	He	0.147	ug/l	526.33
Se	78	72	2	H2	0.035	ug/l	68.22
Br	79	72	1	No Gas	392.817	ug/l	12047.82
Br	79	72	2	H2	224.742	ug/l	6894.67
Se	82	72	1	No Gas	0.665	ug/l	1754.17
Kr	84	72	1	No Gas		ug/l	48665.13
Sr	88	72	1	No Gas	0.036	ug/l	2046.10
Sr	88	72	3	He	0.043	ug/l	287.78
Mo	95	115	1	No Gas	0.051	ug/l	411.12
Mo	95	115	3	He	0.064	ug/l	170.00
Mo	98	115	1	No Gas	0.051	ug/l	636.69
Ag	107	115	1	No Gas	0.001	ug/l	62.69
Ag	109	115	1	No Gas	0.001	ug/l	56.69
Cd	111	115	1	No Gas	0.000	ug/l	17.76

ICPMS207-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Cd	111	115	3	He	0.001	ug/l	6.56
Cd	114	115	1	No Gas	-0.001	ug/l	19.64
Cd	114	115	3	He	0.001	ug/l	11.78
Sn	118	115	1	No Gas	0.099	ug/l	5523.49
Sn	118	115	3	He	0.159	ug/l	1555.65
Sb	121	115	1	No Gas	0.043	ug/l	1190.50
Sb	121	115	3	He	0.036	ug/l	263.03
Sb	123	115	1	No Gas	0.052	ug/l	1045.81
Sb	123	115	3	He	0.038	ug/l	214.69
Ba	135	115	1	No Gas	0.020	ug/l	83.17
Ba	137	115	1	No Gas	0.026	ug/l	196.28
La	139	115	3	He	0.001	ug/l	25.55
Ce	140	115	3	He	0.002	ug/l	38.89
Hg	201	209	1	No Gas	0.012	ug/l	42.32
Hg	202	209	1	No Gas	0.014	ug/l	112.64
Hg	202	209	3	He	0.014	ug/l	42.66
Tl	203	209	3	He	0.114	ug/l	1005.78
Tl	205	209	1	No Gas	0.128	ug/l	5275.53
Tl	205	209	3	He	0.115	ug/l	2389.18
[Pb]	206	209	1	No Gas	0.055	ug/l	1038.94
[Pb]	207	209	1	No Gas	0.052	ug/l	900.04
Pb	208	209	1	No Gas	0.053	ug/l	4095.83
Th	232	209	3	He	0.088	ug/l	1714.81
U	238	209	1	No Gas	0.001	ug/l	110.65

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	2954549.02	86.0
Sc	45	2	H2	1610568.57	87.9
Sc	45	3	He	191978.68	91.6
Ge	72	1	No Gas	944841.62	89.0
Ge	72	2	H2	663961.11	90.4
Ge	72	3	He	138057.80	91.8
In	115	1	No Gas	5934423.07	86.1
In	115	3	He	1291383.20	88.1
Tb	159	1	No Gas	7209867.58	89.3
Tb	159	3	He	2905102.11	92.4
Ho	165	1	No Gas	6592599.19	90.1
Ho	165	3	He	2717661.00	92.2
Lu	175	1	No Gas	6724389.42	89.7
Lu	175	3	He	2325724.58	91.7
Bi	209	1	No Gas	4443730.82	89.8
Bi	209	3	He	1993575.41	91.3

ICPMS207-B Analytical Data

Sample Name	LCS4-162518
File Name	041LCS4.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\211229DoD.b
Acq Time	2021-12-29 17:21:09
Sample Type	LCS4
Total Dilution	1.0000
Comment	ICPMS-6020-W-T
Operator	CAR/SRH/JPV/AEM
Method	SW6020/ SW6020B

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	105.265	ug/l	399805.03
Be	9	45	1	No Gas	49.992	ug/l	91515.03
B	11	45	1	No Gas	102.895	ug/l	134726.45
Na	23	45	3	He	5306.133	ug/l	3065815.75
Mg	24	45	3	He	5401.803	ug/l	1646320.33
Al	27	45	1	No Gas	507.882	ug/l	6222047.68
Si	28	45	2	H2	991.624	ug/l	1490629.27
K	39	72	3	He	5201.550	ug/l	2062686.08
Ca	40	72	2	H2	5111.503	ug/l	28945760.99
Ti	47	72	1	No Gas	95.757	ug/l	165684.35
V	51	72	1	No Gas	95.268	ug/l	1819425.24
V	51	72	3	He	98.135	ug/l	364808.95
Cr	52	72	1	No Gas	104.525	ug/l	1972102.02
Cr	52	72	3	He	99.286	ug/l	379439.95
Mn	55	72	1	No Gas	505.517	ug/l	12850562.75
Mn	55	72	3	He	509.513	ug/l	1263631.09
Fe	56	72	2	H2	514.277	ug/l	6844307.97
Fe	56	72	3	He	515.090	ug/l	1695462.29
Co	59	72	1	No Gas	102.727	ug/l	2127579.14
Ni	60	72	1	No Gas	103.425	ug/l	498671.61
Ni	60	72	3	He	101.807	ug/l	153003.72
Cu	63	72	1	No Gas	102.032	ug/l	1228048.34
Cu	63	72	3	He	105.023	ug/l	405873.13
Cu	65	72	1	No Gas	100.603	ug/l	593109.87
Zn	66	72	1	No Gas	102.145	ug/l	429257.86
Zn	66	72	3	He	99.539	ug/l	90132.56
As	75	72	1	No Gas	106.064	ug/l	637604.02
As	75	72	3	He	97.071	ug/l	96223.84
Se	78	72	2	H2	99.798	ug/l	60695.46
Br	79	72	1	No Gas	334.691	ug/l	11881.37
Br	79	72	2	H2	282.563	ug/l	8082.95
Se	82	72	1	No Gas	100.525	ug/l	35234.33
Kr	84	72	1	No Gas		ug/l	73707.99
Sr	88	72	1	No Gas	103.371	ug/l	3509838.46
Sr	88	72	3	He	99.659	ug/l	400592.54
Mo	95	115	1	No Gas	94.577	ug/l	681411.70
Mo	95	115	3	He	94.429	ug/l	226128.26
Mo	98	115	1	No Gas	93.155	ug/l	1096859.47
Ag	107	115	1	No Gas	9.489	ug/l	175529.00
Ag	109	115	1	No Gas	9.621	ug/l	169551.73
Cd	111	115	1	No Gas	49.992	ug/l	201417.35

ICPMS207-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Cd	111	115	3	He	49.170	ug/l	61025.97
Cd	114	115	1	No Gas	49.662	ug/l	451398.16
Cd	114	115	3	He	49.328	ug/l	149301.27
Sn	118	115	1	No Gas	94.811	ug/l	1156366.13
Sn	118	115	3	He	96.021	ug/l	293996.48
Sb	121	115	1	No Gas	95.542	ug/l	1965755.63
Sb	121	115	3	He	95.757	ug/l	482964.99
Sb	123	115	1	No Gas	98.389	ug/l	1514914.58
Sb	123	115	3	He	97.187	ug/l	384846.11
Ba	135	115	1	No Gas	97.824	ug/l	336060.86
Ba	137	115	1	No Gas	95.977	ug/l	590434.72
La	139	115	3	He	106.368	ug/l	1686267.98
Ce	140	115	3	He	107.640	ug/l	1805180.30
Hg	201	209	1	No Gas	0.014	ug/l	46.32
Hg	202	209	1	No Gas	0.018	ug/l	129.64
Hg	202	209	3	He	0.020	ug/l	56.32
Tl	203	209	3	He	97.076	ug/l	525302.06
Tl	205	209	1	No Gas	102.777	ug/l	2907242.84
Tl	205	209	3	He	100.243	ug/l	1277346.87
[Pb]	206	209	1	No Gas	101.779	ug/l	1030544.00
[Pb]	207	209	1	No Gas	100.751	ug/l	878530.69
Pb	208	209	1	No Gas	102.300	ug/l	4086386.50
Th	232	209	3	He	102.099	ug/l	1758020.38
U	238	209	1	No Gas	103.386	ug/l	3646807.31

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	3036109.53	88.4
Sc	45	2	H2	1662629.64	90.7
Sc	45	3	He	197184.42	94.1
Ge	72	1	No Gas	1000198.26	94.3
Ge	72	2	H2	689412.54	93.9
Ge	72	3	He	145107.93	96.5
In	115	1	No Gas	6186626.79	89.8
In	115	3	He	1342050.51	91.6
Tb	159	1	No Gas	7606221.16	94.2
Tb	159	3	He	2960991.22	94.1
Ho	165	1	No Gas	6970442.80	95.3
Ho	165	3	He	2790377.52	94.6
Lu	175	1	No Gas	7089602.27	94.5
Lu	175	3	He	2375522.68	93.7
Bi	209	1	No Gas	4535215.20	91.6
Bi	209	3	He	2015393.78	92.3

ICPMS207-B Analytical Data

Sample Name	B21121977-001A
File Name	042SMPL.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\211229DoD.b
Acq Time	2021-12-29 17:27:05
Sample Type	Sample
Total Dilution	1.0000
Comment	ICPMS-6020-W-D
Operator	CAR/SRH/JPV/AEM
Method	SW6020/ SW6020B

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	8.369	ug/l	48777.59
Be	9	45	1	No Gas	-0.002	ug/l	282.61
B	11	45	1	No Gas	46.257	ug/l	78283.04
Na	23	45	3	He	399100.596	ug/l	253198894.00
Mg	24	45	3	He	260551.356	ug/l	87552791.67
Al	27	45	1	No Gas	0.597	ug/l	11429.97
Si	28	45	2	H2	25714.366	ug/l	40619776.31
K	39	72	3	He	7555.715	ug/l	3111224.26
Ca	40	72	2	H2	141162.752	ug/l	804247632.64
Ti	47	72	1	No Gas	1.954	ug/l	3976.22
V	51	72	1	No Gas	14.025	ug/l	182504.68
V	51	72	3	He	6.444	ug/l	43169.75
Cr	52	72	1	No Gas	7.115	ug/l	226046.88
Cr	52	72	3	He	7.554	ug/l	31572.72
Mn	55	72	1	No Gas	2.792	ug/l	97330.60
Mn	55	72	3	He	3.158	ug/l	8776.20
Fe	56	72	2	H2	21.269	ug/l	310707.43
Fe	56	72	3	He	20.334	ug/l	80581.78
Co	59	72	1	No Gas	0.850	ug/l	20533.75
Ni	60	72	1	No Gas	96.296	ug/l	512508.45
Ni	60	72	3	He	93.684	ug/l	148934.71
Cu	63	72	1	No Gas	2.796	ug/l	38234.37
Cu	63	72	3	He	0.553	ug/l	2505.39
Cu	65	72	1	No Gas	1.431	ug/l	9935.37
Zn	66	72	1	No Gas	2.240	ug/l	10990.27
Zn	66	72	3	He	1.788	ug/l	1817.90
As	75	72	1	No Gas	0.728	ug/l	39412.38
As	75	72	3	He	1.018	ug/l	1493.45
Se	78	72	2	H2	4.624	ug/l	2895.73
Br	79	72	1	No Gas	207011.801	ug/l	3497714.82
Br	79	72	2	H2	117671.263	ug/l	1906940.86
Se	82	72	1	No Gas	8.949	ug/l	5101.70
Kr	84	72	1	No Gas		ug/l	508813.74
Sr	88	72	1	No Gas	1901.861	ug/l	71202204.92
Sr	88	72	3	He	1911.657	ug/l	8120594.19
Mo	95	115	1	No Gas	1.042	ug/l	8431.42
Mo	95	115	3	He	1.085	ug/l	2706.94
Mo	98	115	1	No Gas	1.028	ug/l	13568.35
Ag	107	115	1	No Gas	0.008	ug/l	208.75
Ag	109	115	1	No Gas	0.007	ug/l	180.74
Cd	111	115	1	No Gas	0.022	ug/l	118.99

ICPMS207-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Cd	111	115	3	He	0.017	ug/l	27.44
Cd	114	115	1	No Gas	0.016	ug/l	195.66
Cd	114	115	3	He	0.019	ug/l	68.96
Sn	118	115	1	No Gas	-0.292	ug/l	1131.14
Sn	118	115	3	He	-0.308	ug/l	198.89
Sb	121	115	1	No Gas	0.147	ug/l	3771.56
Sb	121	115	3	He	0.153	ug/l	889.79
Sb	123	115	1	No Gas	0.165	ug/l	3167.68
Sb	123	115	3	He	0.138	ug/l	638.08
Ba	135	115	1	No Gas	67.198	ug/l	257313.73
Ba	137	115	1	No Gas	66.022	ug/l	452809.45
La	139	115	3	He	0.001	ug/l	31.11
Ce	140	115	3	He	0.003	ug/l	56.67
Hg	201	209	1	No Gas	0.011	ug/l	43.99
Hg	202	209	1	No Gas	0.037	ug/l	239.62
Hg	202	209	3	He	0.030	ug/l	79.98
Tl	203	209	3	He	0.451	ug/l	2950.85
Tl	205	209	1	No Gas	0.463	ug/l	16017.96
Tl	205	209	3	He	0.467	ug/l	7163.48
[Pb]	206	209	1	No Gas	0.064	ug/l	1245.62
[Pb]	207	209	1	No Gas	0.060	ug/l	1063.38
Pb	208	209	1	No Gas	0.063	ug/l	4925.95
Th	232	209	3	He	0.020	ug/l	577.58
U	238	209	1	No Gas	0.073	ug/l	2904.75

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	3787970.59	110.2
Sc	45	2	H2	1752861.94	95.7
Sc	45	3	He	219323.10	104.7
Ge	72	1	No Gas	1103202.58	104.0
Ge	72	2	H2	698158.74	95.1
Ge	72	3	He	153373.52	102.0
In	115	1	No Gas	6896539.59	100.1
In	115	3	He	1386675.87	94.6
Tb	159	1	No Gas	8572882.89	106.1
Tb	159	3	He	3148234.53	100.1
Ho	165	1	No Gas	7870165.62	107.6
Ho	165	3	He	2952407.98	100.1
Lu	175	1	No Gas	8030993.42	107.1
Lu	175	3	He	2553063.70	100.7
Bi	209	1	No Gas	4902556.92	99.0
Bi	209	3	He	2096692.87	96.0

Energy Laboratories Inc

Standard LOG

Standard ID: ME211124 EL-MSICV-2
Standard Name EL-MSICV-2
Date Prepared 11/24/2021
Date Expires: 11/24/2022
Department ME
Vendor: Inorganic Ventures
Lot Number:
Balance ID:

Type: Primary
BY: Amanda E. McDani
Status: Open

Comments:

Chemical / Solvent Used	BottleNo	Amt	Units	Exp
Multi Analyte Custom Grade Solution	14023	500	mL	11/24

Final Volume: mL

Stock Source **Base Units** **Amount Added**

Analytes **CAS** Conc: **ug/mL**

Page: *1 of 1*

INORGANIC VENTURES™
300 Technology Drive
Christiansburg, VA 24073 - USA
inorganicventures.com

CERTIFICATE OF ANALYSIS

tel: 800.669.6799 - 540.585.3030
fax: 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:	EL-MSICV-2
Lot Number:	R2-MEB696849
Matrix:	3% (v/v) HNO3 tr. HF
Value / Analyte(s):	1 000 µg/mL ea: Silicon, 100 µg/mL ea: Tin, Titanium, Molybdenum, Antimony

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
Antimony, Sb	100.0 ± 0.6 µg/mL	Molybdenum, Mo	100.0 ± 0.5 µg/mL
Silicon, Si	1 000 ± 7 µg/mL	Tin, Sn	99.9 ± 0.4 µg/mL
Titanium, Ti	99.9 ± 0.6 µg/mL		

Density: 1.019 g/mL (measured at 20 ± 4 °C)

Assay Information:

ANALYTE	METHOD	NIST SRM#	SRM LOT#
Mo	ICP Assay	3134	130418
Sb	ICP Assay	3102a	140911
Si	ICP Assay	3150	130912
Sn	ICP Assay	3161a	070330
Sn	Calculated		See Sec. 4.2
Ti	ICP Assay	3162a	130925

The follow ing 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.

ID #: 14023
Opened:
Multi Analyte Custom Grade Solution
Expires: 9/14/2024
Rec'd: 7/7/2021
Energy Laboratories Inc 1120 So. 27th Street
Billings MT 59107

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

- 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.

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, EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

September 14, 2020

- 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 14, 2024

- 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

Michael J Booth

Certifying Officer:

Paul Gaines
Chairman / Senior Technical Director

Paul R Gaines

Energy Laboratories Inc

Standard LOG

Standard ID:	ME211202 EL200.2MS		
Standard Name	EL-200.2MS	Type:	Primary
Date Prepared	12/2/2021	BY:	Amanda E. McDani
Date Expires:	12/2/2022		
Department	ME	Status:	Open
Vendor:	Inorganic Ventures		
Lot Number:	P2-MEB685870		
Balance ID:			
Comments:	Opened 811/2021; Expires 8/11/2022		

Chemical / Solvent Used	BottleNo	Amt	Units	Exp
Multi Analyte Custom Grade Solution	14398	500	mL	12/2/

Final Volume: 500 mL

Stock Source	**Base Units**	**Amount Added**
Analytes	**CAS**	Conc: **ug/mL**

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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:	EL-200.2MS
Lot Number:	S2-MEB702960
Matrix:	5% (v/v) HNO3
Value / Analyte(s):	5 000 µg/mL ea: Calcium, Magnesium, Potassium, Sodium, 1 000 µg/mL ea: Phosphorus, 500 µg/mL ea: Manganese, Aluminum, Iron, 100 µg/mL ea: Arsenic, Barium, Chromium, Lithium, Lead, Strontium, Vanadium, Boron, Cobalt, Copper, Nickel, Selenium, Thallium, Zinc, 50 µg/mL ea: Cadmium, Beryllium, 10 µg/mL ea: Silver

ID #: 14398
Opened:_____
Multi Analyte Custom Grade Solution
Expires: 3/8/2025
Rec'd: 10/18/2021
Energy Laboratories Inc 1120 So. 27th Street
Billings MT 59107

3.0 CERTIFIED VALUES AND UNCERTAINTIES

ANALYTE	CERTIFIED VALUE	ANALYTE	CERTIFIED VALUE
Aluminum, Al	499.9 ± 1.9 µg/mL	Arsenic, As	100.0 ± 0.8 µg/mL
Barium, Ba	100.0 ± 0.4 µg/mL	Beryllium, Be	50.01 ± 0.30 µg/mL
Boron, B	100.0 ± 0.7 µg/mL	Cadmium, Cd	50.01 ± 0.22 µg/mL
Calcium, Ca	5 000 ± 20 µg/mL	Chromium, Cr	100.0 ± 0.7 µg/mL
Cobalt, Co	100.0 ± 0.5 µg/mL	Copper, Cu	100.0 ± 0.4 µg/mL
Iron, Fe	499.8 ± 2.1 µg/mL	Lead, Pb	100.0 ± 0.5 µg/mL
Lithium, Li	100.0 ± 0.4 µg/mL	Magnesium, Mg	5 000 ± 20 µg/mL
Manganese, Mn	500.1 ± 2.0 µg/mL	Nickel, Ni	100.0 ± 0.5 µg/mL
Phosphorus, P	1 000 ± 6 µg/mL	Potassium, K	5 000 ± 19 µg/mL
Selenium, Se	100.0 ± 0.8 µg/mL	Silver, Ag	10.00 ± 0.05 µg/mL
Sodium, Na	5 000 ± 18 µg/mL	Strontium, Sr	100.0 ± 0.4 µg/mL
Thallium, Tl	100.0 ± 0.7 µg/mL	Vanadium, V	100.0 ± 0.5 µg/mL
Zinc, Zn	100.1 ± 0.4 µg/mL		

Density: 1.097 g/mL (measured at 20 ± 4 °C)

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
As	ICP Assay	3103a	100818
B	ICP Assay	3107	110830
Ba	ICP Assay	3104a	140909
Ba	Gravimetric		See Sec. 4.2
Be	ICP Assay	3105a	090514
Ca	ICP Assay	3109a	130213
Ca	EDTA	928	928
Cd	ICP Assay	3108	130116
Cd	EDTA	928	928
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
K	ICP Assay	3141a	140813
K	Gravimetric		See Sec. 4.2
Li	ICP Assay	3129a	100714
Li	Gravimetric		See Sec. 4.2
Mg	ICP Assay	3131a	140110
Mg	EDTA	928	928
Mn	ICP Assay	3132	050429
Mn	EDTA	928	928
Na	ICP Assay	3152a	120715
Na	Gravimetric		See Sec. 4.2
Ni	ICP Assay	3136	120619
Ni	EDTA	928	928
P	ICP Assay	3139a	060717
P	Acidimetric	84L	84L
Pb	ICP Assay	3128	101026
Pb	EDTA	928	928
Se	ICP Assay	3149	100901
Sr	EDTA	928	928
Sr	ICP Assay	Traceable to 3153a	K2-SR650985
Tl	ICP Assay	3158	151215
V	ICP 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 (±) = $U_{CRM/RM} = k\,(u^2_{char} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{1/2}$

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

- 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.

Low Silver Note: This solution contains "LOW" levels of Silver. Please store this entire bottle inside a sealed glass jar.

8.0 HAZARDOUS INFORMATION

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

9.0 HOMOGENEITY

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

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

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

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

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

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

Inorganic Ventures, 300 Technology Drive, Christiansburg, Va. 24073, USA; Telephone: 800.669.6799; 540.585.3030, Fax: 540.585.3012; inorganicventures.com; info@inorganicventures.com

11.0 CERTIFICATION, EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

March 08, 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

- March 08, 2025

- 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

Michael J Booth

Certifying Officer:

Paul Gaines
Chairman / Senior Technical Director

Paul R Gaines

Energy Laboratories Inc

Spike LOG

Standard ID: ME211222 AUDIGSPK
Standard Name AUDIGSPK
Type: Secondary
Date Prepared 12/22/2021
BY: Amanda E. McDani
Date Expires: 10/25/2022
Department ME
Status: Empty/Disposed
Vendor:
Lot Number:
Balance ID:

Comments:

Final Volume:
50 mL

Stock Source		**Base Units**	**Amount Added**
ME211202A	U Stock	ug/mL	5 mL
ME 211025 Th Sec	Th Seondary Stock	ug/mL	5 mL
ME211222 Ce 2nd	Ce Secondary Stock	ug/mL	5 mL
ME211222 La Sec	La Secondary Stock	ug/mL	5 mL
ME210920A AU 2n	Au 2nd source Stock	ug/mL	15 mL
ME211025A	Te Stock	ug/mL	15 mL

Analytes		**CAS**	Conc:	**ug/mL**
A	Cerium	7440-45-1		0
A	Gold	7440-57-5		0
A	Lanthanum	7439-91-0		0
A	Tellurium	13494-80-9		0
	Thorium			0
A	Uranium	7440-61-1		0

Energy Laboratories Inc

Standard LOG

Standard ID: ME211202A
Standard Name U Stock
Date Prepared 12/2/2021
Date Expires: 12/2/2022
Department ME
Vendor: SCP Science
Lot Number: S210517021
Balance ID:

Type: Primary
BY: Amanda E. McDani
Status: New

Comments:

Chemical / Solvent Used	BottleNo	Amt	Units	Expires
ICP/ICPMS Standard Uranium	14419	500	mL	12/2/2022

Final Volume:
500 mL

Stock Source **Base Units** **Amount Added**

Analytes **CAS** Conc: **ug/mL**

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1.0 DESCRIPTION:

*Plasma*CAL ICP/ICPMS Standard - Uranium 1000 µg/ml

Catalogue Number: 140-051-920/-921/-925

Starting Material: Uranyl Nitrate 99.99%

Lot Number: **S210517021**

Matrix: 4% HNO_3 (See Section 3 for actual matrix)

Expiration Date (End of month): **May 2023** (or 15 months after bottle is opened, whichever comes first)

2.0 CERTIFIED VALUES AND ASSOCIATED UNCERTAINTY:

Certified Concentration: **1004 µg/ml +/- 4 µg/ml**

985 µg/g +/- 4 µg/g

Method of analysis: Inductively Coupled Plasma Atomic Emission Spectroscopy (ICP-AES)

Traceability: NIST Standard Reference Material 3164 Lot: **080521**

Note: The uncertainty of the certified value has been calculated from applicable uncertainty contributors (u_i) including uncertainty established during characterization of the material (u_{char}), the between bottle variation (u_{bb}), short-term stability (u_{sts}) and long-term stability (u_{lts}) according to the model $u_c = \sqrt{(u_{char}^2 + u_{bb}^2 + u_{sts}^2 + u_{lts}^2)}$. This combined uncertainty has been further multiplied by a coverage factor (k) of 2 to provide a 95% confidence interval.

ID #: 14419
Opened:_____
ICP/ICPMS Standard Uranium
Expires: 5/31/2023
Rec'd: 10/20/2021
Energy Laboratories Inc 1120 So. 27th Street
Billings MT 59107

3.0 REFERENCE VALUES:

Density: **1.020 g/ml @ 24.0 °C**

Actual Matrix: **4.0% (v/v) HNO_3**

% abundance of stable isotopes : ^{238}U : 99. 82% ; ^{235}U : 0.18%

Note : The uranyl nitrate comes from a depleted source of uranium.

Trace Metal Impurities as tested by ICP-MS:

Element	Conc. (ppm)	Element	Conc. (ppm)	Element	Conc. (ppm)	Element	Conc. (ppm)
Ag	<0.0010	Fe	<0.0018	Nd	<0.0010	Sn	<0.0010
Al	**0.0252**	Ga	<0.0010	Ni	<0.0010	Sr	<0.0025
As	<0.0010	Gd	<0.0010	Os	<0.0010	Ta	<0.0010
Au	<0.0010	Ge	<0.0010	P	<0.0026	Tb	<0.0010
B	<0.0015	Hf	<0.0010	Pb	<0.0010	Te	<0.0010
Ba	<0.0010	Hg	*	Pd	<0.0010	Th	<0.0010
Be	<0.0010	Ho	<0.0010	Pr	<0.0010	Ti	<0.0012
Bi	<0.0010	In	<0.0010	Pt	<0.0010	Tl	<0.0011
Ca	<0.0135	Ir	<0.0010	Rb	<0.0010	Tm	<0.0010
Cd	<0.0010	K	<0.0024	Re	<0.0010	U	N/A
Ce	<0.0010	La	<0.0010	Rh	<0.0010	V	<0.0010
Co	<0.0010	Li	<0.0010	Ru	<0.0010	W	<0.0020
Cr	<0.0010	Lu	<0.0010	S	*	Y	<0.0010
Cs	<0.0010	Mg	<0.0020	Sb	<0.0010	Yb	<0.0010
Cu	<0.0010	Mn	<0.0010	Sc	<0.0010	Zn	<0.0010
Dy	<0.0010	Mo	<0.0010	Se	<0.0010	Zr	<0.0010
Er	<0.0010	Na	<0.0010	Si	<0.1		
Eu	<0.0010	Nb	<0.0010	Sm	<0.0010	*: Not tested	

4.0 APPROVAL AND DATE OF CERTIFICATION:

Certification Approval: Yaling Sui, Chemist

Certification Date: May 27, 2021

Yaling Sui

5.0 INTENDED USE / *UTILISATION PRÉVUE*:

- ICP Standards: For the calibration of, including but not limited to: ICP-AES, ICP-MS, FAAS, GFAA, XRF and DCP. / *Étalons ICP : Pour l'étalonnage d'instruments de mesure tels que: ICP-AES, ICP-MS, FAAS, GFAA, XRF et DCP.*
- AA Standards: For the calibration of Flame (FAAS) and Graphite Furnace (GFAA) Atomic Absorption Spectrometers. / *Étalons AA : Pour l'étalonnage de spectromètres d'absorption atomique flamme (GFAA) et four au graphite (GFAA).*
- Matrix Modifiers: For the optimization of analytical conditions to provide better Graphite Furnace Atomic Absorption (GFAA) instrument response and improved detection limits. / *Modificateur de matrice : Pour l'optimisation des conditions analytiques afin de fournir des meilleurs réponses instrumentales et limites de détection pour SAA four au graphite.*
- pH Standards: For the calibrating pH meters or for other wet chemistry applications. / *Étalons pH : Pour étalonnage de pH mètres et autres applications de chimie humide.*
- Conductivity Standards: For electrolytic conductivity measurement as a calibration standard. / *Étalons de conductivité : Comme étalon pour les mesures de conductivité électrolytiques.*
- IC Standards: for calibration of, but not limited to IC, HPLC, TLC, ISE, IR, NMR, MS, UV/VIS or other wet chemistry applications. / *Étalons IC : Pour étalonnage d'instruments tels que : IC, HPLC, TLC, ISE, IR, NMR, MS, UV/VIS et autres applications de chimie humide.*

For any inquiries, please contact **SCP SCIENCE**. / *Pour toute question, veuillez contacter* ***SCP SCIENCE***.

6.0 INSTRUCTIONS FOR USE / *INSTRUCTIONS D'UTILISATION*:

Handling and Storage / Manutention et entreposage: Keep product tightly capped when not in use. The solution should be opened for a minimum amount of time necessary to dispense the amount required. Do not pipet or use directly from container. Do not return unused portions back to container. Store under normal laboratory conditions. Avoid exposure to excessive sources of heat and humidity or direct sunlight. / *Garder les contenants bien fermés lorsque non utilisés. Le contenant devrait être ouvert seulement pour le temps requis afin de prélever la quantité nécessaire. Ne pas pipetter ou utiliser directement du contenant. Ne pas retourner les portions non-utilisées dans le contentant. Conserver dans des conditions normales de laboratoire. Éviter l'exposition à des sources de chaleur et d'humidité excessives ou à l'exposition solaire directe.*

Stability / *Stabilité*: This Standard is guaranteed to be stable and accurate to within the specified uncertainty of measurement up to the unopened expiry date, if sealed, or up to the opened expiry date (when indicated), whichever comes first, provided the solution is kept tightly capped and stored under the indicated storage conditions. Purchasers will be notified of any significant changes resulting in re-certification or withdrawal of the product prior to the expiration date. / *La stabilité et l'exactitude de cet étalon sont garanties d'être à l'intérieur de l'incertitude de mesure, jusqu'à la date d'expiration de la bouteille non-ouverte, si scellée, ou jusqu'à la date d'expiration de la bouteille ouverte (si indiquée), en présumant que le contenant est maintenu fermé et gardé dans les conditions d'entreposage indiquées. Les acheteurs seront avisés dans le cas où il y aura des changements significatifs nécessitant une re-certification ou un rappel du produit avant la date d'expiration.*

7.0 HAZARDOUS INFORMATION / *INFORMATION SUR LES RISQUES POTENTIELS*:

Please refer to the associated Safety Data Sheet (SDS) for information regarding this product (available at www.SCPSCIENCE.com). / *SVP vous référer à la Fiche Signalétique applicable pour de l'information sur ce produit (Disponible à www.SCPSCIENCE.com).*

8.0 HOMOGENEITY / *HOMOGÉNÉITÉ*:

This solution has been blended according to an in-house procedure and its homogeneity is guaranteed to be fit for purpose when a sample size sufficient for the intended method of analysis is used. / *Cette solution a été préparée selon une procédure maison et nous assurons que sa homogénéité est approprié à l'emploi lorsqu'un échantillon suffisant pour la méthode d'analyse prévue est utilisé.*

9.0 TRACEABILITY / *TRAÇABILITÉ*:

This CRM (Certified Reference Material) is traceable to the NIST SRM (Standard Reference Material) indicated in section 2 through an unbroken chain of comparisons. In addition, balances used are regularly calibrated using weights which are traceable to NIST (National Institute of Standards and Technology) or NRC (National Research Council of Canada) standards. All conductivity meters used to analyze this standard have been regularly calibrated using a NIST or NRC traceable Thermometer and standards. All pH meters used to analyze this standard have been regularly calibrated using a NIST or NRC traceable thermometer and pH/MV simulator. / *Ce matériel de référence certifié est traçable au Matériel de Référence Standardisé de NIST indiqué à la section 2 par une chaine de comparaison ininterrompue. De plus, les balances utilisées sont étalonnées régulièrement en utilisant des poids qui sont traçables au NIST (National Institute of Standards and Technology) ou au CRNC (Conseil National de Recherches Canada). Tout conductimètre utilisé afin d'analyser cet étalon a été sujet à un étalonnage périodique utilisant des thermomètres et étalons traçables au NIST ou CNRC. Tout pH mètre utilisé afin d'analyser cet étalon a été sujet à un étalonnage périodique utilisant des thermomètres et un simulateur pH/MV traçables au NIST ou au CNRC.*

10.0 PREPARATION / *PRÉPARATION*:

For the preparation of these solutions, 18 meghom/cm double deionized water, high-purity acids and glassware calibrated to ASTM Class A specifications are used. / *Une eau de 18 meghom/cm doublement déionisé, de l'acide de haute pureté, ainsi que de la verrerie étalonnée afin de satisfaire les spécifications Classe A de ASTM ont été utilisés pour la préparation de cet étalon.*

11.0 QUALITY SYSTEM CERTIFICATIONS / *CERTIFICATIONS DE SYSTÈME QUALITÉ*:

ISO 9001 Certification / *Certification ISO 9001*: This standard was produced in a facility which operates under a **registered** ISO 9001 Quality Management System. Please consult our web site for a copy of the most recent revision of our certificate of registration. / *Cet étalon a été fabriqué dans un laboratoire qui utilise un Système de Gestion de la Qualité* ***enregistré*** *à la norme ISO 9001. Veuillez consulter notre site web pour obtenir la version la plus récente de notre certificat d'enregistrement.*

ISO 17025 Accreditation / *Accréditation ISO 17025*: SCP SCIENCE (Corporate Headquarters) operates an ISO 17025 **accredited** laboratory. Please consult our web site for a copy of the most recent revision of our certificate and scope of accreditation. / ***SCP SCIENCE (Siège social)*** *est* ***accréditée*** *ISO 17025. Veuillez consulter notre site web afin d'obtenir la plus récente version de notre certificat d'accréditation ainsi que la portée de notre accréditation.*

ISO 17034 Accreditation / *Accréditation ISO 17034* : SCP SCIENCE (Corporate Headquarters) is an ISO 17034 accredited Reference Material Producer. Please consult our website for a copy of our most recent certificate and scope of accreditation. / ***SCP SCIENCE (Siège social)*** *est un Fabricant de Matériaux de Référence Accrédité ISO 17034. Veuillez consulter notre site web afin d'obtenir la plus récente version de notre certificat d'accréditation ainsi que la portée de notre accréditation.*

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GERMANY
Alte Marktoberdorfer Straße 14, 87616
Marktoberdorf

Phone: +49 (0) 8342-89560-61
Fax: +49 (0) 8342-89560-69

Energy Laboratories Inc

Standard LOG

Standard ID:	ME 211025 TH SECONDARY STOCK		
Standard Name	Th Seondary Stock	Type:	Primary
Date Prepared	10/25/2021	BY:	Stacy R. Hendricks
Date Expires:	10/25/2022		
Department	ME	Status:	Open
Vendor:	Inorganic Ventures		
Lot Number:	S2-TH706436		
Balance ID:			
Comments:	Opened 10/25/2021; Expires 10/25/2022		

Chemical / Solvent Used	BottleNo	Amt	Units	Expires
Thorium Single Analyte Custom Grade Sol	14318	125	mL	10/25/2022

Final Volume:
500 mL

Stock Source **Base Units** **Amount Added**

Analytes **CAS** Conc: **ug/mL**

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Certificate of Analysis

300 Technology Drive
Christiansburg, VA 24073 USA
inorganicventures.com

P: 800-669-6799/540-585-3030
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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:	CGTH1
Lot Number:	S2-TH706436
Matrix:	5% (v/v) HNO3
Value / Analyte(s):	1 000 µg/mL ea: Thorium
Starting Material:	TH(NO3)4*4H2O
Starting Material Lot#:	2250
Starting Material Purity:	99.9905%

ID #: 14318
Opened:
Thorium Single Analyte Custom Grade Solutic
Expires: 7/4/2025
Rec'd: 9/24/2021
Energy Laboratories Inc 1120 So. 27th Street
Billings MT 59107

3.0 CERTIFIED VALUES AND UNCERTAINTIES

Certified Value: 1001 ± 4 µg/mL

Density: 1.026 g/mL (measured at 20 ± 4 °C)

Assay Information:

Assay Method #1 **1001 ± 3 µg/mL**
EDTA NIST SRM 928 Lot Number: 928

Assay Method #2 **1001 ± 6 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 <	0.000448	M	Eu <	0.000224	O	Na	0.064077	M	Se <	0.005827	M	Zn	0.003183
O	Al	0.010962	M	Fe	0.012392	M	Nb <	0.003138	i	Si <		M	Zr <	0.010310
M	As <	0.038776	M	Ga <	0.004931	M	Nd	0.004697	M	Sm	0.000871			
M	Au <	0.000224	M	Gd	0.000300	M	Ni <	0.006724	M	Sn <	0.028242			
M	B <	0.021293	M	Ge <	0.008965	M	Os <	0.000224	M	Sr	0.002582			
M	Ba	0.001317	M	Hf <	0.000224	i	P <		M	Ta <	0.001344			
M	Be <	0.000224	M	Hg <	0.000448	M	Pb	0.003287	M	Tb <	0.001793			
M	Bi <	0.001793	M	Ho <	0.001344	M	Pd <	0.000448	M	Te <	0.010086			
O	Ca	0.051969	M	In	0.000134	M	Pr	0.001202	s	Th <				
M	Cd <	0.001344	M	Ir <	0.000224	M	Pt <	0.000224	M	Ti <	0.004258			
M	Ce	0.015420	O	K	0.028928	M	Rb <	0.005155	M	Tl <	0.000224			
M	Co <	0.001344	M	La	0.003577	M	Re <	0.000224	M	Tm <	0.000224			
M	Cr <	0.015465	M	Li <	0.000448	M	Rh <	0.000224	M	U	0.006564			
M	Cs <	0.013896	M	Lu <	0.000224	M	Ru <	0.000224	M	V <	0.001793			
M	Cu	0.001472	O	Mg	0.027914	i	S <		M	W <	0.000224			
M	Dy	0.000197	M	Mn	0.001814	M	Sb <	0.004931	M	Y	0.000860			
M	Er <	0.002241	M	Mo <	0.000896	M	Sc <	0.000672	M	Yb <	0.000224			

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 - 232.04 +4 8 Th(OH) 3+ and Th(OH)22+

Chemical Compatibility -Soluble in HCl, and HNO3. Avoid H3PO4, H2SO4 and HF although solubilities may not be a problem depending upon pH and matrix (For example: ThF4 is soluble in acids). Avoid neutral to basic media. Th4+ is stable with most metals and inorganic anions forming an insoluble carbonate, oxide, fluoride, oxalate, sulfate and phosphate in neutral to slightly acidic media.

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.

Th Containing Samples (Preparation and Solution) -Metal (Soluble in Aqua Regia); Oxide (The heated oxide is not soluble in acids except hot conc. H2SO4); Ores (Na2O2 fusion at 480 ± 20EC for 7 minutes, cool and treat sintered mass with 50 mL cold water and stand until disintegrated. The mass is transferred to a beaker and acidified with HCl with 25 mL excess HCl added. Any residue is collected on a Whatman No. 42 filter, dried and ignited to 1000 EC in Pt0 crucible and the ash treated with H2SO4 / HF and fumed. If residue remains, then treat it by peroxide fusion as above.)

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 232 amu	1 ppt	N/A	
ICP-OES 274.716 nm	0.08 / 0.008 µg/mL	1	Ti, Ta, Fe, V
ICP-OES 283.231 nm	0.07 / 0.007 µg/mL	1	U, Mo, Ti, Fe, Cr
ICP-OES 283.730 nm	0.07 / 0.007 µg/mL	1	U, Zr

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

July 04, 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

- July 04, 2025

- 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

Michael J Booth

Certifying Officer:

Paul Gaines
Chairman / Senior Technical Director

Paul R Gaines

Energy Laboratories Inc

Standard LOG

Standard ID:	ME211222 CE 2ND SOURCE		
Standard Name	Ce Secondary Stock	Type:	Primary
Date Prepared	12/22/2021	BY:	Amanda E. McDani
Date Expires:	12/22/2022		
Department	ME	Status:	Open
Vendor:	SCP Science		
Lot Number:	S210208003		
Balance ID:			
Comments:	opened 12/22/2021, expires 12/22/2022		

Chemical / Solvent Used	BottleNo	Amt	Units	Expires
Cerium PlasmaCal Standard	14327	125	mL	12/22/2022

Final Volume:
125 mL

Stock Source | **Base Units** | **Amount Added**

Analytes		**CAS**	Conc:	**ug/mL**
A	Cerium	7440-45-1		1000

SCP SCIENCE

Providing Innovative Solutions to Analytical Chemists

Certificate of Analysis

1.0 DESCRIPTION:

***Plasma*CAL ICP/ICPMS Standard - Cerium 1000 µg/ml**

Catalogue Number: 140-051-580/-581/-585

Starting Material: Cerium(III) Nitrate Hexahydrate 99.99+%

Lot Number: **S210208003**

Matrix: 4% HNO_3 (See Section 3 for actual matrix)

Expiration Date (End of month): **February 2023** (or 15 months after bottle is opened, whichever comes first)

Ce

2.0 CERTIFIED VALUES AND ASSOCIATED UNCERTAINTY:

Certified Concentration: **1003 µg/ml +/- 4 µg/ml**

982 µg/g +/- 4 µg/g

Method of analysis: Inductively Coupled Plasma Atomic Emission Spectroscopy (ICP-AES)

Traceability: NIST Standard Reference Material 3110 Lot: **090504**

Note: The uncertainty of the certified value has been calculated from applicable uncertainty contributors (u_i) including uncertainty established during characterization of the material (u_{char}), the between bottle variation (u_{bb}), short-term stability (u_{sts}) and long-term stability (u_{lts}) according to the model $u_c = \sqrt{(u_{char}^2 + u_{bb}^2 + u_{sts}^2 + u_{lts}^2)}$. This combined uncertainty has been further multiplied by a coverage factor (k) of 2 to provide a 95% confidence interval.

3.0 REFERENCE VALUES:

Density: **1.021 g/ml @ 22.5 °C**

Actual Matrix: **4.0% (v/v) HNO_3**

ID #: **14327**
Opened: _____
Cerium PlasmaCal Standard
Expires: 2/28/2023
Rec'd: 9/29/2021
Energy Laboratories Inc 1120 So. 27th Street
Billings MT 59107

Trace Metal Impurities as tested by ICP-MS:

Element	Conc. (ppm)	Element	Conc. (ppm)	Element	Conc. (ppm)	Element	Conc. (ppm)
Ag	<0.0010	Fe	<0.0018	Nd	**0.0102**	Sn	<0.0010
Al	**0.0148**	Ga	**0.0526**	Ni	**0.0064**	Sr	<0.0025
As	<0.0010	Gd	<0.0010	Os	<0.0010	Ta	<0.0010
Au	<0.0010	Ge	<0.0010	P	<0.0132	Tb	<0.0010
B	<0.0015	Hf	<0.0010	Pb	<0.0010	Te	<0.0010
Ba	<0.0010	Hg	*	Pd	<0.0010	Th	<0.0010
Be	<0.0010	Ho	<0.0010	Pr	**0.0235**	Ti	<0.0012
Bi	<0.0010	In	<0.0010	Pt	<0.0010	Tl	<0.0011
Ca	**0.0375**	Ir	<0.0010	Rb	<0.0010	Tm	<0.0010
Cd	<0.0010	K	<0.0024	Re	<0.0010	U	<0.0010
Ce	N/A	La	<0.10	Rh	<0.0010	V	<0.0010
Co	<0.0010	Li	<0.0010	Ru	<0.0010	W	<0.0020
Cr	<0.0010	Lu	<0.0010	S	*	Y	<0.0010
Cs	<0.0010	Mg	<0.0010	Sb	<0.0010	Yb	<0.0010
Cu	**0.0121**	Mn	<0.0010	Sc	<0.0010	Zn	<0.0010
Dy	<0.0010	Mo	<0.0010	Se	<0.0010	Zr	<0.0010
Er	<0.0010	Na	<0.0010	Si	<0.10		
Eu	**0.0035**	Nb	<0.0010	Sm	<0.0010	*: Not tested	

4.0 APPROVAL AND DATE OF CERTIFICATION:

Certification Approval: Yaling Sui, Chemist

Certification Date: February 22, 2021

Yaling Sui

5.0 INTENDED USE / *UTILISATION PRÉVUE*:

- ICP Standards: For the calibration of, including but not limited to: ICP-AES, ICP-MS, FAAS, GFAA, XRF and DCP. / *Étalons ICP : Pour l'étalonnage d'instruments de mesure tels que: ICP-AES, ICP-MS, FAAS, GFAA, XRF et DCP.*
- AA Standards: For the calibration of Flame (FAAS) and Graphite Furnace (GFAA) Atomic Absorption Spectrometers. / *Étalons AA : Pour l'étalonnage de spectromètres d'absorption atomique flamme (GFAA) et four au graphite (GFAA).*
- Matrix Modifiers: For the optimization of analytical conditions to provide better Graphite Furnace Atomic Absorption (GFAA) instrument response and improved detection limits. / *Modificateur de matrice : Pour l'optimisation des conditions analytiques afin de fournir des meilleurs réponses instrumentales et limites de détection pour SAA four au graphite.*
- pH Standards: For the calibrating pH meters or for other wet chemistry applications. / *Étalons pH : Pour étalonnage de pH mètres et autres applications de chimie humide.*
- Conductivity Standards: For electrolytic conductivity measurement as a calibration standard. / *Étalons de conductivité : Comme étalon pour les mesures de conductivité électrolytiques.*
- IC Standards: for calibration of, but not limited to IC, HPLC, TLC, ISE, IR, NMR, MS, UV/VIS or other wet chemistry applications. / *Étalons IC : Pour étalonnage d'instruments tels que : IC, HPLC, TLC, ISE, IR, NMR, MS, UV/VIS et autres applications de chimie humide.*

For any inquiries, please contact **SCP SCIENCE**. / *Pour toute question, veuillez contacter **SCP SCIENCE**.*

6.0 INSTRUCTIONS FOR USE / *INSTRUCTIONS D'UTILISATION*:

Handling and Storage / Manutention et entreposage: Keep product tightly capped when not in use. The solution should be opened for a minimum amount of time necessary to dispense the amount required. Do not pipet or use directly from container. Do not return unused portions back to container. Store under normal laboratory conditions. Avoid exposure to excessive sources of heat and humidity or direct sunlight. / *Garder les contenants bien fermés lorsque non utilisés. Le contenant devrait être ouvert seulement pour le temps requis afin de prélever la quantité nécessaire. Ne pas pipetter ou utiliser directement du contenant. Ne pas retourner les portions non-utilisées dans le contentant. Conserver dans des conditions normales de laboratoire. Éviter l'exposition à des sources de chaleur et d'humidité excessives ou à l'exposition solaire directe.*

Stability / *Stabilité*: This Standard is guaranteed to be stable and accurate to within the specified uncertainty of measurement up to the unopened expiry date, if sealed, or up to the opened expiry date (when indicated), whichever comes first, provided the solution is kept tightly capped and stored under the indicated storage conditions. Purchasers will be notified of any significant changes resulting in re-certification or withdrawal of the product prior to the expiration date. / *La stabilité et l'exactitude de cet étalon sont garanties d'être à l'intérieur de l'incertitude de mesure, jusqu'à la date d'expiration de la bouteille non-ouverte, si scellée, ou jusqu'à la date d'expiration de la bouteille ouverte (si indiquée), en présumant que le contenant est maintenu fermé et gardé dans les conditions d'entreposage indiquées. Les acheteurs seront avisés dans le cas où il y aura des changements significatifs nécessitant une re-certification ou un rappel du produit avant la date d'expiration.*

7.0 HAZARDOUS INFORMATION / *INFORMATION SUR LES RISQUES POTENTIELS*:

Please refer to the associated Safety Data Sheet (SDS) for information regarding this product (available at www.SCPSCIENCE.com). / *SVP vous référer à la Fiche Signalétique applicable pour de l'information sur ce produit (Disponible à www.SCPSCIENCE.com).*

8.0 HOMOGENEITY / *HOMOGÉNÉITÉ:*

This solution has been blended according to an in-house procedure and its homogeneity is guaranteed to be fit for purpose when a sample size sufficient for the intended method of analysis is used. / *Cette solution a été préparée selon une procédure maison et nous assurons que sa homogénéité est approprié à l'emploi lorsqu'un échantillon suffisant pour la méthode d'analyse prévue est utilisé.*

9.0 TRACEABILITY / *TRAÇABILITÉ*:

This CRM (Certified Reference Material) is traceable to the NIST SRM (Standard Reference Material) indicated in section 2 through an unbroken chain of comparisons. In addition, balances used are regularly calibrated using weights which are traceable to NIST (National Institute of Standards and Technology) or NRC (National Research Council of Canada) standards. All conductivity meters used to analyze this standard have been regularly calibrated using a NIST or NRC traceable Thermometer and standards. All pH meters used to analyze this standard have been regularly calibrated using a NIST or NRC traceable thermometer and pH/MV simulator. / *Ce matériel de référence certifié est traçable au Matériel de Référence Standardisé de NIST indiqué à la section 2 par une chaine de comparaison ininterrompue. De plus, les balances utilisées sont étalonnées régulièrement en utilisant des poids qui sont traçables au NIST (National Institute of Standards and Technology) ou au CRNC (Conseil National de Recherches Canada). Tout conductimètre utilisé afin d'analyser cet étalon a été sujet à un étalonnage périodique utilisant des thermomètres et étalons traçables au NIST ou CNRC. Tout pH mètre utilisé afin d'analyser cet étalon a été sujet à un étalonnage périodique utilisant des thermomètres et un simulateur pH/MV traçables au NIST ou au CNRC.*

10.0 PREPARATION / *PRÉPARATION:*

For the preparation of these solutions, 18 meghom/cm double deionized water, high-purity acids and glassware calibrated to ASTM Class A specifications are used. / *Une eau de 18 meghom/cm doublement déionisé, de l'acide de haute pureté, ainsi que de la verrerie étalonnée afin de satisfaire les spécifications Classe A de ASTM ont été utilisés pour la préparation de cet étalon.*

11.0 QUALITY SYSTEM CERTIFICATIONS / *CERTIFICATIONS DE SYSTÈME QUALITÉ:*

ISO 9001 Certification / *Certification ISO 9001*: This standard was produced in a facility which operates under a **registered** ISO 9001 Quality Management System. Please consult our web site for a copy of the most recent revision of our certificate of registration. / *Cet étalon a été fabriqué dans un laboratoire qui utilise un Système de Gestion de la Qualité **enregistré** à la norme ISO 9001. Veuillez consulter notre site web pour obtenir la version la plus récente de notre certificat d'enregistrement.*

ISO 17025 Accreditation / *Accréditation ISO 17025*: SCP SCIENCE (Corporate Headquarters) operates an ISO 17025 **accredited** laboratory. Please consult our web site for a copy of the most recent revision of our certificate and scope of accreditation. / ***SCP SCIENCE (Siège social)** est **accréditée** ISO 17025. Veuillez consulter notre site web afin d'obtenir la plus récente version de notre certificat d'accréditation ainsi que la portée de notre accréditation.*

ISO 17034 Accreditation / *Accréditation ISO 17034* : SCP SCIENCE (Corporate Headquarters) is an ISO 17034 accredited Reference Material Producer. Please consult our website for a copy of our most recent certificate and scope of accreditation. / ***SCP SCIENCE (Siège social)** est un Fabricant de Matériaux de Référence Accrédité ISO 17034. Veuillez consulter notre site web afin d'obtenir la plus récente version de notre certificat d'accréditation ainsi que la portée de notre accréditation.*

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Energy Laboratories Inc

Standard LOG

Standard ID:	ME211222 LA SECOND SOURCE		
Standard Name	La Secondary Stock	Type:	Primary
Date Prepared	12/22/2021	BY:	Amanda E. McDani
Date Expires:	12/22/2022		
Department	ME	Status:	Open
Vendor:	SCP Science		
Lot Number:	S210803016		
Balance ID:			
Comments:	opened 12/22/2021, expires 12/22/2022		

Chemical / Solvent Used	BottleNo	Amt	Units	Expires
Lanthanum PlasmaCal Standard	14326	125	mL	12/22/2022

Final Volume: mL

Stock Source **Base Units** **Amount Added**

Analytes **CAS** Conc: **ug/mL**

SCP SCIENCE

Providing Innovative Solutions to Analytical Chemists

Certificate of Analysis

1.0 DESCRIPTION:

PlasmaCAL ICP/ICPMS Standard - Lanthanum 1000 µg/ml

Catalogue Number: 140-051-570/-571/-575

Starting Material: Lanthanum(III) Oxide 99.99+%

Lot Number: **S210803016**

Matrix: 4% HNO_3 (See Section 3 for actual matrix)

Expiration Date (End of month): **August 2023** (or 15 months after bottle is opened, whichever comes first)

La

2.0 CERTIFIED VALUES AND ASSOCIATED UNCERTAINTY:

Certified Concentration: **1005 µg/ml +/- 4 µg/ml**

985 µg/g +/- 3 µg/g

Method of analysis: Inductively Coupled Plasma Atomic Emission Spectroscopy (ICP-AES)

Traceability: NIST Standard Reference Material 3127a Lot: **151030**

Note: The uncertainty of the certified value has been calculated from applicable uncertainty contributors (u_i) including uncertainty established during characterization of the material (u_{char}), the between bottle variation (u_{bb}), short-term stability (u_{sts}) and long-term stability (u_{lts}) according to the model $u_c = \sqrt{(u_{char}^2 + u_{bb}^2 + u_{sts}^2 + u_{lts}^2)}$. This combined uncertainty has been further multiplied by a coverage factor (k) of 2 to provide a 95% confidence interval.

3.0 REFERENCE VALUES:

Density: **1.020 g/ml @ 23.2 °C**

Actual Matrix: **4.0% (v/v) HNO_3**

ID #: 14326
Opened:_____
Lanthanum PlasmaCal Standard
Expires: 8/31/2023
Rec'd: 9/29/2021
Energy Laboratories Inc 1120 So. 27th Street
Billings MT 59107

Trace Metal Impurities as tested by ICP-MS:

Element	Conc. (ppm)	Element	Conc. (ppm)	Element	Conc. (ppm)	Element	Conc. (ppm)
Ag	<0.0010	Fe	<0.0018	Nd	<0.0010	Sn	<0.0010
Al	**0.0106**	Ga	<0.0010	Ni	<0.0010	Sr	<0.0025
As	<0.0010	Gd	**0.0889**	Os	<0.0010	Ta	<0.0010
Au	<0.0010	Ge	<0.0010	P	<0.0026	Tb	<0.0010
B	<0.0015	Hf	<0.0010	Pb	<0.0010	Te	<0.0010
Ba	**0.0031**	Hg	*	Pd	<0.0010	Th	<0.0010
Be	<0.0010	Ho	<0.0010	Pr	<0.0010	Ti	<0.0062
Bi	<0.0010	In	<0.0010	Pt	<0.0010	Tl	<0.0011
Ca	**0.0169**	Ir	<0.0010	Rb	<0.0010	Tm	<0.0010
Cd	<0.0010	K	<0.0024	Re	<0.0010	U	<0.0010
Ce	**0.0272**	La	N/A	Rh	<0.0010	V	<0.0010
Co	<0.0010	Li	<0.0010	Ru	<0.0010	W	<0.0020
Cr	<0.0010	Lu	<0.0010	S	*	Y	**0.0020**
Cs	<0.0010	Mg	<0.0010	Sb	<0.0010	Yb	<0.0010
Cu	<0.0010	Mn	<0.0010	Sc	<0.0010	Zn	<0.0010
Dy	<0.0010	Mo	<0.0010	Se	<0.0010	Zr	<0.0010
Er	<0.0010	Na	**0.0156**	Si	<0.1		
Eu	<0.0010	Nb	<0.0010	Sm	<0.0010	*: Not tested	

4.0 APPROVAL AND DATE OF CERTIFICATION:

Certification Approval: Daniel Boisvert, Chemist

Certification Date: August 12, 2021

Daniel Boisvert

5.0 INTENDED USE / *UTILISATION PRÉVUE*:

- ICP Standards: For the calibration of, including but not limited to: ICP-AES, ICP-MS, FAAS, GFAA, XRF and DCP. / *Étalons ICP : Pour l'étalonnage d'instruments de mesure tels que: ICP-AES, ICP-MS, FAAS, GFAA, XRF et DCP.*
- AA Standards: For the calibration of Flame (FAAS) and Graphite Furnace (GFAA) Atomic Absorption Spectrometers. / *Étalons AA : Pour l'étalonnage de spectromètres d'absorption atomique flamme (GFAA) et four au graphite (GFAA).*
- Matrix Modifiers: For the optimization of analytical conditions to provide better Graphite Furnace Atomic Absorption (GFAA) instrument response and improved detection limits. / *Modificateur de matrice : Pour l'optimisation des conditions analytiques afin de fournir des meilleurs réponses instrumentales et limites de détection pour SAA four au graphite.*
- pH Standards: For the calibrating pH meters or for other wet chemistry applications. / *Étalons pH : Pour étalonnage de pH mètres et autres applications de chimie humide.*
- Conductivity Standards: For electrolytic conductivity measurement as a calibration standard. / *Étalons de conductivité : Comme étalon pour les mesures de conductivité électrolytiques.*
- IC Standards: for calibration of, but not limited to IC, HPLC, TLC, ISE, IR, NMR, MS, UV/VIS or other wet chemistry applications. / *Étalons IC : Pour étalonnage d'instruments tels que : IC, HPLC, TLC, ISE, IR, NMR, MS, UV/VIS et autres applications de chimie humide.*

For any inquiries, please contact **SCP SCIENCE**. / *Pour toute question, veuillez contacter **SCP SCIENCE**.*

6.0 INSTRUCTIONS FOR USE / *INSTRUCTIONS D'UTILISATION*:

Handling and Storage / Manutention et entreposage: Keep product tightly capped when not in use. The solution should be opened for a minimum amount of time necessary to dispense the amount required. Do not pipet or use directly from container. Do not return unused portions back to container. Store under normal laboratory conditions. Avoid exposure to excessive sources of heat and humidity or direct sunlight. / *Garder les contenants bien fermés lorsque non utilisés. Le contenant devrait être ouvert seulement pour le temps requis afin de prélever la quantité nécessaire. Ne pas pipetter ou utiliser directement du contenant. Ne pas retourner les portions non-utilisées dans le contentant. Conserver dans des conditions normales de laboratoire. Éviter l'exposition à des sources de chaleur et d'humidité excessives ou à l'exposition solaire directe.*

Stability / *Stabilité*: This Standard is guaranteed to be stable and accurate to within the specified uncertainty of measurement up to the unopened expiry date, if sealed, or up to the opened expiry date (when indicated), whichever comes first, provided the solution is kept tightly capped and stored under the indicated storage conditions. Purchasers will be notified of any significant changes resulting in re-certification or withdrawal of the product prior to the expiration date. / *La stabilité et l'exactitude de cet étalon sont garanties d'être à l'intérieur de l'incertitude de mesure, jusqu'à la date d'expiration de la bouteille non-ouverte, si scellée, ou jusqu'à la date d'expiration de la bouteille ouverte (si indiquée), en présumant que le contenant est maintenu fermé et gardé dans les conditions d'entreposage indiquées. Les acheteurs seront avisés dans le cas où il y aura des changements significatifs nécessitant une re-certification ou un rappel du produit avant la date d'expiration.*

7.0 HAZARDOUS INFORMATION / *INFORMATION SUR LES RISQUES POTENTIELS*:

Please refer to the associated Safety Data Sheet (SDS) for information regarding this product (available at www.SCPSCIENCE.com). / *SVP vous référer à la Fiche Signalétique applicable pour de l'information sur ce produit (Disponible à www.SCPSCIENCE.com).*

8.0 HOMOGENEITY / *HOMOGÉNÉITÉ:*

This solution has been blended according to an in-house procedure and its homogeneity is guaranteed to be fit for purpose when a sample size sufficient for the intended method of analysis is used. / *Cette solution a été préparée selon une procédure maison et nous assurons que sa homogénéité est approprié à l'emploi lorsqu'un échantillon suffisant pour la méthode d'analyse prévue est utilisé.*

9.0 TRACEABILITY / *TRAÇABILITÉ*:

This CRM (Certified Reference Material) is traceable to the NIST SRM (Standard Reference Material) indicated in section 2 through an unbroken chain of comparisons. In addition, balances used are regularly calibrated using weights which are traceable to NIST (National Institute of Standards and Technology) or NRC (National Research Council of Canada) standards. All conductivity meters used to analyze this standard have been regularly calibrated using a NIST or NRC traceable Thermometer and standards. All pH meters used to analyze this standard have been regularly calibrated using a NIST or NRC traceable thermometer and pH/MV simulator. / *Ce matériel de référence certifié est traçable au Matériel de Référence Standardisé de NIST indiqué à la section 2 par une chaine de comparaison ininterrompue. De plus, les balances utilisées sont étalonnées régulièrement en utilisant des poids qui sont traçables au NIST (National Institute of Standards and Technology) ou au CRNC (Conseil National de Recherches Canada). Tout conductimètre utilisé afin d'analyser cet étalon a été sujet à un étalonnage périodique utilisant des thermomètres et étalons traçables au NIST ou CNRC. Tout pH mètre utilisé afin d'analyser cet étalon a été sujet à un étalonnage périodique utilisant des thermomètres et un simulateur pH/MV traçables au NIST ou au CNRC.*

10.0 PREPARATION / *PRÉPARATION:*

For the preparation of these solutions, 18 meghom/cm double deionized water, high-purity acids and glassware calibrated to ASTM Class A specifications are used. / *Une eau de 18 meghom/cm doublement déionisé, de l'acide de haute pureté, ainsi que de la verrerie étalonnée afin de satisfaire les spécifications Classe A de ASTM ont été utilisés pour la préparation de cet étalon.*

11.0 QUALITY SYSTEM CERTIFICATIONS / *CERTIFICATIONS DE SYSTÈME QUALITÉ:*

ISO 9001 Certification / *Certification ISO 9001*: This standard was produced in a facility which operates under a **registered** ISO 9001 Quality Management System. Please consult our web site for a copy of the most recent revision of our certificate of registration. / *Cet étalon a été fabriqué dans un laboratoire qui utilise un Système de Gestion de la Qualité **enregistré** à la norme ISO 9001. Veuillez consulter notre site web pour obtenir la version la plus récente de notre certificat d'enregistrement.*

ISO 17025 Accreditation / *Accréditation ISO 17025*: SCP SCIENCE (Corporate Headquarters) operates an ISO 17025 **accredited** laboratory. Please consult our web site for a copy of the most recent revision of our certificate and scope of accreditation. / ***SCP SCIENCE (Siège social)** est **accréditée** ISO 17025. Veuillez consulter notre site web afin d'obtenir la plus récente version de notre certificat d'accréditation ainsi que la portée de notre accréditation.*

ISO 17034 Accreditation / *Accréditation ISO 17034* : SCP SCIENCE (Corporate Headquarters) is an ISO 17034 accredited Reference Material Producer. Please consult our website for a copy of our most recent certificate and scope of accreditation. / ***SCP SCIENCE (Siège social)** est un Fabricant de Matériaux de Référence Accrédité ISO 17034. Veuillez consulter notre site web afin d'obtenir la plus récente version de notre certificat d'accréditation ainsi que la portée de notre accréditation.*

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Fax: +1 (800) 253-5549

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N.Y. 12919-4816

Phone: +1 (800) 361-6820
Fax: +1 (800) 253-5549

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12 Ave. de Québec, Bat. IRIS
91140, Villebon-sur-Yvette

Phone: +33 (0) 1 69 18 71 17
Fax: +33 (0) 1 60 92 05 67

GERMANY
Alte Marktoberdorfer Straße 14, 87616
Marktoberdorf

Phone: +49 (0) 8342-89560-61
Fax: +49 (0) 8342-89560-69

Energy Laboratories Inc

Standard LOG

Standard ID:	ME210920A AU 2ND SOURCE		
Standard Name	Au 2nd source Stock	Type:	Primary
Date Prepared	9/20/2021	BY:	Ron Hunt
Date Expires:	12/20/2022		
Department	ME	Status:	Empty/Disposed
Vendor:	SCP Science		
Lot Number:	S210720002		
Balance ID:			

Comments:

Chemical / Solvent Used	BottleNo	Amt	Units	Exp
PlasmaCal Standard Gold 1000ug/ml	14229	500	mL	8/31/

Final Volume: 500 mL

Stock Source	**Base Units**	**Amount Added**
Analytes	**CAS**	Conc: **ug/mL**

SCP SCIENCE

Providing Innovative Solutions to Analytical Chemists

Certificate of Analysis

1.0 DESCRIPTION:

PlasmaCAL ICP/ICPMS Standard - Gold 1000 µg/ml

Catalogue Number: 140-052-790/-791/-795

Starting Material: Gold Metal 99.99+%

Lot Number: **S210720002**

Matrix: 10% HCl (See Section 3 for actual matrix)

Expiration Date (End of month): **August 2023** (or 15 months after bottle is opened, whichever comes first)

Au

2.0 CERTIFIED VALUES AND ASSOCIATED UNCERTAINTY:

Certified Concentration: **1005 µg/ml +/- 4 µg/ml**

986 µg/g +/- 4 µg/g

Method of analysis: Inductively Coupled Plasma Atomic Emission Spectroscopy (ICP-AES)

Traceability: NIST Standard Reference Material 3121 Lot: **991806**

Note: The uncertainty of the certified value has been calculated from applicable uncertainty contributors (u_i) including uncertainty established during characterization of the material (u_{char}), the between bottle variation (u_{bb}), short-term stability (u_{sts}) and long-term stability (u_{lts}) according to the model $u_c = \sqrt{(u_{char}^2 + u_{bb}^2 + u_{sts}^2 + u_{lts}^2)}$. This combined uncertainty has been further multiplied by a coverage factor (k) of 2 to provide a 95% confidence interval.

ID #: 14229
Opened:_____
PlasmaCal Standard Gold 1000ug/ml
Expires: 8/31/2023
Rec'd: 9/1/2021
Energy Laboratories Inc 1120 So. 27th Street
Billings MT 59107

3.0 REFERENCE VALUES:

Density: **1.019 g/ml @ 23.0 °C**

Actual Matrix: **10.0% (v/v) HCl**

Trace Metal Impurities as tested by ICP-MS:

Element	Conc. (ppm)	Element	Conc. (ppm)	Element	Conc. (ppm)	Element	Conc. (ppm)
Ag	<0.0010	Fe	<0.0018	Nd	<0.0010	Sn	<0.0010
Al	<0.0010	Ga	<0.0010	Ni	**0.0020**	Sr	<0.0025
As	**0.0210**	Gd	<0.0010	Os	<0.0010	Ta	<0.0010
Au	N/A	Ge	<0.0010	P	<0.0026	Tb	<0.0010
B	<0.0015	Hf	<0.0010	Pb	<0.0010	Te	<0.0010
Ba	<0.0010	Hg	*	Pd	<0.0010	Th	<0.0010
Be	<0.0010	Ho	<0.0010	Pr	<0.0010	Ti	<0.0012
Bi	<0.0010	In	<0.0010	Pt	<0.0010	Tl	<0.0011
Ca	<0.0135	Ir	<0.0010	Rb	<0.0010	Tm	<0.0010
Cd	<0.0010	K	<0.0120	Re	<0.0010	U	<0.0010
Ce	<0.0010	La	**0.0060**	Rh	<0.0010	V	<0.0010
Co	<0.0010	Li	<0.0010	Ru	<0.0010	W	<0.0020
Cr	<0.0010	Lu	<0.0010	S	*	Y	<0.0010
Cs	**0.0032**	Mg	<0.0020	Sb	<0.0010	Yb	<0.0010
Cu	<0.0010	Mn	<0.0010	Sc	<0.0010	Zn	<0.0010
Dy	<0.0010	Mo	<0.0010	Se	<0.0010	Zr	<0.0010
Er	<0.0010	Na	**0.0158**	Si	<0.1		
Eu	<0.0010	Nb	<0.0010	Sm	<0.0010	*: Not tested	

4.0 APPROVAL AND DATE OF CERTIFICATION:

Certification Approval: Daniel Boisvert, Chemist

Certification Date: August 09, 2021

Daniel Boisvert

5.0 INTENDED USE / *UTILISATION PRÉVUE*:

- ICP Standards: For the calibration of, including but not limited to: ICP-AES, ICP-MS, FAAS, GFAA, XRF and DCP. / *Étalons ICP : Pour l'étalonnage d'instruments de mesure tels que: ICP-AES, ICP-MS, FAAS, GFAA, XRF et DCP.*
- AA Standards: For the calibration of Flame (FAAS) and Graphite Furnace (GFAA) Atomic Absorption Spectrometers. / *Étalons AA : Pour l'étalonnage de spectromètres d'absorption atomique flamme (GFAA) et four au graphite (GFAA).*
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- pH Standards: For the calibrating pH meters or for other wet chemistry applications. / *Étalons pH : Pour étalonnage de pH mètres et autres applications de chimie humide.*
- Conductivity Standards: For electrolytic conductivity measurement as a calibration standard. / *Étalons de conductivité : Comme étalon pour les mesures de conductivité électrolytiques.*
- IC Standards: for calibration of, but not limited to IC, HPLC, TLC, ISE, IR, NMR, MS, UV/VIS or other wet chemistry applications. / *Étalons IC : Pour étalonnage d'instruments tels que : IC, HPLC, TLC, ISE, IR, NMR, MS, UV/VIS et autres applications de chimie humide.*

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Stability / *Stabilité*: This Standard is guaranteed to be stable and accurate to within the specified uncertainty of measurement up to the unopened expiry date, if sealed, or up to the opened expiry date (when indicated), whichever comes first, provided the solution is kept tightly capped and stored under the indicated storage conditions. Purchasers will be notified of any significant changes resulting in re-certification or withdrawal of the product prior to the expiration date. / *La stabilité et l'exactitude de cet étalon sont garanties d'être à l'intérieur de l'incertitude de mesure, jusqu'à la date d'expiration de la bouteille non-ouverte, si scellée, ou jusqu'à la date d'expiration de la bouteille ouverte (si indiquée), en présumant que le contenant est maintenu fermé et gardé dans les conditions d'entreposage indiquées. Les acheteurs seront avisés dans le cas où il y aura des changements significatifs nécessitant une re-certification ou un rappel du produit avant la date d'expiration.*

7.0 HAZARDOUS INFORMATION / *INFORMATION SUR LES RISQUES POTENTIELS*:

Please refer to the associated Safety Data Sheet (SDS) for information regarding this product (available at www.SCPSCIENCE.com). / *SVP vous référer à la Fiche Signalétique applicable pour de l'information sur ce produit (Disponible à www.SCPSCIENCE.com).*

8.0 HOMOGENEITY / *HOMOGÉNÉITÉ:*

This solution has been blended according to an in-house procedure and its homogeneity is guaranteed to be fit for purpose when a sample size sufficient for the intended method of analysis is used. / *Cette solution a été préparée selon une procédure maison et nous assurons que sa homogénéité est approprié à l'emploi lorsqu'un échantillon suffisant pour la méthode d'analyse prévue est utilisé.*

9.0 TRACEABILITY / *TRAÇABILITÉ*:

This CRM (Certified Reference Material) is traceable to the NIST SRM (Standard Reference Material) indicated in section 2 through an unbroken chain of comparisons. In addition, balances used are regularly calibrated using weights which are traceable to NIST (National Institute of Standards and Technology) or NRC (National Research Council of Canada) standards. All conductivity meters used to analyze this standard have been regularly calibrated using a NIST or NRC traceable Thermometer and standards. All pH meters used to analyze this standard have been regularly calibrated using a NIST or NRC traceable thermometer and pH/MV simulator. / *Ce matériel de référence certifié est traçable au Matériel de Référence Standardisé de NIST indiqué à la section 2 par une chaine de comparaison ininterrompue. De plus, les balances utilisées sont étalonnées régulièrement en utilisant des poids qui sont traçables au NIST (National Institute of Standards and Technology) ou au CRNC (Conseil National de Recherches Canada). Tout conductimètre utilisé afin d'analyser cet étalon a été sujet à un étalonnage périodique utilisant des thermomètres et étalons traçables au NIST ou CNRC. Tout pH mètre utilisé afin d'analyser cet étalon a été sujet à un étalonnage périodique utilisant des thermomètres et un simulateur pH/MV traçables au NIST ou au CNRC.*

10.0 PREPARATION / *PRÉPARATION:*

For the preparation of these solutions, 18 meghom/cm double deionized water, high-purity acids and glassware calibrated to ASTM Class A specifications are used. / *Une eau de 18 meghom/cm doublement déionisé, de l'acide de haute pureté, ainsi que de la verrerie étalonnée afin de satisfaire les spécifications Classe A de ASTM ont été utilisés pour la préparation de cet étalon.*

11.0 QUALITY SYSTEM CERTIFICATIONS / *CERTIFICATIONS DE SYSTÈME QUALITÉ:*

ISO 9001 Certification / *Certification ISO 9001*: This standard was produced in a facility which operates under a **registered** ISO 9001 Quality Management System. Please consult our web site for a copy of the most recent revision of our certificate of registration. / *Cet étalon a été fabriqué dans un laboratoire qui utilise un Système de Gestion de la Qualité* ***enregistré*** *à la norme ISO 9001. Veuillez consulter notre site web pour obtenir la version la plus récente de notre certificat d'enregistrement.*

ISO 17025 Accreditation / *Accréditation ISO 17025*: SCP SCIENCE (Corporate Headquarters) operates an ISO 17025 **accredited** laboratory. Please consult our web site for a copy of the most recent revision of our certificate and scope of accreditation. / ***SCP SCIENCE (Siège social)*** *est* ***accréditée*** *ISO 17025. Veuillez consulter notre site web afin d'obtenir la plus récente version de notre certificat d'accréditation ainsi que la portée de notre accréditation.*

ISO 17034 Accreditation / *Accréditation ISO 17034* : SCP SCIENCE (Corporate Headquarters) is an ISO 17034 accredited Reference Material Producer. Please consult our website for a copy of our most recent certificate and scope of accreditation. / ***SCP SCIENCE (Siège social)*** *est un Fabricant de Matériaux de Référence Accrédité ISO 17034. Veuillez consulter notre site web afin d'obtenir la plus récente version de notre certificat d'accréditation ainsi que la portée de notre accréditation.*

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N.Y. 12919-4816

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91140, Villebon-sur-Yvette

Phone: +33 (0) 1 69 18 71 17
Fax: +33 (0) 1 60 92 05 67

GERMANY
Alte Marktoberdorfer Straße 14, 87616
Marktoberdorf

Phone: +49 (0) 8342-89560-61
Fax: +49 (0) 8342-89560-69

Energy Laboratories Inc

Standard LOG

Standard ID:	ME211025A		
Standard Name	Te Stock	Type:	Primary
Date Prepared	10/25/2021	BY:	Stacy R. Hendricks
Date Expires:	10/25/2022		
Department	ME	Status:	Open
Vendor:	SCP Science		
Lot Number:	S200130018		
Balance ID:			
Comments:	Opened 10/25/2021; Expires 10/25/2022		

Chemical / Solvent Used	BottleNo	Amt	Units	Exp
ICP/ICPMS Standard Tellurium	14418	500	mL	10/25

Final Volume: 500 mL

Stock Source	**Base Units**	**Amount Added**
Analytes	**CAS**	Conc: **ug/mL**

SCP SCIENCE

Providing Innovative Solutions to Analytical Chemists

Certificate of Analysis

1.0 DESCRIPTION:

PlasmaCAL ICP/ICPMS Standard - Tellurium 1000 µg/ml

Catalogue Number: 140-051-520/-521/-525

Starting Material: Tellurium Metal 99.99+%

Lot Number: **S210615004**

Matrix: 10% HNO3 (See Section 3 for actual matrix)

Expiration Date (End of month): **June 2023** (or 15 months after bottle is opened, whichever comes first)

Te

2.0 CERTIFIED VALUES AND ASSOCIATED UNCERTAINTY:

Certified Concentration: **1005 µg/ml +/- 5 µg/ml**

958 µg/g +/- 5 µg/g

Method of analysis: Inductively Coupled Plasma Atomic Emission Spectroscopy (ICP-AES)

Traceability: NIST Standard Reference Material 3156 Lot: **140830**

Note: The uncertainty of the certified value has been calculated from applicable uncertainty contributors (u_i) including uncertainty established during characterization of the material (u_{char}), the between bottle variation (u_{bb}), short-term stability (u_{sts}) and long-term stability (u_{lts}) according to the model $u_c = \sqrt{(u_{char}^2 + u_{bb}^2 + u_{sts}^2 + u_{lts}^2)}$. This combined uncertainty has been further multiplied by a coverage factor (k) of 2 to provide a 95% confidence interval.

ID #: 14418
Opened:
ICP/ICPMS Standard Tellurium
Expires: 6/30/2023
Rec'd: 10/20/2021
Energy Laboratories Inc 1120 So. 27th Street
Billings MT 59107

3.0 REFERENCE VALUES:

Density: **1.049 g/ml @ 25.5 °C**

Actual Matrix: **10.0% (v/v) HNO3**

Trace Metal Impurities as tested by ICP-AES:

Element	Conc. (ppm)	Element	Conc. (ppm)	Element	Conc. (ppm)	Element	Conc. (ppm)
Ag	<0.0010	Fe	<0.0018	Nd	**0.0449**	Sn	<0.0010
Al	<0.0010	Ga	<0.0010	Ni	<0.0010	Sr	<0.0025
As	<0.0010	Gd	<0.0010	Os	<0.0010	Ta	<0.0010
Au	<0.0010	Ge	<0.0010	P	**0.0184**	Tb	<0.0010
B	<0.0015	Hf	<0.0010	Pb	<0.0010	Te	N/A
Ba	<0.0010	Hg	*	Pd	<0.0010	Th	<0.0010
Be	<0.0010	Ho	<0.0010	Pr	**0.0028**	Ti	<0.0012
Bi	<0.0010	In	**0.0020**	Pt	<0.0010	Tl	<0.0011
Ca	<0.0135	Ir	<0.0010	Rb	<0.0010	Tm	<0.0010
Cd	<0.0010	K	<0.0024	Re	<0.0010	U	<0.0010
Ce	<0.0010	La	<0.0010	Rh	<0.0010	V	<0.0010
Co	<0.0010	Li	<0.0010	Ru	<0.0010	W	<0.0020
Cr	<0.0010	Lu	<0.0010	S	*	Y	<0.0010
Cs	<0.0010	Mg	<0.0020	Sb	<0.0010	Yb	<0.0010
Cu	<0.0010	Mn	<0.0010	Sc	<0.0010	Zn	<0.0010
Dy	<0.0010	Mo	<0.0010	Se	<0.1	Zr	<0.0010
Er	<0.0010	Na	<0.0025	Si	<0.1		
Eu	<0.0010	Nb	<0.0010	Sm	<0.0010	*: Not tested	

4.0 APPROVAL AND DATE OF CERTIFICATION:

Certification Approval: Daniel Boisvert, Chemist

Certification Date: June 30, 2021

Daniel Boisvert

5.0 INTENDED USE / *UTILISATION PRÉVUE*:

- ICP Standards: For the calibration of, including but not limited to: ICP-AES, ICP-MS, FAAS, GFAA, XRF and DCP. / *Étalons ICP : Pour l'étalonnage d'instruments de mesure tels que: ICP-AES, ICP-MS, FAAS, GFAA, XRF et DCP.*
- AA Standards: For the calibration of Flame (FAAS) and Graphite Furnace (GFAA) Atomic Absorption Spectrometers. / *Étalons AA : Pour l'étalonnage de spectromètres d'absorption atomique flamme (GFAA) et four au graphite (GFAA).*
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6.0 INSTRUCTIONS FOR USE / *INSTRUCTIONS D'UTILISATION*:

Handling and Storage / Manutention et entreposage: Keep product tightly capped when not in use. The solution should be opened for a minimum amount of time necessary to dispense the amount required. Do not pipet or use directly from container. Do not return unused portions back to container. Store under normal laboratory conditions. Avoid exposure to excessive sources of heat and humidity or direct sunlight. / *Garder les contenants bien fermés lorsque non utilisés. Le contenant devrait être ouvert seulement pour le temps requis afin de prélever la quantité nécessaire. Ne pas pipetter ou utiliser directement du contenant. Ne pas retourner les portions non-utilisées dans le contentant. Conserver dans des conditions normales de laboratoire. Éviter l'exposition à des sources de chaleur et d'humidité excessives ou à l'exposition solaire directe.*

Stability / *Stabilité*: This Standard is guaranteed to be stable and accurate to within the specified uncertainty of measurement up to the unopened expiry date, if sealed, or up to the opened expiry date (when indicated), whichever comes first, provided the solution is kept tightly capped and stored under the indicated storage conditions. Purchasers will be notified of any significant changes resulting in re-certification or withdrawal of the product prior to the expiration date. / *La stabilité et l'exactitude de cet étalon sont garanties d'être à l'intérieur de l'incertitude de mesure, jusqu'à la date d'expiration de la bouteille non-ouverte, si scellée, ou jusqu'à la date d'expiration de la bouteille ouverte (si indiquée), en présumant que le contenant est maintenu fermé et gardé dans les conditions d'entreposage indiquées. Les acheteurs seront avisés dans le cas où il y aura des changements significatifs nécessitant une re-certification ou un rappel du produit avant la date d'expiration.*

7.0 HAZARDOUS INFORMATION / *INFORMATION SUR LES RISQUES POTENTIELS*:

Please refer to the associated Safety Data Sheet (SDS) for information regarding this product (available at www.SCPSCIENCE.com). / *SVP vous référer à la Fiche Signalétique applicable pour de l'information sur ce produit (Disponible à www.SCPSCIENCE.com).*

8.0 HOMOGENEITY / *HOMOGÉNÉITÉ:*

This solution has been blended according to an in-house procedure and its homogeneity is guaranteed to be fit for purpose when a sample size sufficient for the intended method of analysis is used. / *Cette solution a été préparée selon une procédure maison et nous assurons que sa homogénéité est approprié à l'emploi lorsqu'un échantillon suffisant pour la méthode d'analyse prévue est utilisé.*

9.0 TRACEABILITY / *TRAÇABILITÉ*:

This CRM (Certified Reference Material) is traceable to the NIST SRM (Standard Reference Material) indicated in section 2 through an unbroken chain of comparisons. In addition, balances used are regularly calibrated using weights which are traceable to NIST (National Institute of Standards and Technology) or NRC (National Research Council of Canada) standards. All conductivity meters used to analyze this standard have been regularly calibrated using a NIST or NRC traceable Thermometer and standards. All pH meters used to analyze this standard have been regularly calibrated using a NIST or NRC traceable thermometer and pH/MV simulator. / *Ce matériel de référence certifié est traçable au Matériel de Référence Standardisé de NIST indiqué à la section 2 par une chaine de comparaison ininterrompue. De plus, les balances utilisées sont étalonnées régulièrement en utilisant des poids qui sont traçables au NIST (National Institute of Standards and Technology) ou au CRNC (Conseil National de Recherches Canada). Tout conductimètre utilisé afin d'analyser cet étalon a été sujet à un étalonnage périodique utilisant des thermomètres et étalons traçables au NIST ou CNRC. Tout pH mètre utilisé afin d'analyser cet étalon a été sujet à un étalonnage périodique utilisant des thermomètres et un simulateur pH/MV traçables au NIST ou au CNRC.*

10.0 PREPARATION / *PRÉPARATION:*

For the preparation of these solutions, 18 meghom/cm double deionized water, high-purity acids and glassware calibrated to ASTM Class A specifications are used. / *Une eau de 18 meghom/cm doublement déionisé, de l'acide de haute pureté, ainsi que de la verrerie étalonnée afin de satisfaire les spécifications Classe A de ASTM ont été utilisés pour la préparation de cet étalon.*

11.0 QUALITY SYSTEM CERTIFICATIONS / *CERTIFICATIONS DE SYSTÈME QUALITÉ:*

ISO 9001 Certification / *Certification ISO 9001*: This standard was produced in a facility which operates under a **registered** ISO 9001 Quality Management System. Please consult our web site for a copy of the most recent revision of our certificate of registration. / *Cet étalon a été fabriqué dans un laboratoire qui utilise un Système de Gestion de la Qualité* ***enregistré*** *à la norme ISO 9001. Veuillez consulter notre site web pour obtenir la version la plus récente de notre certificat d'enregistrement.*

ISO 17025 Accreditation / *Accréditation ISO 17025*: SCP SCIENCE (Corporate Headquarters) operates an ISO 17025 **accredited** laboratory. Please consult our web site for a copy of the most recent revision of our certificate and scope of accreditation. / ***SCP SCIENCE (Siège social)*** *est* ***accréditée*** *ISO 17025. Veuillez consulter notre site web afin d'obtenir la plus récente version de notre certificat d'accréditation ainsi que la portée de notre accréditation.*

ISO 17034 Accreditation / *Accréditation ISO 17034* : SCP SCIENCE (Corporate Headquarters) is an ISO 17034 accredited Reference Material Producer. Please consult our website for a copy of our most recent certificate and scope of accreditation. / ***SCP SCIENCE (Siège social)*** *est un Fabricant de Matériaux de Référence Accrédité ISO 17034. Veuillez consulter notre site web afin d'obtenir la plus récente version de notre certificat d'accréditation ainsi que la portée de notre accréditation.*

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Energy Laboratories Inc

Standard LOG

Standard ID:	ME211207 2008TS		
Standard Name	200.8 Tune Solution	Type:	Primary
Date Prepared	12/7/2021	BY:	Stacy R. Hendricks
Date Expires:	12/7/2022		
Department	ME	Status:	New
Vendor:	Inorganic Ventures		
Lot Number:	R2-MEB691898		
Balance ID:			
Comments:	Opened 12/7/2021; Expired 12/7/2022		

Chemical / Solvent Used	BottleNo	Amt	Units	Exp
Multi Analyte Custom Grade Solution	13795	125	mL	12/7/

Final Volume: 125 mL

Stock Source	**Base Units**	**Amount Added**
Analytes	**CAS**	Conc: **ug/mL**

INORGANIC VENTURES
300 Technology Drive
Christiansburg, VA 24073 - USA
inorganicventures.com

CERTIFICATE OF ANALYSIS

tel: 800.669.6799 ; 540.585.3030
fax: 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:	2008TS
Lot Number:	R2-MEB691898
Matrix:	3% (v/v) HNO3
Value / Analyte(s):	10 µg/mL ea: Beryllium, Cobalt, Indium, Magnesium, Lead

ID #: 13795
Opened: _____
Multi Analyte Custom Grade Solution
Expires: 4/8/2024
Rec'd: 4/29/2021
Energy Laboratories Inc 1120 So. 27th Street
Billings MT 59107

3.0 CERTIFIED VALUES AND UNCERTAINTIES

ANALYTE	CERTIFIED VALUE	ANALYTE	CERTIFIED VALUE
Beryllium, Be	10.01 ± 0.06 µg/mL	Cobalt, Co	10.01 ± 0.04 µg/mL
Indium, In	10.01 ± 0.04 µg/mL	Lead, Pb	10.01 ± 0.04 µg/mL
Magnesium, Mg	10.01 ± 0.05 µg/mL		

Density: 1.014 g/mL (measured at 20 ± 4 °C)

Assay Information:

ANALYTE	METHOD	NIST SRM#	SRM LOT#
Be	ICP Assay	3105a	090514
Co	EDTA	928	928
Co	ICP Assay	traceable to 3113	M2-CO661665
Co	Calculated		See Sec. 4.2
In	ICP Assay	3124a	110516
In	EDTA	928	928
In	Calculated		See Sec. 4.2
Mg	ICP Assay	3131a	140110
Mg	EDTA	928	928
Mg	Calculated		See Sec. 4.2
Pb	ICP Assay	3128	101026
Pb	EDTA	928	928
Pb	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

- 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

April 08, 2020

- 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

- April 08, 2024

- 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
Manager, Quality Control

Certifying Officer:

Paul Gaines
CEO, Senior Technical Director

Energy Laboratories Inc

Standard LOG

Standard ID: ME210901 1000 PPB STANDARD
Standard Name 1000 PPB Standard
Date Prepared 9/1/2021
Date Expires: 1/4/2022
Department ME
Vendor:
Lot Number:
Balance ID:

Type: Secondary
BY: Cindy Rohrer
Status: Open

Comments: Made fresh daily

Chemical / Solvent Used	BottleNo	Amt	Units	Expires
Nitric Acid, 69.0-70.0%,0000282671	14178	0.5	mL	4/11/2026
Hydrochloric Acid Instra Analyzed 000028	14028	0.25	mL	3/29/2026
Milli-Q H2O	391	48.25	mL	6/1/2100

Final Volume:
50 mL

Stock Source		**Base Units**	**Amount Added**
ME210726 MSCAL	MSCAL 2B	ug/mL	0.5 mL
ME210610 MSCAL	EL-MSCAL-5A	ug/mL	0.5 mL
ME210105AU	Au Secondary Stock	ug/mL	0.01 mL

Analytes	**CAS**	Conc:	**ug/mL**

Energy Laboratories Inc

Standard LOG

Standard ID:	ME210726 MSCAL2B		
Standard Name	MSCAL 2B	Type:	Primary
Date Prepared	7/26/2021	BY:	Alyssa A. espinoza
Date Expires:	7/26/2022		
Department	ME	Status:	Open
Vendor:	Inorganic Ventures		
Lot Number:	S2-MEB702845		
Balance ID:			
Comments:	Opened 7/26/2021; Expires 7/26/2022		

Chemical / Solvent Used	BottleNo	Amt	Units	Expires
Multi Analyte Custom Grade Solution	13652		mL	7/26/2022

Final Volume: mL

Stock Source **Base Units** **Amount Added**

Analytes **CAS** Conc: **ug/mL**

Energy Laboratories Inc

Standard LOG

Standard ID:	ME210726 MSCAL2B		
Standard Name	MSCAL 2B	Type:	Primary
Date Prepared	7/26/2021	BY:	Alyssa A. espinoza
Date Expires:	7/26/2022		
Department	ME	Status:	Open
Vendor:	Inorganic Ventures		
Lot Number:	S2-MEB702845		
Balance ID:			
Comments:	Opened 7/26/2021; Expires 7/26/2022		

Chemical / Solvent Used	BottleNo	Amt	Units	Expires
Multi Analyte Custom Grade Solution	13652		mL	7/26/2022

Final Volume: mL

Stock Source **Base Units** **Amount Added**

Analytes **CAS** Conc: **ug/mL**

INORGANIC VENTURES
Refine your results. Redefine your industry.

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:	Multi Analyte Custom Grade Solution
Catalog Number:	EL-MSCAL-2B
Lot Number:	S2-MEB702845
Matrix:	5% (v/v) HNO3
Value / Analyte(s):	100 µg/mL ea:

Aluminum, Arsenic,
Boron, Barium,
Beryllium, Cadmium,
Cobalt, Chromium,
Copper, Iron,
Manganese, Nickel,
Lead, Selenium,
Strontium, Thorium,
Thallium, Uranium,
Vanadium, Zinc,

40 µg/mL ea:
Silver

ID #: 13652
Opened:
Multi Analyte Custom Grade Solution
Expires: 3/8/2025
Rec'd: 3/18/2021
Energy Laboratories Inc 1120 So. 27th Street
Billings MT 59107

3.0 CERTIFIED VALUES AND UNCERTAINTIES

ANALYTE	CERTIFIED VALUE	ANALYTE	CERTIFIED VALUE
Aluminum, Al	100.0 ± 0.4 µg/mL	Arsenic, As	100.0 ± 0.9 µg/mL
Barium, Ba	100.0 ± 0.5 µg/mL	Beryllium, Be	100.0 ± 0.7 µg/mL
Boron, B	99.9 ± 0.7 µg/mL	Cadmium, Cd	100.0 ± 0.5 µg/mL
Chromium, Cr	100.0 ± 0.8 µg/mL	Cobalt, Co	100.0 ± 0.6 µg/mL
Copper, Cu	100.0 ± 0.5 µg/mL	Iron, Fe	100.1 ± 0.4 µg/mL
Lead, Pb	100.0 ± 0.6 µg/mL	Manganese, Mn	100.0 ± 0.5 µg/mL
Nickel, Ni	100.0 ± 0.6 µg/mL	Selenium, Se	100.0 ± 0.7 µg/mL
Silver, Ag	39.99 ± 0.18 µg/mL	Strontium, Sr	100.0 ± 0.4 µg/mL
Thallium, Tl	100.0 ± 0.6 µg/mL	Thorium, Th	100.0 ± 0.5 µg/mL
Uranium, U	100.0 ± 0.5 µg/mL	Vanadium, V	100.0 ± 0.5 µg/mL
Zinc, Zn	100.0 ± 0.5 µg/mL		

Density: 1.033 g/mL (measured at 20 ± 4 °C)

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
As	ICP Assay	3103a	100818
B	ICP Assay	3107	110830
Ba	ICP Assay	3104a	140909
Ba	Gravimetric		See Sec. 4.2
Be	ICP Assay	3105a	090514
Cd	ICP Assay	3108	130116
Cd	EDTA	928	928
Co	ICP Assay	3113	190630
Co	EDTA	928	928
Cr	ICP Assay	3112a	170630
Cu	ICP Assay	3114	121207
Cu	EDTA	928	928
Fe	ICP Assay	3126a	140812
Fe	EDTA	928	928
Fe	Calculated		See Sec. 4.2
Mn	ICP Assay	3132	050429
Mn	EDTA	928	928
Ni	ICP Assay	3136	120619
Ni	EDTA	928	928
Pb	ICP Assay	3128	101026
Pb	EDTA	928	928
Se	ICP Assay	3149	100901
Se	Calculated		See Sec. 4.2
Sr	EDTA	928	928
Sr	ICP Assay	Traceable to 3153a	K2-SR650985
Sr	Calculated		See Sec. 4.2
Th	EDTA	928	928
Th	Calculated		See Sec. 4.2
Tl	ICP Assay	3158	151215
U	ICP Assay	3164	080521
U	Calculated		See Sec. 4.2
V	ICP 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 (±) = $U_{CRM/RM} = k\,(u^2_{char} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{1/2}$

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

Certified Abundance:

IV's Certified Abundance

Isotope	Atom %
Uranium 238U	99.8 ± 0.1
Uranium 235U	0.24 ± 0.05

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

March 08, 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

- **March 08, 2025**

- 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

Energy Laboratories Inc

Standard LOG

Standard ID:	ME210610 MSCAL-5A		
Standard Name	EL-MSCAL-5A	Type:	Primary
Date Prepared	6/10/2021	BY:	Alyssa A. espinoza
Date Expires:	6/10/2022		
Department	ME	Status:	Empty/Disposed
Vendor:	Inorganic Ventures		
Lot Number:	P2-MEB687200		
Balance ID:			
Comments:	Opened 6/10/21; Expires 6/10/22		

Chemical / Solvent Used	BottleNo	Amt	Units	Expires
Multi Analyte Custom Grade Solution	13476	500	mL	6/10/2022

Final Volume:
500 mL

Stock Source	**Base Units**	**Amount Added**
Analytes	**CAS**	Conc: **ug/mL**

INORGANIC VENTURES™
300 Technology Drive
Christiansburg, VA 24073 · USA
inorganicventures.com
tel: 800.669.6799 · 540.585.3030
fax: 540.585.3012
info@inorganicventures.com

CERTIFICATE OF ANALYSIS

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:	EL-MSCAL-5A
Lot Number:	R2-MEB695692
Matrix:	3% (v/v) HNO3
Value / Analyte(s):	5 000 µg/mL ea: Calcium, Magnesium, Potassium, Sodium, 500 µg/mL ea: Phosphorus, Iron, 250 µg/mL ea: Lithium

ID #: 13476
Opened:_____
Multi Analyte Custom Grade Solution
Expires: 8/12/2024
Rec'd: 1/15/2021
Energy Laboratories Inc 1120 So. 27th Street
Billings MT 59107

3.0 CERTIFIED VALUES AND UNCERTAINTIES

ANALYTE	CERTIFIED VALUE	ANALYTE	CERTIFIED VALUE
Calcium, Ca	5 000 ± 20 µg/mL	Iron, Fe	500.0 ± 2.1 µg/mL
Lithium, Li	250.0 ± 1.1 µg/mL	Magnesium, Mg	5 000 ± 20 µg/mL
Phosphorus, P	500.1 ± 2.9 µg/mL	Potassium, K	5 000 ± 19 µg/mL
Sodium, Na	5 000 ± 18 µg/mL		

Density: 1.076 g/mL (measured at 20 ± 4 °C)

Assay Information:

ANALYTE	METHOD	NIST SRM#	SRM LOT#
Ca	ICP Assay	3109a	130213
Ca	EDTA	928	928
Fe	ICP Assay	3126a	140812
Fe	EDTA	928	928
K	ICP Assay	3141a	140813
K	Gravimetric		See Sec. 4.2
Li	ICP Assay	3129a	100714
Li	Gravimetric		See Sec. 4.2
Mg	ICP Assay	3131a	140110
Mg	EDTA	928	928
Na	ICP Assay	3152a	120715
Na	Gravimetric		See Sec. 4.2
P	ICP Assay	3139a	060717
P	Acidimetric	84L	84L

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

- 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.

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, EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

August 12, 2020

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

11.2 Lot Expiration Date

- August 12, 2024

- 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

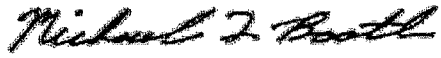
- Sealed TCT Bag Open Date: _____

- 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

Energy Laboratories Inc

Standard LOG

Standard ID:	ME210105AU		
Standard Name	Au Secondary Stock	Type:	Secondary
Date Prepared	1/4/2021	BY:	Ron Hunt
Date Expires:	1/4/2022		
Department	ME	Status:	Empty/Disposed
Vendor:	Inorganic Ventures		
Lot Number:	R2-AU695955		
Balance ID:			
Comments:	Opened 1/4/2021; Expires 1/4/2021		

Chemical / Solvent Used	BottleNo	Amt	Units	Expires
Gold Single Analyte Custom Grade Soluti	13396	500	mL	1/4/2021

Final Volume:
500 mL

Stock Source **Base Units** **Amount Added**

Analytes **CAS** Conc: **ug/mL**

Energy Laboratories Inc

Standard LOG

Standard ID: ME210901 100 PPB STANDARD
Standard Name: 100 ppb Standard
Date Prepared: 6/10/2021
Date Expires: 1/4/2022
Department: ME
Vendor: Inorganic Ventures
Lot Number:
Balance ID:

Type: Secondary
BY: Cindy Rohrer
Status: Expired

Comments: Made Fresh Daily

Chemical / Solvent Used	BottleNo	Amt	Units	Exp
Hydrochloric Acid, 36.5-38.0% 000027	13784	0.25	mL	12/15
Nitric Acid, 69.0-70.0%,0000277202	13781	0.5	mL	1/14/
Milli-Q H2O	391	48.335	mL	6/1/2

Final Volume: 50 mL

Stock Source		Base Units	Amount Added
ME210511 MSCAL	MSCAL 3C	ug/mL	0.05 mL
ME210610 MSCAL	EL-MSCAL-5A	ug/mL	0.25 mL
ME210812 HgPrim	Primary Hg Stock 2 PPM	ug/mL	0.05 mL
ME210726 MSCAL	MSCAL 2B	ug/mL	0.05 mL

Analytes	CAS	Conc:	ug/mL

Energy Laboratories Inc

Standard LOG

Standard ID:	ME210511 MSCAL 3C		
Standard Name	MSCAL 3C	Type:	Primary
Date Prepared	5/11/2021	BY:	Alyssa A. espinoza
Date Expires:	5/11/2022		
Department	ME	Status:	Open
Vendor:	Inorganic Ventures		
Lot Number:	P2-MEB682620		
Balance ID:			
Comments:	Opened 5/11/21; expires 5/11/22		

Chemical / Solvent Used	BottleNo	Amt	Units	Expires
Multi Analyte Custom Grade Solution	13651	250	mL	5/11/2022

Final Volume:
250 mL

Stock Source **Base Units** **Amount Added**

Analytes **CAS** Conc: **ug/mL**

INORGANIC VENTURES™
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Certificate of Analysis

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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:	EL-MSCAL-3C
Lot Number:	S2-MEB702844
Matrix:	3% (v/v) HNO3 tr. HF
Value / Analyte(s):	400 µg/mL ea: Silicon, 100 µg/mL ea: Tin, Titanium, Molybdenum, Antimony

ID #: 13651
Opened:
Multi Analyte Custom Grade Solution
Expires: 3/8/2025
Rec'd: 3/18/2021
Energy Laboratories Inc 1120 So. 27th Street
Billings MT 59107

3.0 CERTIFIED VALUES AND UNCERTAINTIES

ANALYTE	CERTIFIED VALUE	ANALYTE	CERTIFIED VALUE
Antimony, Sb	100.0 ± 0.8 µg/mL	Molybdenum, Mo	100.0 ± 0.6 µg/mL
Silicon, Si	400.1 ± 3.0 µg/mL	Tin, Sn	100.0 ± 0.6 µg/mL
Titanium, Ti	100.0 ± 0.7 µg/mL		

Density: 1.015 g/mL (measured at 20 ± 4 °C)

Assay Information:

ANALYTE	METHOD	NIST SRM#	SRM LOT#
Mo	ICP Assay	3134	130418
Sb	ICP Assay	3102a	140911
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 Expended 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 Expended 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

- 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

March 08, 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

- March 08, 2025

- 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

Michael J Booth

Certifying Officer:

Paul Gaines
Chairman / Senior Technical Director

Paul R Gaines

Energy Laboratories Inc

Standard LOG

Standard ID:	ME210610 MSCAL-5A		
Standard Name	EL-MSCAL-5A	Type:	Primary
Date Prepared	6/10/2021	BY:	Alyssa A. espinoza
Date Expires:	6/10/2022		
Department	ME	Status:	Empty/Disposed
Vendor:	Inorganic Ventures		
Lot Number:	P2-MEB687200		
Balance ID:			
Comments:	Opened 6/10/21; Expires 6/10/22		

Chemical / Solvent Used	BottleNo	Amt	Units	Expires
Multi Analyte Custom Grade Solution	13476	500	mL	6/10/2022

Final Volume:
500 mL

Stock Source	**Base Units**	**Amount Added**
Analytes	**CAS**	Conc: **ug/mL**

INORGANIC VENTURES™
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Christiansburg, VA 24073 · USA
inorganicventures.com
tel: 800.669.6799 · 540.585.3030
fax: 540.585.3012
info@inorganicventures.com

CERTIFICATE OF ANALYSIS

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:	EL-MSCAL-5A
Lot Number:	R2-MEB695692
Matrix:	3% (v/v) HNO3
Value / Analyte(s):	5 000 µg/mL ea: Calcium, Magnesium, Potassium, Sodium, 500 µg/mL ea: Phosphorus, Iron, 250 µg/mL ea: Lithium

ID #: 13476
Opened:_____
Multi Analyte Custom Grade Solution
Expires: 8/12/2024
Rec'd: 1/15/2021
Energy Laboratories Inc 1120 So. 27th Street
Billings MT 59107

3.0 CERTIFIED VALUES AND UNCERTAINTIES

ANALYTE	CERTIFIED VALUE	ANALYTE	CERTIFIED VALUE
Calcium, Ca	5 000 ± 20 µg/mL	Iron, Fe	500.0 ± 2.1 µg/mL
Lithium, Li	250.0 ± 1.1 µg/mL	Magnesium, Mg	5 000 ± 20 µg/mL
Phosphorus, P	500.1 ± 2.9 µg/mL	Potassium, K	5 000 ± 19 µg/mL
Sodium, Na	5 000 ± 18 µg/mL		

Density: 1.076 g/mL (measured at 20 ± 4 °C)

Assay Information:

ANALYTE	METHOD	NIST SRM#	SRM LOT#
Ca	ICP Assay	3109a	130213
Ca	EDTA	928	928
Fe	ICP Assay	3126a	140812
Fe	EDTA	928	928
K	ICP Assay	3141a	140813
K	Gravimetric		See Sec. 4.2
Li	ICP Assay	3129a	100714
Li	Gravimetric		See Sec. 4.2
Mg	ICP Assay	3131a	140110
Mg	EDTA	928	928
Na	ICP Assay	3152a	120715
Na	Gravimetric		See Sec. 4.2
P	ICP Assay	3139a	060717
P	Acidimetric	84L	84L

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

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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

- 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.

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, EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

August 12, 2020

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

11.2 Lot Expiration Date

- August 12, 2024

- 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

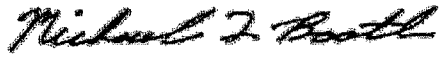
- Sealed TCT Bag Open Date: _____

- 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

Energy Laboratories Inc

Spike LOG

Standard ID:	ME210812 HGPRIMARY		
Standard Name	Primary Hg Stock 2 PPM	Type:	Primary
Date Prepared	8/12/2021	BY:	Parker A. Pearsall
Date Expires:	1/5/2022		
Department	ME	Status:	Expired
Vendor:	Inorganic Ventures		
Lot Number:			
Balance ID:			

Comments: Made with different HG stock than QCS

Chemical / Solvent Used	BottleNo	Amt	Units	Expires
Nitric Acid Instra Analyzed 0000267725	13706	0.5	mL	8/11/2025
Hydrochloric Acid, 36.5-38.0% 000027130	13503	0.25	mL	9/15/2025

Final Volume:
25 mL

Stock Source		**Base Units**	**Amount Added**
ME210105HG	HG Stock	ug/mL	0.05 mL
ME210105AU	Au Stock	ug/mL	0.05 mL

Analytes	**CAS**	Conc:	**ug/mL**

Energy Laboratories Inc

Standard LOG

Standard ID:	ME210105AU		
Standard Name	Au Secondary Stock	Type:	Secondary
Date Prepared	1/4/2021	BY:	Ron Hunt
Date Expires:	1/4/2022		
Department	ME	Status:	Empty/Disposed
Vendor:	Inorganic Ventures		
Lot Number:	R2-AU695955		
Balance ID:			
Comments:	Opened 1/4/2021; Expires 1/4/2021		

Chemical / Solvent Used	BottleNo	Amt	Units	Expires
Gold Single Analyte Custom Grade Soluti	13396	500	mL	1/4/2021

Final Volume:
500 mL

Stock Source **Base Units** **Amount Added**

Analytes **CAS** Conc: **ug/mL**

300 Technology Drive
Christiansburg, VA 24073 - USA
inorganicventures.com
tel: 800.669.6799 - 540.585.3030
fax: 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:	Single Analyte Custom Grade Solution
Catalog Number:	CGAU1
Lot Number:	R2-AU695955
Matrix:	10% (v/v) HCl
Value / Analyte(s):	1 000 µg/mL ea: Gold
Starting Material:	H[AuCl4]
Starting Material Lot#:	2340
Starting Material Purity:	99.9983%

ID #: 13396
Opened:
Gold Single Analyte Custom Grade Solution
Expires: 9/1/2024
Rec'd: 1/4/2021
Energy Laboratories Inc 1120 So. 27th Street
Billings MT 59107

3.0 CERTIFIED VALUES AND UNCERTAINTIES

Certified Value: 1001 ± 5 µg/mL

Density: 1.022 g/mL (measured at 20 ± 4 °C)

Assay Information:

Assay Method #1 **1002 ± 4 µg/mL**
ICP Assay NIST SRM 3121 Lot Number: 991806

Assay Method #2 **1001 ± 5 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	0.029000	M	Eu	<	0.000210	O	Na	0.003300	M	Se	<	0.014000	M	Zn	0.000370	
M	Al	< 0.001900	M	Fe		0.002100	M	Nb	< 0.000110	O	Si		0.003300	M	Zr	< 0.001700	
M	As	< 0.005700	M	Ga	<	0.001100	M	Nd	< 0.000110	M	Sm	<	0.000110				
s	Au	<	M	Gd	<	0.000110	M	Ni	< 0.002500	M	Sn	<	0.001600				
M	B	< 0.005000	M	Ge	<	0.004300	M	Os	< 0.000110	M	Sr	<	0.000810				
M	Ba	< 0.001300	M	Hf	<	0.000310	O	P	< 0.052000	M	Ta	<	0.000110				
M	Be	< 0.000610	M	Hg	<	0.001200	M	Pb	< 0.001900	M	Tb	<	0.000110				
M	Bi	< 0.002700	M	Ho	<	0.000110	M	Pd	0.003600	M	Te	<	0.002600				
O	Ca	0.001400	M	In		0.000071	M	Pr	< 0.000110	M	Th	<	0.004100				
M	Cd	< 0.000410	M	Ir	<	0.000210	M	Pt	0.008800	M	Ti	<	0.003100				
M	Ce	< 0.000210	O	K	<	0.011000	M	Rb	< 0.001500	M	Tl	<	0.000110				
M	Co	< 0.000210	M	La	<	0.000110	M	Re	< 0.000110	M	Tm	<	0.000110				
O	Cr	< 0.005200	O	Li		0.000063	M	Rh	< 0.001500	M	U	<	0.000110				
M	Cs	< 0.000810	M	Lu	<	0.000110	M	Ru	< 0.001700	O	V	<	0.002700				
O	Cu	0.001000	O	Mg		0.000230	O	S	< 0.052000	M	W	<	0.003900				
M	Dy	< 0.000110	O	Mn	<	0.002100	M	Sb	0.003200	M	Y	<	0.000110				
M	Er	< 0.000110	M	Mo	<	0.001400	O	Sc	< 0.001400	M	Yb	<	0.000110				

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 - 196.97 +3 6 Au(Cl)63

Chemical Compatibility -Stable in HCl, and HNO3, as the chloride complex. Avoid basic media. Stable with most metals and inorganic anions in acidic media.

Stability - 2-100 ppb levels. 2-10 ppb Au is stable for #1day maximum in 1% HNO3 / LDPE container. 100 ppb is stable for #2 days maximum in 1% HNO3 / LDPE container. 1-10,000 ppm solutions chemically stable for years in 10% HCl / LDPE container.

Au Containing Samples (Preparation and Solution) - Metal (Aqua Regia); Oxides (Soluble in HCl); Ores (Dissolve in HCl / 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 197 amu	5 ppt	N/A	181Ta16O
ICP-OES 208.209 nm	0.04/0.01 µg/mL	1	Ir, Re
ICP-OES 242.795 nm	0.02/0.003 µg/mL	1	Mn, Os, Th, Ta, Pt, Co, F
ICP-OES 267.595 nm	0.03/0.003 µg/mL	1	Nb, Ta, U, Cr, Th, Rh, Ru

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

September 01, 2020

- 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 01, 2024

- 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

Energy Laboratories Inc

Standard LOG

Standard ID:	ME210105HG		
Standard Name	HG Stock	Type:	Primary
Date Prepared	1/4/2021	BY:	Ron Hunt
Date Expires:	1/5/2022		
Department	ME	Status:	Expired
Vendor:	Inorganic Ventures		
Lot Number:	R2-HG696409		
Balance ID:			

Comments:

Chemical / Solvent Used	BottleNo	Amt	Units	Expires
Mercury Single Analyte Custom Grade Sol	13412	125	mL	9/15/2024

Final Volume:
125 mL

Stock Source **Base Units** **Amount Added**

Analytes **CAS** Conc: **ug/mL**

300 Technology Drive
Christiansburg, VA 24073 - USA
inorganicventures.com
tel: 800.669.6799 - 540.585.3030
fax: 540.585.3012
sales@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:	Single Analyte Custom Grade Solution
Catalog Number:	CGHG1
Lot Number:	R2-HG696409
Matrix:	5% (v/v) HNO3
Value / Analyte(s):	1 000 µg/mL ea: Mercury
Starting Material:	Hg metal
Starting Material Lot#:	1959
Starting Material Purity:	99.9994%

ID #: 13412
Opened:
Mercury Single Analyte Custom Grade Solutic
Expires: 9/15/2024
Rec'd: 1/4/2021
Energy Laboratories Inc 1120 So. 27th Street
Billings MT 59107

3.0 CERTIFIED VALUES AND UNCERTAINTIES

Certified Value: 1002 ± 3 µg/mL

Density: 1.026 g/mL (measured at 20 ± 4 °C)

Assay Information:

Assay Method #1 **1004 ± 8 µg/mL**
ICP Assay NIST SRM 3133 Lot Number: 160921

Assay Method #2 **1003 ± 3 µg/mL**
EDTA NIST SRM 928 Lot Number: 928

Assay Method #3 **1001 ± 3 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.

O	Ag	0.001159	M	Eu	<	0.000201	O	Na	0.000435	M	Se	<	0.015915	O	Zn	<	0.001510
O	Al	0.000090	O	Fe		0.000113	M	Nb	< 0.000201	O	Si		0.000525	M	Zr	<	0.000201
M	As	< 0.000402	M	Ga	<	0.000201	M	Nd	< 0.000201	M	Sm	<	0.000201				
M	Au	< 0.003631	M	Gd	<	0.000201	M	Ni	< 0.000402	M	Sn	<	0.001007				
M	B	< 0.001208	M	Ge	<	0.000201	M	Os	< 0.000605	M	Sr	<	0.000201				
M	Ba	< 0.000201	M	Hf	<	0.000201	O	P	< 0.032370	M	Ta	<	0.000201				
M	Be	< 0.000201	s	Hg	<		M	Pb	< 0.000201	M	Tb	<	0.000201				
M	Bi	< 0.000201	M	Ho	<	0.000201	M	Pd	< 0.000403	M	Te	<	0.002216				
O	Ca	0.000746	M	In	<	0.000201	M	Pr	< 0.000201	M	Th	<	0.000201				
M	Cd	< 0.000201	M	Ir	<	0.000201	M	Pt	< 0.000402	M	Ti	<	0.000402				
M	Ce	< 0.000201	O	K		0.002007	M	Rb	< 0.000201	O	Tl	<	0.016508				
M	Co	< 0.000201	M	La	<	0.000201	M	Re	< 0.000201	M	Tm	<	0.000201				
O	Cr	< 0.003021	O	Li	<	0.000107	M	Rh	< 0.000201	M	U	<	0.008058				
M	Cs	< 0.001208	M	Lu	<	0.000201	M	Ru	< 0.000201	M	V	<	0.000201				
M	Cu	< 0.000402	O	Mg		0.000096	O	S	< 0.053950	M	W	<	0.000604				
M	Dy	< 0.000201	M	Mn	<	0.000604	M	Sb	< 0.001208	M	Y	<	0.000201				
M	Er	< 0.000201	M	Mo		0.000971	M	Sc	< 0.000201	M	Yb	<	0.000201				

M - Checked by ICP-MS O - Checked by ICP-OES i - Spectral Interference
n - Not Checked For s - Solution Standard Element

6.0 INTENDED USE

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

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

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

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

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

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

Atomic Weight; Valence; Coordination Number; Chemical Form in Solution - 200.59 +2 4 Hg(OH)(aq) 1+

Chemical Compatibility - Stable in HNO3. Avoid basic media forming insoluble carbonate. The sulfide, basic carbonate, oxalate, phosphate, arsenite, arsenate and iodide are insoluble in water.

Stability - 2-100 ppb levels not stable in 1% HNO3 / LDPE container, stable in 10% HNO3 packaged in borosilicate glass. 1-100 ppm levels stable in 7% HNO3 packaged in borosilicate glass. 1000-10,000 ppm solutions are chemically stable for years in 5-10% HNO3 / LDPE container.

Hg Containing Samples (Preparation and Solution) - Metal (soluble in HNO3); Oxide (Soluble in HNO3); Ores and Organic based (The literature has more references to the preparation of Hg containing samples than any other element. Please consult the literature for your specific sample type, since such preparations are prone to error. Or e-mail our technical staff and we will contact you to discuss your particular sample preparation questions in further detail.).

Atomic Spectroscopic Information (ICP-OES D.L.s are given as radial/axial view):

Technique/Line	**Estimated D.L.**	**Order**	**Interferences** (underlined indicates severe)
ICP-MS 202 amu	9 ppt	n/a	186W16O
ICP-OES 184.950 nm	0.03 / 0.005 µg/mL	1	
ICP-OES 194.227 nm	0.03 / 0.005 µg/mL	1	V
ICP-OES 253.652 nm	0.1 / 0.03 µg/mL	1	Ta, Co, Th ,Rh , Fe, U

8.0 HAZARDOUS INFORMATION

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

9.0 HOMOGENEITY

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

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

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

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

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

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

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 15, 2020

- 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 15, 2024

- 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

Energy Laboratories Inc

Standard LOG

Standard ID:	ME210726 MSCAL2B		
Standard Name	MSCAL 2B	Type:	Primary
Date Prepared	7/26/2021	BY:	Alyssa A. espinoza
Date Expires:	7/26/2022		
Department	ME	Status:	Open
Vendor:	Inorganic Ventures		
Lot Number:	S2-MEB702845		
Balance ID:			
Comments:	Opened 7/26/2021; Expires 7/26/2022		

Chemical / Solvent Used	BottleNo	Amt	Units	Expires
Multi Analyte Custom Grade Solution	13652		mL	7/26/2022

Final Volume: mL

Stock Source **Base Units** **Amount Added**

Analytes **CAS** Conc: **ug/mL**

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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:	EL-MSCAL-3C
Lot Number:	S2-MEB702844
Matrix:	3% (v/v) HNO3 tr. HF
Value / Analyte(s):	400 µg/mL ea: Silicon, 100 µg/mL ea: Tin, Titanium, Molybdenum, Antimony

ID #: 13651
Opened:
Multi Analyte Custom Grade Solution
Expires: 3/8/2025
Rec'd: 3/18/2021
Energy Laboratories Inc 1120 So. 27th Street
Billings MT 59107

3.0 CERTIFIED VALUES AND UNCERTAINTIES

ANALYTE	CERTIFIED VALUE	ANALYTE	CERTIFIED VALUE
Antimony, Sb	100.0 ± 0.8 µg/mL	Molybdenum, Mo	100.0 ± 0.6 µg/mL
Silicon, Si	400.1 ± 3.0 µg/mL	Tin, Sn	100.0 ± 0.6 µg/mL
Titanium, Ti	100.0 ± 0.7 µg/mL		

Density: 1.015 g/mL (measured at 20 ± 4 °C)

Assay Information:

ANALYTE	METHOD	NIST SRM#	SRM LOT#
Mo	ICP Assay	3134	130418
Sb	ICP Assay	3102a	140911
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 Expended 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 Expended 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

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

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

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

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

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

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

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

8.0 HAZARDOUS INFORMATION

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

9.0 HOMOGENEITY

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

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

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

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

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

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

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11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

March 08, 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

- March 08, 2025

- 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

Michael J Booth

Certifying Officer:

Paul Gaines
Chairman / Senior Technical Director

Paul R Gaines

Energy Laboratories Inc

Standard LOG

Standard ID:	ME210511 MSCAL 3C		
Standard Name	MSCAL 3C	Type:	Primary
Date Prepared	5/11/2021	BY:	Alyssa A. espinoza
Date Expires:	5/11/2022		
Department	ME	Status:	Open
Vendor:	Inorganic Ventures		
Lot Number:	P2-MEB682620		
Balance ID:			
Comments:	Opened 5/11/21; expires 5/11/22		

Chemical / Solvent Used	BottleNo	Amt	Units	Expires
Multi Analyte Custom Grade Solution	13651	250	mL	5/11/2022

Final Volume:
250 mL

Stock Source **Base Units** **Amount Added**

Analytes **CAS** Conc: **ug/mL**

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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:	EL-MSCAL-3C
Lot Number:	S2-MEB702844
Matrix:	3% (v/v) HNO3 tr. HF
Value / Analyte(s):	400 µg/mL ea: Silicon, 100 µg/mL ea: Tin, Titanium, Molybdenum, Antimony

ID #: 13651
Opened:
Multi Analyte Custom Grade Solution
Expires: 3/8/2025
Rec'd: 3/18/2021
Energy Laboratories Inc 1120 So. 27th Street
Billings MT 59107

3.0 CERTIFIED VALUES AND UNCERTAINTIES

ANALYTE	CERTIFIED VALUE	ANALYTE	CERTIFIED VALUE
Antimony, Sb	100.0 ± 0.8 µg/mL	Molybdenum, Mo	100.0 ± 0.6 µg/mL
Silicon, Si	400.1 ± 3.0 µg/mL	Tin, Sn	100.0 ± 0.6 µg/mL
Titanium, Ti	100.0 ± 0.7 µg/mL		

Density: 1.015 g/mL (measured at 20 ± 4 °C)

Assay Information:

ANALYTE	METHOD	NIST SRM#	SRM LOT#
Mo	ICP Assay	3134	130418
Sb	ICP Assay	3102a	140911
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 Expended 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 Expended 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

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

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

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

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

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

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

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

8.0 HAZARDOUS INFORMATION

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

9.0 HOMOGENEITY

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

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

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

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

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

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

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11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

March 08, 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

- March 08, 2025

- 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

Michael J Booth

Certifying Officer:

Paul Gaines
Chairman / Senior Technical Director

Paul R Gaines

Energy Laboratories Inc

Standard LOG

Standard ID:	ME210610 MSCAL-5A		
Standard Name	EL-MSCAL-5A	Type:	Primary
Date Prepared	6/10/2021	BY:	Alyssa A. espinoza
Date Expires:	6/10/2022		
Department	ME	Status:	Empty/Disposed
Vendor:	Inorganic Ventures		
Lot Number:	P2-MEB687200		
Balance ID:			
Comments:	Opened 6/10/21; Expires 6/10/22		

Chemical / Solvent Used	BottleNo	Amt	Units	Expires
Multi Analyte Custom Grade Solution	13476	500	mL	6/10/2022

Final Volume:
500 mL

Stock Source	**Base Units**	**Amount Added**
Analytes	**CAS**	Conc: **ug/mL**

INORGANIC VENTURES™
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inorganicventures.com

tel: 800.669.6799 · 540.585.3030
fax: 540.585.3012
info@inorganicventures.com

CERTIFICATE OF ANALYSIS

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:	EL-MSCAL-5A
Lot Number:	R2-MEB695692
Matrix:	3% (v/v) HNO3
Value / Analyte(s):	5 000 µg/mL ea: Calcium, Magnesium, Potassium, Sodium, 500 µg/mL ea: Phosphorus, Iron, 250 µg/mL ea: Lithium

ID #: 13476
Opened:_____
Multi Analyte Custom Grade Solution
Expires: 8/12/2024
Rec'd: 1/15/2021
Energy Laboratories Inc 1120 So. 27th Street
Billings MT 59107

3.0 CERTIFIED VALUES AND UNCERTAINTIES

ANALYTE	CERTIFIED VALUE	ANALYTE	CERTIFIED VALUE
Calcium, Ca	5 000 ± 20 µg/mL	Iron, Fe	500.0 ± 2.1 µg/mL
Lithium, Li	250.0 ± 1.1 µg/mL	Magnesium, Mg	5 000 ± 20 µg/mL
Phosphorus, P	500.1 ± 2.9 µg/mL	Potassium, K	5 000 ± 19 µg/mL
Sodium, Na	5 000 ± 18 µg/mL		

Density: 1.076 g/mL (measured at 20 ± 4 °C)

Assay Information:

ANALYTE	METHOD	NIST SRM#	SRM LOT#
Ca	ICP Assay	3109a	130213
Ca	EDTA	928	928
Fe	ICP Assay	3126a	140812
Fe	EDTA	928	928
K	ICP Assay	3141a	140813
K	Gravimetric		See Sec. 4.2
Li	ICP Assay	3129a	100714
Li	Gravimetric		See Sec. 4.2
Mg	ICP Assay	3131a	140110
Mg	EDTA	928	928
Na	ICP Assay	3152a	120715
Na	Gravimetric		See Sec. 4.2
P	ICP Assay	3139a	060717
P	Acidimetric	84L	84L

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

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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

- 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.

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, EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

August 12, 2020

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

11.2 Lot Expiration Date

- August 12, 2024

- 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

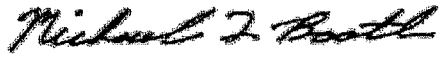
- Sealed TCT Bag Open Date: _____

- 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

Energy Laboratories Inc

Spike LOG

Standard ID:	ME210812 HGPRIMARY		
Standard Name	Primary Hg Stock 2 PPM	Type:	Primary
Date Prepared	8/12/2021	BY:	Parker A. Pearsall
Date Expires:	1/5/2022		
Department	ME	Status:	Expired
Vendor:	Inorganic Ventures		
Lot Number:			
Balance ID:			

Comments: Made with different HG stock than QCS

Chemical / Solvent Used	BottleNo	Amt	Units	Expires
Nitric Acid Instra Analyzed 0000267725	13706	0.5	mL	8/11/2025
Hydrochloric Acid, 36.5-38.0% 000027130	13503	0.25	mL	9/15/2025

Final Volume:
25 mL

Stock Source		**Base Units**	**Amount Added**
ME210105HG	HG Stock	ug/mL	0.05 mL
ME210105AU	Au Stock	ug/mL	0.05 mL

Analytes	**CAS**	Conc:	**ug/mL**

Energy Laboratories Inc

Standard LOG

Standard ID:	ME210105AU		
Standard Name	Au Secondary Stock	Type:	Secondary
Date Prepared	1/4/2021	BY:	Ron Hunt
Date Expires:	1/4/2022		
Department	ME	Status:	Empty/Disposed
Vendor:	Inorganic Ventures		
Lot Number:	R2-AU695955		
Balance ID:			
Comments:	Opened 1/4/2021; Expires 1/4/2021		

Chemical / Solvent Used	BottleNo	Amt	Units	Expires
Gold Single Analyte Custom Grade Soluti	13396	500	mL	1/4/2021

Final Volume:
500 mL

Stock Source **Base Units** **Amount Added**

Analytes **CAS** Conc: **ug/mL**

300 Technology Drive
Christiansburg, VA 24073 - USA
inorganicventures.com
tel: 800.669.6799 - 540.585.3030
fax: 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:	Single Analyte Custom Grade Solution
Catalog Number:	CGAU1
Lot Number:	R2-AU695955
Matrix:	10% (v/v) HCl
Value / Analyte(s):	1 000 µg/mL ea: Gold
Starting Material:	H[AuCl4]
Starting Material Lot#:	2340
Starting Material Purity:	99.9983%

ID #: 13396
Opened:
Gold Single Analyte Custom Grade Solution
Expires: 9/1/2024
Rec'd: 1/4/2021
Energy Laboratories Inc 1120 So. 27th Street
Billings MT 59107

3.0 CERTIFIED VALUES AND UNCERTAINTIES

Certified Value: 1001 ± 5 µg/mL

Density: 1.022 g/mL (measured at 20 ± 4 °C)

Assay Information:

Assay Method #1 **1002 ± 4 µg/mL**
ICP Assay NIST SRM 3121 Lot Number: 991806

Assay Method #2 **1001 ± 5 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	0.029000	M	Eu	<	0.000210	O	Na	0.003300	M	Se	<	0.014000	M	Zn	0.000370	
M	Al	< 0.001900	M	Fe	0.002100	M	Nb	<	0.000110	O	Si	0.003300	M	Zr	<	0.001700	
M	As	< 0.005700	M	Ga	<	0.001100	M	Nd	<	0.000110	M	Sm	<	0.000110			
s	Au	<	M	Gd	<	0.000110	M	Ni	<	0.002500	M	Sn	<	0.001600			
M	B	< 0.005000	M	Ge	<	0.004300	M	Os	<	0.000110	M	Sr	<	0.000810			
M	Ba	< 0.001300	M	Hf	<	0.000310	O	P	<	0.052000	M	Ta	<	0.000110			
M	Be	< 0.000610	M	Hg	<	0.001200	M	Pb	<	0.001900	M	Tb	<	0.000110			
M	Bi	< 0.002700	M	Ho	<	0.000110	M	Pd	0.003600	M	Te	<	0.002600				
O	Ca	0.001400	M	In	0.000071	M	Pr	<	0.000110	M	Th	<	0.004100				
M	Cd	< 0.000410	M	Ir	<	0.000210	M	Pt	0.008800	M	Ti	<	0.003100				
M	Ce	< 0.000210	O	K	<	0.011000	M	Rb	<	0.001500	M	Tl	<	0.000110			
M	Co	< 0.000210	M	La	<	0.000110	M	Re	<	0.000110	M	Tm	<	0.000110			
O	Cr	< 0.005200	O	Li	0.000063	M	Rh	<	0.001500	M	U	<	0.000110				
M	Cs	< 0.000810	M	Lu	<	0.000110	M	Ru	<	0.001700	O	V	<	0.002700			
O	Cu	0.001000	O	Mg	0.000230	O	S	<	0.052000	M	W	<	0.003900				
M	Dy	< 0.000110	O	Mn	<	0.002100	M	Sb	0.003200	M	Y	<	0.000110				
M	Er	< 0.000110	M	Mo	<	0.001400	O	Sc	<	0.001400	M	Yb	<	0.000110			

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 - 196.97 +3 6 Au(Cl)63

Chemical Compatibility -Stable in HCl, and HNO3, as the chloride complex. Avoid basic media. Stable with most metals and inorganic anions in acidic media.

Stability - 2-100 ppb levels. 2-10 ppb Au is stable for #1day maximum in 1% HNO3 / LDPE container. 100 ppb is stable for #2 days maximum in 1% HNO3 / LDPE container. 1-10,000 ppm solutions chemically stable for years in 10% HCl / LDPE container.

Au Containing Samples (Preparation and Solution) - Metal (Aqua Regia); Oxides (Soluble in HCl); Ores (Dissolve in HCl / 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 197 amu	5 ppt	N/A	181Ta16O
ICP-OES 208.209 nm	0.04/0.01 µg/mL	1	Ir, Re
ICP-OES 242.795 nm	0.02/0.003 µg/mL	1	Mn, Os, Th, Ta, Pt, Co, F
ICP-OES 267.595 nm	0.03/0.003 µg/mL	1	Nb, Ta, U, Cr, Th, Rh, Ru

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 01, 2020

- 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 01, 2024

- 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

Energy Laboratories Inc

Standard LOG

Standard ID:	ME210105HG		
Standard Name	HG Stock	Type:	Primary
Date Prepared	1/4/2021	BY:	Ron Hunt
Date Expires:	1/5/2022		
Department	ME	Status:	Expired
Vendor:	Inorganic Ventures		
Lot Number:	R2-HG696409		
Balance ID:			

Comments:

Chemical / Solvent Used	BottleNo	Amt	Units	Expires
Mercury Single Analyte Custom Grade Sol	13412	125	mL	9/15/2024

Final Volume:
125 mL

Stock Source **Base Units** **Amount Added**

Analytes **CAS** Conc: **ug/mL**

300 Technology Drive
Christiansburg, VA 24073 - USA
inorganicventures.com
tel: 800.669.6799 - 540.585.3030
fax: 540.585.3012
sales@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:	Single Analyte Custom Grade Solution
Catalog Number:	CGHG1
Lot Number:	R2-HG696409
Matrix:	5% (v/v) HNO3
Value / Analyte(s):	1 000 µg/mL ea: Mercury
Starting Material:	Hg metal
Starting Material Lot#:	1959
Starting Material Purity:	99.9994%

ID #: 13412
Opened:
Mercury Single Analyte Custom Grade Solutic
Expires: 9/15/2024
Rec'd: 1/4/2021
Energy Laboratories Inc 1120 So. 27th Street
Billings MT 59107

3.0 CERTIFIED VALUES AND UNCERTAINTIES

Certified Value: 1002 ± 3 µg/mL

Density: 1.026 g/mL (measured at 20 ± 4 °C)

Assay Information:

Assay Method #1 **1004 ± 8 µg/mL**
ICP Assay NIST SRM 3133 Lot Number: 160921

Assay Method #2 **1003 ± 3 µg/mL**
EDTA NIST SRM 928 Lot Number: 928

Assay Method #3 **1001 ± 3 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.

O	Ag	0.001159	M	Eu	<	0.000201	O	Na	0.000435	M	Se	<	0.015915	O	Zn	<	0.001510
O	Al	0.000090	O	Fe		0.000113	M	Nb	< 0.000201	O	Si		0.000525	M	Zr	<	0.000201
M	As	< 0.000402	M	Ga	<	0.000201	M	Nd	< 0.000201	M	Sm	<	0.000201				
M	Au	< 0.003631	M	Gd	<	0.000201	M	Ni	< 0.000402	M	Sn	<	0.001007				
M	B	< 0.001208	M	Ge	<	0.000201	M	Os	< 0.000605	M	Sr	<	0.000201				
M	Ba	< 0.000201	M	Hf	<	0.000201	O	P	< 0.032370	M	Ta	<	0.000201				
M	Be	< 0.000201	s	Hg	<		M	Pb	< 0.000201	M	Tb	<	0.000201				
M	Bi	< 0.000201	M	Ho	<	0.000201	M	Pd	< 0.000403	M	Te	<	0.002216				
O	Ca	0.000746	M	In	<	0.000201	M	Pr	< 0.000201	M	Th	<	0.000201				
M	Cd	< 0.000201	M	Ir	<	0.000201	M	Pt	< 0.000402	M	Ti	<	0.000402				
M	Ce	< 0.000201	O	K		0.002007	M	Rb	< 0.000201	O	Tl	<	0.016508				
M	Co	< 0.000201	M	La	<	0.000201	M	Re	< 0.000201	M	Tm	<	0.000201				
O	Cr	< 0.003021	O	Li	<	0.000107	M	Rh	< 0.000201	M	U	<	0.008058				
M	Cs	< 0.001208	M	Lu	<	0.000201	M	Ru	< 0.000201	M	V	<	0.000201				
M	Cu	< 0.000402	O	Mg		0.000096	O	S	< 0.053950	M	W	<	0.000604				
M	Dy	< 0.000201	M	Mn	<	0.000604	M	Sb	< 0.001208	M	Y	<	0.000201				
M	Er	< 0.000201	M	Mo		0.000971	M	Sc	< 0.000201	M	Yb	<	0.000201				

M - Checked by ICP-MS O - Checked by ICP-OES i - Spectral Interference
n - Not Checked For s - Solution Standard Element

6.0 INTENDED USE

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

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

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

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

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

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

Atomic Weight; Valence; Coordination Number; Chemical Form in Solution - 200.59 +2 4 Hg(OH)(aq) 1+

Chemical Compatibility - Stable in HNO3. Avoid basic media forming insoluble carbonate. The sulfide, basic carbonate, oxalate, phosphate, arsenite, arsenate and iodide are insoluble in water.

Stability - 2-100 ppb levels not stable in 1% HNO3 / LDPE container, stable in 10% HNO3 packaged in borosilicate glass. 1-100 ppm levels stable in 7% HNO3 packaged in borosilicate glass. 1000-10,000 ppm solutions are chemically stable for years in 5-10% HNO3 / LDPE container.

Hg Containing Samples (Preparation and Solution) - Metal (soluble in HNO3); Oxide (Soluble in HNO3); Ores and Organic based (The literature has more references to the preparation of Hg containing samples than any other element. Please consult the literature for your specific sample type, since such preparations are prone to error. Or e-mail our technical staff and we will contact you to discuss your particular sample preparation questions in further detail.).

Atomic Spectroscopic Information (ICP-OES D.L.s are given as radial/axial view):

Technique/Line	Estimated D.L.	Order	Interferences (underlined indicates severe)
ICP-MS 202 amu	9 ppt	n/a	186W16O
ICP-OES 184.950 nm	0.03 / 0.005 µg/mL	1	
ICP-OES 194.227 nm	0.03 / 0.005 µg/mL	1	V
ICP-OES 253.652 nm	0.1 / 0.03 µg/mL	1	Ta, Co, Th ,Rh , Fe, U

8.0 HAZARDOUS INFORMATION

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

9.0 HOMOGENEITY

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

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

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

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

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

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

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 15, 2020

- 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 15, 2024

- 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

Energy Laboratories Inc

Standard LOG

Standard ID:	ME210726 MSCAL2B		
Standard Name	MSCAL 2B	Type:	Primary
Date Prepared	7/26/2021	BY:	Alyssa A. espinoza
Date Expires:	7/26/2022		
Department	ME	Status:	Open
Vendor:	Inorganic Ventures		
Lot Number:	S2-MEB702845		
Balance ID:			
Comments:	Opened 7/26/2021; Expires 7/26/2022		

Chemical / Solvent Used	BottleNo	Amt	Units	Expires
Multi Analyte Custom Grade Solution	13652		mL	7/26/2022

Final Volume: mL

Stock Source **Base Units** **Amount Added**

Analytes **CAS** Conc: **ug/mL**

INORGANIC VENTURES
Refine your results. Redefine your industry.

Certificate of Analysis

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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:	EL-MSCAL-2B
Lot Number:	S2-MEB702845
Matrix:	5% (v/v) HNO3
Value / Analyte(s):	100 µg/mL ea:

Aluminum, Arsenic,
Boron, Barium,
Beryllium, Cadmium,
Cobalt, Chromium,
Copper, Iron,
Manganese, Nickel,
Lead, Selenium,
Strontium, Thorium,
Thallium, Uranium,
Vanadium, Zinc,

40 µg/mL ea:
Silver

ID #: 13652
Opened:_____
Multi Analyte Custom Grade Solution
Expires: 3/8/2025
Rec'd: 3/18/2021
Energy Laboratories Inc 1120 So. 27th Street
Billings MT 59107

3.0 CERTIFIED VALUES AND UNCERTAINTIES

ANALYTE	CERTIFIED VALUE	ANALYTE	CERTIFIED VALUE
Aluminum, Al	100.0 ± 0.4 µg/mL	Arsenic, As	100.0 ± 0.9 µg/mL
Barium, Ba	100.0 ± 0.5 µg/mL	Beryllium, Be	100.0 ± 0.7 µg/mL
Boron, B	99.9 ± 0.7 µg/mL	Cadmium, Cd	100.0 ± 0.5 µg/mL
Chromium, Cr	100.0 ± 0.8 µg/mL	Cobalt, Co	100.0 ± 0.6 µg/mL
Copper, Cu	100.0 ± 0.5 µg/mL	Iron, Fe	100.1 ± 0.4 µg/mL
Lead, Pb	100.0 ± 0.6 µg/mL	Manganese, Mn	100.0 ± 0.5 µg/mL
Nickel, Ni	100.0 ± 0.6 µg/mL	Selenium, Se	100.0 ± 0.7 µg/mL
Silver, Ag	39.99 ± 0.18 µg/mL	Strontium, Sr	100.0 ± 0.4 µg/mL
Thallium, Tl	100.0 ± 0.6 µg/mL	Thorium, Th	100.0 ± 0.5 µg/mL
Uranium, U	100.0 ± 0.5 µg/mL	Vanadium, V	100.0 ± 0.5 µg/mL
Zinc, Zn	100.0 ± 0.5 µg/mL		

Density: 1.033 g/mL (measured at 20 ± 4 °C)

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
As	ICP Assay	3103a	100818
B	ICP Assay	3107	110830
Ba	ICP Assay	3104a	140909
Ba	Gravimetric		See Sec. 4.2
Be	ICP Assay	3105a	090514
Cd	ICP Assay	3108	130116
Cd	EDTA	928	928
Co	ICP Assay	3113	190630
Co	EDTA	928	928
Cr	ICP Assay	3112a	170630
Cu	ICP Assay	3114	121207
Cu	EDTA	928	928
Fe	ICP Assay	3126a	140812
Fe	EDTA	928	928
Fe	Calculated		See Sec. 4.2
Mn	ICP Assay	3132	050429
Mn	EDTA	928	928
Ni	ICP Assay	3136	120619
Ni	EDTA	928	928
Pb	ICP Assay	3128	101026
Pb	EDTA	928	928
Se	ICP Assay	3149	100901
Se	Calculated		See Sec. 4.2
Sr	EDTA	928	928
Sr	ICP Assay	Traceable to 3153a	K2-SR650985
Sr	Calculated		See Sec. 4.2
Th	EDTA	928	928
Th	Calculated		See Sec. 4.2
Tl	ICP Assay	3158	151215
U	ICP Assay	3164	080521
U	Calculated		See Sec. 4.2
V	ICP 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 (±) = $U_{CRM/RM} = k\,(u^2_{char} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{1/2}$

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

Certified Abundance:

IV's Certified Abundance

Isotope	Atom %
Uranium 238U	99.8 ± 0.1
Uranium 235U	0.24 ± 0.05

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

March 08, 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

- **March 08, 2025**

- 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

Energy Laboratories Inc

Standard LOG

Standard ID:	ME210901 10 PPB STANDARD		
Standard Name:	10 ppb Standard	Type:	Secondary
Date Prepared:	9/1/2021	BY:	Cindy Rohrer
Date Expires:	1/4/2022		
Department:	ME	Status:	Expired
Vendor:	Inorganic Ventures		
Lot Number:			
Balance ID:			
Comments:	Made fresh daily		

Chemical / Solvent Used	BottleNo	Amt	Units	Exp
Nitric Acid, 69.0-70.0%,0000282671	14178	0.5	mL	4/11/
Milli-Q H2O	391	43.5	mL	6/1/2
Hydrochloric Acid Instra Analyzed 000	14028	0.25	mL	3/29/

Final Volume: 50 mL

Stock Source		Base Units	Amount Added
ME210901 100 PP	100 ppb Standard	ug/mL	5 mL

Analytes	CAS	Conc:	ug/mL

Energy Laboratories Inc

Standard LOG

Standard ID: ME210901 1 PPB STANDARD
Standard Name: 1 PPB STANDARD
Date Prepared: 9/1/2021
Date Expires: 1/4/2022
Department:
Vendor:
Lot Number:
Balance ID:

Type: Secondary
BY: Cindy Rohrer
Status: Expired

Comments: Made fresh daily

Chemical / Solvent Used	BottleNo	Amt	Units	Exp
Hydrochloric Acid Instra Analyzed 000	14028	0.25	mL	3/29/
Nitric Acid, 69.0-70.0%,0000277202	13781	0.5	mL	1/14/
Milli-Q H2O	391	39.25	mL	6/1/2

Final Volume: 50 mL

Stock Source	Base Units	Amount Added
ME210901 10 PPB 10 ppb Standard	ug/mL	10 mL

Analytes	CAS	Conc: ug/mL

Energy Laboratories Inc

Standard LOG

Standard ID: ME210901 0.5 PPB STANDARD
Standard Name: 0.5 ppb Standard
Date Prepared: 9/1/2021
Date Expires: 1/4/2022
Department: ME
Vendor: Inorganic Ventures
Lot Number:
Balance ID:

Type: Secondary
BY: Cindy Rohrer
Status: Expired

Comments: Made fresh daily

Chemical / Solvent Used	BottleNo	Amt	Units	Exp
Nitric Acid, 69.0-70.0%,0000282671	14178	0.5	mL	4/11/
Milli-Q H2O	391	46	mL	6/1/2
Hydrochloric Acid Instra Analyzed 000	14028	0.25	mL	3/29/

Final Volume: 50 mL

Stock Source		Base Units	Amount Added
ME210901 1 PPB	1 PPB STANDARD	ug/mL	25 mL

Analytes	CAS	Conc:	ug/mL

Energy Laboratories Inc

Standard LOG

Standard ID:	ME210901 0.1 PPB STANDARD		
Standard Name:	0.1 ppb Standard	Type:	Secondary
Date Prepared:	9/1/2021	BY:	Cindy Rohrer
Date Expires:	1/4/2022		
Department:	ME	Status:	Expired
Vendor:	Inorganic Ventures		
Lot Number:			
Balance ID:			
Comments:	Made fresh daily		

Chemical / Solvent Used	BottleNo	Amt	Units	Exp
Hydrochloric Acid Instra Analyzed 000	14028	0.25	mL	3/29/
Nitric Acid, 69.0-70.0%,0000282671	14178	0.5	mL	4/11/
Milli-Q H2O	391	48	mL	6/1/2

Final Volume: 50 mL

Stock Source	Base Units	Amount Added
ME210901 0.5 PPB 0.5 ppb Standard	ug/mL	10 mL

Analytes	CAS	Conc:	ug/mL

Energy Laboratories Inc

Standard LOG

Standard ID: ME210901 0.05 PPB STANDARD
Standard Name: 0.05 ppb Standard
Date Prepared: 9/1/2021
Date Expires: 1/4/2022
Department: ME
Vendor: Inorganic Ventures
Lot Number:
Balance ID:

Type: Secondary
BY: Cindy Rohrer
Status: Expired

Comments: Made fresh daily

Chemical / Solvent Used	BottleNo	Amt	Units	Exp
Nitric Acid, 69.0-70.0%,0000282671	14178	0.5	mL	4/11/
Milli-Q H2O	391	48	mL	6/1/2
Hydrochloric Acid Instra Analyzed 000	14028	0.5	mL	3/29/

Final Volume: 50 mL

Stock Source	Base Units	Amount Added
ME210901 0.1 PPB 0.1 ppb Standard	ug/mL	25 mL

Analytes	CAS	Conc:	ug/mL

Energy Laboratories Inc

Standard LOG

Standard ID: ME210901 0.025 PPB STANDARD
Standard Name: 0.025 ppb Standard
Date Prepared: 9/1/2021
Date Expires: 1/4/2022
Department: ME
Vendor: Inorganic Ventures
Lot Number:
Balance ID:

Type: Secondary
BY: Cindy Rohrer
Status: Expired

Comments: Made fresh daily

Chemical / Solvent Used	BottleNo	Amt	Units	Exp
Nitric Acid, 69.0-70.0%,0000282671	14178	0.5	mL	4/11/
Milli-Q H2O	391	48	mL	6/1/2
Hydrochloric Acid Instra Analyzed 000	14028	0.5	mL	3/29/

Final Volume: 50 mL

Stock Source	Base Units	Amount Added
ME210901 0.05 PP 0.05 ppb Standard	ug/mL	25 mL

Analytes	CAS	Conc:	ug/mL

Energy Laboratories Inc

Standard LOG

Standard ID: ME211206 ICV STANDARD
Standard Name ICV for ICPMS Standards
Date Prepared 12/6/2021
Date Expires: 4/30/2022
Department
Vendor:
Lot Number:
Balance ID:

Type: Secondary
BY: Stacy R. Hendricks
Status: Open

Comments: Made fresh daily

Chemical / Solvent Used	BottleNo	Amt	Units	Exp
Hydrochloric Acid Instra Analyzed 000	14028	1	mL	3/29/
Nitric Acid Instra Analyzed 000028856	14572	2	mL	6/28/
Milli-Q H2O	391		mL	6/1/2

Final Volume: 100 mL

Stock Source		Base Units	Amount Added
ME210211 U Seco	U 2' QCS	ug/mL	0.05 mL
ME211206 Th QC	Th QCS Stock	ug/mL	0.05 mL
ME210901 Hg Sec	Secondary Hg Stock 2 PPM	ug/mL	0.05 mL
ME211124 EL-MSI	EL-MSICV-2	ug/mL	0.05 mL
ME210817 ICV-1A	EL-MSICV-1A	ug/mL	0.05 mL
ME210903 Ce, La	Ce, La Secondary solution	ug/mL	0.05 mL

Analytes	CAS	Conc:	mg/L

Energy Laboratories Inc

Spike LOG

Standard ID: ME210211 U SECOND SOURCE
Standard Name U 2' QCS
Type: Secondary
Date Prepared 2/11/2021
BY: Alyssa A. Olson
Date Expires: 4/30/2022
Department ME
Status: Open
Vendor:
Lot Number:
Balance ID:

Comments:

Chemical / Solvent Used	BottleNo	Amt	Units	Expires
Nitric Acid Instra Analyzed 0000264786	13061	0.25	mL	5/12/2025
Milli-Q H2O	391	22.25	mL	6/1/2100

Final Volume:
25 mL

Stock Source		**Base Units**	**Amount Added**
ME200624A	U Stock	ug/mL	2.5 mL

Analytes	**CAS**	Conc:	**ug/mL**

Energy Laboratories Inc

Standard LOG

Standard ID: ME200624A
Standard Name U Stock
Date Prepared 6/24/2020
Date Expires: 4/30/2022
Department ME
Vendor: SCP Science
Lot Number: S200422002
Balance ID:

Type: Primary
BY: Ron Hunt

Status: Empty/Disposed

Comments:

Chemical / Solvent Used	BottleNo	Amt	Units	Exp
PlasmaCal Standard Uranium	12767	500	mL	4/30/

Final Volume: 500 mL

Stock Source	**Base Units**	**Amount Added**
Analytes	**CAS**	Conc: **ug/mL**
A Uranium	7440-61-1	1000

Page: *1 of 1*

SCP SCIENCE

Providing Innovative Solutions to Analytical Chemists

Certificate of Analysis

1.0 DESCRIPTION: ***Plasma*CAL ICP/ICPMS Standard - Uranium 1000 µg/ml**

Catalogue Number: 140-051-920/-921/-925

Starting Material: Uranyl Nitrate 99.99%

Lot Number: **S200422002**

Matrix: 4% HNO_3 (See Section 3 for actual matrix)

Expiration Date (End of month): **April 2022** (or 15 months after bottle is opened, whichever comes first)

U

2.0 CERTIFIED VALUES AND ASSOCIATED UNCERTAINTY:

Certified Concentration: **1003 µg/ml +/- 4 µg/ml**

983 µg/g +/- 4 µg/g

Method of analysis: Inductively Coupled Plasma Atomic Emission Spectroscopy (ICP-AES)

Traceability: NIST Standard Reference Material 3164 Lot: **080521**

Note: The uncertainty of the certified value has been calculated from applicable uncertainty contributors (u_i) including uncertainty established during characterization of the material (u_{char}), the between bottle variation (u_{bb}), short-term stability (u_{sts}) and long-term stability (u_{lts}) according to the model $u_c = \sqrt{(u_{char}^2 + u_{bb}^2 + u_{sts}^2 + u_{lts}^2)}$. This combined uncertainty has been further multiplied by a coverage factor (k) of 2 to provide a 95% confidence interval.

ID #: 12767
Opened:
PlasmaCal Standard Uranium
Expires: 4/30/2022
Rec'd: 6/15/2020
Energy Laboratories Inc 1120 So. 27th Street
Billings MT 59107

3.0 REFERENCE VALUES:

Density: **1.020 g/ml @ 21.7 °C**

Actual Matrix: **4.0% (v/v) HNO_3**

% abundance of stable isotopes : ^{238}U : 99.79% ; ^{235}U : 0.21%

Note : The uranyl nitrate comes from a depleted source of uranium.

Trace Metal Impurities as tested by ICP-MS:

Element	Conc. (ppm)	Element	Conc. (ppm)	Element	Conc. (ppm)	Element	Conc. (ppm)
Ag	<0.0010	Fe	<0.0018	Nd	<0.0010	Sn	<0.0010
Al	**0.0073**	Ga	<0.0010	Ni	**0.0038**	Sr	<0.0025
As	<0.0010	Gd	<0.0010	Os	*	Ta	<0.0010
Au	<0.0010	Ge	<0.0010	P	<0.0026	Tb	<0.0010
B	<0.0015	Hf	<0.0010	Pb	<0.0010	Te	<0.0031
Ba	<0.0010	Hg	*	Pd	<0.0010	Th	**0.0020**
Be	<0.0010	Ho	<0.0010	Pr	<0.0010	Ti	<0.0012
Bi	<0.0010	In	<0.0010	Pt	<0.0010	Tl	<0.0011
Ca	**0.0340**	Ir	<0.0010	Rb	<0.0010	Tm	<0.0010
Cd	<0.0010	K	<0.0024	Re	<0.0010	U	N/A
Ce	<0.0010	La	*	Rh	<0.0010	V	<0.0010
Co	<0.0010	Li	<0.0010	Ru	<0.0010	W	<0.0020
Cr	<0.0010	Lu	<0.0010	S	<1.0000	Y	**0.0049**
Cs	<0.0010	Mg	<0.0010	Sb	<0.0010	Yb	<0.0010
Cu	<0.0010	Mn	<0.0010	Sc	<0.0010	Zn	<0.0010
Dy	<0.0010	Mo	<0.0010	Se	*	Zr	<0.0010
Er	<0.0010	Na	<0.0010	Si	<1.0000		
Eu	<0.0010	Nb	<0.0010	Sm	<0.0010	*: Not tested	

4.0 APPROVAL AND DATE OF CERTIFICATION:

Certification Approval: Daniel Boisvert, Chemist

Certification Date: April 28, 2020

Daniel Boisvert

5.0 INTENDED USE / *UTILISATION PRÉVUE*:

- ICP Standards: For the calibration of, including but not limited to: ICP-AES, ICP-MS, FAAS, GFAA, XRF and DCP. / *Étalons ICP : Pour l'étalonnage d'instruments de mesure tels que: ICP-AES, ICP-MS, FAAS, GFAA, XRF et DCP.*
- AA Standards: For the calibration of Flame (FAAS) and Graphite Furnace (GFAA) Atomic Absorption Spectrometers. / *Étalons AA : Pour l'étalonnage de spectromètres d'absorption atomique flamme (GFAA) et four au graphite (GFAA).*
- Matrix Modifiers: For the optimization of analytical conditions to provide better Graphite Furnace Atomic Absorption (GFAA) instrument response and improved detection limits. / *Modificateur de matrice : Pour l'optimisation des conditions analytiques afin de fournir des meilleurs réponses instrumentales et limites de détection pour SAA four au graphite.*
- pH Standards: For the calibrating pH meters or for other wet chemistry applications. / *Étalons pH : Pour étalonnage de pH mètres et autres applications de chimie humide.*
- Conductivity Standards: For electrolytic conductivity measurement as a calibration standard. / *Étalons de conductivité : Comme étalon pour les mesures de conductivité électrolytiques.*
- IC Standards: for calibration of, but not limited to IC, HPLC, TLC, ISE, IR, NMR, MS, UV/VIS or other wet chemistry applications. / *Étalons IC : Pour étalonnage d'instruments tels que : IC, HPLC, TLC, ISE, IR, NMR, MS, UV/VIS et autres applications de chimie humide.*

For any inquiries, please contact **SCP SCIENCE**. / *Pour toute question, veuillez contacter **SCP SCIENCE**.*

6.0 INSTRUCTIONS FOR USE / *INSTRUCTIONS D'UTILISATION*:

Handling and Storage / Manutention et entreposage: Keep product tightly capped when not in use. The solution should be opened for a minimum amount of time necessary to dispense the amount required. Do not pipet or use directly from container. Do not return unused portions back to container. Store under normal laboratory conditions. Avoid exposure to excessive sources of heat and humidity or direct sunlight. / *Garder les contenants bien fermés lorsque non utilisés. Le contenant devrait être ouvert seulement pour le temps requis afin de prélever la quantité nécessaire. Ne pas pipetter ou utiliser directement du contenant. Ne pas retourner les portions non-utilisées dans le contentant. Conserver dans des conditions normales de laboratoire. Éviter l'exposition à des sources de chaleur et d'humidité excessives ou à l'exposition solaire directe.*

Stability / *Stabilité*: This Standard is guaranteed to be stable and accurate to within the specified uncertainty of measurement up to the unopened expiry date, if sealed, or up to the opened expiry date (when indicated), whichever comes first, provided the solution is kept tightly capped and stored under the indicated storage conditions. Purchasers will be notified of any significant changes resulting in re-certification or withdrawal of the product prior to the expiration date. / *La stabilité et l'exactitude de cet étalon sont garanties d'être à l'intérieur de l'incertitude de mesure, jusqu'à la date d'expiration de la bouteille non-ouverte, si scellée, ou jusqu'à la date d'expiration de la bouteille ouverte (si indiquée), en présumant que le contenant est maintenu fermé et gardé dans les conditions d'entreposage indiquées. Les acheteurs seront avisés dans le cas où il y aura des changements significatifs nécessitant une re-certification ou un rappel du produit avant la date d'expiration.*

7.0 HAZARDOUS INFORMATION / *INFORMATION SUR LES RISQUES POTENTIELS*:

Please refer to the associated Safety Data Sheet (SDS) for information regarding this product (available at www.SCPSCIENCE.com). / *SVP vous référer à la Fiche Signalétique applicable pour de l'information sur ce produit (Disponible à www.SCPSCIENCE.com).*

8.0 HOMOGENEITY / *HOMOGÉNÉITÉ:*

This solution has been blended according to an in-house procedure and its homogeneity is guaranteed to be fit for purpose when a sample size sufficient for the intended method of analysis is used. / *Cette solution a été préparée selon une procédure maison et nous assurons que sa homogénéité est approprié à l'emploi lorsqu'un échantillon suffisant pour la méthode d'analyse prévue est utilisé.*

9.0 TRACEABILITY / *TRAÇABILITÉ*:

This CRM (Certified Reference Material) is traceable to the NIST SRM (Standard Reference Material) indicated in section 2 through an unbroken chain of comparisons. In addition, balances used are regularly calibrated using weights which are traceable to NIST (National Institute of Standards and Technology) or NRC (National Research Council of Canada) standards. All conductivity meters used to analyze this standard have been regularly calibrated using a NIST or NRC traceable Thermometer and standards. All pH meters used to analyze this standard have been regularly calibrated using a NIST or NRC traceable thermometer and pH/MV simulator. / *Ce matériel de référence certifié est traçable au Matériel de Référence Standardisé de NIST indiqué à la section 2 par une chaine de comparaison ininterrompue. De plus, les balances utilisées sont étalonnées régulièrement en utilisant des poids qui sont traçables au NIST (National Institute of Standards and Technology) ou au CRNC (Conseil National de Recherches Canada). Tout conductimètre utilisé afin d'analyser cet étalon a été sujet à un étalonnage périodique utilisant des thermomètres et étalons traçables au NIST ou CNRC. Tout pH mètre utilisé afin d'analyser cet étalon a été sujet à un étalonnage périodique utilisant des thermomètres et un simulateur pH/MV traçables au NIST ou au CNRC.*

10.0 PREPARATION / *PRÉPARATION:*

For the preparation of these solutions, 18 meghom/cm double deionized water, high-purity acids and glassware calibrated to ASTM Class A specifications are used. / *Une eau de 18 meghom/cm doublement déionisé, de l'acide de haute pureté, ainsi que de la verrerie étalonnée afin de satisfaire les spécifications Classe A de ASTM ont été utilisés pour la préparation de cet étalon.*

11.0 QUALITY SYSTEM CERTIFICATIONS / *CERTIFICATIONS DE SYSTÈME QUALITÉ:*

ISO 9001 Certification / *Certification ISO 9001*: This standard was produced in a facility which operates under a **registered** ISO 9001 Quality Management System. Please consult our web site for a copy of the most recent revision of our certificate of registration. / *Cet étalon a été fabriqué dans un laboratoire qui utilise un Système de Gestion de la Qualité **enregistré** à la norme ISO 9001. Veuillez consulter notre site web pour obtenir la version la plus récente de notre certificat d'enregistrement.*

ISO 17025 Accreditation / *Accréditation ISO 17025*: SCP SCIENCE (Corporate Headquarters) operates an ISO 17025 **accredited** laboratory. Please consult our web site for a copy of the most recent revision of our certificate and scope of accreditation. / ***SCP SCIENCE (Siège social)** est **accréditée** ISO 17025. Veuillez consulter notre site web afin d'obtenir la plus récente version de notre certificat d'accréditation ainsi que la portée de notre accréditation.*

ISO 17034 Accreditation / *Accréditation ISO 17034* : SCP SCIENCE (Corporate Headquarters) is an ISO 17034 accredited Reference Material Producer. Please consult our website for a copy of our most recent certificate and scope of accreditation. / ***SCP SCIENCE (Siège social)** est un Fabricant de Matériaux de Référence Accrédité ISO 17034. Veuillez consulter notre site web afin d'obtenir la plus récente version de notre certificat d'accréditation ainsi que la portée de notre accréditation.*

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Fax: +49 (0) 8342-89560-69

Energy Laboratories Inc

Spike LOG

Standard ID: ME211206 TH QCS STOCK
Standard Name Th QCS Stock
Date Prepared 12/6/2021
Date Expires: 10/25/2022
Department ME
Vendor:
Lot Number:
Balance ID:

Type: Secondary
BY: Stacy R. Hendricks
Status: Open

Comments:

Chemical / Solvent Used	BottleNo	Amt	Units	Exp
Nitric Acid Instra Analyzed 000028856	14572	0.25	mL	6/28/
Milli-Q H2O	391	22.25	mL	6/1/2

Final Volume: 25 mL

Stock Source	**Base Units**	**Amount Added**
ME 211025 Th Sec Th Seondary Stock	ug/mL	2.5 mL

Analytes	**CAS**	Conc:	**ug/mL**

Energy Laboratories Inc

Standard LOG

Standard ID:	ME 211025 TH SECONDARY STOCK		
Standard Name	Th Seondary Stock	Type:	Primary
Date Prepared	10/25/2021	BY:	Stacy R. Hendricks
Date Expires:	10/25/2022		
Department	ME	Status:	Open
Vendor:	SCP Science		
Lot Number:	S190401026		
Balance ID:			
Comments:	Opened 10/25/2021; Expires 10/25/2022		

Chemical / Solvent Used	BottleNo	Amt	Units	Exp
Thorium Single Analyte Custom Grade	14318	125	mL	10/25

Final Volume: 500 mL

Stock Source	**Base Units**	**Amount Added**
Analytes	**CAS**	Conc: **ug/mL**

INORGANIC VENTURES
Refine your results. Redefine your industry.

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:	CGTH1
Lot Number:	S2-TH706436
Matrix:	5% (v/v) HNO3
Value / Analyte(s):	1 000 µg/mL ea: Thorium
Starting Material:	TH(NO3)4*4H2O
Starting Material Lot#:	2250
Starting Material Purity:	99.9905%

ID #: 14318
Opened:
Thorium Single Analyte Custom Grade Solutic
Expires: 7/4/2025
Rec'd: 9/24/2021
Energy Laboratories Inc 1120 So. 27th Street
Billings MT 59107

3.0 CERTIFIED VALUES AND UNCERTAINTIES

Certified Value: 1001 ± 4 µg/mL

Density: 1.026 g/mL (measured at 20 ± 4 °C)

Assay Information:

Assay Method #1 **1001 ± 3 µg/mL**
EDTA NIST SRM 928 Lot Number: 928

Assay Method #2 **1001 ± 6 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 <	0.000448	M	Eu <	0.000224	O	Na	0.064077	M	Se <	0.005827	M	Zn	0.003183
O	Al	0.010962	M	Fe	0.012392	M	Nb <	0.003138	i	Si <		M	Zr <	0.010310
M	As <	0.038776	M	Ga <	0.004931	M	Nd	0.004697	M	Sm	0.000871			
M	Au <	0.000224	M	Gd	0.000300	M	Ni <	0.006724	M	Sn <	0.028242			
M	B <	0.021293	M	Ge <	0.008965	M	Os <	0.000224	M	Sr	0.002582			
M	Ba	0.001317	M	Hf <	0.000224	i	P <		M	Ta <	0.001344			
M	Be <	0.000224	M	Hg <	0.000448	M	Pb	0.003287	M	Tb <	0.001793			
M	Bi <	0.001793	M	Ho <	0.001344	M	Pd <	0.000448	M	Te <	0.010086			
O	Ca	0.051969	M	In	0.000134	M	Pr	0.001202	s	Th <				
M	Cd <	0.001344	M	Ir <	0.000224	M	Pt <	0.000224	M	Ti <	0.004258			
M	Ce	0.015420	O	K	0.028928	M	Rb <	0.005155	M	Tl <	0.000224			
M	Co <	0.001344	M	La	0.003577	M	Re <	0.000224	M	Tm <	0.000224			
M	Cr <	0.015465	M	Li <	0.000448	M	Rh <	0.000224	M	U	0.006564			
M	Cs <	0.013896	M	Lu <	0.000224	M	Ru <	0.000224	M	V <	0.001793			
M	Cu	0.001472	O	Mg	0.027914	i	S <		M	W <	0.000224			
M	Dy	0.000197	M	Mn	0.001814	M	Sb <	0.004931	M	Y	0.000860			
M	Er <	0.002241	M	Mo <	0.000896	M	Sc <	0.000672	M	Yb <	0.000224			

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 - 232.04 +4 8 Th(OH) 3+ and Th(OH)22+

Chemical Compatibility -Soluble in HCl, and HNO3. Avoid H3PO4, H2SO4 and HF although solubilities may not be a problem depending upon pH and matrix (For example: ThF4 is soluble in acids). Avoid neutral to basic media. Th4+ is stable with most metals and inorganic anions forming an insoluble carbonate, oxide, fluoride, oxalate, sulfate and phosphate in neutral to slightly acidic media.

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.

Th Containing Samples (Preparation and Solution) -Metal (Soluble in Aqua Regia); Oxide (The heated oxide is not soluble in acids except hot conc. H2SO4); Ores (Na2O2 fusion at 480 ± 20EC for 7 minutes, cool and treat sintered mass with 50 mL cold water and stand until disintegrated. The mass is transferred to a beaker and acidified with HCl with 25 mL excess HCl added. Any residue is collected on a Whatman No. 42 filter, dried and ignited to 1000 EC in Pt0 crucible and the ash treated with H2SO4 / HF and fumed. If residue remains, then treat it by peroxide fusion as above.)

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 232 amu	1 ppt	N/A	
ICP-OES 274.716 nm	0.08 / 0.008 µg/mL	1	Ti, Ta, Fe, V
ICP-OES 283.231 nm	0.07 / 0.007 µg/mL	1	U, Mo, Ti, Fe, Cr
ICP-OES 283.730 nm	0.07 / 0.007 µg/mL	1	U, Zr

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

July 04, 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

- July 04, 2025

- 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

Michael J Booth

Certifying Officer:

Paul Gaines
Chairman / Senior Technical Director

Paul R Gaines

Energy Laboratories Inc

Spike LOG

Standard ID: ME210901 HG SECOND SOURCE
Standard Name Secondary Hg Stock 2 PPM
Date Prepared 9/1/2021
Date Expires: 7/26/2022
Department ME
Vendor: Inorganic Ventures
Lot Number:
Balance ID:

Type: Secondary
BY: Alyssa A. espinoza
Status: Open

Comments:

Chemical / Solvent Used	BottleNo	Amt	Units	Exp
Nitric Acid, 69.0-70.0%,0000282671	14178	0.1	mL	4/11/
Hydrochloric Acid Instra Analyzed 000	14028	0.05	mL	3/29/

Final Volume: 50 mL

Stock Source		**Base Units**	**Amount Added**
ME210726	Hg Secondary Source	ug/mL	0.1 mL

Analytes	**CAS**	Conc:	**ug/mL**

Energy Laboratories Inc

Spike LOG

Standard ID: ME210726
Standard Name Hg Secondary Source
Date Prepared 7/26/2021
Date Expires: 7/26/2022
Department
Vendor:
Lot Number:
Balance ID:

Type:
BY: Jordan A. Gjerde
Status: New

Comments:

Chemical / Solvent Used	BottleNo	Amt	Units	Exp
Mercury Single Analyte Custom Grade	13979	120	mL	7/26/

Final Volume: mL

Stock Source **Base Units** **Amount Added**

Analytes **CAS** Conc: **ug/mL**

Page: *1 of 1*

INORGANIC VENTURES
300 Technology Drive
Christiansburg, VA 24073 - USA
inorganicventures.com

CERTIFICATE OF ANALYSIS

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fax: 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:	Single Analyte Custom Grade Solution
Catalog Number:	CGHG1
Lot Number:	R2-HG696409
Matrix:	5% (v/v) HNO3
Value / Analyte(s):	1 000 µg/mL ea: Mercury
Starting Material:	Hg metal
Starting Material Lot#:	1959
Starting Material Purity:	99.9994%

ID #: 13979
Opened:
Mercury Single Analyte Custom Grade Solutic
Expires: 9/15/2024
Rec'd: 6/23/2021
Energy Laboratories Inc 1120 So. 27th Street
Billings MT 59107

3.0 CERTIFIED VALUES AND UNCERTAINTIES

Certified Value: 1002 ± 3 µg/mL

Density: 1.026 g/mL (measured at 20 ± 4 °C)

Assay Information:

Assay Method #1	**1004 ± 8 µg/mL** ICP Assay NIST SRM 3133 Lot Number: 160921
Assay Method #2	**1003 ± 3 µg/mL** EDTA NIST SRM 928 Lot Number: 928
Assay Method #3	**1001 ± 3 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.

O	Ag		0.001159	M	Eu	<	0.000201	O	Na		0.000435	M	Se	<	0.015915	O	Zn	<	0.001510
O	Al		0.000090	O	Fe		0.000113	M	Nb	<	0.000201	O	Si		0.000525	M	Zr	<	0.000201
M	As	<	0.000402	M	Ga	<	0.000201	M	Nd	<	0.000201	M	Sm	<	0.000201				
M	Au	<	0.003631	M	Gd	<	0.000201	M	Ni	<	0.000402	M	Sn	<	0.001007				
M	B	<	0.001208	M	Ge	<	0.000201	M	Os	<	0.000605	M	Sr	<	0.000201				
M	Ba	<	0.000201	M	Hf	<	0.000201	O	P	<	0.032370	M	Ta	<	0.000201				
M	Be	<	0.000201	s	Hg	<		M	Pb	<	0.000201	M	Tb	<	0.000201				
M	Bi	<	0.000201	M	Ho	<	0.000201	M	Pd	<	0.000403	M	Te	<	0.002216				
O	Ca		0.000746	M	In	<	0.000201	M	Pr	<	0.000201	M	Th	<	0.000201				
M	Cd	<	0.000201	M	Ir	<	0.000201	M	Pt	<	0.000402	M	Ti	<	0.000402				
M	Ce	<	0.000201	O	K		0.002007	M	Rb	<	0.000201	O	Tl	<	0.016508				
M	Co	<	0.000201	M	La	<	0.000201	M	Re	<	0.000201	M	Tm	<	0.000201				
O	Cr	<	0.003021	O	Li	<	0.000107	M	Rh	<	0.000201	M	U	<	0.008058				
M	Cs	<	0.001208	M	Lu	<	0.000201	M	Ru	<	0.000201	M	V	<	0.000201				
M	Cu	<	0.000402	O	Mg		0.000096	O	S	<	0.053950	M	W	<	0.000604				
M	Dy	<	0.000201	M	Mn	<	0.000604	M	Sb	<	0.001208	M	Y	<	0.000201				
M	Er	<	0.000201	M	Mo		0.000971	M	Sc	<	0.000201	M	Yb	<	0.000201				

M - Checked by ICP-MS O - Checked by ICP-OES i - Spectral Interference
n - Not Checked For s - Solution Standard Element

6.0 INTENDED USE

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

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

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

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

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

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

Atomic Weight; Valence; Coordination Number; Chemical Form in Solution - 200.59 +2 4 Hg(OH)(aq) 1+

Chemical Compatibility - Stable in HNO3. Avoid basic media forming insoluble carbonate. The sulfide, basic carbonate, oxalate, phosphate, arsenite, arsenate and iodide are insoluble in water.

Stability - 2-100 ppb levels not stable in 1% HNO3 / LDPE container, stable in 10% HNO3 packaged in borosilicate glass. 1-100 ppm levels stable in 7% HNO3 packaged in borosilicate glass. 1000-10,000 ppm solutions are chemically stable for years in 5-10% HNO3 / LDPE container.

Hg Containing Samples (Preparation and Solution) - Metal (soluble in HNO3); Oxide (Soluble in HNO3); Ores and Organic based (The literature has more references to the preparation of Hg containing samples than any other element. Please consult the literature for your specific sample type, since such preparations are prone to error. Or e-mail our technical staff and we will contact you to discuss your particular sample preparation questions in further detail.).

Atomic Spectroscopic Information (ICP-OES D.L.s are given as radial/axial view):

Technique/Line	Estimated D.L.	Order	Interferences (underlined indicates severe)
ICP-MS 202 amu	9 ppt	n/a	186W16O
ICP-OES 184.950 nm	0.03 / 0.005 µg/mL	1	
ICP-OES 194.227 nm	0.03 / 0.005 µg/mL	1	V
ICP-OES 253.652 nm	0.1 / 0.03 µg/mL	1	Ta, Co, Th ,Rh , Fe, U

8.0 HAZARDOUS INFORMATION

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

9.0 HOMOGENEITY

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

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

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

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

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

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

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 15, 2020

- 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 15, 2024**

- 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

Energy Laboratories Inc

Standard LOG

Standard ID: ME211124 EL-MSICV-2
Standard Name EL-MSICV-2
Date Prepared 11/24/2021
Date Expires: 11/24/2022
Department ME
Vendor: Inorganic Ventures
Lot Number:
Balance ID:

Type: Primary
BY: Amanda E. McDani
Status: Open

Comments:

Chemical / Solvent Used	BottleNo	Amt	Units	Exp
Multi Analyte Custom Grade Solution	14023	500	mL	11/24

Final Volume: mL

Stock Source **Base Units** **Amount Added**

Analytes **CAS** Conc: **ug/mL**

Page: *1 of 1*

INORGANIC VENTURES™
300 Technology Drive
Christiansburg, VA 24073 - USA
inorganicventures.com

CERTIFICATE OF ANALYSIS

tel: 800.669.6799 - 540.585.3030
fax: 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:	EL-MSICV-2
Lot Number:	R2-MEB696849
Matrix:	3% (v/v) HNO_3 tr. HF
Value / Analyte(s):	1 000 µg/mL ea: Silicon, 100 µg/mL ea: Tin, Titanium, Molybdenum, Antimony

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
Antimony, Sb	100.0 ± 0.6 µg/mL	Molybdenum, Mo	100.0 ± 0.5 µg/mL
Silicon, Si	1 000 ± 7 µg/mL	Tin, Sn	99.9 ± 0.4 µg/mL
Titanium, Ti	99.9 ± 0.6 µg/mL		

Density: 1.019 g/mL (measured at 20 ± 4 °C)

Assay Information:

ANALYTE	METHOD	NIST SRM#	SRM LOT#
Mo	ICP Assay	3134	130418
Sb	ICP Assay	3102a	140911
Si	ICP Assay	3150	130912
Sn	ICP Assay	3161a	070330
Sn	Calculated		See Sec. 4.2
Ti	ICP Assay	3162a	130925

The follow ing 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.

ID #: 14023
Opened:
Multi Analyte Custom Grade Solution
Expires: 9/14/2024
Rec'd: 7/7/2021
Energy Laboratories Inc 1120 So. 27th Street
Billings MT 59107

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

- 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.

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, EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

September 14, 2020

- 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 14, 2024

- 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

Michael J Booth

Certifying Officer:

Paul Gaines
Chairman / Senior Technical Director

Paul R Gaines

Energy Laboratories Inc

Standard LOG

Standard ID:	ME210817 ICV-1A		
Standard Name	EL-MSICV-1A	Type:	Primary
Date Prepared	8/17/2021	BY:	Alyssa A. espinoza
Date Expires:	8/17/2022		
Department	ME	Status:	Open
Vendor:	Inorganic Ventures		
Lot Number:	R2-MEB688457		
Balance ID:			
Comments:	Opened 8/17/2021; Expires 8/17/2022		

Chemical / Solvent Used	BottleNo	Amt	Units	Exp
Multi Analyte Custom Grade Solution	13475	500	mL	8/17/

Final Volume: 500 mL

Stock Source	**Base Units**	**Amount Added**
Analytes	**CAS**	Conc: **ug/mL**

INORGANIC VENTURES™
300 Technology Drive
Christiansburg, VA 24073 · USA
inorganicventures.com

CERTIFICATE OF ANALYSIS

tel: 800.669.6799 · 540.585.3030
fax: 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 Callbration 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:	EL-MSICV-1A
Lot Number:	R2-MEB688457
Matrix:	5% (v/v) HNO3
Value / Analyte(s):	5 000 µg/mL ea: Calcium, Potassium, Magnesium, Sodium,
	1 000 µg/mL ea: Phosphorus,
	500 µg/mL ea: Manganese, Iron, Aluminum,
	100 µg/mL ea: Arsenic, Boron, Barium, Cobalt, Chromium, Copper, Lithium, Nickel, Lead, Selenium, Strontium, Thallium, Vanadium, Zinc,
	50 µg/mL ea: Silver, Cadmium, Beryllium

ID #: 13475
Opened:_____
Multi Analyte Custom Grade Solution
Expires: 1/10/2024
Rec'd: 1/15/2021
Energy Laboratories Inc 1120 So. 27th Street
Billings MT 59107

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
Aluminum, Al	500.3 ± 1.8 µg/mL	Arsenic, As	100.0 ± 0.8 µg/mL
Barium, Ba	99.9 ± 0.4 µg/mL	Beryllium, Be	49.96 ± 0.33 µg/mL
Boron, B	100.0 ± 0.6 µg/mL	Cadmium, Cd	50.10 ± 0.22 µg/mL
Calcium, Ca	5 001 ± 20 µg/mL	Chromium, Cr	100.0 ± 0.6 µg/mL
Cobalt, Co	100.0 ± 0.5 µg/mL	Copper, Cu	100.1 ± 0.4 µg/mL
Iron, Fe	499.7 ± 2.1 µg/mL	Lead, Pb	100.1 ± 0.4 µg/mL
Lithium, Li	100.0 ± 0.4 µg/mL	Magnesium, Mg	5 000 ± 21 µg/mL
Manganese, Mn	499.8 ± 1.9 µg/mL	Nickel, Ni	100.1 ± 0.4 µg/mL
Phosphorus, P	1 000 ± 5 µg/mL	Potassium, K	5 000 ± 18 µg/mL
Selenium, Se	100.1 ± 0.8 µg/mL	Silver, Ag	50.02 ± 0.22 µg/mL
Sodium, Na	5 000 ± 18 µg/mL	Strontium, Sr	100.1 ± 0.4 µg/mL
Thallium, Tl	100.0 ± 0.7 µg/mL	Vanadium, V	99.9 ± 0.5 µg/mL
Zinc, Zn	100.0 ± 0.4 µg/mL		

Density: 1.098 g/mL (measured at 20 ± 4 °C)

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
As	ICP Assay	3103a	100818
B	ICP Assay	3107	110830
Ba	ICP Assay	3104a	140909
Ba	Gravimetric		See Sec. 4.2
Be	ICP Assay	3105a	090514
Ca	ICP Assay	3109a	130213
Ca	EDTA	928	928
Cd	ICP Assay	3108	130116
Cd	EDTA	928	928
Co	EDTA	928	928
Co	ICP Assay	traceable to 3113	M2-CO661665
Cr	ICP Assay	3112a	170630
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
Li	ICP Assay	3129a	100714
Li	Gravimetric		See Sec. 4.2
Mg	ICP Assay	3131a	140110
Mg	EDTA	928	928
Mn	ICP Assay	3132	050429
Mn	EDTA	928	928
Na	ICP Assay	3152a	120715
Na	Gravimetric		See Sec. 4.2
Ni	ICP Assay	3136	120619
Ni	EDTA	928	928
P	ICP Assay	3139a	060717
P	Acidimetric	84L	84L
Pb	ICP Assay	3128	101026
Pb	EDTA	928	928
Se	ICP Assay	3149	100901
Sr	EDTA	928	928
Sr	ICP Assay	3153a	990906
Tl	ICP Assay	3158	993012
V	ICP 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 (±) = $U_{CRM/RM} = k\,(u^2_{char} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{1/2}$

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

- 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 outer bag.

- While stored in the sealed outer bag, transpiration of this CRM/RM is negligible. After opening the sealed outer 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 outer 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.

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, EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

January 10, 2020

- 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 10, 2024

- 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 outer 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
Manager, Quality Control

Certifying Officer:

Paul Gaines
CEO, Senior Technical Director

Energy Laboratories Inc

Standard LOG

Standard ID:	ME210903 CE, LA SECONDARY		
Standard Name	Ce, La Secondary solution	Type:	Secondary
Date Prepared	9/3/2021	BY:	Parker A. Pearsall
Date Expires:	5/25/2022		
Department	ME	Status:	Open
Vendor:			
Lot Number:			
Balance ID:			
Comments:	Second Source Stock Solution		

Chemical / Solvent Used	BottleNo	Amt	Units	Exp
Nitric Acid Instra Analyzed 000020579	10902	0.5	mL	7/1/2
Milli-Q H2O	391	39.5	mL	6/1/2

Final Volume: 50 mL

Stock Source		**Base Units**	**Amount Added**
ME210903 La Sec	La Secondary Stock	ug/mL	5 mL
ME210525 Ce 2nd	Ce Secondary Stock	ug/mL	5 mL

Analytes	**CAS**	Conc:	**ug/mL**

Energy Laboratories Inc

Standard LOG

Standard ID:	ME210903 LA SECOND SOURCE		
Standard Name	La Secondary Stock	Type:	Secondary
Date Prepared	9/3/2021	BY:	Alyssa A. espinoza
Date Expires:	9/3/2022		
Department		Status:	Empty/Disposed
Vendor:			
Lot Number:			
Balance ID:			
Comments:	Opened 9/3/2021; Expires 9/3/2022		

Chemical / Solvent Used	BottleNo	Amt	Units	Exp
Lanthanum PlasmaCal Standard	14019	125	mL	9/3/2

Final Volume: mL

Stock Source **Base Units** **Amount Added**

Analytes **CAS** Conc: **ug/mL**

Page: *1 of 1*

SCP SCIENCE

Providing Innovative Solutions to Analytical Chemists

Certificate of Analysis

1.0 DESCRIPTION:

PlasmaCAL ICP/ICPMS Standard - Lanthanum 1000 µg/ml

Catalogue Number: 140-051-570/-571/-575

Starting Material: Lanthanum(III) Oxide 99.99+%

Lot Number: **S201029004**

Matrix: 4% HNO_3 (See Section 3 for actual matrix)

Expiration Date (End of month): **November 2022** (or 15 months after bottle is opened, whichever comes first)

La

2.0 CERTIFIED VALUES AND ASSOCIATED UNCERTAINTY:

Certified Concentration: **1005 µg/ml +/- 4 µg/ml**

985 µg/g +/- 4 µg/g

Method of analysis: Inductively Coupled Plasma Atomic Emission Spectroscopy (ICP-AES)

Traceability: NIST Standard Reference Material 3127a Lot: **151030**

Note: The uncertainty of the certified value has been calculated from applicable uncertainty contributors (u_i) including uncertainty established during characterization of the material (u_{char}), the between bottle variation (u_{bb}), short-term stability (u_{sts}) and long-term stability (u_{lts}) according to the model $u_c = \sqrt{(u_{char}^2 + u_{bb}^2 + u_{sts}^2 + u_{lts}^2)}$. This combined uncertainty has been further multiplied by a coverage factor (k) of 2 to provide a 95% confidence interval.

ID #: 14019
Opened:_____
Lanthanum PlasmaCal Standard
Expires: 11/30/2022
Rec'd: 7/6/2021
Energy Laboratories Inc 1120 So. 27th Street
Billings MT 59107

3.0 REFERENCE VALUES:

Density: **1.020 g/ml @ 23.4 °C**

Actual Matrix: **4.0% (v/v) HNO_3**

Trace Metal Impurities as tested by ICP-AES:

Element	Conc. (ppm)	Element	Conc. (ppm)	Element	Conc. (ppm)	Element	Conc. (ppm)
Ag	<0.0049	Fe	<0.0102	Nd	<0.1595	Sn	<0.0307
Al	<0.0280	Ga	<0.0260	Ni	<0.0139	Sr	<0.0004
As	<0.0525	Gd	<0.0685	Os	*	Ta	<0.0635
Au	<0.0085	Ge	<0.0548	P	<0.0104	Tb	<0.0146
B	<0.2535	Hf	<0.0339	Pb	<0.2460	Te	<0.4025
Ba	<0.0025	Hg	*	Pd	<0.1410	Th	<0.0471
Be	<0.0022	Ho	<0.0065	Pr	<0.0274	Ti	<0.0013
Bi	<0.0780	In	<0.0105	Pt	<0.0533	Tl	<0.5600
Ca	**0.0164**	Ir	<0.0243	Rb	*	Tm	<0.0105
Cd	<0.0048	K	<0.0128	Re	<0.0076	U	<0.2490
Ce	<0.0393	La	N/A	Rh	<0.0163	V	<0.0049
Co	<0.0224	Li	<0.0006	Ru	<0.0304	W	<0.0443
Cr	<0.0063	Lu	<0.0021	S	<0.0515	Y	<0.0033
Cs	*	Mg	<0.0045	Sb	<0.0197	Yb	<0.0057
Cu	<0.0040	Mn	<0.0018	Sc	<0.0055	Zn	<0.0045
Dy	<0.0043	Mo	<0.0229	Se	<0.0249	Zr	<0.0061
Er	<0.0070	Na	<0.0038	Si	<0.0455		
Eu	<0.0086	Nb	<0.0112	Sm	<0.1105	*: Not tested	

4.0 APPROVAL AND DATE OF CERTIFICATION:

Certification Approval: Daniel Boisvert, Chemist

Certification Date: November 04, 2020

Daniel Boisvert

5.0 INTENDED USE / *UTILISATION PRÉVUE*:

- ICP Standards: For the calibration of, including but not limited to: ICP-AES, ICP-MS, FAAS, GFAA, XRF and DCP. / *Étalons ICP : Pour l'étalonnage d'instruments de mesure tels que: ICP-AES, ICP-MS, FAAS, GFAA, XRF et DCP.*
- AA Standards: For the calibration of Flame (FAAS) and Graphite Furnace (GFAA) Atomic Absorption Spectrometers. / *Étalons AA : Pour l'étalonnage de spectromètres d'absorption atomique flamme (GFAA) et four au graphite (GFAA).*
- Matrix Modifiers: For the optimization of analytical conditions to provide better Graphite Furnace Atomic Absorption (GFAA) instrument response and improved detection limits. / *Modificateur de matrice : Pour l'optimisation des conditions analytiques afin de fournir des meilleurs réponses instrumentales et limites de détection pour SAA four au graphite.*
- pH Standards: For the calibrating pH meters or for other wet chemistry applications. / *Étalons pH : Pour étalonnage de pH mètres et autres applications de chimie humide.*
- Conductivity Standards: For electrolytic conductivity measurement as a calibration standard. / *Étalons de conductivité : Comme étalon pour les mesures de conductivité électrolytiques.*
- IC Standards: for calibration of, but not limited to IC, HPLC, TLC, ISE, IR, NMR, MS, UV/VIS or other wet chemistry applications. / *Étalons IC : Pour étalonnage d'instruments tels que : IC, HPLC, TLC, ISE, IR, NMR, MS, UV/VIS et autres applications de chimie humide.*

For any inquiries, please contact **SCP SCIENCE**. / *Pour toute question, veuillez contacter* ***SCP SCIENCE***.

6.0 INSTRUCTIONS FOR USE / *INSTRUCTIONS D'UTILISATION*:

Handling and Storage / Manutention et entreposage: Keep product tightly capped when not in use. The solution should be opened for a minimum amount of time necessary to dispense the amount required. Do not pipet or use directly from container. Do not return unused portions back to container. Store under normal laboratory conditions. Avoid exposure to excessive sources of heat and humidity or direct sunlight. / *Garder les contenants bien fermés lorsque non utilisés. Le contenant devrait être ouvert seulement pour le temps requis afin de prélever la quantité nécessaire. Ne pas pipetter ou utiliser directement du contenant. Ne pas retourner les portions non-utilisées dans le contentant. Conserver dans des conditions normales de laboratoire. Éviter l'exposition à des sources de chaleur et d'humidité excessives ou à l'exposition solaire directe.*

Stability / *Stabilité*: This Standard is guaranteed to be stable and accurate to within the specified uncertainty of measurement up to the unopened expiry date, if sealed, or up to the opened expiry date (when indicated), whichever comes first, provided the solution is kept tightly capped and stored under the indicated storage conditions. Purchasers will be notified of any significant changes resulting in re-certification or withdrawal of the product prior to the expiration date. / *La stabilité et l'exactitude de cet étalon sont garanties d'être à l'intérieur de l'incertitude de mesure, jusqu'à la date d'expiration de la bouteille non-ouverte, si scellée, ou jusqu'à la date d'expiration de la bouteille ouverte (si indiquée), en présumant que le contenant est maintenu fermé et gardé dans les conditions d'entreposage indiquées. Les acheteurs seront avisés dans le cas où il y aura des changements significatifs nécessitant une re-certification ou un rappel du produit avant la date d'expiration.*

7.0 HAZARDOUS INFORMATION / *INFORMATION SUR LES RISQUES POTENTIELS*:

Please refer to the associated Safety Data Sheet (SDS) for information regarding this product (available at www.SCPSCIENCE.com). / *SVP vous référer à la Fiche Signalétique applicable pour de l'information sur ce produit (Disponible à www.SCPSCIENCE.com).*

8.0 HOMOGENEITY / *HOMOGÉNÉITÉ:*

This solution has been blended according to an in-house procedure and its homogeneity is guaranteed to be fit for purpose when a sample size sufficient for the intended method of analysis is used. / *Cette solution a été préparée selon une procédure maison et nous assurons que sa homogénéité est approprié à l'emploi lorsqu'un échantillon suffisant pour la méthode d'analyse prévue est utilisé.*

9.0 TRACEABILITY / *TRAÇABILITÉ*:

This CRM (Certified Reference Material) is traceable to the NIST SRM (Standard Reference Material) indicated in section 2 through an unbroken chain of comparisons. In addition, balances used are regularly calibrated using weights which are traceable to NIST (National Institute of Standards and Technology) or NRC (National Research Council of Canada) standards. All conductivity meters used to analyze this standard have been regularly calibrated using a NIST or NRC traceable Thermometer and standards. All pH meters used to analyze this standard have been regularly calibrated using a NIST or NRC traceable thermometer and pH/MV simulator. / *Ce matériel de référence certifié est traçable au Matériel de Référence Standardisé de NIST indiqué à la section 2 par une chaine de comparaison ininterrompue. De plus, les balances utilisées sont étalonnées régulièrement en utilisant des poids qui sont traçables au NIST (National Institute of Standards and Technology) ou au CRNC (Conseil National de Recherches Canada). Tout conductimètre utilisé afin d'analyser cet étalon a été sujet à un étalonnage périodique utilisant des thermomètres et étalons traçables au NIST ou CNRC. Tout pH mètre utilisé afin d'analyser cet étalon a été sujet à un étalonnage périodique utilisant des thermomètres et un simulateur pH/MV traçables au NIST ou au CNRC.*

10.0 PREPARATION / *PRÉPARATION:*

For the preparation of these solutions, 18 meghom/cm double deionized water, high-purity acids and glassware calibrated to ASTM Class A specifications are used. / *Une eau de 18 meghom/cm doublement déionisé, de l'acide de haute pureté, ainsi que de la verrerie étalonnée afin de satisfaire les spécifications Classe A de ASTM ont été utilisés pour la préparation de cet étalon.*

11.0 QUALITY SYSTEM CERTIFICATIONS / *CERTIFICATIONS DE SYSTÈME QUALITÉ:*

ISO 9001 Certification / *Certification ISO 9001*: This standard was produced in a facility which operates under a **registered** ISO 9001 Quality Management System. Please consult our web site for a copy of the most recent revision of our certificate of registration. / *Cet étalon a été fabriqué dans un laboratoire qui utilise un Système de Gestion de la Qualité* ***enregistré*** *à la norme ISO 9001. Veuillez consulter notre site web pour obtenir la version la plus récente de notre certificat d'enregistrement.*

ISO 17025 Accreditation / *Accréditation ISO 17025*: SCP SCIENCE (Corporate Headquarters) operates an ISO 17025 **accredited** laboratory. Please consult our web site for a copy of the most recent revision of our certificate and scope of accreditation. / ***SCP SCIENCE (Siège social)*** *est* ***accréditée*** *ISO 17025. Veuillez consulter notre site web afin d'obtenir la plus récente version de notre certificat d'accréditation ainsi que la portée de notre accréditation.*

ISO 17034 Accreditation / *Accréditation ISO 17034* : SCP SCIENCE (Corporate Headquarters) is an ISO 17034 accredited Reference Material Producer. Please consult our website for a copy of our most recent certificate and scope of accreditation. / ***SCP SCIENCE (Siège social)*** *est un Fabricant de Matériaux de Référence Accrédité ISO 17034. Veuillez consulter notre site web afin d'obtenir la plus récente version de notre certificat d'accréditation ainsi que la portée de notre accréditation.*

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Fax: +33 (0) 1 60 92 05 67

GERMANY
Alte Marktoberdorfer Straße 14, 87616
Marktoberdorf

Phone: +49 (0) 8342-89560-61
Fax: +49 (0) 8342-89560-69

Energy Laboratories Inc

Standard LOG

Standard ID:	ME210525 CE 2ND SOURCE		
Standard Name	Ce Secondary Stock	Type:	Primary
Date Prepared	5/25/2021	BY:	Stacy R. Hendricks
Date Expires:	5/25/2022		
Department	ME	Status:	Empty/Disposed
Vendor:	Inorganic Ventures		
Lot Number:	N2-CE682808		
Balance ID:			
Comments:	opened 5/25/2021, expires 5/25/2022		

Chemical / Solvent Used	BottleNo	Amt	Units	Exp
ICP/ICPMS Standard Cerium	13642	125	mL	5/25/

Final Volume: 125 mL

Stock Source	**Base Units**	**Amount Added**
Analytes	**CAS**	Conc: **ug/mL**

Page: *1 of 1*

SCP SCIENCE

Providing Innovative Solutions to Analytical Chemists

Certificate of Analysis

1.0 DESCRIPTION:

***Plasma*CAL ICP/ICPMS Standard - Cerium 1000 µg/ml**

Catalogue Number: 140-051-580/-581/-585

Starting Material: Cerium(III) Nitrate Hexahydrate 99.99+%

Lot Number: **S210208003**

Matrix: 4% HNO_3 (See Section 3 for actual matrix)

Expiration Date (End of month): **February 2023** (or 15 months after bottle is opened, whichever comes first)

Ce

2.0 CERTIFIED VALUES AND ASSOCIATED UNCERTAINTY:

Certified Concentration: **1003 µg/ml +/- 4 µg/ml**

982 µg/g +/- 4 µg/g

Method of analysis: Inductively Coupled Plasma Atomic Emission Spectroscopy (ICP-AES)

Traceability: NIST Standard Reference Material 3110 Lot: **090504**

Note: The uncertainty of the certified value has been calculated from applicable uncertainty contributors (u_i) including uncertainty established during characterization of the material (u_{char}), the between bottle variation (u_{bb}), short-term stability (u_{sts}) and long-term stability (u_{lts}) according to the model $u_c = \sqrt{(u_{char}^2 + u_{bb}^2 + u_{sts}^2 + u_{lts}^2)}$. This combined uncertainty has been further multiplied by a coverage factor (k) of 2 to provide a 95% confidence interval.

3.0 REFERENCE VALUES:

Density: **1.021 g/ml @ 22.5 °C**

Actual Matrix: **4.0% (v/v) HNO_3**

Trace Metal Impurities as tested by ICP-MS:

ID #: 13642
Opened:_____
ICP/ICPMS Standard Cerium
Expires: 2/28/2023
Rec'd: 3/16/2021
Energy Laboratories Inc 1120 So. 27th Street
Billings MT 59107

Element	Conc. (ppm)	Element	Conc. (ppm)	Element	Conc. (ppm)	Element	Conc. (ppm)
Ag	<0.0010	Fe	<0.0018	Nd	**0.0102**	Sn	<0.0010
Al	**0.0148**	Ga	**0.0526**	Ni	**0.0064**	Sr	<0.0025
As	<0.0010	Gd	<0.0010	Os	<0.0010	Ta	<0.0010
Au	<0.0010	Ge	<0.0010	P	<0.0132	Tb	<0.0010
B	<0.0015	Hf	<0.0010	Pb	<0.0010	Te	<0.0010
Ba	<0.0010	Hg	*	Pd	<0.0010	Th	<0.0010
Be	<0.0010	Ho	<0.0010	Pr	**0.0235**	Ti	<0.0012
Bi	<0.0010	In	<0.0010	Pt	<0.0010	Tl	<0.0011
Ca	**0.0375**	Ir	<0.0010	Rb	<0.0010	Tm	<0.0010
Cd	<0.0010	K	<0.0024	Re	<0.0010	U	<0.0010
Ce	N/A	La	<0.10	Rh	<0.0010	V	<0.0010
Co	<0.0010	Li	<0.0010	Ru	<0.0010	W	<0.0020
Cr	<0.0010	Lu	<0.0010	S	*	Y	<0.0010
Cs	<0.0010	Mg	<0.0010	Sb	<0.0010	Yb	<0.0010
Cu	**0.0121**	Mn	<0.0010	Sc	<0.0010	Zn	<0.0010
Dy	<0.0010	Mo	<0.0010	Se	<0.0010	Zr	<0.0010
Er	<0.0010	Na	<0.0010	Si	<0.10		
Eu	**0.0035**	Nb	<0.0010	Sm	<0.0010	*: Not tested	

4.0 APPROVAL AND DATE OF CERTIFICATION:

Certification Approval: Yaling Sui, Chemist

Certification Date: February 22, 2021

Yaling Sui

5.0 INTENDED USE / *UTILISATION PRÉVUE*:

- ICP Standards: For the calibration of, including but not limited to: ICP-AES, ICP-MS, FAAS, GFAA, XRF and DCP. / *Étalons ICP : Pour l'étalonnage d'instruments de mesure tels que: ICP-AES, ICP-MS, FAAS, GFAA, XRF et DCP.*
- AA Standards: For the calibration of Flame (FAAS) and Graphite Furnace (GFAA) Atomic Absorption Spectrometers. / *Étalons AA : Pour l'étalonnage de spectromètres d'absorption atomique flamme (GFAA) et four au graphite (GFAA).*
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- Conductivity Standards: For electrolytic conductivity measurement as a calibration standard. / *Étalons de conductivité : Comme étalon pour les mesures de conductivité électrolytiques.*
- IC Standards: for calibration of, but not limited to IC, HPLC, TLC, ISE, IR, NMR, MS, UV/VIS or other wet chemistry applications. / *Étalons IC : Pour étalonnage d'instruments tels que : IC, HPLC, TLC, ISE, IR, NMR, MS, UV/VIS et autres applications de chimie humide.*

For any inquiries, please contact **SCP SCIENCE**. / *Pour toute question, veuillez contacter* ***SCP SCIENCE***.

6.0 INSTRUCTIONS FOR USE / *INSTRUCTIONS D'UTILISATION*:

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Stability / *Stabilité*: This Standard is guaranteed to be stable and accurate to within the specified uncertainty of measurement up to the unopened expiry date, if sealed, or up to the opened expiry date (when indicated), whichever comes first, provided the solution is kept tightly capped and stored under the indicated storage conditions. Purchasers will be notified of any significant changes resulting in re-certification or withdrawal of the product prior to the expiration date. */ La stabilité et l'exactitude de cet étalon sont garanties d'être à l'intérieur de l'incertitude de mesure, jusqu'à la date d'expiration de la bouteille non-ouverte, si scellée, ou jusqu'à la date d'expiration de la bouteille ouverte (si indiquée), en présumant que le contenant est maintenu fermé et gardé dans les conditions d'entreposage indiquées. Les acheteurs seront avisés dans le cas où il y aura des changements significatifs nécessitant une re-certification ou un rappel du produit avant la date d'expiration.*

7.0 HAZARDOUS INFORMATION / *INFORMATION SUR LES RISQUES POTENTIELS*:

Please refer to the associated Safety Data Sheet (SDS) for information regarding this product (available at www.SCPSCIENCE.com). / *SVP vous référer à la Fiche Signalétique applicable pour de l'information sur ce produit (Disponible à www.SCPSCIENCE.com).*

8.0 HOMOGENEITY / *HOMOGÉNÉITÉ:*

This solution has been blended according to an in-house procedure and its homogeneity is guaranteed to be fit for purpose when a sample size sufficient for the intended method of analysis is used. / *Cette solution a été préparée selon une procédure maison et nous assurons que sa homogénéité est approprié à l'emploi lorsqu'un échantillon suffisant pour la méthode d'analyse prévue est utilisé.*

9.0 TRACEABILITY / *TRAÇABILITÉ*:

This CRM (Certified Reference Material) is traceable to the NIST SRM (Standard Reference Material) indicated in section 2 through an unbroken chain of comparisons. In addition, balances used are regularly calibrated using weights which are traceable to NIST (National Institute of Standards and Technology) or NRC (National Research Council of Canada) standards. All conductivity meters used to analyze this standard have been regularly calibrated using a NIST or NRC traceable Thermometer and standards. All pH meters used to analyze this standard have been regularly calibrated using a NIST or NRC traceable thermometer and pH/MV simulator. / *Ce matériel de référence certifié est traçable au Matériel de Référence Standardisé de NIST indiqué à la section 2 par une chaine de comparaison ininterrompue. De plus, les balances utilisées sont étalonnées régulièrement en utilisant des poids qui sont traçables au NIST (National Institute of Standards and Technology) ou au CRNC (Conseil National de Recherches Canada). Tout conductimètre utilisé afin d'analyser cet étalon a été sujet à un étalonnage périodique utilisant des thermomètres et étalons traçables au NIST ou CNRC. Tout pH mètre utilisé afin d'analyser cet étalon a été sujet à un étalonnage périodique utilisant des thermomètres et un simulateur pH/MV traçables au NIST ou au CNRC.*

10.0 PREPARATION / *PRÉPARATION:*

For the preparation of these solutions, 18 meghom/cm double deionized water, high-purity acids and glassware calibrated to ASTM Class A specifications are used. / *Une eau de 18 meghom/cm doublement déionisé, de l'acide de haute pureté, ainsi que de la verrerie étalonnée afin de satisfaire les spécifications Classe A de ASTM ont été utilisés pour la préparation de cet étalon.*

11.0 QUALITY SYSTEM CERTIFICATIONS / *CERTIFICATIONS DE SYSTÈME QUALITÉ:*

ISO 9001 Certification / *Certification ISO 9001*: This standard was produced in a facility which operates under a **registered** ISO 9001 Quality Management System. Please consult our web site for a copy of the most recent revision of our certificate of registration. / *Cet étalon a été fabriqué dans un laboratoire qui utilise un Système de Gestion de la Qualité* ***enregistré*** *à la norme ISO 9001. Veuillez consulter notre site web pour obtenir la version la plus récente de notre certificat d'enregistrement.*

ISO 17025 Accreditation / *Accréditation ISO 17025*: SCP SCIENCE (Corporate Headquarters) operates an ISO 17025 **accredited** laboratory. Please consult our web site for a copy of the most recent revision of our certificate and scope of accreditation. / ***SCP SCIENCE (Siège social)*** *est* ***accréditée*** *ISO 17025. Veuillez consulter notre site web afin d'obtenir la plus récente version de notre certificat d'accréditation ainsi que la portée de notre accréditation.*

ISO 17034 Accreditation / *Accréditation ISO 17034* : SCP SCIENCE (Corporate Headquarters) is an ISO 17034 accredited Reference Material Producer. Please consult our website for a copy of our most recent certificate and scope of accreditation. */ **SCP SCIENCE (Siège social)** est un Fabricant de Matériaux de Référence Accrédité ISO 17034. Veuillez consulter notre site web afin d'obtenir la plus récente version de notre certificat d'accréditation ainsi que la portée de notre accréditation.*

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Alte Marktoberdorfer Straße 14, 87616
Marktoberdorf

Phone: +49 (0) 8342-89560-61
Fax: +49 (0) 8342-89560-69

Energy Laboratories Inc

Standard LOG

Standard ID:	ME210901 ICSA		
Standard Name	ICSA	Type:	Secondary
Date Prepared	9/1/2021	BY:	Cindy Rohrer
Date Expires:	9/1/2022		
Department	ME	Status:	Open
Vendor:			
Lot Number:			
Balance ID:			

Comments: Made fresh every Monday, Wednesday, and Friday

Chemical / Solvent Used	BottleNo	Amt	Units	Exp
Nitric Acid, 69.0-70.0%,0000282671	14178	1	mL	4/11/
Milli-Q H2O	391	46.5	mL	6/1/2
Hydrochloric Acid Instra Analyzed 000	14028	0.5	mL	3/29/

Final Volume: 50 mL

Stock Source		Base Units	Amount Added
ME210901 6020IC	6020ICS-8A	ug/mL	2 mL

Analytes	CAS	Conc:	mg/L

Energy Laboratories Inc

Standard LOG

Standard ID:	ME210901 6020ICS-8A		
Standard Name	6020ICS-8A	Type:	Primary
Date Prepared	9/1/2021	BY:	Alyssa A. espinoza
Date Expires:	9/1/2022		
Department	ME	Status:	Open
Vendor:	Inorganic Ventures		
Lot Number:	P2-MEB684490		
Balance ID:			
Comments:	Opened on 9/01/2021; Expires on 9/01/2022.		

Chemical / Solvent Used	BottleNo	Amt	Units	Expires
Multi Analyte Custom Grade Solution	13794	500	mL	9/1/2022

Final Volume:
500 mL

Stock Source	**Base Units**	**Amount Added**
Analytes	**CAS**	Conc: **mg/L**

INORGANIC VENTURES
300 Technology Drive
Christiansburg, VA 24073 - USA
inorganicventures.com

CERTIFICATE OF ANALYSIS

tel 800.669.6899 - 540.585.3030
fax 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:	6020ICS-8A
Lot Number:	R2-MEB693957
Matrix:	1% (v/v) HNO3
Value / Analyte(s):	18 000 µg/mL ea: Chloride,
	3 000 µg/mL ea: Calcium,
	2 500 µg/mL ea: Iron, Sodium,
	2 000 µg/mL ea: Carbon,
	1 000 µg/mL ea: Aluminum, Phosphorus, Sulfur, Potassium, Magnesium,
	20 µg/mL ea: Molybdenum, Titanium

ID #: 13794
Opened:
Multi Analyte Custom Grade Solution
Expires: 6/18/2024
Rec'd: 4/29/2021
Energy Laboratories Inc 1120 So. 27th Street
Billings MT 59107

3.0 CERTIFIED VALUES AND UNCERTAINTIES

ANALYTE	CERTIFIED VALUE	ANALYTE	CERTIFIED VALUE
Aluminum, Al	1 001 ± 4 µg/mL	Calcium, Ca	3 003 ± 12 µg/mL
Carbon, C	2 002 ± 5 µg/mL	Chloride, Cl	18 020.0 ± 90.0 µg/mL
Iron, Fe	2 502 ± 10 µg/mL	Magnesium, Mg	1 001 ± 4 µg/mL
Molybdenum, Mo	20.02 ± 0.09 µg/mL	Phosphorus, P	1 001 ± 6 µg/mL
Potassium, K	1 001 ± 4 µg/mL	Sodium, Na	2 502 ± 9 µg/mL
Sulfur, S	1 001 ± 4 µg/mL	Titanium, Ti	20.02 ± 0.12 µg/mL

Density: 1.050 g/mL (measured at 20 ± 4 °C)

Assay Information:

ANALYTE	METHOD	NIST SRM#	SRM LOT#
Al	ICP Assay	3101a	140903
Al	EDTA	928	928
C	Acidimetric	84L	84L
Ca	ICP Assay	3109a	130213
Ca	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
Mo	ICP Assay	3134	130418
Mo	Calculated		See Sec. 4.2
Na	ICP Assay	3152a	120715
Na	Gravimetric		See Sec. 4.2
P	ICP Assay	3139a	060717
P	Acidimetric	84L	84L
S	Acidimetric	84L	84L
S	ICP Assay	traceable to 3154	M2-S657208
Ti	ICP Assay	3162a	130925
Ti	Calculated		See Sec. 4.2

The follow ing 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	<	0.000110	M	Eu	<	0.000067	s	Na	<		M	Se	<	0.003300	M	Zn		0.007900
s	Al	<		s	Fe	<		M	Nb	<	0.000140	O	Si	<	0.011000	M	Zr	<	0.000770
O	As	<	0.021000	M	Ga		0.026000	M	Nd	<	0.000034	M	Sm	<	0.000034				
M	Au	<	0.000067	M	Gd	<	0.000067	O	Ni		0.002900	M	Sn	<	0.000210				
M	B	<	0.001200	M	Ge	<	0.002600	M	Os	<	0.000034	M	Sr		0.031000				
M	Ba		0.001400	M	Hf	<	0.000034	s	P	<		M	Ta	<	0.000340				
O	Be	<	0.000210	M	Hg	<	0.000140	M	Pb		0.000510	M	Tb	<	0.000034				
M	Bi	<	0.000210	M	Ho	<	0.000034	M	Pd	<	0.000110	M	Te	<	0.000670				
s	Ca	<		M	In	<	0.000067	M	Pr	<	0.000034	M	Th	<	0.000034				
O	Cd	<	0.002700	M	Ir	<	0.000034	M	Pt	<	0.000034	s	Ti	<					
M	Ce	<	0.000140	s	K	<		M	Rb		0.056000	M	Tl	<	0.000210				
M	Co	<	0.014000	M	La	<	0.000410	M	Re	<	0.000034	M	Tm	<	0.000034				
M	Cr		0.022000	O	Li		0.002500	M	Rh	<	0.000067	M	U	<	0.000034				
M	Cs		0.000970	M	Lu	<	0.000034	M	Ru	<	0.000340	M	V	<	0.000410				
M	Cu		0.009900	s	Mg	<		s	S	<		M	W		0.001800				
M	Dy	<	0.000034	M	Mn		0.005300	M	Sb		0.000640	M	Y	<	0.000034				
M	Er	<	0.000034	s	Mo	<		M	Sc	<	0.000540	M	Yb	<	0.000034				

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**

8.0 HAZARDOUS INFORMATION

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

9.0 HOMOGENEITY

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

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

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

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

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

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

Inorganic Ventures, 300 Technology Drive, Christiansburg, Va. 24073, USA; Telephone: 800.669.6799; 540.585.3030, Fax: 540.585.3012; inorganicventures.com; info@inorganicventures.com

11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

June 18, 2020

- 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 18, 2024

- 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

Michael J Booth

Certifying Officer:

Paul Gaines
Chairman / Senior Technical Director

Paul R Gaines

Energy Laboratories Inc

Standard LOG

Standard ID:	ME210901 ICSAB		
Standard Name	ICSAB	Type:	Secondary
Date Prepared	9/1/2021	BY:	Cindy Rohrer
Date Expires:	9/1/2022		
Department	ME	Status:	Open
Vendor:			
Lot Number:			
Balance ID:			

Comments: Made fresh every Monday, Wednesday, and Friday

Chemical / Solvent Used	BottleNo	Amt	Units	Exp
Nitric Acid, 69.0-70.0%,0000282671	14178	1	mL	4/11/
Milli-Q H2O	391	46.45	mL	6/1/2
Hydrochloric Acid Instra Analyzed 000	14028	0.5	mL	3/29/

Final Volume: 50 mL

Stock Source		**Base Units**	**Amount Added**
ME210901 6020IC	6020ICS-8A	ug/mL	2 mL
ME 210901 6020IC	6020ICS-9B	ug/mL	0.05 mL

Analytes	**CAS**	Conc:	**mg/L**

Energy Laboratories Inc

Standard LOG

Standard ID:	ME 210901 6020ICS-9B		
Standard Name	6020ICS-9B	Type:	Primary
Date Prepared	9/1/2021	BY:	Alyssa A. espinoza
Date Expires:	9/1/2022		
Department	ME	Status:	Open
Vendor:	Inorganic Ventures		
Lot Number:	P2-MEB678862		
Balance ID:			
Comments:	Opened 9/1/2021; Expires 9/1/2022		

Chemical / Solvent Used	BottleNo	Amt	Units	Expires
Multi Analyte Custom Grade Solution	13478	125	mL	9/1/2022

Final Volume:
125 mL

Stock Source **Base Units** **Amount Added**

Analytes **CAS** Conc: **mg/L**

INORGANIC VENTURES
300 Technology Drive
Christiansburg, VA 24073 · USA
inorganicventures.com
tel: 800.669.6799 · 540.585.3030
fax: 540.585.3012
info@inorganicventures.com

CERTIFICATE OF ANALYSIS

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:	6020ICS-9B
Lot Number:	P2-MEB678862
Matrix:	3% (v/v) HNO3
Value / Analyte(s):	20 µg/mL ea: Cobalt, Chromium, Copper, Manganese, Nickel, Vanadium, 10 µg/mL ea: Zinc, Arsenic, Cadmium, Selenium, 5 µg/mL ea: Silver

ID #: 13478
Opened:_____
Multi Analyte Custom Grade Solution
Expires: 5/17/2023
Rec'd: 1/15/2021
Energy Laboratories Inc 1120 So. 27th Street
Billings MT 59107

3.0 CERTIFIED VALUES AND UNCERTAINTIES

ANALYTE	CERTIFIED VALUE	ANALYTE	CERTIFIED VALUE
Arsenic, As	10.01 ± 0.05 µg/mL	Cadmium, Cd	10.01 ± 0.04 µg/mL
Chromium, Cr	20.02 ± 0.12 µg/mL	Cobalt, Co	20.01 ± 0.10 µg/mL
Copper, Cu	20.02 ± 0.08 µg/mL	Manganese, Mn	20.02 ± 0.09 µg/mL
Nickel, Ni	20.02 ± 0.09 µg/mL	Selenium, Se	10.01 ± 0.06 µg/mL
Silver, Ag	5.005 ± 0.022 µg/mL	Vanadium, V	20.02 ± 0.08 µg/mL
Zinc, Zn	10.01 ± 0.04 µg/mL		

Density: 1.015 g/mL (measured at 20 ± 4 °C)

Assay Information:

ANALYTE	METHOD	NIST SRM#	SRM LOT#
Ag	ICP Assay	3151	160729
Ag	Volhard	999c	999c
As	ICP Assay	3103a	100818
As	Calculated		See Sec. 4.2
Cd	ICP Assay	3108	130116
Cd	EDTA	928	928
Co	EDTA	928	928
Co	ICP Assay	traceable to 3113	M2-CO661665
Cr	ICP Assay	3112a	170630
Cu	ICP Assay	3114	121207
Cu	EDTA	928	928
Mn	EDTA	928	928
Mn	ICP Assay	Traceable to 3132	N2-MN665236
Mn	Calculated		See Sec. 4.2
Ni	ICP Assay	3136	120619
Ni	EDTA	928	928
Se	ICP Assay	3149	100901
Se	Calculated		See Sec. 4.2
V	EDTA	928	928
V	ICP Assay	3165	992706
Zn	ICP Assay	3168a	120629
Zn	EDTA	928	928

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

Characterization of CRM/RM by Two or More Methods

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

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

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

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

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

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

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

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

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

X_a = mean of Assay Method A with

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

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

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

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

4.1 Thermometer Calibration

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

4.2 *Balance Calibration*

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

4.3 Glassware Calibration

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

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

N/A

6.0 INTENDED USE

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

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

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

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

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

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

Low Silver Note: This solution contains "LOW" levels of Silver. Please store this entire bottle inside a sealed glass jar.

8.0 HAZARDOUS INFORMATION

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

9.0 HOMOGENEITY

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

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

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

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

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

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

Inorganic Ventures, 300 Technology Drive, Christiansburg, Va. 24073, USA; Telephone: 800.669.6799; 540.585.3030, Fax: 540.585.3012; inorganicventures.com; info@inorganicventures.com

11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

May 17, 2019

- 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

- May 17, 2023

- 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

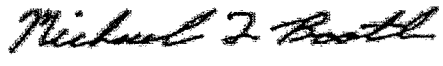
- Sealed TCT Bag Open Date: _____

- 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
Supervisor, Quality Control



Certifying Officer:

Paul Gaines
CEO, Senior Technical Director

Energy Laboratories Inc

Standard LOG

Standard ID:	ME211006 SS1		
Standard Name	SS1 ICPMS Spiking Solution	Type:	Tertiary
Date Prepared	10/6/2021	BY:	Jason P. Van Clea
Date Expires:	1/5/2022		
Department	ME	Status:	Expired
Vendor:	Inorganic Ventures		
Lot Number:			
Balance ID:			

Comments:

Chemical / Solvent Used	BottleNo	Amt	Units	Exp
Nitric Acid, 69.0-70.0%,0000277202	13781	0.8	mL	1/14/
Hydrochloric Acid, 36.5-38.0% 000027	13784	2	mL	12/15
Milli-Q H2O	391	28.8	mL	6/1/2

Final Volume: 40 mL

Stock Source		Base Units	Amount Added
ME210812 HgPrim	Primary Hg Stock 2 PPM	ug/mL	2 mL
ME210726 MSCAL	MSCAL 2B	ug/mL	2 mL
ME210511 MSCAL	MSCAL 3C	ug/mL	2 mL

Analytes	CAS	Conc: ug/mL

Energy Laboratories Inc

Spike LOG

Standard ID:	ME210812 HGPRIMARY		
Standard Name	Primary Hg Stock 2 PPM	Type:	Primary
Date Prepared	8/12/2021	BY:	Parker A. Pearsall
Date Expires:	1/5/2022		
Department	ME	Status:	Expired
Vendor:	Inorganic Ventures		
Lot Number:			
Balance ID:			

Comments: Made with different HG stock than QCS

Chemical / Solvent Used	BottleNo	Amt	Units	Expires
Nitric Acid Instra Analyzed 0000267725	13706	0.5	mL	8/11/2025
Hydrochloric Acid, 36.5-38.0% 000027130	13503	0.25	mL	9/15/2025

Final Volume:
25 mL

Stock Source		**Base Units**	**Amount Added**
ME210105HG	HG Stock	ug/mL	0.05 mL
ME210105AU	Au Stock	ug/mL	0.05 mL

Analytes	**CAS**	Conc:	**ug/mL**

Energy Laboratories Inc

Standard LOG

Standard ID:	ME210105AU		
Standard Name	Au Secondary Stock	Type:	Secondary
Date Prepared	1/4/2021	BY:	Ron Hunt
Date Expires:	1/4/2022		
Department	ME	Status:	Empty/Disposed
Vendor:	Inorganic Ventures		
Lot Number:	R2-AU695955		
Balance ID:			
Comments:	Opened 1/4/2021; Expires 1/4/2021		

Chemical / Solvent Used	BottleNo	Amt	Units	Expires
Gold Single Analyte Custom Grade Soluti	13396	500	mL	1/4/2021

Final Volume:
500 mL

Stock Source **Base Units** **Amount Added**

Analytes **CAS** Conc: **ug/mL**

300 Technology Drive
Christiansburg, VA 24073 - USA
inorganicventures.com
tel: 800.669.6799 - 540.585.3030
fax: 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:	Single Analyte Custom Grade Solution
Catalog Number:	CGAU1
Lot Number:	R2-AU695955
Matrix:	10% (v/v) HCl
Value / Analyte(s):	1 000 µg/mL ea: Gold
Starting Material:	H[AuCl4]
Starting Material Lot#:	2340
Starting Material Purity:	99.9983%

ID #: 13396
Opened:
Gold Single Analyte Custom Grade Solution
Expires: 9/1/2024
Rec'd: 1/4/2021
Energy Laboratories Inc 1120 So. 27th Street
Billings MT 59107

3.0 CERTIFIED VALUES AND UNCERTAINTIES

Certified Value: 1001 ± 5 µg/mL

Density: 1.022 g/mL (measured at 20 ± 4 °C)

Assay Information:

Assay Method #1 **1002 ± 4 µg/mL**
ICP Assay NIST SRM 3121 Lot Number: 991806

Assay Method #2 **1001 ± 5 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	0.029000	M	Eu	<	0.000210	O	Na	0.003300	M	Se	<	0.014000	M	Zn	0.000370	
M	Al	< 0.001900	M	Fe		0.002100	M	Nb	< 0.000110	O	Si		0.003300	M	Zr	< 0.001700	
M	As	< 0.005700	M	Ga	<	0.001100	M	Nd	< 0.000110	M	Sm	<	0.000110				
s	Au	<	M	Gd	<	0.000110	M	Ni	< 0.002500	M	Sn	<	0.001600				
M	B	< 0.005000	M	Ge	<	0.004300	M	Os	< 0.000110	M	Sr	<	0.000810				
M	Ba	< 0.001300	M	Hf	<	0.000310	O	P	< 0.052000	M	Ta	<	0.000110				
M	Be	< 0.000610	M	Hg	<	0.001200	M	Pb	< 0.001900	M	Tb	<	0.000110				
M	Bi	< 0.002700	M	Ho	<	0.000110	M	Pd	0.003600	M	Te	<	0.002600				
O	Ca	0.001400	M	In		0.000071	M	Pr	< 0.000110	M	Th	<	0.004100				
M	Cd	< 0.000410	M	Ir	<	0.000210	M	Pt	0.008800	M	Ti	<	0.003100				
M	Ce	< 0.000210	O	K	<	0.011000	M	Rb	< 0.001500	M	Tl	<	0.000110				
M	Co	< 0.000210	M	La	<	0.000110	M	Re	< 0.000110	M	Tm	<	0.000110				
O	Cr	< 0.005200	O	Li		0.000063	M	Rh	< 0.001500	M	U	<	0.000110				
M	Cs	< 0.000810	M	Lu	<	0.000110	M	Ru	< 0.001700	O	V	<	0.002700				
O	Cu	0.001000	O	Mg		0.000230	O	S	< 0.052000	M	W	<	0.003900				
M	Dy	< 0.000110	O	Mn	<	0.002100	M	Sb	0.003200	M	Y	<	0.000110				
M	Er	< 0.000110	M	Mo	<	0.001400	O	Sc	< 0.001400	M	Yb	<	0.000110				

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 - 196.97 +3 6 Au(Cl)63

Chemical Compatibility -Stable in HCl, and HNO3, as the chloride complex. Avoid basic media. Stable with most metals and inorganic anions in acidic media.

Stability - 2-100 ppb levels. 2-10 ppb Au is stable for #1day maximum in 1% HNO3 / LDPE container. 100 ppb is stable for #2 days maximum in 1% HNO3 / LDPE container. 1-10,000 ppm solutions chemically stable for years in 10% HCl / LDPE container.

Au Containing Samples (Preparation and Solution) - Metal (Aqua Regia); Oxides (Soluble in HCl); Ores (Dissolve in HCl / 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 197 amu	5 ppt	N/A	181Ta16O
ICP-OES 208.209 nm	0.04/0.01 µg/mL	1	Ir, Re
ICP-OES 242.795 nm	0.02/0.003 µg/mL	1	Mn, Os, Th, Ta, Pt, Co, F
ICP-OES 267.595 nm	0.03/0.003 µg/mL	1	Nb, Ta, U, Cr, Th, Rh, Ru

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 01, 2020

- 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 01, 2024

- 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

Energy Laboratories Inc

Standard LOG

Standard ID:	ME210105HG		
Standard Name	HG Stock	Type:	Primary
Date Prepared	1/4/2021	BY:	Ron Hunt
Date Expires:	1/5/2022		
Department	ME	Status:	Expired
Vendor:	Inorganic Ventures		
Lot Number:	R2-HG696409		
Balance ID:			

Comments:

Chemical / Solvent Used	BottleNo	Amt	Units	Expires
Mercury Single Analyte Custom Grade Sol	13412	125	mL	9/15/2024

Final Volume:
125 mL

Stock Source **Base Units** **Amount Added**

Analytes **CAS** Conc: **ug/mL**

300 Technology Drive
Christiansburg, VA 24073 - USA
inorganicventures.com
tel: 800.669.6799 - 540.585.3030
fax: 540.585.3012
sales@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:	Single Analyte Custom Grade Solution
Catalog Number:	CGHG1
Lot Number:	R2-HG696409
Matrix:	5% (v/v) HNO3
Value / Analyte(s):	1 000 µg/mL ea: Mercury
Starting Material:	Hg metal
Starting Material Lot#:	1959
Starting Material Purity:	99.9994%

ID #: 13412
Opened:
Mercury Single Analyte Custom Grade Solutic
Expires: 9/15/2024
Rec'd: 1/4/2021
Energy Laboratories Inc 1120 So. 27th Street
Billings MT 59107

3.0 CERTIFIED VALUES AND UNCERTAINTIES

Certified Value: 1002 ± 3 µg/mL

Density: 1.026 g/mL (measured at 20 ± 4 °C)

Assay Information:

Assay Method #1 **1004 ± 8 µg/mL**
ICP Assay NIST SRM 3133 Lot Number: 160921

Assay Method #2 **1003 ± 3 µg/mL**
EDTA NIST SRM 928 Lot Number: 928

Assay Method #3 **1001 ± 3 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.

O	Ag		0.001159	M	Eu	<	0.000201	O	Na		0.000435	M	Se	<	0.015915	O	Zn	<	0.001510
O	Al		0.000090	O	Fe		0.000113	M	Nb	<	0.000201	O	Si		0.000525	M	Zr	<	0.000201
M	As	<	0.000402	M	Ga	<	0.000201	M	Nd	<	0.000201	M	Sm	<	0.000201				
M	Au	<	0.003631	M	Gd	<	0.000201	M	Ni	<	0.000402	M	Sn	<	0.001007				
M	B	<	0.001208	M	Ge	<	0.000201	M	Os	<	0.000605	M	Sr	<	0.000201				
M	Ba	<	0.000201	M	Hf	<	0.000201	O	P	<	0.032370	M	Ta	<	0.000201				
M	Be	<	0.000201	s	Hg	<		M	Pb	<	0.000201	M	Tb	<	0.000201				
M	Bi	<	0.000201	M	Ho	<	0.000201	M	Pd	<	0.000403	M	Te	<	0.002216				
O	Ca		0.000746	M	In	<	0.000201	M	Pr	<	0.000201	M	Th	<	0.000201				
M	Cd	<	0.000201	M	Ir	<	0.000201	M	Pt	<	0.000402	M	Ti	<	0.000402				
M	Ce	<	0.000201	O	K		0.002007	M	Rb	<	0.000201	O	Tl	<	0.016508				
M	Co	<	0.000201	M	La	<	0.000201	M	Re	<	0.000201	M	Tm	<	0.000201				
O	Cr	<	0.003021	O	Li	<	0.000107	M	Rh	<	0.000201	M	U	<	0.008058				
M	Cs	<	0.001208	M	Lu	<	0.000201	M	Ru	<	0.000201	M	V	<	0.000201				
M	Cu	<	0.000402	O	Mg		0.000096	O	S	<	0.053950	M	W	<	0.000604				
M	Dy	<	0.000201	M	Mn	<	0.000604	M	Sb	<	0.001208	M	Y	<	0.000201				
M	Er	<	0.000201	M	Mo		0.000971	M	Sc	<	0.000201	M	Yb	<	0.000201				

M - Checked by ICP-MS O - Checked by ICP-OES i - Spectral Interference
n - Not Checked For s - Solution Standard Element

6.0 INTENDED USE

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

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

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

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

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

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

Atomic Weight; Valence; Coordination Number; Chemical Form in Solution - 200.59 +2 4 Hg(OH)(aq) 1+

Chemical Compatibility - Stable in HNO3. Avoid basic media forming insoluble carbonate. The sulfide, basic carbonate, oxalate, phosphate, arsenite, arsenate and iodide are insoluble in water.

Stability - 2-100 ppb levels not stable in 1% HNO3 / LDPE container, stable in 10% HNO3 packaged in borosilicate glass. 1-100 ppm levels stable in 7% HNO3 packaged in borosilicate glass. 1000-10,000 ppm solutions are chemically stable for years in 5-10% HNO3 / LDPE container.

Hg Containing Samples (Preparation and Solution) - Metal (soluble in HNO3); Oxide (Soluble in HNO3); Ores and Organic based (The literature has more references to the preparation of Hg containing samples than any other element. Please consult the literature for your specific sample type, since such preparations are prone to error. Or e-mail our technical staff and we will contact you to discuss your particular sample preparation questions in further detail.).

Atomic Spectroscopic Information (ICP-OES D.L.s are given as radial/axial view):

Technique/Line	Estimated D.L.	Order	Interferences (underlined indicates severe)
ICP-MS 202 amu	9 ppt	n/a	186W16O
ICP-OES 184.950 nm	0.03 / 0.005 µg/mL	1	
ICP-OES 194.227 nm	0.03 / 0.005 µg/mL	1	V
ICP-OES 253.652 nm	0.1 / 0.03 µg/mL	1	Ta, Co, Th ,Rh , Fe, U

8.0 HAZARDOUS INFORMATION

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

9.0 HOMOGENEITY

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

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

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

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

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

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

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11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

September 15, 2020

- 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 15, 2024

- 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

Energy Laboratories Inc

Standard LOG

Standard ID:	ME210726 MSCAL2B		
Standard Name	MSCAL 2B	Type:	Primary
Date Prepared	7/26/2021	BY:	Alyssa A. espinoza
Date Expires:	7/26/2022		
Department	ME	Status:	Open
Vendor:	Inorganic Ventures		
Lot Number:	S2-MEB702845		
Balance ID:			
Comments:	Opened 7/26/2021; Expires 7/26/2022		

Chemical / Solvent Used	BottleNo	Amt	Units	Expires
Multi Analyte Custom Grade Solution	13652		mL	7/26/2022

Final Volume: mL

Stock Source **Base Units** **Amount Added**

Analytes **CAS** Conc: **ug/mL**

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Certificate of Analysis

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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 883.01 ACCREDITED Reference Material Producer Certificate 883.02

2.0 PRODUCT DESCRIPTION

Product Code:	Multi Analyte Custom Grade Solution
Catalog Number:	EL-MSCAL-3C
Lot Number:	S2-MEB702844
Matrix:	3% (v/v) HNO3 tr. HF
Value / Analyte(s):	400 µg/mL ea: Silicon, 100 µg/mL ea: Tin, Titanium, Molybdenum, Antimony

ID #: 13651
Opened:
Multi Analyte Custom Grade Solution
Expires: 3/8/2025
Rec'd: 3/18/2021
Energy Laboratories Inc 1120 So. 27th Street
Billings MT 59107

3.0 CERTIFIED VALUES AND UNCERTAINTIES

ANALYTE	CERTIFIED VALUE	ANALYTE	CERTIFIED VALUE
Antimony, Sb	100.0 ± 0.8 µg/mL	Molybdenum, Mo	100.0 ± 0.6 µg/mL
Silicon, Si	400.1 ± 3.0 µg/mL	Tin, Sn	100.0 ± 0.6 µg/mL
Titanium, Ti	100.0 ± 0.7 µg/mL		

Density: 1.015 g/mL (measured at 20 ± 4 °C)

Assay Information:

ANALYTE	METHOD	NIST SRM#	SRM LOT#
Mo	ICP Assay	3134	130418
Sb	ICP Assay	3102a	140911
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 Expended 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 Expended 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

- 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

March 08, 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

- March 08, 2025

- 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

Michael J Booth

Certifying Officer:

Paul Gaines
Chairman / Senior Technical Director

Paul R Gaines

Energy Laboratories Inc

Standard LOG

Standard ID:	ME210511 MSCAL 3C		
Standard Name	MSCAL 3C	Type:	Primary
Date Prepared	5/11/2021	BY:	Alyssa A. espinoza
Date Expires:	5/11/2022		
Department	ME	Status:	Open
Vendor:	Inorganic Ventures		
Lot Number:	P2-MEB682620		
Balance ID:			
Comments:	Opened 5/11/21; expires 5/11/22		

Chemical / Solvent Used	BottleNo	Amt	Units	Expires
Multi Analyte Custom Grade Solution	13651	250	mL	5/11/2022

Final Volume:
250 mL

Stock Source **Base Units** **Amount Added**

Analytes **CAS** Conc: **ug/mL**

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:	EL-MSCAL-3C
Lot Number:	S2-MEB702844
Matrix:	3% (v/v) HNO3 tr. HF
Value / Analyte(s):	400 µg/mL ea: Silicon, 100 µg/mL ea: Tin, Titanium, Molybdenum, Antimony

ID #: 13651
Opened:
Multi Analyte Custom Grade Solution
Expires: 3/8/2025
Rec'd: 3/18/2021
Energy Laboratories Inc 1120 So. 27th Street
Billings MT 59107

3.0 CERTIFIED VALUES AND UNCERTAINTIES

ANALYTE	CERTIFIED VALUE	ANALYTE	CERTIFIED VALUE
Antimony, Sb	100.0 ± 0.8 µg/mL	Molybdenum, Mo	100.0 ± 0.6 µg/mL
Silicon, Si	400.1 ± 3.0 µg/mL	Tin, Sn	100.0 ± 0.6 µg/mL
Titanium, Ti	100.0 ± 0.7 µg/mL		

Density: 1.015 g/mL (measured at 20 ± 4 °C)

Assay Information:

ANALYTE	METHOD	NIST SRM#	SRM LOT#
Mo	ICP Assay	3134	130418
Sb	ICP Assay	3102a	140911
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 (±) = $U_{CRM/RM} = k\,(u^2_{char} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{1/2}$

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

- 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

March 08, 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

- March 08, 2025

- 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

Michael J Booth

Certifying Officer:

Paul Gaines
Chairman / Senior Technical Director

Paul R Gaines

Energy Laboratories Inc

Spike LOG

Standard ID: ME211117A INTERNAL STANDARD
Standard Name Internal Standards 2 mg/L
Type: Solution
Date Prepared 11/17/2021
BY: Stacy R. Hendricks
Date Expires: 1/4/2022
Department ME
Status: Expired
Vendor:
Lot Number:
Balance ID:

Comments:

Chemical / Solvent Used	BottleNo	Amt	Units	Expires
Hydrochloric Acid, 36.5-38.0% 000028182	13910	10	mL	3/29/2026
Nitric Acid, 69.0-70.0%,0000282671	14178	20	mL	4/11/2026

Final Volume:
1000 mL

Stock Source		**Base Units**	**Amount Added**
ME210105AU	Au Secondary Stock	ug/mL	0.2 mL
ME210420 Ge Sec	Ge Secondary Standard	ug/mL	2 mL
ME210208 Sc Sec	Sc Secondary Stock	ug/mL	2 mL
ME210208 Bi Seco	Bismuth Secondary Stock	ug/mL	2 mL
ME210208 In Seco	In Secondary Stock	ug/mL	2 mL
ME210212-TB	TB Terbium primary source	ug/mL	2 mL
ME210212-HO	HO Holmium primary source	ug/mL	2 mL
ME210212-LU	LU Lutetium primary source	ug/mL	2 mL

Analytes	**CAS**	Conc:	**ug/mL**

Energy Laboratories Inc

Standard LOG

Standard ID:	ME210105AU		
Standard Name	Au Secondary Stock	Type:	Secondary
Date Prepared	1/4/2021	BY:	Ron Hunt
Date Expires:	1/4/2022		
Department	ME	Status:	Empty/Disposed
Vendor:	Inorganic Ventures		
Lot Number:	R2-AU695955		
Balance ID:			
Comments:	Opened 1/4/2021; Expires 1/4/2021		

Chemical / Solvent Used	BottleNo	Amt	Units	Expires
Gold Single Analyte Custom Grade Soluti	13396	500	mL	1/4/2021

Final Volume:
500 mL

Stock Source	**Base Units**	**Amount Added**
Analytes	**CAS**	Conc: **ug/mL**

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tel: 800.669.6799 - 540.585.3030
fax: 540.585.3012
info@inorganicventures.com

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:	Single Analyte Custom Grade Solution
Catalog Number:	CGAU1
Lot Number:	R2-AU695955
Matrix:	10% (v/v) HCl
Value / Analyte(s):	1 000 µg/mL ea: Gold
Starting Material:	H[AuCl4]
Starting Material Lot#:	2340
Starting Material Purity:	99.9983%

ID #: 13396
Opened:
Gold Single Analyte Custom Grade Solution
Expires: 9/1/2024
Rec'd: 1/4/2021
Energy Laboratories Inc 1120 So. 27th Street
Billings MT 59107

3.0 CERTIFIED VALUES AND UNCERTAINTIES

Certified Value: 1001 ± 5 µg/mL

Density: 1.022 g/mL (measured at 20 ± 4 °C)

Assay Information:

Assay Method #1 **1002 ± 4 µg/mL**
ICP Assay NIST SRM 3121 Lot Number: 991806

Assay Method #2 **1001 ± 5 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	0.029000	M	Eu	<	0.000210	O	Na	0.003300	M	Se	<	0.014000	M	Zn	0.000370	
M	Al	< 0.001900	M	Fe		0.002100	M	Nb	< 0.000110	O	Si		0.003300	M	Zr	< 0.001700	
M	As	< 0.005700	M	Ga	<	0.001100	M	Nd	< 0.000110	M	Sm	<	0.000110				
s	Au	<	M	Gd	<	0.000110	M	Ni	< 0.002500	M	Sn	<	0.001600				
M	B	< 0.005000	M	Ge	<	0.004300	M	Os	< 0.000110	M	Sr	<	0.000810				
M	Ba	< 0.001300	M	Hf	<	0.000310	O	P	< 0.052000	M	Ta	<	0.000110				
M	Be	< 0.000610	M	Hg	<	0.001200	M	Pb	< 0.001900	M	Tb	<	0.000110				
M	Bi	< 0.002700	M	Ho	<	0.000110	M	Pd	0.003600	M	Te	<	0.002600				
O	Ca	0.001400	M	In		0.000071	M	Pr	< 0.000110	M	Th	<	0.004100				
M	Cd	< 0.000410	M	Ir	<	0.000210	M	Pt	0.008800	M	Ti	<	0.003100				
M	Ce	< 0.000210	O	K	<	0.011000	M	Rb	< 0.001500	M	Tl	<	0.000110				
M	Co	< 0.000210	M	La	<	0.000110	M	Re	< 0.000110	M	Tm	<	0.000110				
O	Cr	< 0.005200	O	Li		0.000063	M	Rh	< 0.001500	M	U	<	0.000110				
M	Cs	< 0.000810	M	Lu	<	0.000110	M	Ru	< 0.001700	O	V	<	0.002700				
O	Cu	0.001000	O	Mg		0.000230	O	S	< 0.052000	M	W	<	0.003900				
M	Dy	< 0.000110	O	Mn	<	0.002100	M	Sb	0.003200	M	Y	<	0.000110				
M	Er	< 0.000110	M	Mo	<	0.001400	O	Sc	< 0.001400	M	Yb	<	0.000110				

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 - 196.97 +3 6 Au(Cl)63

Chemical Compatibility -Stable in HCl, and HNO3, as the chloride complex. Avoid basic media. Stable with most metals and inorganic anions in acidic media.

Stability - 2-100 ppb levels. 2-10 ppb Au is stable for #1day maximum in 1% HNO3 / LDPE container. 100 ppb is stable for #2 days maximum in 1% HNO3 / LDPE container. 1-10,000 ppm solutions chemically stable for years in 10% HCl / LDPE container.

Au Containing Samples (Preparation and Solution) - Metal (Aqua Regia); Oxides (Soluble in HCl); Ores (Dissolve in HCl / 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 197 amu	5 ppt	N/A	181Ta16O
ICP-OES 208.209 nm	0.04/0.01 µg/mL	1	Ir, Re
ICP-OES 242.795 nm	0.02/0.003 µg/mL	1	Mn, Os, Th, Ta, Pt, Co, F
ICP-OES 267.595 nm	0.03/0.003 µg/mL	1	Nb, Ta, U, Cr, Th, Rh, Ru

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 01, 2020

- 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 01, 2024

- 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

Energy Laboratories Inc

Standard LOG

Standard ID:	ME210420 GE SECONDARY STOCK		
Standard Name	Ge Secondary Standard	Type:	Primary
Date Prepared	4/20/2021	BY:	Stacy R. Hendricks
Date Expires:	4/20/2022		
Department	ME	Status:	Open
Vendor:	SCP Science		
Lot Number:	S201204009		
Balance ID:			
Comments:	Opened 4/20/2021; Expires 4/20/2022		

Chemical / Solvent Used	BottleNo	Amt	Units	Expires
ICP/ICPMS Standard Germanium	13639	125	mL	4/20/2022

Final Volume:
125 mL

Stock Source **Base Units** **Amount Added**

Analytes **CAS** Conc: **ug/mL**

SCP SCIENCE

Providing Innovative Solutions to Analytical Chemists

Certificate of Analysis

1.0 DESCRIPTION:

***Plasma*CAL ICP/ICPMS Standard - Germanium 1000 µg/ml**

Catalogue Number: 140-050-320/-321/-325

Starting Material: Ammonium Hexafluorogermanate(IV) 99.99+%

Lot Number: **S201204009**

Matrix: H_2O / tr. F^-

Ge

Expiration Date (End of month): **December 2022** (or 15 months after bottle is opened, whichever comes first)

2.0 CERTIFIED VALUES AND ASSOCIATED UNCERTAINTY:

Certified Concentration: **1002 µg/ml +/- 3 µg/ml**

1002 µg/g +/- 3 µg/g

Method of analysis: Inductively Coupled Plasma Atomic Emission Spectroscopy (ICP-AES)

Traceability: NIST Standard Reference Material 3120a Lot: **151115**

Note: The uncertainty of the certified value has been calculated from applicable uncertainty contributors (u_i) including uncertainty established during characterization of the material (u_{char}), the between bottle variation (u_{bb}), short-term stability (u_{sts}) and long-term stability (u_{lts}) according to the model $u_c = \sqrt{(u_{char}^2 + u_{bb}^2 + u_{sts}^2 + u_{lts}^2)}$. This combined uncertainty has been further multiplied by a coverage factor (k) of 2 to provide a 95% confidence interval.

ID #: 13639
Opened:_____
ICP/ICPMS Standard Germanium
Expires: 12/31/2022
Rec'd: 3/16/2021
Energy Laboratories Inc 1120 So. 27th Street
Billings MT 59107

3.0 REFERENCE VALUES:

Density: **1.000 g/ml @ 22.7 °C**

Trace Metal Impurities as tested by ICP-MS:

Element	Conc. (ppm)	Element	Conc. (ppm)	Element	Conc. (ppm)	Element	Conc. (ppm)
Ag	<0.0010	Fe	<0.0018	Nd	<0.0010	Sn	<0.0010
Al	<0.0010	Ga	<0.0010	Ni	<0.0010	Sr	<0.0025
As	**0.0097**	Gd	<0.0010	Os	<0.0010	Ta	<0.0010
Au	<0.0010	Ge	N/A	P	<0.0026	Tb	<0.0010
B	<0.0015	Hf	<0.0010	Pb	<0.0010	Te	<0.0010
Ba	<0.0010	Hg	*	Pd	<0.0010	Th	<0.0010
Be	<0.0010	Ho	<0.0010	Pr	<0.0010	Ti	<0.0012
Bi	<0.0010	In	<0.0010	Pt	<0.0010	Tl	<0.0011
Ca	<0.0135	Ir	<0.0010	Rb	<0.0010	Tm	<0.0010
Cd	<0.0010	K	<0.0024	Re	<0.0010	U	<0.0010
Ce	<0.0010	La	<0.0010	Rh	<0.0010	V	<0.0010
Co	<0.0010	Li	<0.0010	Ru	<0.0010	W	<0.0020
Cr	<0.0010	Lu	<0.0010	S	*	Y	<0.0010
Cs	<0.0010	Mg	<0.0010	Sb	<0.0010	Yb	<0.0010
Cu	<0.0010	Mn	<0.0010	Sc	<0.0010	Zn	<0.0010
Dy	<0.0010	Mo	<0.0010	Se	<0.0010	Zr	<0.0010
Er	<0.0010	Na	<0.0025	Si	*		
Eu	<0.0010	Nb	<0.0010	Sm	<0.0010	*: Not tested	

4.0 APPROVAL AND DATE OF CERTIFICATION:

Certification Approval: Daniel Boisvert, Chemist

Certification Date: December 16, 2020

Daniel Boisvert

5.0 INTENDED USE / *UTILISATION PRÉVUE*:

- ICP Standards: For the calibration of, including but not limited to: ICP-AES, ICP-MS, FAAS, GFAA, XRF and DCP. / *Étalons ICP : Pour l'étalonnage d'instruments de mesure tels que: ICP-AES, ICP-MS, FAAS, GFAA, XRF et DCP.*
- AA Standards: For the calibration of Flame (FAAS) and Graphite Furnace (GFAA) Atomic Absorption Spectrometers. / *Étalons AA : Pour l'étalonnage de spectromètres d'absorption atomique flamme (GFAA) et four au graphite (GFAA).*
- Matrix Modifiers: For the optimization of analytical conditions to provide better Graphite Furnace Atomic Absorption (GFAA) instrument response and improved detection limits. / *Modificateur de matrice : Pour l'optimisation des conditions analytiques afin de fournir des meilleurs réponses instrumentales et limites de détection pour SAA four au graphite.*
- pH Standards: For the calibrating pH meters or for other wet chemistry applications. / *Étalons pH : Pour étalonnage de pH mètres et autres applications de chimie humide.*
- Conductivity Standards: For electrolytic conductivity measurement as a calibration standard. / *Étalons de conductivité : Comme étalon pour les mesures de conductivité électrolytiques.*
- IC Standards: for calibration of, but not limited to IC, HPLC, TLC, ISE, IR, NMR, MS, UV/VIS or other wet chemistry applications. / *Étalons IC : Pour étalonnage d'instruments tels que : IC, HPLC, TLC, ISE, IR, NMR, MS, UV/VIS et autres applications de chimie humide.*

For any inquiries, please contact **SCP SCIENCE**. / *Pour toute question, veuillez contacter **SCP SCIENCE**.*

6.0 INSTRUCTIONS FOR USE / *INSTRUCTIONS D'UTILISATION*:

Handling and Storage / Manutention et entreposage: Keep product tightly capped when not in use. The solution should be opened for a minimum amount of time necessary to dispense the amount required. Do not pipet or use directly from container. Do not return unused portions back to container. Store under normal laboratory conditions. Avoid exposure to excessive sources of heat and humidity or direct sunlight. / *Garder les contenants bien fermés lorsque non utilisés. Le contenant devrait être ouvert seulement pour le temps requis afin de prélever la quantité nécessaire. Ne pas pipetter ou utiliser directement du contenant. Ne pas retourner les portions non-utilisées dans le contentant. Conserver dans des conditions normales de laboratoire. Éviter l'exposition à des sources de chaleur et d'humidité excessives ou à l'exposition solaire directe.*

Stability / *Stabilité*: This Standard is guaranteed to be stable and accurate to within the specified uncertainty of measurement up to the unopened expiry date, if sealed, or up to the opened expiry date (when indicated), whichever comes first, provided the solution is kept tightly capped and stored under the indicated storage conditions. Purchasers will be notified of any significant changes resulting in re-certification or withdrawal of the product prior to the expiration date. / *La stabilité et l'exactitude de cet étalon sont garanties d'être à l'intérieur de l'incertitude de mesure, jusqu'à la date d'expiration de la bouteille non-ouverte, si scellée, ou jusqu'à la date d'expiration de la bouteille ouverte (si indiquée), en présumant que le contenant est maintenu fermé et gardé dans les conditions d'entreposage indiquées. Les acheteurs seront avisés dans le cas où il y aura des changements significatifs nécessitant une re-certification ou un rappel du produit avant la date d'expiration.*

7.0 HAZARDOUS INFORMATION / *INFORMATION SUR LES RISQUES POTENTIELS*:

Please refer to the associated Safety Data Sheet (SDS) for information regarding this product (available at www.SCPSCIENCE.com). / *SVP vous référer à la Fiche Signalétique applicable pour de l'information sur ce produit (Disponible à www.SCPSCIENCE.com).*

8.0 HOMOGENEITY / *HOMOGÉNÉITÉ:*

This solution has been blended according to an in-house procedure and its homogeneity is guaranteed to be fit for purpose when a sample size sufficient for the intended method of analysis is used. / *Cette solution a été préparée selon une procédure maison et nous assurons que sa homogénéité est approprié à l'emploi lorsqu'un échantillon suffisant pour la méthode d'analyse prévue est utilisé.*

9.0 TRACEABILITY / *TRAÇABILITÉ*:

This CRM (Certified Reference Material) is traceable to the NIST SRM (Standard Reference Material) indicated in section 2 through an unbroken chain of comparisons. In addition, balances used are regularly calibrated using weights which are traceable to NIST (National Institute of Standards and Technology) or NRC (National Research Council of Canada) standards. All conductivity meters used to analyze this standard have been regularly calibrated using a NIST or NRC traceable Thermometer and standards. All pH meters used to analyze this standard have been regularly calibrated using a NIST or NRC traceable thermometer and pH/MV simulator. / *Ce matériel de référence certifié est traçable au Matériel de Référence Standardisé de NIST indiqué à la section 2 par une chaine de comparaison ininterrompue. De plus, les balances utilisées sont étalonnées régulièrement en utilisant des poids qui sont traçables au NIST (National Institute of Standards and Technology) ou au CRNC (Conseil National de Recherches Canada). Tout conductimètre utilisé afin d'analyser cet étalon a été sujet à un étalonnage périodique utilisant des thermomètres et étalons traçables au NIST ou CNRC. Tout pH mètre utilisé afin d'analyser cet étalon a été sujet à un étalonnage périodique utilisant des thermomètres et un simulateur pH/MV traçables au NIST ou au CNRC.*

10.0 PREPARATION / *PRÉPARATION:*

For the preparation of these solutions, 18 meghom/cm double deionized water, high-purity acids and glassware calibrated to ASTM Class A specifications are used. / *Une eau de 18 meghom/cm doublement déionisé, de l'acide de haute pureté, ainsi que de la verrerie étalonnée afin de satisfaire les spécifications Classe A de ASTM ont été utilisés pour la préparation de cet étalon.*

11.0 QUALITY SYSTEM CERTIFICATIONS / *CERTIFICATIONS DE SYSTÈME QUALITÉ:*

ISO 9001 Certification / *Certification ISO 9001*: This standard was produced in a facility which operates under a **registered** ISO 9001 Quality Management System. Please consult our web site for a copy of the most recent revision of our certificate of registration. / *Cet étalon a été fabriqué dans un laboratoire qui utilise un Système de Gestion de la Qualité **enregistré** à la norme ISO 9001. Veuillez consulter notre site web pour obtenir la version la plus récente de notre certificat d'enregistrement.*

ISO 17025 Accreditation / *Accréditation ISO 17025*: **SCP SCIENCE (Corporate Headquarters)** operates an ISO 17025 **accredited** laboratory. Please consult our web site for a copy of the most recent revision of our certificate and scope of accreditation. / ***SCP SCIENCE (Siège social)** est **accréditée** ISO 17025. Veuillez consulter notre site web afin d'obtenir la plus récente version de notre certificat d'accréditation ainsi que la portée de notre accréditation.*

ISO 17034 Accreditation / *Accréditation ISO 17034* : **SCP SCIENCE (Corporate Headquarters)** is an ISO 17034 accredited Reference Material Producer. Please consult our website for a copy of our most recent certificate and scope of accreditation. / ***SCP SCIENCE (Siège social)** est un Fabricant de Matériaux de Référence Accrédité ISO 17034. Veuillez consulter notre site web afin d'obtenir la plus récente version de notre certificat d'accréditation ainsi que la portée de notre accréditation.*

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Fax: +33 (0) 1 60 92 05 67

GERMANY
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Marktoberdorf

Phone: +49 (0) 8342-89560-61
Fax: +49 (0) 8342-89560-69

Energy Laboratories Inc

Spike LOG

Standard ID:	ME210208 SC SECOND STOCK		
Standard Name	Sc Secondary Stock	Type:	Primary
Date Prepared	2/8/2021	BY:	Parker A. Pearsall
Date Expires:	2/8/2022		
Department	ME	Status:	Open
Vendor:	SCP Science		
Lot Number:	S200813011		
Balance ID:			
Comments:	Opened 2/08/2021; Expires 2/08/2022		

Chemical / Solvent Used	BottleNo	Amt	Units	Expires
PlasmaCal Standard Scandium	13520	125	mL	8/31/2022

Final Volume:
125 mL

Stock Source **Base Units** **Amount Added**

Analytes **CAS** Conc: **ug/mL**

SCP SCIENCE

Providing Innovative Solutions to Analytical Chemists

Certificate of Analysis

1.0 DESCRIPTION:

PlasmaCAL ICP/ICPMS Standard - Scandium 1000 µg/ml

Catalogue Number: 140-051-210/-211/-215
Starting Material: Scandium(III) Oxide 99.99+%
Lot Number: **S200813011**
Matrix: 4% HNO_3 (See Section 3 for actual matrix)
Expiration Date (End of month): **August 2022** (or 15 months after bottle is opened, whichever comes first)

Sc

2.0 CERTIFIED VALUES AND ASSOCIATED UNCERTAINTY:

Certified Concentration: **999 µg/ml +/- 5 µg/ml**
978 µg/g +/- 5 µg/g

Method of analysis: Inductively Coupled Plasma Atomic Emission Spectroscopy (ICP-AES)

Traceability: NIST Standard Reference Material 3148a Lot: **100701**

Note: The uncertainty of the certified value has been calculated from applicable uncertainty contributors (u_i) including uncertainty established during characterization of the material (u_{char}), the between bottle variation (u_{bb}), short-term stability (u_{sts}) and long-term stability (u_{lts}) according to the model $u_c = \sqrt{(u_{char}^2 + u_{bb}^2 + u_{sts}^2 + u_{lts}^2)}$. This combined uncertainty has been further multiplied by a coverage factor (k) of 2 to provide a 95% confidence interval.

ID #: 13520
Opened:_____
PlasmaCal Standard Scandium
Expires: 8/31/2022
Rec'd: 1/26/2021
Energy Laboratories Inc 1120 So. 27th Street
Billings MT 59107

3.0 REFERENCE VALUES:

Density: **1.022 g/ml @ 22.5 °C**
Actual Matrix: **4.0% (v/v) HNO_3**

Trace Metal Impurities as tested by ICP-AES:

Element	Conc. (ppm)	Element	Conc. (ppm)	Element	Conc. (ppm)	Element	Conc. (ppm)
Ag	<0.0244	Fe	<0.0102	Nd	<0.0319	Sn	<0.1535
Al	<0.0280	Ga	<0.0260	Ni	<0.0139	Sr	<0.0004
As	<0.0105	Gd	<0.0137	Os	*	Ta	<0.0635
Au	<0.0085	Ge	<0.0548	P	<0.0104	Tb	<0.0146
B	<0.0507	Hf	<0.0339	Pb	<0.0492	Te	<0.4025
Ba	<0.0005	Hg	*	Pd	<0.0282	Th	<0.0471
Be	<0.0022	Ho	<0.0065	Pr	<0.1370	Ti	<0.0013
Bi	<0.0156	In	<0.0105	Pt	<0.2665	Tl	<0.5600
Ca	**0.0742**	Ir	<0.0243	Rb	*	Tm	<0.0105
Cd	<0.0048	K	<0.0128	Re	<0.0076	U	<0.2490
Ce	<0.0393	La	<0.0173	Rh	<0.0163	V	<0.0049
Co	<0.0224	Li	<0.0028	Ru	<0.0304	W	<0.0443
Cr	<0.0063	Lu	<0.0021	S	<0.0515	Y	<0.0033
Cs	*	Mg	<0.0009	Sb	<0.0197	Yb	<0.0057
Cu	<0.0200	Mn	<0.0089	Sc	N/A	Zn	<0.0045
Dy	<0.0214	Mo	<0.0229	Se	<0.1245	Zr	**0.1015**
Er	<0.0349	Na	<0.0191	Si	<0.0091		
Eu	<0.0017	Nb	<0.0112	Sm	<0.1105	*: Not tested	

4.0 APPROVAL AND DATE OF CERTIFICATION:

Certification Approval: Daniel Boisvert, Chemist
Certification Date: August 20, 2020

Daniel Boisvert

5.0 INTENDED USE / *UTILISATION PRÉVUE*:

- ICP Standards: For the calibration of, including but not limited to: ICP-AES, ICP-MS, FAAS, GFAA, XRF and DCP. / *Étalons ICP : Pour l'étalonnage d'instruments de mesure tels que: ICP-AES, ICP-MS, FAAS, GFAA, XRF et DCP.*
- AA Standards: For the calibration of Flame (FAAS) and Graphite Furnace (GFAA) Atomic Absorption Spectrometers. / *Étalons AA : Pour l'étalonnage de spectromètres d'absorption atomique flamme (GFAA) et four au graphite (GFAA).*
- Matrix Modifiers: For the optimization of analytical conditions to provide better Graphite Furnace Atomic Absorption (GFAA) instrument response and improved detection limits. / *Modificateur de matrice : Pour l'optimisation des conditions analytiques afin de fournir des meilleurs réponses instrumentales et limites de détection pour SAA four au graphite.*
- pH Standards: For the calibrating pH meters or for other wet chemistry applications. / *Étalons pH : Pour étalonnage de pH mètres et autres applications de chimie humide.*
- Conductivity Standards: For electrolytic conductivity measurement as a calibration standard. / *Étalons de conductivité : Comme étalon pour les mesures de conductivité électrolytiques.*
- IC Standards: for calibration of, but not limited to IC, HPLC, TLC, ISE, IR, NMR, MS, UV/VIS or other wet chemistry applications. / *Étalons IC : Pour étalonnage d'instruments tels que : IC, HPLC, TLC, ISE, IR, NMR, MS, UV/VIS et autres applications de chimie humide.*

For any inquiries, please contact **SCP SCIENCE**. / *Pour toute question, veuillez contacter **SCP SCIENCE**.*

6.0 INSTRUCTIONS FOR USE / *INSTRUCTIONS D'UTILISATION*:

Handling and Storage / Manutention et entreposage: Keep product tightly capped when not in use. The solution should be opened for a minimum amount of time necessary to dispense the amount required. Do not pipet or use directly from container. Do not return unused portions back to container. Store under normal laboratory conditions. Avoid exposure to excessive sources of heat and humidity or direct sunlight. / *Garder les contenants bien fermés lorsque non utilisés. Le contenant devrait être ouvert seulement pour le temps requis afin de prélever la quantité nécessaire. Ne pas pipetter ou utiliser directement du contenant. Ne pas retourner les portions non-utilisées dans le contentant. Conserver dans des conditions normales de laboratoire. Éviter l'exposition à des sources de chaleur et d'humidité excessives ou à l'exposition solaire directe.*

Stability / *Stabilité*: This Standard is guaranteed to be stable and accurate to within the specified uncertainty of measurement up to the unopened expiry date, if sealed, or up to the opened expiry date (when indicated), whichever comes first, provided the solution is kept tightly capped and stored under the indicated storage conditions. Purchasers will be notified of any significant changes resulting in re-certification or withdrawal of the product prior to the expiration date. / *La stabilité et l'exactitude de cet étalon sont garanties d'être à l'intérieur de l'incertitude de mesure, jusqu'à la date d'expiration de la bouteille non-ouverte, si scellée, ou jusqu'à la date d'expiration de la bouteille ouverte (si indiquée), en présumant que le contenant est maintenu fermé et gardé dans les conditions d'entreposage indiquées. Les acheteurs seront avisés dans le cas où il y aura des changements significatifs nécessitant une re-certification ou un rappel du produit avant la date d'expiration.*

7.0 HAZARDOUS INFORMATION / *INFORMATION SUR LES RISQUES POTENTIELS*:

Please refer to the associated Safety Data Sheet (SDS) for information regarding this product (available at www.SCPSCIENCE.com). / *SVP vous référer à la Fiche Signalétique applicable pour de l'information sur ce produit (Disponible à www.SCPSCIENCE.com).*

8.0 HOMOGENEITY / *HOMOGÉNÉITÉ:*

This solution has been blended according to an in-house procedure and its homogeneity is guaranteed to be fit for purpose when a sample size sufficient for the intended method of analysis is used. / *Cette solution a été préparée selon une procédure maison et nous assurons que sa homogénéité est approprié à l'emploi lorsqu'un échantillon suffisant pour la méthode d'analyse prévue est utilisé.*

9.0 TRACEABILITY / *TRAÇABILITÉ*:

This CRM (Certified Reference Material) is traceable to the NIST SRM (Standard Reference Material) indicated in section 2 through an unbroken chain of comparisons. In addition, balances used are regularly calibrated using weights which are traceable to NIST (National Institute of Standards and Technology) or NRC (National Research Council of Canada) standards. All conductivity meters used to analyze this standard have been regularly calibrated using a NIST or NRC traceable Thermometer and standards. All pH meters used to analyze this standard have been regularly calibrated using a NIST or NRC traceable thermometer and pH/MV simulator. / *Ce matériel de référence certifié est traçable au Matériel de Référence Standardisé de NIST indiqué à la section 2 par une chaine de comparaison ininterrompue. De plus, les balances utilisées sont étalonnées régulièrement en utilisant des poids qui sont traçables au NIST (National Institute of Standards and Technology) ou au CRNC (Conseil National de Recherches Canada). Tout conductimètre utilisé afin d'analyser cet étalon a été sujet à un étalonnage périodique utilisant des thermomètres et étalons traçables au NIST ou CNRC. Tout pH mètre utilisé afin d'analyser cet étalon a été sujet à un étalonnage périodique utilisant des thermomètres et un simulateur pH/MV traçables au NIST ou au CNRC.*

10.0 PREPARATION / *PRÉPARATION:*

For the preparation of these solutions, 18 meghom/cm double deionized water, high-purity acids and glassware calibrated to ASTM Class A specifications are used. / *Une eau de 18 meghom/cm doublement déionisé, de l'acide de haute pureté, ainsi que de la verrerie étalonnée afin de satisfaire les spécifications Classe A de ASTM ont été utilisés pour la préparation de cet étalon.*

11.0 QUALITY SYSTEM CERTIFICATIONS / *CERTIFICATIONS DE SYSTÈME QUALITÉ:*

ISO 9001 Certification / *Certification ISO 9001*: This standard was produced in a facility which operates under a **registered** ISO 9001 Quality Management System. Please consult our web site for a copy of the most recent revision of our certificate of registration. / *Cet étalon a été fabriqué dans un laboratoire qui utilise un Système de Gestion de la Qualité **enregistré** à la norme ISO 9001. Veuillez consulter notre site web pour obtenir la version la plus récente de notre certificat d'enregistrement.*

ISO 17025 Accreditation / *Accréditation ISO 17025*: SCP SCIENCE (Corporate Headquarters) operates an ISO 17025 **accredited** laboratory. Please consult our web site for a copy of the most recent revision of our certificate and scope of accreditation. / ***SCP SCIENCE (Siège social)** est **accréditée** ISO 17025. Veuillez consulter notre site web afin d'obtenir la plus récente version de notre certificat d'accréditation ainsi que la portée de notre accréditation.*

ISO 17034 Accreditation / *Accréditation ISO 17034* : SCP SCIENCE (Corporate Headquarters) is an ISO 17034 accredited Reference Material Producer. Please consult our website for a copy of our most recent certificate and scope of accreditation. / ***SCP SCIENCE (Siège social)** est un Fabricant de Matériaux de Référence Accrédité ISO 17034. Veuillez consulter notre site web afin d'obtenir la plus récente version de notre certificat d'accréditation ainsi que la portée de notre accréditation.*

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Marktoberdorf

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Fax: +49 (0) 8342-89560-69

Energy Laboratories Inc

Spike LOG

Standard ID:	ME210208 BI SECONDARY STOCK		
Standard Name	Bismuth Secondary Stock	Type:	Primary
Date Prepared	2/8/2021	BY:	Parker A. Pearsall
Date Expires:	2/8/2022		
Department	ME	Status:	Open
Vendor:	Inorganic Ventures		
Lot Number:	P2-BI687736		
Balance ID:			
Comments:	Opened 02/08/2021; Expires 02/08/2022		

Chemical / Solvent Used	BottleNo	Amt	Units	Expires
Bismuth Single Analyte Custom Grade Sol	13448	125	mL	1/11/2024

Final Volume:
125 mL

Stock Source **Base Units** **Amount Added**

Analytes **CAS** Conc: **ug/mL**

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:	CGBI1
Lot Number:	P2-BI687736
Matrix:	5% (v/v) HNO3
Value / Analyte(s):	1 000 µg/mL ea: Bismuth
Starting Material:	Bi METAL
Starting Material Lot#:	1874
Starting Material Purity:	99.9997%

ID #: 13448
Opened:_____
Bismuth Single Analyte Custom Grade Solutic
Expires: 1/11/2024
Rec'd: 1/7/2021
Energy Laboratories Inc 1120 So. 27th Street
Billings MT 59107

3.0 CERTIFIED VALUES AND UNCERTAINTIES

Certified Value: 1002 ± 6 µg/mL

Density: 1.026 g/mL (measured at 20 ± 4 °C)

Assay Information:

Assay Method #1 **1002 ± 4 µg/mL**
ICP Assay NIST SRM 3106 Lot Number: 180815

Assay Method #2 **1001 ± 6 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.

O	Ag		0.000158	M	Eu	<	0.000430	O	Na		0.000456	M	Se	<	0.003000	M	Zn	<	0.012000
O	Al	<	0.014000	O	Fe		0.000096	M	Nb	<	0.000430	O	Si		0.001852	M	Zr	<	0.000860
M	As	<	0.000430	M	Ga	<	0.000430	M	Nd	<	0.000430	M	Sm	<	0.000430				
M	Au	<	0.000430	M	Gd	<	0.000430	M	Ni		0.000174	M	Sn	<	0.003000				
O	B		0.000349	M	Ge	<	0.000860	M	Os	<	0.200000	M	Sr	<	0.000430				
M	Ba	<	0.000430	M	Hf	<	0.000430	O	P	<	0.059000	M	Ta	<	0.000860				
O	Be	<	0.001200	M	Hg	<	0.000860	O	Pb	<	0.024000	M	Tb	<	0.000430				
s	Bi	<		M	Ho	<	0.000430	M	Pd	<	0.000430	M	Te	<	0.016000				
O	Ca		0.000349	M	In	<	0.000430	M	Pr	<	0.000430	M	Th	<	0.000430				
M	Cd	<	0.000430	M	Ir	<	0.000430	M	Pt	<	0.000430	M	Ti	<	0.001300				
M	Ce	<	0.000430	O	K		0.000295	M	Rb	<	0.000430	M	Tl	<	0.000430				
M	Co	<	0.000430	M	La	<	0.000430	M	Re	<	0.000430	M	Tm	<	0.000430				
O	Cr	<	0.002000	O	Li	<	0.000120	M	Rh	<	0.000430	M	U	<	0.000430				
M	Cs	<	0.005200	M	Lu	<	0.000430	M	Ru	<	0.007700	M	V	<	0.001800				
M	Cu	<	0.002600	O	Mg		0.000029	O	S	<	0.059000	M	W	<	0.000860				
M	Dy	<	0.000430	M	Mn	<	0.000860	M	Sb	<	0.014000	M	Y	<	0.000430				
M	Er	<	0.000430	M	Mo	<	0.000860	O	Sc	<	0.000590	M	Yb	<	0.000430				

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 - 208.98 +3 6 Bi(O)(H2O)x1+

Chemical Compatibility -Stable in HCl, HNO3, H2SO4 and HF. Avoid basic media forming insoluble hydroxide. Stable with most metals and inorganic anions in acidic media. Many salts that are insoluble in water are soluble in HCl, HNO3 and HF. The major problem with Bi3+ is its tendency to hydrolyze at higher concentrations or in dilute acid. Nitric acid solutions should be 5% to hold the Bi in solution in the 100 to 10000 µg/mL concentration range.

Stability - 2-100 ppb levels stable for months in 1% HNO3 / LDPE container. 1-10,000 ppm solutions chemically stable for years in 5 - 7% HNO3 / LDPE container.

Bi Containing Samples (Preparation and Solution) -Metal (soluble in HNO3); Oxides (Soluble in HNO3); Alloys (Dissolve in conc. 4:1 HCl /HNO3. Heating may be required.); Organic based (dry ash at 450EC and dissolve ash in HNO3 or acid digestion with conc. hot sulfuric acid adding hydrogen peroxide dropwise and carefully until clear.)

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 209 amu	2 ppt	N/A	193Ir16O
ICP-OES 222.825 nm	0.1/0.02 µg/mL	1	Cr, Hf, Ce, Os
ICP-OES 223.061 nm	0.04/0.005 µg/mL	1	Th, Ir, Ti Cu
ICP-OES 306.772 nm	0.08/0.01 µg/mL	1	Th, U, Zr, Hf, Fe

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 11, 2020

- 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 11, 2024

- 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.

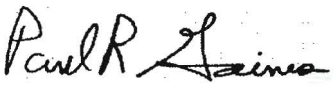
12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

Certificate Approved By:

Michael Booth
Manager, Quality Control

Certifying Officer:

Paul Gaines
CEO, Senior Technical Director



Energy Laboratories Inc

Spike LOG

Standard ID:	ME210208 IN SECONDARY STOCK		
Standard Name	In Secondary Stock	Type:	Primary
Date Prepared	2/8/2021	BY:	Parker A. Pearsall
Date Expires:	2/8/2022		
Department	ME	Status:	Open
Vendor:	SCP Science		
Lot Number:	S200212023		
Balance ID:			
Comments:	Opened 02/08/2021; Expires 02/08/2022		

Chemical / Solvent Used	BottleNo	Amt	Units	Expires
Indium ICP ICPMS Standard	12886	125	mL	2/27/2022

Final Volume:
125 mL

Stock Source **Base Units** **Amount Added**

Analytes **CAS** Conc: **ug/mL**

SCP SCIENCE

Providing Innovative Solutions to Analytical Chemists

Certificate of Analysis

1.0 DESCRIPTION:

***Plasma*CAL ICP/ICPMS Standard - Indium 1000 µg/ml**

Catalogue Number: 140-051-490/-491/-495

Starting Material: In Metal 99.99+%

Lot Number: **S200212023**

Matrix: 4% HNO_3 (See Section 3 for actual matrix)

Expiration Date (End of month): **February 2022** (or 15 months after bottle is opened, whichever comes first)

In

2.0 CERTIFIED VALUES AND ASSOCIATED UNCERTAINTY:

Certified Concentration: **997 µg/ml +/- 4 µg/ml**

977 µg/g +/- 4 µg/g

Method of analysis: Inductively Coupled Plasma Atomic Emission Spectroscopy (ICP-AES)

Traceability: NIST Standard Reference Material 3124a Lot: **110516**

Note: The uncertainty of the certified value has been calculated from applicable uncertainty contributors (u_i) including uncertainty established during characterization of the material (u_{char}), the between bottle variation (u_{bb}), short-term stability (u_{sts}) and long-term stability (u_{lts}) according to the model $u_c = \sqrt{(u_{char}^2 + u_{bb}^2 + u_{sts}^2 + u_{lts}^2)}$. This combined uncertainty has been further multiplied by a coverage factor (k) of 2 to provide a 95% confidence interval.

3.0 REFERENCE VALUES:

Density: **1.020 g/ml @ 22.6 °C**

Actual Matrix: **4.0% (v/v) HNO_3**

ID #: **12886**
Opened: _____
Indium ICP ICPMS Standard
Expires: 2/27/2022
Rec'd: 7/27/2020
Energy Laboratories Inc 1120 So. 27th Street
Billings MT 59107

Trace Metal Impurities as tested by ICP-MS:

Element	Conc. (ppm)	Element	Conc. (ppm)	Element	Conc. (ppm)	Element	Conc. (ppm)
Ag	<0.0010	Fe	<0.0018	Nd	<0.0010	Sn	**0.0079**
Al	<0.0010	Ga	<0.0010	Ni	<0.0010	Sr	<0.0025
As	<0.0010	Gd	<0.0010	Os	<0.0010	Ta	<0.0010
Au	<0.0010	Ge	<0.0010	P	<0.0026	Tb	<0.0010
B	<0.0015	Hf	<0.0010	Pb	**0.0013**	Te	<0.0010
Ba	**0.0063**	Hg	<0.0010	Pd	<0.0010	Th	<0.0010
Be	<0.0010	Ho	<0.0010	Pr	<0.0010	Ti	<0.0012
Bi	<0.0010	In	N/A	Pt	<0.0010	Tl	<0.0011
Ca	**0.0336**	Ir	<0.0010	Rb	<0.0010	Tm	<0.0010
Cd	<0.0010	K	<0.0024	Re	<0.0010	U	<0.0010
Ce	<0.0010	La	<0.0010	Rh	<0.0010	V	<0.0010
Co	<0.0010	Li	<0.0010	Ru	<0.0010	W	<0.0020
Cr	<0.0010	Lu	<0.0010	S	<0.5000	Y	<0.0010
Cs	<0.0010	Mg	<0.0010	Sb	<0.0010	Yb	<0.0010
Cu	<0.0010	Mn	<0.0010	Sc	<0.0010	Zn	<0.0010
Dy	<0.0010	Mo	<0.0010	Se	<0.0010	Zr	<0.0010
Er	<0.0010	Na	**0.0035**	Si	<0.1000		
Eu	<0.0010	Nb	<0.0010	Sm	<0.0010	*: Not tested	

4.0 APPROVAL AND DATE OF CERTIFICATION:

Certification Approval: Daniel Boisvert, Chemist

Certification Date: February 19, 2020

Daniel Boisvert

5.0 INTENDED USE / *UTILISATION PRÉVUE*:

- ICP Standards: For the calibration of, including but not limited to: ICP-AES, ICP-MS, FAAS, GFAA, XRF and DCP. / *Étalons ICP : Pour l'étalonnage d'instruments de mesure tels que: ICP-AES, ICP-MS, FAAS, GFAA, XRF et DCP.*
- AA Standards: For the calibration of Flame (FAAS) and Graphite Furnace (GFAA) Atomic Absorption Spectrometers. / *Étalons AA : Pour l'étalonnage de spectromètres d'absorption atomique flamme (GFAA) et four au graphite (GFAA).*
- Matrix Modifiers: For the optimization of analytical conditions to provide better Graphite Furnace Atomic Absorption (GFAA) instrument response and improved detection limits. / *Modificateur de matrice : Pour l'optimisation des conditions analytiques afin de fournir des meilleurs réponses instrumentales et limites de détection pour SAA four au graphite.*
- pH Standards: For the calibrating pH meters or for other wet chemistry applications. / *Étalons pH : Pour étalonnage de pH mètres et autres applications de chimie humide.*
- Conductivity Standards: For electrolytic conductivity measurement as a calibration standard. / *Étalons de conductivité : Comme étalon pour les mesures de conductivité électrolytiques.*
- IC Standards: for calibration of, but not limited to IC, HPLC, TLC, ISE, IR, NMR, MS, UV/VIS or other wet chemistry applications. / *Étalons IC : Pour étalonnage d'instruments tels que : IC, HPLC, TLC, ISE, IR, NMR, MS, UV/VIS et autres applications de chimie humide.*

For any inquiries, please contact **SCP SCIENCE**. / *Pour toute question, veuillez contacter **SCP SCIENCE**.*

6.0 INSTRUCTIONS FOR USE / *INSTRUCTIONS D'UTILISATION*:

Handling and Storage / Manutention et entreposage: Keep product tightly capped when not in use. The solution should be opened for a minimum amount of time necessary to dispense the amount required. Do not pipet or use directly from container. Do not return unused portions back to container. Store under normal laboratory conditions. Avoid exposure to excessive sources of heat and humidity or direct sunlight. / *Garder les contenants bien fermés lorsque non utilisés. Le contenant devrait être ouvert seulement pour le temps requis afin de prélever la quantité nécessaire. Ne pas pipetter ou utiliser directement du contenant. Ne pas retourner les portions non-utilisées dans le contentant. Conserver dans des conditions normales de laboratoire. Éviter l'exposition à des sources de chaleur et d'humidité excessives ou à l'exposition solaire directe.*

Stability / *Stabilité*: This Standard is guaranteed to be stable and accurate to within the specified uncertainty of measurement up to the unopened expiry date, if sealed, or up to the opened expiry date (when indicated), whichever comes first, provided the solution is kept tightly capped and stored under the indicated storage conditions. Purchasers will be notified of any significant changes resulting in re-certification or withdrawal of the product prior to the expiration date. / *La stabilité et l'exactitude de cet étalon sont garanties d'être à l'intérieur de l'incertitude de mesure, jusqu'à la date d'expiration de la bouteille non-ouverte, si scellée, ou jusqu'à la date d'expiration de la bouteille ouverte (si indiquée), en présumant que le contenant est maintenu fermé et gardé dans les conditions d'entreposage indiquées. Les acheteurs seront avisés dans le cas où il y aura des changements significatifs nécessitant une re-certification ou un rappel du produit avant la date d'expiration.*

7.0 HAZARDOUS INFORMATION / *INFORMATION SUR LES RISQUES POTENTIELS*:

Please refer to the associated Safety Data Sheet (SDS) for information regarding this product (available at www.SCPSCIENCE.com). / *SVP vous référer à la Fiche Signalétique applicable pour de l'information sur ce produit (Disponible à www.SCPSCIENCE.com).*

8.0 HOMOGENEITY / *HOMOGÉNÉITÉ:*

This solution has been blended according to an in-house procedure and its homogeneity is guaranteed to be fit for purpose when a sample size sufficient for the intended method of analysis is used. / *Cette solution a été préparée selon une procédure maison et nous assurons que sa homogénéité est approprié à l'emploi lorsqu'un échantillon suffisant pour la méthode d'analyse prévue est utilisé.*

9.0 TRACEABILITY / *TRAÇABILITÉ*:

This CRM (Certified Reference Material) is traceable to the NIST SRM (Standard Reference Material) indicated in section 2 through an unbroken chain of comparisons. In addition, balances used are regularly calibrated using weights which are traceable to NIST (National Institute of Standards and Technology) or NRC (National Research Council of Canada) standards. All conductivity meters used to analyze this standard have been regularly calibrated using a NIST or NRC traceable Thermometer and standards. All pH meters used to analyze this standard have been regularly calibrated using a NIST or NRC traceable thermometer and pH/MV simulator. / *Ce matériel de référence certifié est traçable au Matériel de Référence Standardisé de NIST indiqué à la section 2 par une chaine de comparaison ininterrompue. De plus, les balances utilisées sont étalonnées régulièrement en utilisant des poids qui sont traçables au NIST (National Institute of Standards and Technology) ou au CRNC (Conseil National de Recherches Canada). Tout conductimètre utilisé afin d'analyser cet étalon a été sujet à un étalonnage périodique utilisant des thermomètres et étalons traçables au NIST ou CNRC. Tout pH mètre utilisé afin d'analyser cet étalon a été sujet à un étalonnage périodique utilisant des thermomètres et un simulateur pH/MV traçables au NIST ou au CNRC.*

10.0 PREPARATION / *PRÉPARATION:*

For the preparation of these solutions, 18 meghom/cm double deionized water, high-purity acids and glassware calibrated to ASTM Class A specifications are used. / *Une eau de 18 meghom/cm doublement déionisé, de l'acide de haute pureté, ainsi que de la verrerie étalonnée afin de satisfaire les spécifications Classe A de ASTM ont été utilisés pour la préparation de cet étalon.*

11.0 QUALITY SYSTEM CERTIFICATIONS / *CERTIFICATIONS DE SYSTÈME QUALITÉ:*

ISO 9001 Certification / *Certification ISO 9001*: This standard was produced in a facility which operates under a **registered** ISO 9001 Quality Management System. Please consult our web site for a copy of the most recent revision of our certificate of registration. / *Cet étalon a été fabriqué dans un laboratoire qui utilise un Système de Gestion de la Qualité **enregistré** à la norme ISO 9001. Veuillez consulter notre site web pour obtenir la version la plus récente de notre certificat d'enregistrement.*

ISO 17025 Accreditation / *Accréditation ISO 17025*: SCP SCIENCE (Corporate Headquarters) operates an ISO 17025 **accredited** laboratory. Please consult our web site for a copy of the most recent revision of our certificate and scope of accreditation. / ***SCP SCIENCE (Siège social)** est **accréditée** ISO 17025. Veuillez consulter notre site web afin d'obtenir la plus récente version de notre certificat d'accréditation ainsi que la portée de notre accréditation.*

ISO 17034 Accreditation / *Accréditation ISO 17034* : SCP SCIENCE (Corporate Headquarters) is an ISO 17034 accredited Reference Material Producer. Please consult our website for a copy of our most recent certificate and scope of accreditation. / ***SCP SCIENCE (Siège social)** est un Fabricant de Matériaux de Référence Accrédité ISO 17034. Veuillez consulter notre site web afin d'obtenir la plus récente version de notre certificat d'accréditation ainsi que la portée de notre accréditation.*

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Alte Marktoberdorfer Straße 14, 87616
Marktoberdorf

Phone: +49 (0) 8342-89560-61
Fax: +49 (0) 8342-89560-69

Energy Laboratories Inc

Spike LOG

Standard ID:	ME210212-TB		
Standard Name	TB Terbium primary source	Type:	Primary
Date Prepared	2/12/2021	BY:	Alyssa A. Olson
Date Expires:	2/12/2022		
Department	ME	Status:	Open
Vendor:	Inorganic Ventures		
Lot Number:	R2-TB695079AA		
Balance ID:			
Comments:	Opened 2/12/2021; Expires 2/12/2022		

Chemical / Solvent Used	BottleNo	Amt	Units	Expires
Terbium Single Analyte Atomic Absorption	13445	125	mL	2/12/2022

Final Volume:
125 mL

Stock Source **Base Units** **Amount Added**

Analytes **CAS** Conc: **ug/mL**

300 Technology Drive
Christiansburg, VA 24073 USA
inorganicventures.com
tel: 800.669.6799 · 540.585.3030
fax: 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:	Single Analyte Atomic Absorption Solution
Catalog Number:	AATB1
Lot Number:	R2-TB695079AA
Matrix:	5% (v/v) HNO3
Value / Analyte(s):	1 000 µg/mL ea: Terbium

ID #: 13445
Opened:
Terbium Single Analyte Atomic Absorption So
Expires: 8/19/2024
Rec'd: 1/7/2021
Energy Laboratories Inc 1120 So. 27th Street
Billings MT 59107

3.0 CERTIFIED VALUES AND UNCERTAINTIES

Certified Value:	1000 ± 10 µg/mL
Density:	1.026 g/mL (measured at 20 ± 4 °C)

4.0 TRACEABILITY TO NIST

The concentration of this solution standard has been verified by Inductively Coupled Plasma Spectroscopy (ICP) and is traceable to NIST SRM 3157a.

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**

Atomic Weight; Valence; Coordination Number; Chemical Form in Solution - 158.93 +3 6 to 9 or 10 for some compounds $Tb(OH)_x(H_2O)_y^{+3-x}$

Chemical Compatibility -Soluble in HCl, H_2SO_4 and HNO_3. Avoid HF, H_3PO_4 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% HNO_3 / LDPE container. 1-10,000 ppm solutions chemically stable for years in 2 - 5% HNO_3 / LDPE container.

Tb Containing Samples (Preparation and Solution) -Metal (Soluble in acids); Oxide (Dissolve by heating in H_2O/ HNO_3); Ores (Carbonate fusion in Pt0 followed by HCl dissolution); Organic Matrices (dry ash and dissolve in 1:1 H_2O / HCl or HNO_3).

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 159 amu	1 ppt	N/A	
ICP-OES 350.917 nm	0.02 / 0.002 µg/mL	1	V, Th, Ce, Zr
ICP-OES 367.635 nm	0.06 / 0.006 µg/mL	1	Ta, Ce, Co, U

8.0 HAZARDOUS INFORMATION

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

9.0 HOMOGENEITY

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

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

August 19, 2020

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

11.2 Lot Expiration Date

- **August 19, 2024**

- 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

Energy Laboratories Inc

Spike LOG

Standard ID:	ME210212-HO		
Standard Name	HO Holmium primary source	Type:	Primary
Date Prepared	2/12/2021	BY:	Alyssa A. Olson
Date Expires:	2/12/2022		
Department	ME	Status:	Open
Vendor:	Inorganic Ventures		
Lot Number:	R2-HO691014		
Balance ID:			
Comments:	Opened 2/12/2021; Expires 2/12/2022		

Chemical / Solvent Used	BottleNo	Amt	Units	Expires
Holmium Single Analyte Custom Grade S	13443	125	mL	2/12/2022

Final Volume: mL

Stock Source **Base Units** **Amount Added**

Analytes **CAS** Conc: **ug/mL**

300 Technology Drive
Christiansburg, VA 24073 - USA
inorganicventures.com
tel: 800.669.6799 - 540.585.3030
fax: 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:	Single Analyte Custom Grade Solution
Catalog Number:	CGHO1
Lot Number:	R2-HO691014
Matrix:	5% (v/v) HNO3
Value / Analyte(s):	1 000 µg/mL ea: Holmium
Starting Material:	Holmium Oxide
Starting Material Lot#:	1890
Starting Material Purity:	99.9947%

ID #: 13443
Opened:
Holmium Single Analyte Custom Grade Soluti
Expires: 4/1/2024
Rec'd: 1/7/2021
Energy Laboratories Inc 1120 So. 27th Street
Billings MT 59107

3.0 CERTIFIED VALUES AND UNCERTAINTIES

Certified Value: 999 ± 3 µg/mL

Density: 1.026 g/mL (measured at 20 ± 4 °C)

Assay Information:

Assay Method #1	**996 ± 6 µg/mL** ICP Assay NIST SRM 3123a Lot Number: 090408
Assay Method #2	**998 ± 3 µg/mL** EDTA NIST SRM 928 Lot Number: 928
Assay Method #3	**1000 ± 3 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	<	0.010000	M	Eu		0.000377	M	Na	<	0.036000	M	Se	<	0.004400	M	Zn	<	0.071000
M	Al	<	0.020000	M	Fe		0.002965	M	Nb	<	0.001200	i	Si	<		M	Zr	<	0.000400
M	As	<	0.011000	M	Ga	<	0.001600	M	Nd		0.000183	M	Sm		0.000700				
M	Au	<	0.006400	M	Gd		0.000404	M	Ni	<	0.004800	M	Sn	<	0.002400				
M	B	<	0.091000	M	Ge	<	0.004000	M	Os	<	0.000400	M	Sr	<	0.002400				
M	Ba	<	0.002400	M	Hf	<	0.003200	i	P	<		i	Ta	<					
M	Be	<	0.003200	M	Hg	<	0.005600	M	Pb	<	0.057000	M	Tb		0.000431				
M	Bi	<	0.005600	s	Ho	<		M	Pd	<	0.004400	M	Te	<	0.008000				
M	Ca	<	0.028000	M	In	<	0.001600	M	Pr		0.000204	M	Th	<	0.001200				
M	Cd	<	0.000800	M	Ir	<	0.001600	M	Pt	<	0.000400	M	Ti	<	0.000800				
M	Ce	<	0.004800	O	K		0.002965	M	Rb	<	0.002400	M	Tl	<	0.001600				
M	Co	<	0.001600	M	La		0.000350	M	Re	<	0.000400	M	Tm		0.000323				
M	Cr	<	0.005600	O	Li	<	0.001200	M	Rh	<	0.001600	M	U	<	0.000400				
M	Cs		0.000485	M	Lu		0.037737	M	Ru	<	0.000400	M	V	<	0.029000				
M	Cu	<	0.005600	O	Mg	<	0.003300	n	S	<		M	W	<	0.011000				
M	Dy		0.009434	M	Mn	<	0.001200	M	Sb	<	0.002000	M	Y		0.003504				
M	Er		0.001671	M	Mo	<	0.011000	M	Sc	<	0.001200	M	Yb		0.006199				

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 - 164.93 +3 6 to 9 or 10 for some compounds Ho(OH)x(H2O)y+3-x

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.

Ho Containing Samples (Preparation and Solution) - Meta l(Soluble in acids); Oxide (Dissolved 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 165 amu	1 ppt	n/a	149 Sm16O
ICP-OES 339.898 nm	0.02 / 0.002 µg/mL	1	Ce, Re
ICP-OES 345.600 nm	0.006 / 0.0001 µg/mL	1	U, Ti

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

April 01, 2020

- 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

- **April 01, 2024**

- 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
Manager, Quality Control

Certifying Officer:

Paul Gaines
CEO, Senior Technical Director

Energy Laboratories Inc

Spike LOG

Standard ID:	ME210212-LU		
Standard Name	LU Lutetium primary source	Type:	Primary
Date Prepared	2/12/2021	BY:	Alyssa A. Olson
Date Expires:	2/12/2022		
Department	ME	Status:	Open
Vendor:	Inorganic Ventures		
Lot Number:	R2-LU689867RAA		
Balance ID:			
Comments:	Opened 2/12/2021; Expires 2/12/2022		

Chemical / Solvent Used	BottleNo	Amt	Units	Expires
Lutetium Single Analyte Atomic Absorptio	13444	125	mL	3/1/2024

Final Volume:
125 mL

Stock Source **Base Units** **Amount Added**

Analytes **CAS** Conc: **ug/mL**

INORGANIC VENTURES
300 Technology Drive
Christiansburg, VA 24073 · USA
inorganicventures.com

CERTIFICATE OF ANALYSIS

tel: 800.669.6799 · 540.585.3030
fax: 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:	Single Analyte Atomic Absorption Solution
Catalog Number:	AALU1
Lot Number:	R2-LU689867RAA
Matrix:	2% (v/v) HNO3
Value / Analyte(s):	1 000 µg/mL ea: Lutetium

ID #: 13444
Opened:
Lutetium Single Analyte Custom Grade Soluti
Expires: 3/1/2024
Rec'd: 1/7/2021
Energy Laboratories Inc 1120 So. 27th Street
Billings MT 59107

3.0 CERTIFIED VALUES AND UNCERTAINTIES

Certified Value:	1000 ± 10 µg/mL
Density:	1.011 g/mL (measured at 20 ± 4 °C)

4.0 TRACEABILITY TO NIST

The concentration of this solution standard has been verified by Inductively Coupled Plasma Spectroscopy (ICP) and is traceable to NIST SRM 3130a.

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**

Atomic Weight; Valence; Coordination Number; Chemical Form in Solution - 174.97 +3 6 to 9 or 10 for some compounds Lu(OH)x(H2O)y+3-x

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.

Lu Containing Samples (Preparation and Solution) -Metal (Soluble in acids); Oxide (Dissolved 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 175 amu	1 ppt	n/a	159 Tb16O
ICP-OES 261.542 nm	0.001 / 0.0003 µg/mL	1	Th, Mo, V, W
ICP-OES 291.139 nm	0.006 / 0.0006 µg/mL	1	Cr, U

8.0 HAZARDOUS INFORMATION

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

9.0 HOMOGENEITY

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

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

March 01, 2020

- 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 01, 2024

- 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.

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Paul R Gaines