PREP BATCH REPORT

Prep Code: **PRP-3010** Technician: **Amanda E. McDaniels** Prep Start Date: **12/22/2021 4:22:22 P**

Prep Batch **162444** Prep Temp: **92 °C** Batch Units: **ML** Prep End Date: **12/23/2021 9:44:00 A**

Sample ID	Matrix	pH	Initial Samp Amt	Sol Added	Sol Recovered	Final Vol (mL)	Factor	Balance	Prep Start Date	Prep End Date
MB-162444 Temp cell F3			50	0	0	50	1		12/22/2021	12/23/2021
LCS4-162444			50	0	0	50	1		12/22/2021	12/23/2021
B21121841-001H	Ground Water		50	0	0	50	1		12/22/2021	12/23/2021
B21121841-001HMS4			50	0	0	50	1		12/22/2021	12/23/2021
B21121841-001HMSD4			50	0	0	50	1		12/22/2021	12/23/2021
B21121841-003H bottle 1/2	Ground Water		50	0	0	50	1		12/22/2021	12/23/2021
B21121841-004H	Ground Water		50	0	0	50	1		12/22/2021	12/23/2021

Number	Reagent Name	Exp Date	A
14344	Hydrochloric Acid, 36.5-38.0% 0000285454	5/10/2026	1 mL
14377	50mL DigiTubes J521901-2029	10/12/2022	
14601	Nitric Acid Instra Analyzed,0000280251	3/17/2026	6 mL

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

26-Jan-22

Run ID ICPMS207-B_211223B

Run Start Date: 12/23/2021 10:50:45
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
14986288	Rinse	ICPMS-6020-W-	SAMP		12/23/2021 10:5	1	R372324		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
14986289	Rinse	ICPMS-6020-W-	SAMP		12/23/2021 10:5	1	R372324		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
14986290	Cal Blk	ICPMS-6020-W-	SAMP		12/23/2021 11:0	1	R372324		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	0.0006966	0.001	1	0%	0	0	0%	
Arsenic	A	mg/L	0	0		0	0	0	0.0001626	0.001	1	0%	0	0	0%	
Beryllium	A	mg/L	0	0		0	0	0	0.0001137	0.001	1	0%	0	0	0%	
Boron	A	mg/L	0	0		0	0	0	0.0036397	0.01	1	0%	0	0	0%	L
Cadmium	A	mg/L	0	0		0	0	0	2.969E-05	0.001	1	0%	0	0	0%	
Calcium	A	mg/L	0	0		0	0	0	0.0254163	0.0625	50	0%	0	0	0%	L
Cerium	A	mg/L	0	0		0	0	0	8.97E-06	0.001	0.1	0%	0	0	0%	
Chromium	A	mg/L	0	0		0	0	0	0.0002078	0.001	1	0%	0	0	0%	
Cobalt	A	mg/L	0	0		0	0	0	2.037E-05	0.001	1	0%	0	0	0%	
Copper	A	mg/L	0	0		0	0	0	0.000121	0.001	1	0%	0	0	0%	
Lanthanum	A	mg/L	0	0		0	0	0	1.209E-05	0.001	0.1	0%	0	0	0%	
Lead	A	mg/L	0	0		0	0	0	3.957E-05	0.001	1	0%	0	0	0%	
Lithium	A	mg/L	0	0		0	0	0	0.00122	0.05	2.5	0%	0	0	0%	L
Magnesium	A	mg/L	0	0		0	0	0	0.0084694	0.025	50	0%	0	0	0%	L
Manganese	A	mg/L	0	0		0	0	0	5.319E-05	0.001	1	0%	0	0	0%	
Nickel	A	mg/L	0	0		0	0	0	0.0001477	0.001	1	0%	0	0	0%	
Potassium	A	mg/L	0	0		0	0	0	0.0951865	0.125	50	0%	0	0	0%	L
Selenium	A	mg/L	0	0		0	0	0	6.961E-05	0.001	1	0%	0	0	0%	
Silver	A	mg/L	0	0		0	0	0	1.756E-05	0.001	0.04	0%	0	0	0%	
Sodium	A	mg/L	0	0		0	0	0	0.0321039	0.125	50	0%	0	0	0%	L
Strontium	A	mg/L	0	0		0	0	0	0.0001116	0.001	1	0%	0	0	0%	
Tellurium	A	mg/L	0	0		0	0	0	0.0004865	0.001	0.1	0%	0	0	0%	
Thallium	A	mg/L	0	0		0	0	0	4.044E-05	0.001	1	0%	0	0	0%	
Uranium	A	mg/L	0	0		0	0	0	1.948E-05	0.0003	1	0%	0	0	0%	
Zinc	A	mg/L	0	0		0	0	0	0.0006119	0.002	1	0%	0	0	0%	L
Barium	B	mg/L	0	0		0	0	0	8.917E-05	0.001	1	0%	0	0	0%	
Iron	B	mg/L	0	0		0	0	0	0.0011177	0.025	5	0%	0	0	0%	L
Iron, Ferrous	B	mg/L	0	0		0	0	0	0.0011177	0.025	5	0%	0	0	0%	L
Silicon	B	mg/L	0	0		0	0	0	0.0786454	0.2	0.4	0%	0	0	0%	L
Vanadium	B	mg/L	0	0		0	0	0	0.004194	0.01	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
14986291	0.025 ppb STD	ICPMS-6020B-C	Cal1		12/23/2021 11:0	1	R372324		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
14986291	0.025 ppb STD	ICPMS-6020B-C	Cal1		12/23/2021 11:0	1	R372324		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.00005969	0.00005969		0	0	0		0.01		0%			0%	
Antimony	A	mg/L	0.0000227	0.0000227		0	0	0		0.001		0%			0%	
Arsenic	A	mg/L	0.00002965	0.00002965		0.000025	0	0		0.001		119%	80	120	0%	
Barium	A	mg/L	0.00002712	0.00002712		0.000025	0	0		0.0003		108%	80	120	0%	
Beryllium	A	mg/L	0.00001456	0.00001456		0.000025	0	0		0.001		58%	80	120	0%	S
Boron	A	mg/L	-0.0001061	-0.0001061		0	0	0		0.1		0%			0%	
Cadmium	A	mg/L	0.00002361	0.00002361		0.000025	0	0		0.001		94%	80	120	0%	
Calcium	A	mg/L	0.007047	0.007047		0	0	0		1		0%			0%	
Cerium	A	mg/L	0.00002147	0.00002147		0.000025	0	0		0.001		86%	80	120	0%	
Chromium	A	mg/L	0.00002675	0.00002675		0.000025	0	0		0.001		107%	80	120	0%	
Cobalt	A	mg/L	0.00002235	0.00002235		0.000025	0	0		0.001		89%	80	120	0%	
Copper	A	mg/L	0.00003057	0.00003057		0	0	0		0.005		0%			0%	
Iron	A	mg/L	0.000631	0.000631		0	0	0		0.01		0%			0%	
Lanthanum	A	mg/L	0.00002371	0.00002371		0.000025	0	0		0.001		95%	80	120	0%	
Lead	A	mg/L	0.00002011	0.00002011		0.000025	0	0		0.001		80%	80	120	0%	
Lithium	A	mg/L	0.0002192	0.0002192		0.0003125	0	0		1		70%	80	120	0%	S
Magnesium	A	mg/L	0.005293	0.005293		0	0	0		1		0%			0%	
Manganese	A	mg/L	-1.835E-05	-1.835E-05		0	0	0		0.001		0%			0%	
Mercury	A	mg/L	4.872E-09	4.872E-09		0	0	0		0.001		0%			0%	
Molybdenum	A	mg/L	0.00002643	0.00002643		0	0	0		0.001		0%			0%	
Nickel	A	mg/L	-2.779E-06	-2.779E-06		0	0	0		0.005		0%			0%	
Potassium	A	mg/L	0.007981	0.007981		0.00625	0	0		1		128%	80	120	0%	S
Selenium	A	mg/L	0.00002391	0.00002391		0.000025	0	0		0.005		96%	80	120	0%	
Silicon	A	mg/L	0.0001279	0.0001279		0	0	0		0.1		0%			0%	
Silver	A	mg/L	0.00001041	0.00001041		0	0	0		0.001		0%			0%	
Sodium	A	mg/L	0.006034	0.006034		0.00625	0	0		1		97%	80	120	0%	
Strontium	A	mg/L	0.00002861	0.00002861		0	0	0		0.001		0%	80	120	0%	
Thallium	A	mg/L	0.00001348	0.00001348		0	0	0		0.001		0%			0%	
Thorium	A	mg/L	0.00001443	0.00001443		0	0	0		0.05		0%			0%	
Tin	A	mg/L	-4.939E-06	-4.939E-06		0	0	0		0.001		0%			0%	
Titanium	A	mg/L	0.00003049	0.00003049		0	0	0		0.001		0%			0%	
Uranium	A	mg/L	0.00002265	0.00002265		0.000025	0	0		0.001		91%	80	120	0%	
Vanadium	A	mg/L	0.00007429	0.00007429		0	0	0		0.005		0%			0%	
Zinc	A	mg/L	3.799E-06	3.799E-06		0	0	0		0.01		0%			0%	
Iron, Ferrous	C	mg/L	0.000631	0.000631		0.000025	0	0		0.01	5	2524%	80	120	0%	S

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14986291	0.025 ppb STD	ICPMS-6020B-C	Cal1		12/23/2021 11:0	1	R372324		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	0.00027371	0.00027371		0.0000535	0	0		0.214	0.9	512%	80	120	0%	S

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14986292	0.05 ppb STD	ICPMS-6020B-C	Cal2		12/23/2021 11:1	1	R372324		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.0001004	0.0001004		0	0	0		0.01		0%			0%	
Antimony	A	mg/L	0.00004543	0.00004543		0.00005	0	0		0.001		91%	80	120	0%	
Arsenic	A	mg/L	0.00004829	0.00004829		0.00005	0	0		0.001		97%	80	120	0%	
Barium	A	mg/L	0.00004518	0.00004518		0.00005	0	0		0.0003		90%	80	120	0%	
Beryllium	A	mg/L	0.00004058	0.00004058		0.00005	0	0		0.001		81%	80	120	0%	
Boron	A	mg/L	-7.465E-05	-7.465E-05		0	0	0		0.1		0%			0%	
Cadmium	A	mg/L	0.00004708	0.00004708		0.00005	0	0		0.001		94%	80	120	0%	
Calcium	A	mg/L	0.01294	0.01294		0.0125	0	0		1		104%	80	120	0%	
Cerium	A	mg/L	0.00004483	0.00004483		0.00005	0	0		0.001		90%	80	120	0%	
Chromium	A	mg/L	0.00003073	0.00003073		0.00005	0	0		0.001		61%	80	120	0%	S
Cobalt	A	mg/L	0.00004902	0.00004902		0	0	0		0.001		0%			0%	
Copper	A	mg/L	0.00004332	0.00004332		0.00005	0	0		0.005		87%	80	120	0%	
Iron	A	mg/L	0.001254	0.001254		0.00125	0	0		0.01		100%	80	120	0%	
Lanthanum	A	mg/L	0.00004795	0.00004795		0.00005	0	0		0.001		96%	80	120	0%	
Lead	A	mg/L	0.00004276	0.00004276		0.00005	0	0		0.001		86%	80	120	0%	
Lithium	A	mg/L	0.0005324	0.0005324		0.000625	0	0		1		85%	80	120	0%	
Magnesium	A	mg/L	0.00935	0.00935		0.0125	0	0		1		75%	80	120	0%	S
Manganese	A	mg/L	0.00001472	0.00001472		0.00005	0	0		0.001		29%	80	120	0%	S
Mercury	A	mg/L	-1.15E-07	-1.15E-07		0	0	0		0.001		0%			0%	
Molybdenum	A	mg/L	0.00004613	0.00004613		0.00005	0	0		0.001		92%	80	120	0%	
Nickel	A	mg/L	0.00001674	0.00001674		0	0	0		0.005		0%			0%	
Potassium	A	mg/L	0.01266	0.01266		0.0125	0	0		1		101%	80	120	0%	
Selenium	A	mg/L	0.00004055	0.00004055		0.00005	0	0		0.005		81%	80	120	0%	
Silicon	A	mg/L	0.0001517	0.0001517		0	0	0		0.1		0%			0%	
Silver	A	mg/L	0.00001965	0.00001965		0.00002	0	0		0.001		98%	80	120	0%	
Sodium	A	mg/L	0.0124	0.0124		0.0125	0	0		1		99%	80	120	0%	
Strontium	A	mg/L	0.00004349	0.00004349		0.00005	0	0		0.001		87%	80	120	0%	
Thallium	A	mg/L	0.00003175	0.00003175		0	0	0		0.001		0%			0%	
Thorium	A	mg/L	0.00003129	0.00003129		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
14986292	0.05 ppb STD	ICPMS-6020B-C	Cal2		12/23/2021 11:1	1	R372324		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Tin	A	mg/L	0.00002678	0.00002678		0	0	0		0.001		0%			0%	
Titanium	A	mg/L	0.0000717	0.0000717		0	0	0		0.001		0%			0%	
Uranium	A	mg/L	0.00004531	0.00004531		0.00005	0	0		0.001		91%	80	120	0%	
Vanadium	A	mg/L	0.000102	0.000102		0	0	0		0.005		0%			0%	
Zinc	A	mg/L	7.435E-06	7.435E-06		0	0	0		0.01		0%			0%	
Iron, Ferrous	C	mg/L	0.001254	0.001254		0.00005	0	0		0.01	5	2508%	80	120	0%	S
Silicon as SiO2	C	mg/L	0.00032464	0.00032464		0.00428	0	0		0.214	0.9	8%	80	120	0%	S

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14986293	0.10 ppb STD	ICPMS-6020B-C	Cal3		12/23/2021 11:2	1	R372324		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.0001519	0.0001519		0.0001	0	0		0.01		152%	80	120	0%	S
Antimony	A	mg/L	0.0001069	0.0001069		0.0001	0	0		0.001		107%	80	120	0%	
Arsenic	A	mg/L	0.0001117	0.0001117		0.0001	0	0		0.001		112%	80	120	0%	
Barium	A	mg/L	0.0001143	0.0001143		0.0001	0	0		0.0003		114%	80	120	0%	
Beryllium	A	mg/L	0.00009721	0.00009721		0.0001	0	0		0.001		97%	80	120	0%	
Boron	A	mg/L	-0.0001138	-0.0001138		0	0	0		0.1		0%			0%	
Cadmium	A	mg/L	0.0001055	0.0001055		0.0001	0	0		0.001		106%	80	120	0%	
Calcium	A	mg/L	0.03007	0.03007		0.025	0	0		1		120%	80	120	0%	
Cerium	A	mg/L	0.0001065	0.0001065		0.0001	0	0		0.001		107%	80	120	0%	
Chromium	A	mg/L	0.0001133	0.0001133		0.0001	0	0		0.001		113%	80	120	0%	
Cobalt	A	mg/L	0.0001124	0.0001124		0.0001	0	0		0.001		112%	80	120	0%	
Copper	A	mg/L	0.0001145	0.0001145		0.0001	0	0		0.005		115%	80	120	0%	
Iron	A	mg/L	0.00294	0.00294		0.0025	0	0		0.01		118%	80	120	0%	
Lanthanum	A	mg/L	0.0001091	0.0001091		0.0001	0	0		0.001		109%	80	120	0%	
Lead	A	mg/L	0.0001032	0.0001032		0.0001	0	0		0.001		103%	80	120	0%	
Lithium	A	mg/L	0.001216	0.001216		0.00125	0	0		1		97%	80	120	0%	
Magnesium	A	mg/L	0.02555	0.02555		0.025	0	0		1		102%	80	120	0%	
Manganese	A	mg/L	0.00007673	0.00007673		0.0001	0	0		0.001		77%	80	120	0%	S
Mercury	A	mg/L	1.813E-06	1.813E-06		0.000002	0	0		0.001		91%	80	120	0%	
Molybdenum	A	mg/L	0.0001102	0.0001102		0.0001	0	0		0.001		110%	80	120	0%	
Nickel	A	mg/L	0.0001046	0.0001046		0.0001	0	0		0.005		105%	80	120	0%	
Potassium	A	mg/L	0.03038	0.03038		0.025	0	0		1		122%	80	120	0%	S
Selenium	A	mg/L	0.0001075	0.0001075		0.0001	0	0		0.005		107%	80	120	0%	

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14986293	0.10 ppb STD	ICPMS-6020B-C	Cal3		12/23/2021 11:2	1	R372324		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Silicon	A	mg/L	0.000421	0.000421		0.0004	0	0		0.1		105%	80	120	0%	
Silver	A	mg/L	0.00004597	0.00004597		0.00004	0	0		0.001		115%	80	120	0%	
Sodium	A	mg/L	0.02801	0.02801		0.025	0	0		1		112%	80	120	0%	
Strontium	A	mg/L	0.00009437	0.00009437		0.0001	0	0		0.001		94%	80	120	0%	
Thallium	A	mg/L	0.00009003	0.00009003		0.0001	0	0		0.001		90%	80	120	0%	
Thorium	A	mg/L	0.00007658	0.00007658		0.0001	0	0		0.05		77%	80	120	0%	S
Tin	A	mg/L	0.00008761	0.00008761		0.0001	0	0		0.001		88%	80	120	0%	
Titanium	A	mg/L	0.0001439	0.0001439		0.0001	0	0		0.001		144%	80	120	0%	S
Uranium	A	mg/L	0.0001043	0.0001043		0.0001	0	0		0.001		104%	80	120	0%	
Vanadium	A	mg/L	0.0001481	0.0001481		0.0001	0	0		0.005		148%	80	120	0%	S
Zinc	A	mg/L	0.00002435	0.00002435		0.0001	0	0		0.01		24%	80	120	0%	S
Iron, Ferrous	C	mg/L	0.00294	0.00294		0.0001	0	0		0.01	5	2940%	80	120	0%	S
Silicon as SiO2	C	mg/L	0.00090094	0.00090094		0.00856	0	0		0.214	0.9	11%	80	120	0%	S

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14986294	0.5 ppb STD	ICPMS-6020B-C	Cal4		12/23/2021 11:2	1	R372324		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.0005335	0.0005335		0.0005	0	0		0.01		107%	80	120	0%	
Antimony	A	mg/L	0.0004683	0.0004683		0.0005	0	0		0.001		94%	80	120	0%	
Arsenic	A	mg/L	0.0004755	0.0004755		0.0005	0	0		0.001		95%	80	120	0%	
Barium	A	mg/L	0.0004589	0.0004589		0.0005	0	0		0.0003		92%	80	120	0%	
Beryllium	A	mg/L	0.0004713	0.0004713		0.0005	0	0		0.001		94%	80	120	0%	
Boron	A	mg/L	0.0001535	0.0001535		0.0005	0	0		0.1		31%	80	120	0%	S
Cadmium	A	mg/L	0.0004577	0.0004577		0.0005	0	0		0.001		92%	80	120	0%	
Calcium	A	mg/L	0.1286	0.1286		0.125	0	0		1		103%	80	120	0%	
Cerium	A	mg/L	0.0004563	0.0004563		0.0005	0	0		0.001		91%	80	120	0%	
Chromium	A	mg/L	0.000495	0.000495		0.0005	0	0		0.001		99%	80	120	0%	
Cobalt	A	mg/L	0.0005042	0.0005042		0.0005	0	0		0.001		101%	80	120	0%	
Copper	A	mg/L	0.0005199	0.0005199		0.0005	0	0		0.005		104%	80	120	0%	
Iron	A	mg/L	0.01276	0.01276		0.0125	0	0		0.01		102%	80	120	0%	
Lanthanum	A	mg/L	0.0004737	0.0004737		0.0005	0	0		0.001		95%	80	120	0%	
Lead	A	mg/L	0.0004499	0.0004499		0.0005	0	0		0.001		90%	80	120	0%	
Lithium	A	mg/L	0.005934	0.005934		0.00625	0	0		1		95%	80	120	0%	
Magnesium	A	mg/L	0.1298	0.1298		0.125	0	0		1		104%	80	120	0%	

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14986294	0.5 ppb STD	ICPMS-6020B-C	Cal4		12/23/2021 11:2	1	R372324		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Manganese	A	mg/L	0.0004545	0.0004545		0.0005	0	0		0.001		91%	80	120	0%	
Mercury	A	mg/L	5.034E-06	5.034E-06		0.00001	0	0		0.001		50%	80	120	0%	S
Molybdenum	A	mg/L	0.0004543	0.0004543		0.0005	0	0		0.001		91%	80	120	0%	
Nickel	A	mg/L	0.0004801	0.0004801		0.0005	0	0		0.005		96%	80	120	0%	
Potassium	A	mg/L	0.1241	0.1241		0.125	0	0		1		99%	80	120	0%	
Selenium	A	mg/L	0.0004768	0.0004768		0.0005	0	0		0.005		95%	80	120	0%	
Silicon	A	mg/L	0.001915	0.001915		0.002	0	0		0.1		96%	80	120	0%	
Silver	A	mg/L	0.0001886	0.0001886		0.0002	0	0		0.001		94%	80	120	0%	
Sodium	A	mg/L	0.1271	0.1271		0.125	0	0		1		102%	80	120	0%	
Strontium	A	mg/L	0.0004645	0.0004645		0.0005	0	0		0.001		93%	80	120	0%	
Thallium	A	mg/L	0.0004379	0.0004379		0.0005	0	0		0.001		88%	80	120	0%	
Thorium	A	mg/L	0.0003931	0.0003931		0.0005	0	0		0.05		79%	80	120	0%	S
Tin	A	mg/L	0.0004477	0.0004477		0.0005	0	0		0.001		90%	80	120	0%	
Titanium	A	mg/L	0.00048	0.00048		0.0005	0	0		0.001		96%	80	120	0%	
Uranium	A	mg/L	0.0004531	0.0004531		0.0005	0	0		0.001		91%	80	120	0%	
Vanadium	A	mg/L	0.0005022	0.0005022		0.0005	0	0		0.005		100%	80	120	0%	
Zinc	A	mg/L	0.000454	0.000454		0.0005	0	0		0.01		91%	80	120	0%	
Iron, Ferrous	C	mg/L	0.01276	0.01276		0.0005	0	0		0.01	5	2552%	80	120	0%	S
Silicon as SiO2	C	mg/L	0.0040981	0.0040981		0.0428	0	0		0.214	0.9	10%	80	120	0%	S

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14986295	1 ppb STD	ICPMS-6020B-C	Cal5		12/23/2021 11:3	1	R372324		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.00109	0.00109		0.001	0	0		0.01		109%	80	120	0%	
Antimony	A	mg/L	0.001025	0.001025		0.001	0	0		0.001		102%	80	120	0%	
Arsenic	A	mg/L	0.001086	0.001086		0.001	0	0		0.001		109%	80	120	0%	
Barium	A	mg/L	0.001003	0.001003		0.001	0	0		0.0003		100%	80	120	0%	
Beryllium	A	mg/L	0.001029	0.001029		0.001	0	0		0.001		103%	80	120	0%	
Boron	A	mg/L	0.0006474	0.0006474		0.001	0	0		0.1		65%	80	120	0%	S
Cadmium	A	mg/L	0.001027	0.001027		0.001	0	0		0.001		103%	80	120	0%	
Calcium	A	mg/L	0.2814	0.2814		0.25	0	0		1		113%	80	120	0%	
Cerium	A	mg/L	0.0009958	0.0009958		0.001	0	0		0.001		100%	80	120	0%	
Chromium	A	mg/L	0.001096	0.001096		0.001	0	0		0.001		110%	80	120	0%	
Cobalt	A	mg/L	0.001096	0.001096		0.001	0	0		0.001		110%	80	120	0%	

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14986295	1 ppb STD	ICPMS-6020B-C	Cal5		12/23/2021 11:3	1	R372324		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Copper	A	mg/L	0.00114	0.00114		0.001	0	0		0.005		114%	80	120	0%	
Iron	A	mg/L	0.02862	0.02862		0.025	0	0		0.01		114%	80	120	0%	
Lanthanum	A	mg/L	0.001008	0.001008		0.001	0	0		0.001		101%	80	120	0%	
Lead	A	mg/L	0.0009879	0.0009879		0.001	0	0		0.001		99%	80	120	0%	
Lithium	A	mg/L	0.01346	0.01346		0.0125	0	0		1		108%	80	120	0%	
Magnesium	A	mg/L	0.2888	0.2888		0.25	0	0		1		116%	80	120	0%	
Manganese	A	mg/L	0.001065	0.001065		0.001	0	0		0.001		106%	80	120	0%	
Mercury	A	mg/L	0.00001828	0.00001828		0.00002	0	0		0.001		91%	80	120	0%	
Molybdenum	A	mg/L	0.00104	0.00104		0.001	0	0		0.001		104%	80	120	0%	
Nickel	A	mg/L	0.001079	0.001079		0.001	0	0		0.005		108%	80	120	0%	
Potassium	A	mg/L	0.2813	0.2813		0.25	0	0		1		113%	80	120	0%	
Selenium	A	mg/L	0.001077	0.001077		0.001	0	0		0.005		108%	80	120	0%	
Silicon	A	mg/L	0.004282	0.004282		0.004	0	0		0.1		107%	80	120	0%	
Silver	A	mg/L	0.000425	0.000425		0.0004	0	0		0.001		106%	80	120	0%	
Sodium	A	mg/L	0.282	0.282		0.25	0	0		1		113%	80	120	0%	
Strontium	A	mg/L	0.001072	0.001072		0.001	0	0		0.001		107%	80	120	0%	
Thallium	A	mg/L	0.0009822	0.0009822		0.001	0	0		0.001		98%	80	120	0%	
Thorium	A	mg/L	0.0009126	0.0009126		0.001	0	0		0.05		91%	80	120	0%	
Tin	A	mg/L	0.001002	0.001002		0.001	0	0		0.001		100%	80	120	0%	
Titanium	A	mg/L	0.001051	0.001051		0.001	0	0		0.001		105%	80	120	0%	
Uranium	A	mg/L	0.001021	0.001021		0.001	0	0		0.001		102%	80	120	0%	
Vanadium	A	mg/L	0.001164	0.001164		0.001	0	0		0.005		116%	80	120	0%	
Zinc	A	mg/L	0.001088	0.001088		0.001	0	0		0.01		109%	80	120	0%	
Iron, Ferrous	C	mg/L	0.02862	0.02862		0.001	0	0		0.01	5	2862%	80	120	0%	S
Silicon as SiO2	C	mg/L	0.00916348	0.00916348		0.0856	0	0		0.214	0.9	11%	80	120	0%	S

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14986296	10 ppb STD	ICPMS-6020B-C	Cal6		12/23/2021 11:4	1	R372324		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.009825	0.009825		0.01	0	0		0.01		98%	90	110	0%	
Antimony	A	mg/L	0.009692	0.009692		0.01	0	0		0.001		97%	90	110	0%	
Arsenic	A	mg/L	0.009627	0.009627		0.01	0	0		0.001		96%	90	110	0%	
Barium	A	mg/L	0.009482	0.009482		0.01	0	0		0.0003		95%	90	110	0%	
Beryllium	A	mg/L	0.009791	0.009791		0.01	0	0		0.001		98%	90	110	0%	

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14986296	10 ppb STD	ICPMS-6020B-C Cal6			12/23/2021 11:4	1	R372324		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Boron	A	mg/L	0.009372	0.009372		0.01	0	0		0.1		94%	90	110	0%	
Cadmium	A	mg/L	0.009685	0.009685		0.01	0	0		0.001		97%	90	110	0%	
Calcium	A	mg/L	2.473	2.473		2.5	0	0		1		99%	90	110	0%	
Cerium	A	mg/L	0.009477	0.009477		0.01	0	0		0.001		95%	90	110	0%	
Chromium	A	mg/L	0.009915	0.009915		0.01	0	0		0.001		99%	90	110	0%	
Cobalt	A	mg/L	0.009968	0.009968		0.01	0	0		0.001		100%	90	110	0%	
Copper	A	mg/L	0.01012	0.01012		0.01	0	0		0.005		101%	90	110	0%	
Iron	A	mg/L	0.2547	0.2547		0.25	0	0		0.01		102%	90	110	0%	
Lanthanum	A	mg/L	0.009612	0.009612		0.01	0	0		0.001		96%	90	110	0%	
Lead	A	mg/L	0.009213	0.009213		0.01	0	0		0.001		92%	90	110	0%	
Lithium	A	mg/L	0.1281	0.1281		0.125	0	0		1		102%	90	110	0%	
Magnesium	A	mg/L	2.629	2.629		2.5	0	0		1		105%	90	110	0%	
Manganese	A	mg/L	0.009833	0.009833		0.01	0	0		0.001		98%	90	110	0%	
Mercury	A	mg/L	0.0001755	0.0001755		0.0002	0	0		0.001		88%	90	110	0%	S
Molybdenum	A	mg/L	0.009724	0.009724		0.01	0	0		0.001		97%	90	110	0%	
Nickel	A	mg/L	0.009826	0.009826		0.01	0	0		0.005		98%	90	110	0%	
Potassium	A	mg/L	2.467	2.467		2.5	0	0		1		99%	90	110	0%	
Selenium	A	mg/L	0.009857	0.009857		0.01	0	0		0.005		99%	90	110	0%	
Silicon	A	mg/L	0.03931	0.03931		0.04	0	0		0.1		98%	90	110	0%	
Silver	A	mg/L	0.003929	0.003929		0.004	0	0		0.001		98%	90	110	0%	
Sodium	A	mg/L	2.595	2.595		2.5	0	0		1		104%	90	110	0%	
Strontium	A	mg/L	0.009742	0.009742		0.01	0	0		0.001		97%	90	110	0%	
Thallium	A	mg/L	0.009412	0.009412		0.01	0	0		0.001		94%	90	110	0%	
Thorium	A	mg/L	0.009092	0.009092		0.01	0	0		0.05		91%	90	110	0%	
Tin	A	mg/L	0.009728	0.009728		0.01	0	0		0.001		97%	90	110	0%	
Titanium	A	mg/L	0.009718	0.009718		0.01	0	0		0.001		97%	90	110	0%	
Uranium	A	mg/L	0.00958	0.00958		0.01	0	0		0.001		96%	90	110	0%	
Vanadium	A	mg/L	0.009532	0.009532		0.01	0	0		0.005		95%	90	110	0%	
Zinc	A	mg/L	0.009741	0.009741		0.01	0	0		0.01		97%	90	110	0%	
Iron, Ferrous	C	mg/L	0.2547	0.2547		0.01	0	0		0.01	5	2547%	90	110	0%	S
Silicon as SiO2	C	mg/L	0.0841234	0.0841234		0.856	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
14986297	50 ppb STD	ICPMS-6020B-C Cal7			12/23/2021 11:4	1	R372324		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.04977	0.04977		0.05	0	0		0.01		100%	90	110	0%	
Antimony	A	mg/L	0.04454	0.04454		0.05	0	0		0.001		89%	90	110	0%	S
Arsenic	A	mg/L	0.04868	0.04868		0.05	0	0		0.001		97%	90	110	0%	
Barium	A	mg/L	0.0489	0.0489		0.05	0	0		0.0003		98%	90	110	0%	
Beryllium	A	mg/L	0.04962	0.04962		0.05	0	0		0.001		99%	90	110	0%	
Boron	A	mg/L	0.05022	0.05022		0.05	0	0		0.1		100%	90	110	0%	
Cadmium	A	mg/L	0.04911	0.04911		0.05	0	0		0.001		98%	90	110	0%	
Calcium	A	mg/L	12.82	12.82		12.5	0	0		1		103%	90	110	0%	
Cerium	A	mg/L	0.04945	0.04945		0.05	0	0		0.001		99%	90	110	0%	
Chromium	A	mg/L	0.04941	0.04941		0.05	0	0		0.001		99%	90	110	0%	
Cobalt	A	mg/L	0.05084	0.05084		0.05	0	0		0.001		102%	90	110	0%	
Copper	A	mg/L	0.04938	0.04938		0.05	0	0		0.005		99%	90	110	0%	
Iron	A	mg/L	1.314	1.314		1.25	0	0		0.01		105%	90	110	0%	
Lanthanum	A	mg/L	0.04964	0.04964		0.05	0	0		0.001		99%	90	110	0%	
Lead	A	mg/L	0.04891	0.04891		0.05	0	0		0.001		98%	90	110	0%	
Lithium	A	mg/L	0.6668	0.6668		0.625	0	0		1		107%	90	110	0%	
Magnesium	A	mg/L	13.17	13.17		12.5	0	0		1		105%	90	110	0%	
Manganese	A	mg/L	0.04909	0.04909		0.05	0	0		0.001		98%	90	110	0%	
Mercury	A	mg/L	0.000993	0.000993		0.001	0	0		0.001		99%	90	110	0%	
Molybdenum	A	mg/L	0.04446	0.04446		0.05	0	0		0.001		89%	90	110	0%	S
Nickel	A	mg/L	0.04947	0.04947		0.05	0	0		0.005		99%	90	110	0%	
Potassium	A	mg/L	12.93	12.93		12.5	0	0		1		103%	90	110	0%	
Selenium	A	mg/L	0.04949	0.04949		0.05	0	0		0.005		99%	90	110	0%	
Silicon	A	mg/L	0.1871	0.1871		0.2	0	0		0.1		94%	90	110	0%	
Silver	A	mg/L	0.01974	0.01974		0.02	0	0		0.001		99%	90	110	0%	
Sodium	A	mg/L	13.19	13.19		12.5	0	0		1		106%	90	110	0%	
Strontium	A	mg/L	0.04868	0.04868		0.05	0	0		0.001		97%	90	110	0%	
Thallium	A	mg/L	0.04793	0.04793		0.05	0	0		0.001		96%	90	110	0%	
Thorium	A	mg/L	0.04826	0.04826		0.05	0	0		0.05		97%	90	110	0%	
Tin	A	mg/L	0.04424	0.04424		0.05	0	0		0.001		88%	90	110	0%	S
Titanium	A	mg/L	0.04497	0.04497		0.05	0	0		0.001		90%	90	110	0%	
Uranium	A	mg/L	0.04912	0.04912		0.05	0	0		0.001		98%	90	110	0%	
Vanadium	A	mg/L	0.04908	0.04908		0.05	0	0		0.005		98%	90	110	0%	
Zinc	A	mg/L	0.04921	0.04921		0.05	0	0		0.01		98%	90	110	0%	
Iron, Ferrous	C	mg/L	1.314	1.314		0.05	0	0		0.01	5	2628%	90	110	0%	S

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14986297	50 ppb STD	ICPMS-6020B-C	Cal7		12/23/2021 11:4	1	R372324		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	0.400394	0.400394		4.28	0	0		0.214	0.9	9%	90	110	0%	S

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14986298	100 ppb STD	ICPMS-6020B-C	Cal8		12/23/2021 11:5	1	R372324		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.1001	0.1001		0.1	0	0		0.01		100%	90	110	0%	
Antimony	A	mg/L	0.1028	0.1028		0.1	0	0		0.001		103%	90	110	0%	
Arsenic	A	mg/L	0.1007	0.1007		0.1	0	0		0.001		101%	90	110	0%	
Barium	A	mg/L	0.1006	0.1006		0.1	0	0		0.0003		101%	90	110	0%	
Beryllium	A	mg/L	0.1002	0.1002		0.1	0	0		0.001		100%	90	110	0%	
Boron	A	mg/L	0.09996	0.09996		0.1	0	0		0.1		100%	90	110	0%	
Cadmium	A	mg/L	0.1005	0.1005		0.1	0	0		0.001		100%	90	110	0%	
Calcium	A	mg/L	24.08	24.08		25	0	0		1		96%	90	110	0%	
Cerium	A	mg/L	0.1003	0.1003		0.1	0	0		0.001		100%	90	110	0%	
Chromium	A	mg/L	0.1003	0.1003		0.1	0	0		0.001		100%	90	110	0%	
Cobalt	A	mg/L	0.09958	0.09958		0.1	0	0		0.001		100%	90	110	0%	
Copper	A	mg/L	0.1003	0.1003		0.1	0	0		0.005		100%	90	110	0%	
Iron	A	mg/L	2.533	2.533		2.5	0	0		0.01		101%	90	110	0%	
Lanthanum	A	mg/L	0.1002	0.1002		0.1	0	0		0.001		100%	90	110	0%	
Lead	A	mg/L	0.1006	0.1006		0.1	0	0		0.001		101%	90	110	0%	
Lithium	A	mg/L	1.262	1.262		1.25	0	0		1		101%	90	110	0%	
Magnesium	A	mg/L	25.44	25.44		25	0	0		1		102%	90	110	0%	
Manganese	A	mg/L	0.1005	0.1005		0.1	0	0		0.001		100%	90	110	0%	
Mercury	A	mg/L	0.002006	0.002006		0.002	0	0		0.001		100%	90	110	0%	
Molybdenum	A	mg/L	0.1028	0.1028		0.1	0	0		0.001		103%	90	110	0%	
Nickel	A	mg/L	0.1003	0.1003		0.1	0	0		0.005		100%	90	110	0%	
Potassium	A	mg/L	25.16	25.16		25	0	0		1		101%	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	0.4065	0.4065		0.4	0	0		0.1		102%	90	110	0%	
Silver	A	mg/L	0.04014	0.04014		0.04	0	0		0.001		100%	90	110	0%	
Sodium	A	mg/L	25.31	25.31		25	0	0		1		101%	90	110	0%	
Strontium	A	mg/L	0.1007	0.1007		0.1	0	0		0.001		101%	90	110	0%	
Thallium	A	mg/L	0.1011	0.1011		0.1	0	0		0.001		101%	90	110	0%	
Thorium	A	mg/L	0.101	0.101		0.1	0	0		0.05		101%	90	110	0%	

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14986298	100 ppb STD	ICPMS-6020B-C	Cal8		12/23/2021 11:5	1	R372324		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Tin	A	mg/L	0.1029	0.1029		0.1	0	0		0.001		103%	90	110	0%	
Titanium	A	mg/L	0.1025	0.1025		0.1	0	0		0.001		102%	90	110	0%	
Uranium	A	mg/L	0.1005	0.1005		0.1	0	0		0.001		100%	90	110	0%	
Vanadium	A	mg/L	0.1005	0.1005		0.1	0	0		0.005		100%	90	110	0%	
Zinc	A	mg/L	0.1004	0.1004		0.1	0	0		0.01		100%	90	110	0%	
Iron, Ferrous	C	mg/L	2.533	2.533		0.1	0	0		0.01	5	2533%	90	110	0%	S
Silicon as SiO2	C	mg/L	0.86991	0.86991		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
14986299	1000 ppb STD	ICPMS-6020B-C	Cal10		12/23/2021 12:0	1	R372324		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	1.083	1.083		1	0	0		0.01		108%	90	110	0%	
Antimony	A	mg/L	0.00009378	0.00009378		0	0	0		0.001		0%			0%	
Arsenic	A	mg/L	1.126	1.126		1	0	0		0.001		113%	90	110	0%	S
Barium	A	mg/L	1.093	1.093		1	0	0		0.0003		109%	90	110	0%	
Beryllium	A	mg/L	1.067	1.067		1	0	0		0.001		107%	90	110	0%	
Boron	A	mg/L	1.07	1.07		1	0	0		0.1		107%	90	110	0%	
Cadmium	A	mg/L	1.122	1.122		1	0	0		0.001		112%	90	110	0%	S
Calcium	A	mg/L	50.38	50.38		50	0	0		1		101%	90	110	0%	
Cerium	A	mg/L	0.00002628	0.00002628		0	0	0		0.001		0%			0%	
Chromium	A	mg/L	1.115	1.115		1	0	0		0.001		111%	90	110	0%	S
Cobalt	A	mg/L	1.055	1.055		1	0	0		0.001		105%	90	110	0%	
Copper	A	mg/L	1.092	1.092		1	0	0		0.005		109%	90	110	0%	
Iron	A	mg/L	6.026	6.026		6	0	0		0.01		100%	90	110	0%	
Lanthanum	A	mg/L	0.00001328	0.00001328		0	0	0		0.001		0%			0%	
Lead	A	mg/L	1.108	1.108		1	0	0		0.001		111%	90	110	0%	S
Lithium	A	mg/L	2.483	2.483		2.5	0	0		1		99%	90	110	0%	
Magnesium	A	mg/L	49.61	49.61		50	0	0		1		99%	90	110	0%	
Manganese	A	mg/L	1.1	1.1		1	0	0		0.001		110%	90		0%	
Mercury	A	mg/L	0.00001274	0.00001274		0	0	0		0.001		0%			0%	
Molybdenum	A	mg/L	0.00007595	0.00007595		0	0	0		0.001		0%			0%	
Nickel	A	mg/L	1.109	1.109		1	0	0		0.005		111%	90	110	0%	S
Potassium	A	mg/L	49.82	49.82		50	0	0		1		100%	90	110	0%	
Selenium	A	mg/L	1.108	1.108		1	0	0		0.005		111%	90	110	0%	S

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14986299	1000 ppb STD	ICPMS-6020B-C	Cal10		12/23/2021 12:0	1	R372324		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Silicon	A	mg/L	0.001788	0.001788		0	0	0		0.1		0%			0%	
Silver	A	mg/L	0.3124	0.3124		0	0	0		0.001		0%			0%	
Sodium	A	mg/L	49.67	49.67		50	0	0		1		99%	90	110	0%	
Strontium	A	mg/L	1.126	1.126		1	0	0		0.001		113%	90	110	0%	S
Thallium	A	mg/L	1.118	1.118		1	0	0		0.001		112%	90	110	0%	S
Thorium	A	mg/L	1.13	1.13		1	0	0		0.05		113%	90	110	0%	S
Tin	A	mg/L	0.00002489	0.00002489		0	0	0		0.001		0%			0%	
Titanium	A	mg/L	0.006499	0.006499		1	0	0		0.001		1%	90	110	0%	S
Uranium	A	mg/L	1.122	1.122		1	0	0		0.001		112%	90	110	0%	S
Vanadium	A	mg/L	1.11	1.11		1	0	0		0.005		111%	90	110	0%	S
Zinc	A	mg/L	1.096	1.096		1	0	0		0.01		110%	90	110	0%	
Iron, Ferrous	C	mg/L	6.026	6.026		0	0	0		0.01	5	0%			0%	
Silicon as SiO2	C	mg/L	0.00382632	0.00382632		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
14986300	100 ppb Br STD	ICPMS-6020B-	SAMP		12/23/2021 12:0	1	R372324		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.0002033	0		0	0	0	0.0006966	0.01	1	0%	0	0	0%	
Arsenic	A	mg/L	0.0001196	0		0	0	0	0.0001626	0.001	1	0%	0	0	0%	
Beryllium	A	mg/L	0.0006512	0.0006512		0	0	0	0.0001137	0.001	1	0%	0	0	0%	J
Boron	A	mg/L	0.006389	0.006389		0	0	0	0.0036397	0.1	1	0%	0	0	0%	J
Cadmium	A	mg/L	0.00003613	0.00003613		0	0	0	2.969E-05	0.001	1	0%	0	0	0%	J
Calcium	A	mg/L	0.004429	0		0	0	0	0.0254163	1	50	0%	0	0	0%	
Cerium	A	mg/L	2.453E-07	0		0	0	0	8.97E-06	0.001	0.1	0%	0	0	0%	
Chromium	A	mg/L	0.00004354	0		0	0	0	0.0002078	0.001	1	0%	0	0	0%	
Cobalt	A	mg/L	0.0001159	0.0001159		0	0	0	2.037E-05	0.001	1	0%	0	0	0%	J
Copper	A	mg/L	0.0001158	0		0	0	0	0.000121	0.005	1	0%	0	0	0%	
Lanthanum	A	mg/L	1.881E-06	0		0	0	0	1.209E-05	0.001	0.1	0%	0	0	0%	
Lead	A	mg/L	0.00006662	0.00006662		0	0	0	3.957E-05	0.001	1	0%	0	0	0%	J
Lithium	A	mg/L	0.003225	0.003225		0	0	0	0.00122	1	2.5	0%	0	0	0%	J
Magnesium	A	mg/L	-0.02195	0		0	0	0	0.0084694	1	50	0%	0	0	0%	
Manganese	A	mg/L	0.00004638	0		0	0	0	5.319E-05	0.001	1	0%	0	0	0%	
Nickel	A	mg/L	0.00003199	0		0	0	0	0.0001477	0.005	1	0%	0	0	0%	
Potassium	A	mg/L	0.7098	0.7098		0	0	0	0.0951865	1	50	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
14986300	100 ppb Br STD	ICPMS-6020B-	SAMP		12/23/2021 12:0	1	R372324		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Selenium	A	mg/L	0.0001756	0.0001756		0	0	0	6.961E-05	0.005	1	0%	0	0	0%	J
Silver	A	mg/L	0.0003912	0.0003912		0	0	0	1.756E-05	0.001	0.04	0%	0	0	0%	J
Sodium	A	mg/L	0.003903	0		0	0	0	0.0321039	1	50	0%	0	0	0%	
Strontium	A	mg/L	0.00001272	0		0	0	0	0.0001116	0.001	1	0%	0	0	0%	
Tellurium	A	mg/L	0	0		0	0	0	0.0004865	0.001	0.1	0%	0	0	0%	
Thallium	A	mg/L	0.0007311	0.0007311		0	0	0	4.044E-05	0.001	1	0%	0	0	0%	J
Uranium	A	mg/L	0.0000249	0.0000249		0	0	0	1.948E-05	0.001	1	0%	0	0	0%	J
Zinc	A	mg/L	0.0004037	0		0	0	0	0.0006119	0.01	1	0%	0	0	0%	
Barium	B	mg/L	0.00007481	0		0	0	0	8.917E-05	0.0005	1	0%	0	0	0%	L
Iron	B	mg/L	0.0004225	0		0	0	0	0.0011177	0.025	5	0%	0	0	0%	L
Iron, Ferrous	B	mg/L	0.0004225	0		0	0	0	0.0011177	0.025	5	0%	0	0	0%	L
Silicon	B	mg/L	0.0008192	0		0	0	0	0.0786454	0.2	0.4	0%	0	0	0%	L
Silicon as SiO2	B	mg/L	0.00175309	0		0	0	0	0.1683010	0.428	0.9	0%	0	0	0%	L
Vanadium	B	mg/L	0.000175	0		0	0	0	0.004194	0.01	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
14986301	Rinse	ICPMS-6020-W-	SAMP		12/23/2021 12:1	1	R372324		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.001464	0.001464		0	0	0	0.0006966	0.001	1	0%	0	0	0%	
Arsenic	A	mg/L	0.00003698	0		0	0	0	0.0001626	0.001	1	0%	0	0	0%	
Beryllium	A	mg/L	0.0003097	0.0003097		0	0	0	0.0001137	0.001	1	0%	0	0	0%	J
Boron	A	mg/L	0.002934	0		0	0	0	0.0036397	0.01	1	0%	0	0	0%	L
Cadmium	A	mg/L	0.00001463	0		0	0	0	2.969E-05	0.001	1	0%	0	0	0%	
Calcium	A	mg/L	0.00002698	0		0	0	0	0.0254163	0.0625	50	0%	0	0	0%	L
Cerium	A	mg/L	-8.085E-07	0		0	0	0	8.97E-06	0.001	0.1	0%	0	0	0%	
Chromium	A	mg/L	0.00001254	0		0	0	0	0.0002078	0.001	1	0%	0	0	0%	
Cobalt	A	mg/L	0.00004707	0.00004707		0	0	0	2.037E-05	0.001	1	0%	0	0	0%	J
Copper	A	mg/L	0.00003356	0		0	0	0	0.000121	0.001	1	0%	0	0	0%	
Lanthanum	A	mg/L	7.131E-07	0		0	0	0	1.209E-05	0.001	0.1	0%	0	0	0%	
Lead	A	mg/L	0.00002514	0		0	0	0	3.957E-05	0.001	1	0%	0	0	0%	
Lithium	A	mg/L	0.001024	0		0	0	0	0.00122	0.05	2.5	0%	0	0	0%	L
Magnesium	A	mg/L	-0.01987	0		0	0	0	0.0084694	0.025	50	0%	0	0	0%	L
Manganese	A	mg/L	-1.057E-05	0		0	0	0	5.319E-05	0.001	1	0%	0	0	0%	
Nickel	A	mg/L	5.315E-07	0		0	0	0	0.0001477	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
14986301	Rinse	ICPMS-6020-W-	SAMP		12/23/2021 12:1	1	R372324		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Potassium	A	mg/L	-0.001003	0		0	0	0	0.0951865	0.125	50	0%	0	0	0%	L
Selenium	A	mg/L	0.00005065	0		0	0	0	6.961E-05	0.001	1	0%	0	0	0%	
Silver	A	mg/L	8.357E-06	0		0	0	0	1.756E-05	0.001	0.04	0%	0	0	0%	
Sodium	A	mg/L	-0.004816	0		0	0	0	0.0321039	0.125	50	0%	0	0	0%	L
Strontium	A	mg/L	-3.219E-05	0		0	0	0	0.0001116	0.001	1	0%	0	0	0%	
Tellurium	A	mg/L	0	0		0	0	0	0.0004865	0.001	0.1	0%	0	0	0%	
Thallium	A	mg/L	0.0003123	0.0003123		0	0	0	4.044E-05	0.001	1	0%	0	0	0%	J
Uranium	A	mg/L	7.521E-06	0		0	0	0	1.948E-05	0.0003	1	0%	0	0	0%	
Zinc	A	mg/L	-0.0001239	0		0	0	0	0.0006119	0.002	1	0%	0	0	0%	L
Barium	B	mg/L	2.784E-06	0		0	0	0	8.917E-05	0.001	1	0%	0	0	0%	
Iron	B	mg/L	0.00002168	0		0	0	0	0.0011177	0.025	5	0%	0	0	0%	L
Iron, Ferrous	B	mg/L	0.00002168	0		0	0	0	0.0011177	0.025	5	0%	0	0	0%	L
Silicon	B	mg/L	-0.0001385	0		0	0	0	0.0786454	0.2	0.4	0%	0	0	0%	L
Vanadium	B	mg/L	-5.701E-05	0		0	0	0	0.004194	0.01	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
14986302	QCS	ICPMS-6020-W-	ICV		12/23/2021 12:1	1	R372324		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.2456	0.2456		0.25	0	0	0.0006966	0.001	1	98%	90	110	0%	
Antimony	A	mg/L	0.04404	0.04404		0.05	0	0	0.0002882	0.001	0.1	88%	90	110	0%	S
Arsenic	A	mg/L	0.04896	0.04896		0.05	0	0	0.0001626	0.001	1	98%	90	110	0%	
Barium	A	mg/L	0.04869	0.04869		0.05	0	0	8.917E-05	0.001	1	97%	90	110	0%	
Beryllium	A	mg/L	0.02415	0.02415		0.025	0	0	0.0001137	0.001	1	97%	90	110	0%	
Boron	A	mg/L	0.05196	0.05196		0.05	0	0	0.0036397	0.01	1	104%	90	110	0%	
Cadmium	A	mg/L	0.02504	0.02504		0.025	0	0	2.969E-05	0.001	1	100%	90	110	0%	
Calcium	A	mg/L	2.631	2.631		2.5	0	0	0.0254163	0.0625	50	105%	90	110	0%	
Cerium	A	mg/L	0.05008	0.05008		0.05	0	0	8.97E-06	0.001	0.1	100%	90	110	0%	
Chromium	A	mg/L	0.04946	0.04946		0.05	0	0	0.0002078	0.001	1	99%	90	110	0%	
Cobalt	A	mg/L	0.05019	0.05019		0.05	0	0	2.037E-05	0.001	1	100%	90	110	0%	
Copper	A	mg/L	0.05066	0.05066		0.05	0	0	0.000121	0.001	1	101%	90	110	0%	
Iron	A	mg/L	0.2538	0.2538		0.25	0	0	0.0011177	0.025	5	102%	90	110	0%	
Lanthanum	A	mg/L	0.04908	0.04908		0.05	0	0	1.209E-05	0.001	0.1	98%	90	110	0%	
Lead	A	mg/L	0.04895	0.04895		0.05	0	0	3.957E-05	0.001	1	98%	90	110	0%	
Lithium	A	mg/L	0.05237	0.05237		0.05	0	0	0.00122	0.05	2.5	105%	90	110	0%	

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14986302	QCS	ICPMS-6020-W- ICV			12/23/2021 12:1	1	R372324		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Magnesium	A	mg/L	2.68	2.68		2.5	0	0	0.0084694	0.025	50	107%	90	110	0%	
Manganese	A	mg/L	0.2479	0.2479		0.25	0	0	5.319E-05	0.001	1	99%	90	110	0%	
Molybdenum	A	mg/L	0.04313	0.04313		0.05	0	0	7.382E-05	0.001	0.1	86%	90	110	0%	S
Nickel	A	mg/L	0.05024	0.05024		0.05	0	0	0.0001477	0.001	1	100%	90	110	0%	
Potassium	A	mg/L	2.563	2.563		2.5	0	0	0.0951865	0.125	50	103%	90	110	0%	
Selenium	A	mg/L	0.0501	0.0501		0.05	0	0	6.961E-05	0.001	1	100%	90	110	0%	
Silicon	A	mg/L	0.4617	0.4617		0.5	0	0	0.0786454	0.2	0.4	92%	90	110	0%	
Silver	A	mg/L	0.02535	0.02535		0.025	0	0	1.756E-05	0.001	0.04	101%	90	110	0%	
Sodium	A	mg/L	2.588	2.588		2.5	0	0	0.0321039	0.125	50	104%	90	110	0%	
Strontium	A	mg/L	0.0505	0.0505		0.05	0	0	0.0001116	0.001	1	101%	90	110	0%	
Tellurium	A	mg/L	0.04558	0.04558		0.05	0	0	0.0004865	0.001	0.1	91%	90	110	0%	
Thallium	A	mg/L	0.04922	0.04922		0.05	0	0	4.044E-05	0.001	1	98%	90	110	0%	
Tin	A	mg/L	0.04395	0.04395		0.05	0	0	0.0025355	0.01	0.1	88%	90	110	0%	S
Titanium	A	mg/L	0.04286	0.04286		0.05	0	0	0.0001844	0.001	1	86%	90	110	0%	S
Uranium	A	mg/L	0.05154	0.05154		0.05	0	0	1.948E-05	0.0003	1	103%	90	110	0%	
Vanadium	A	mg/L	0.04847	0.04847		0.05	0	0	0.004194	0.01	1	97%	90	110	0%	
Zinc	A	mg/L	0.05268	0.05268		0.05	0	0	0.0006119	0.002	1	105%	90	110	0%	
Iron, Ferrous	C	mg/L	0.2538	0.2538		0	0	0	0.0011177	0.025	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
14986303	CCV	ICPMS-6020-W- CCV			12/23/2021 12:2	1	R372324		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.04857	0.04857		0.05	0	0	0.0006966	0.001	1	97%	90	110	0%	
Antimony	A	mg/L	0.04394	0.04394		0.05	0	0	0.0002882	0.001	0.1	88%	90	110	0%	S
Arsenic	A	mg/L	0.04912	0.04912		0.05	0	0	0.0001626	0.001	1	98%	90	110	0%	
Barium	A	mg/L	0.04788	0.04788		0.05	0	0	8.917E-05	0.001	1	96%	90	110	0%	
Beryllium	A	mg/L	0.04825	0.04825		0.05	0	0	0.0001137	0.001	1	96%	90	110	0%	
Boron	A	mg/L	0.05124	0.05124		0.05	0	0	0.0036397	0.01	1	102%	90	110	0%	
Cadmium	A	mg/L	0.04848	0.04848		0.05	0	0	2.969E-05	0.001	1	97%	90	110	0%	
Calcium	A	mg/L	13.34	13.34		12.5	0	0	0.0254163	0.0625	50	107%	90	110	0%	
Cerium	A	mg/L	0.04967	0.04967		0.05	0	0	8.97E-06	0.001	0.1	99%	90	110	0%	
Chromium	A	mg/L	0.04927	0.04927		0.05	0	0	0.0002078	0.001	1	99%	90	110	0%	
Cobalt	A	mg/L	0.05026	0.05026		0.05	0	0	2.037E-05	0.001	1	101%	90	110	0%	
Copper	A	mg/L	0.0495	0.0495		0.05	0	0	0.000121	0.001	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
14986303	CCV	ICPMS-6020-W-	CCV		12/23/2021 12:2	1	R372324		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Iron	A	mg/L	1.314	1.314		1.3	0	0	0.0011177	0.025	5	101%	90	110	0%	
Lanthanum	A	mg/L	0.04986	0.04986		0.05	0	0	1.209E-05	0.001	0.1	100%	90	110	0%	
Lead	A	mg/L	0.04816	0.04816		0.05	0	0	3.957E-05	0.001	1	96%	90	110	0%	
Lithium	A	mg/L	0.6433	0.6433		0.625	0	0	0.00122	0.05	2.5	103%	90	110	0%	
Magnesium	A	mg/L	13.15	13.15		12.5	0	0	0.0084694	0.025	50	105%	90	110	0%	
Manganese	A	mg/L	0.04907	0.04907		0.05	0	0	5.319E-05	0.001	1	98%	90	110	0%	
Molybdenum	A	mg/L	0.04422	0.04422		0.05	0	0	7.382E-05	0.001	0.1	88%	90	110	0%	S
Nickel	A	mg/L	0.04912	0.04912		0.05	0	0	0.0001477	0.001	1	98%	90	110	0%	
Potassium	A	mg/L	13.03	13.03		12.5	0	0	0.0951865	0.125	50	104%	90	110	0%	
Selenium	A	mg/L	0.04922	0.04922		0.05	0	0	6.961E-05	0.001	1	98%	90	110	0%	
Silicon	A	mg/L	0.1927	0.1927		0.2	0	0	0.0786454	0.2	0.4	96%	90	110	0%	
Silver	A	mg/L	0.01928	0.01928		0.02	0	0	1.756E-05	0.001	0.04	96%	90	110	0%	
Sodium	A	mg/L	12.9	12.9		12.5	0	0	0.0321039	0.125	50	103%	90	110	0%	
Strontium	A	mg/L	0.04984	0.04984		0.05	0	0	0.0001116	0.001	1	100%	90	110	0%	
Tellurium	A	mg/L	0	0		0	0	0	0.0004865	0.001	0.1	0%	0	0	0%	
Thallium	A	mg/L	0.04915	0.04915		0.05	0	0	4.044E-05	0.001	1	98%	90	110	0%	
Tin	A	mg/L	0.04387	0.04387		0.05	0	0	0.0025355	0.01	0.1	88%	90	110	0%	S
Titanium	A	mg/L	0.04515	0.04515		0.05	0	0	0.0001844	0.001	1	90%	90	110	0%	
Uranium	A	mg/L	0.04889	0.04889		0.05	0	0	1.948E-05	0.0003	1	98%	90	110	0%	
Vanadium	A	mg/L	0.04902	0.04902		0.05	0	0	0.004194	0.01	1	98%	90	110	0%	
Zinc	A	mg/L	0.04947	0.04947		0.05	0	0	0.0006119	0.002	1	99%	90	110	0%	
Iron, Ferrous	C	mg/L	1.314	1.314		0	0	0	0.0011177	0.025	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
14986304	CCB	ICPMS-6020-W-	CCB		12/23/2021 12:3	1	R372324		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	-1.138E-05	-1.138E-05		0	0	0	0.0006966	0.001	1	0%			0%	
Antimony	A	mg/L	0.00002213	0.00002213		0	0	0	0.0002882	0.001	0.1	0%			0%	
Arsenic	A	mg/L	0.00002452	0.00002452		0	0	0	0.0001626	0.001	1	0%			0%	
Barium	A	mg/L	0.00001164	0.00001164		0	0	0	8.917E-05	0.001	1	0%			0%	
Beryllium	A	mg/L	0.0001591	0.0001591		0	0	0	0.0001137	0.001	1	0%			0%	
Boron	A	mg/L	0.001482	0.001482		0	0	0	0.0036397	0.01	1	0%			0%	
Cadmium	A	mg/L	8.423E-06	8.423E-06		0	0	0	2.969E-05	0.001	1	0%			0%	
Calcium	A	mg/L	-0.0007072	-0.0007072		0	0	0	0.0254163	0.0625	50	0%			0%	

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14986304	CCB	ICPMS-6020-W-	CCB		12/23/2021 12:3	1	R372324		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Cerium	A	mg/L	8.127E-07	8.127E-07		0	0	0	8.97E-06	0.001	0.1	0%	0	0	0%	
Chromium	A	mg/L	-1.035E-06	-1.035E-06		0	0	0	0.0002078	0.001	1	0%			0%	
Cobalt	A	mg/L	0.00002554	0.00002554		0	0	0	2.037E-05	0.001	1	0%			0%	
Copper	A	mg/L	0.00002614	0.00002614		0	0	0	0.000121	0.001	1	0%			0%	
Iron	A	mg/L	-0.0000388	-0.0000388		0	0	0	0.0011177	0.025	5	0%			0%	
Lanthanum	A	mg/L	7.078E-07	7.078E-07		0	0	0	1.209E-05	0.001	0.1	0%	0	0	0%	
Lead	A	mg/L	0.00001468	0.00001468		0	0	0	3.957E-05	0.001	1	0%			0%	
Lithium	A	mg/L	0.0007386	0.0007386		0	0	0	0.00122	0.05	2.5	0%			0%	
Magnesium	A	mg/L	-0.02142	-0.02142		0	0	0	0.0084694	0.025	50	0%			0%	
Manganese	A	mg/L	0.00001716	0.00001716		0	0	0	5.319E-05	0.001	1	0%			0%	
Molybdenum	A	mg/L	0.00001553	0.00001553		0	0	0	7.382E-05	0.001	0.1	0%			0%	
Nickel	A	mg/L	-1.446E-05	-1.446E-05		0	0	0	0.0001477	0.001	1	0%			0%	
Potassium	A	mg/L	0.001864	0.001864		0	0	0	0.0951865	0.125	50	0%			0%	
Selenium	A	mg/L	0.00002963	0.00002963		0	0	0	6.961E-05	0.001	1	0%			0%	
Silicon	A	mg/L	-6.187E-05	-6.187E-05		0	0	0	0.0786454	0.2	0.4	0%	0	0	0%	
Silver	A	mg/L	1.969E-06	1.969E-06		0	0	0	1.756E-05	0.001	0.04	0%			0%	
Sodium	A	mg/L	-0.006073	-0.006073		0	0	0	0.0321039	0.125	50	0%			0%	
Strontium	A	mg/L	-4.289E-05	-4.289E-05		0	0	0	0.0001116	0.001	1	0%	0	0	0%	
Tellurium	A	mg/L	0	0		0	0	0	0.0004865	0.001	0.1	0%	0	0	0%	
Thallium	A	mg/L	0.0003279	0.0003279		0	0	0	4.044E-05	0.001	1	0%	0	0	0%	
Tin	A	mg/L	-2.442E-06	-2.442E-06		0	0	0	0.0025355	0.01	0.1	0%	0	0	0%	
Titanium	A	mg/L	-6.926E-06	-6.926E-06		0	0	0	0.0001844	0.001	1	0%	0	0	0%	
Uranium	A	mg/L	4.826E-06	4.826E-06		0	0	0	1.948E-05	0.0003	1	0%	0	0	0%	
Vanadium	A	mg/L	-1.248E-05	-1.248E-05		0	0	0	0.004194	0.01	1	0%	0	0	0%	
Zinc	A	mg/L	-4.371E-05	-4.371E-05		0	0	0	0.0006119	0.002	1	0%	0	0	0%	
Iron, Ferrous	C	mg/L	-0.0000388	-0.0000388		0	0	0	0.0011177	0.025	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
14986305	LRB	ICPMS-6020-W-	MBLK		12/23/2021 12:3	1	R372324		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.0001145	0		0	0	0	0.0006966	0.001	1	0%	0	0	0%	
Antimony	A	mg/L	2.214E-06	0		0	0	0	0.0002882	0.001	0.1	0%	0	0	0%	
Arsenic	A	mg/L	0.00001524	0		0	0	0	0.0001626	0.001	1	0%	0	0	0%	
Barium	A	mg/L	-5.047E-07	0		0	0	0	8.917E-05	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
14986305	LRB	ICPMS-6020-W-	MBLK		12/23/2021 12:3	1	R372324		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Beryllium	A	mg/L	0.0001115	0		0	0	0	0.0001137	0.001	1	0%	0	0	0%	
Boron	A	mg/L	0.0009797	0		0	0	0	0.0036397	0.01	1	0%	0	0	0%	
Cadmium	A	mg/L	4.975E-06	0		0	0	0	2.969E-05	0.001	1	0%	0	0	0%	
Calcium	A	mg/L	-0.001593	0		0	0	0	0.0254163	0.0625	50	0%	0	0	0%	
Cerium	A	mg/L	-2.542E-06	0		0	0	0	8.97E-06	0.001	0.1	0%	0	0	0%	
Chromium	A	mg/L	6.875E-07	0		0	0	0	0.0002078	0.001	1	0%	0	0	0%	
Cobalt	A	mg/L	0.00001728	0		0	0	0	2.037E-05	0.001	1	0%	0	0	0%	
Copper	A	mg/L	4.821E-06	0		0	0	0	0.000121	0.001	1	0%	0	0	0%	
Iron	A	mg/L	-0.0001418	0		0	0	0	0.0011177	0.025	5	0%	0	0	0%	
Lanthanum	A	mg/L	-1.356E-07	0		0	0	0	1.209E-05	0.001	0.1	0%	0	0	0%	
Lead	A	mg/L	7.526E-06	0		0	0	0	3.957E-05	0.0005	1	0%	0	0	0%	
Lithium	A	mg/L	0.000215	0		0	0	0	0.00122	0.05	2.5	0%	0	0	0%	
Magnesium	A	mg/L	-0.02121	0		0	0	0	0.0084694	0.025	50	0%	0	0	0%	
Manganese	A	mg/L	-0.0000299	0		0	0	0	5.319E-05	0.001	1	0%	0	0	0%	
Molybdenum	A	mg/L	8.849E-06	0		0	0	0	7.382E-05	0.001	0.1	0%	0	0	0%	
Nickel	A	mg/L	-3.368E-05	0		0	0	0	0.0001477	0.001	1	0%	0	0	0%	
Potassium	A	mg/L	0.002256	0		0	0	0	0.0951865	0.125	50	0%	0	0	0%	
Selenium	A	mg/L	0.00001364	0		0	0	0	6.961E-05	0.001	1	0%	0	0	0%	
Silicon	A	mg/L	0.000116	0		0	0	0	0.0786454	0.2	0.4	0%	0	0	0%	
Silver	A	mg/L	6.493E-07	0		0	0	0	1.756E-05	0.001	0.04	0%	0	0	0%	
Sodium	A	mg/L	-0.004894	0		0	0	0	0.0321039	0.125	50	0%	0	0	0%	
Strontium	A	mg/L	-5.002E-05	0		0	0	0	0.0001116	0.001	1	0%	0	0	0%	
Tellurium	A	mg/L	0	0		0	0	0	0.0004865	0.001	0.1	0%	0	0	0%	
Thallium	A	mg/L	0.0001268	0.0001268		0	0	0	4.044E-05	0.001	1	0%	0	0	0%	
Tin	A	mg/L	-5.037E-05	0		0	0	0	0.0025355	0.01	0.1	0%	0	0	0%	
Titanium	A	mg/L	-5.689E-07	0		0	0	0	0.0001844	0.001	1	0%	0	0	0%	
Uranium	A	mg/L	2.454E-06	0		0	0	0	1.948E-05	0.0003	1	0%	0	0	0%	
Vanadium	A	mg/L	7.994E-06	0		0	0	0	0.004194	0.01	1	0%	0	0	0%	
Zinc	A	mg/L	-9.192E-05	0		0	0	0	0.0006119	0.002	1	0%	0	0	0%	
Iron, Ferrous	C	mg/L	-0.0001418	0		0	0	0	0.0011177	0.025	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
14986306	LFB	ICPMS-6020-W-	LFB		12/23/2021 12:4	1.03	R372324		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
14986306	LFB	ICPMS-6020-W- LFB			12/23/2021 12:4	1.03	R372324		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.04667	0.0480701		0.05	0	0	0.0007175	0.00103	1	96%	85	115	0%	
Antimony	A	mg/L	0.04174	0.0429922		0.05	0	0	0.0002969	0.001	0.1	86%	85	115	0%	
Arsenic	A	mg/L	0.04814	0.0495842		0.05	0	0	0.0001674	0.001	1	99%	85	115	0%	
Barium	A	mg/L	0.04734	0.0487602		0.05	0	0	9.185E-05	0.001	1	98%	85	115	0%	
Beryllium	A	mg/L	0.04657	0.0479671		0.05	0	0	0.0001171	0.001	1	96%	85	115	0%	
Boron	A	mg/L	0.0479	0.049337		0.05	0	0	0.0037489	0.0103	1	99%	85	115	0%	
Cadmium	A	mg/L	0.04752	0.0489456		0.05	0	0	3.058E-05	0.001	1	98%	85	115	0%	
Calcium	A	mg/L	48.75	50.2125		50	0	0	0.0261787	0.064375	50	100%	85	115	0%	
Cerium	A	mg/L	0.04794	0.0493782		0.05	0	0	9.239E-06	0.001	0.1	99%	85	115	0%	
Chromium	A	mg/L	0.04746	0.0488838		0.05	0	0	0.0002141	0.001	1	98%	85	115	0%	
Cobalt	A	mg/L	0.04754	0.0489662		0.05	0	0	2.098E-05	0.001	1	98%	85	115	0%	
Copper	A	mg/L	0.04599	0.0473697		0.05	0	0	0.0001246	0.001	1	95%	85	115	0%	
Iron	A	mg/L	4.836	4.98108		5.05	0	0	0.0011512	0.02575	5	99%	85	115	0%	
Lanthanum	A	mg/L	0.0481	0.049543		0.05	0	0	1.245E-05	0.001	0.1	99%	85	115	0%	
Lead	A	mg/L	0.04761	0.0490383		0.05	0	0	4.076E-05	0.001	1	98%	88	115	0%	
Lithium	A	mg/L	2.423	2.49569		2.5	0	0	0.0012566	0.0515	2.5	100%	85	115	0%	
Magnesium	A	mg/L	49.34	50.8202		50	0	0	0.0087234	0.02575	50	102%	85	115	0%	
Manganese	A	mg/L	0.04714	0.0485542		0.05	0	0	5.479E-05	0.001	1	97%	85	115	0%	
Molybdenum	A	mg/L	0.04352	0.0448256		0.05	0	0	7.603E-05	0.001	0.1	90%	85	115	0%	
Nickel	A	mg/L	0.04745	0.0488735		0.05	0	0	0.0001521	0.001	1	98%	85	115	0%	
Potassium	A	mg/L	48.7	50.161		50	0	0	0.0980421	0.12875	50	100%	85	115	0%	
Selenium	A	mg/L	0.04799	0.0494297		0.05	0	0	7.17E-05	0.001	1	99%	85	115	0%	
Silicon	A	mg/L	0.1805	0.185915		0.2	0	0	0.0810047	0.206	0.4	93%	85	115	0%	
Silver	A	mg/L	0.01937	0.0199511		0.02	0	0	1.809E-05	0.001	0.04	100%	85	115	0%	
Sodium	A	mg/L	49.18	50.6554		50	0	0	0.033067	0.12875	50	101%	85	115	0%	
Strontium	A	mg/L	0.04762	0.0490486		0.05	0	0	0.000115	0.001	1	98%	85	115	0%	
Tellurium	A	mg/L	0.1759	0.181177		0	0	0	0.0005011	0.00103	0.1	0%	0	0	0%	
Thallium	A	mg/L	0.04848	0.0499344		0.05	0	0	4.165E-05	0.001	1	100%	85	115	0%	
Tin	A	mg/L	0.04308	0.0443724		0.05	0	0	0.0026115	0.0103	0.1	89%	85	115	0%	
Titanium	A	mg/L	0.04693	0.0483379		0.05	0	0	0.0001899	0.001	1	97%	85	115	0%	
Uranium	A	mg/L	0.04896	0.0504288		0.05	0	0	2.006E-05	0.0003	1	101%	85	115	0%	
Vanadium	A	mg/L	0.048	0.04944		0.05	0	0	0.0043198	0.0103	1	99%	85	115	0%	
Zinc	A	mg/L	0.04763	0.0490589		0.05	0	0	0.0006303	0.00206	1	98%	85	115	0%	
Iron, Ferrous	C	mg/L	4.836	4.98108		0	0	0	0.0011512	0.02575	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
14986307	ICSA	ICPMS-6020-W-	ICSA		12/23/2021 12:5	1	R372324		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	39.38	39.38		40	0	0	0.0006966	0.001	1	98%	80	120	0%	
Antimony	A	mg/L	0.0002557	0.0002557		0	0	0	0.0002882	0.001	0.1	0%			0%	
Arsenic	A	mg/L	0.0001358	0.0001358		0	0	0	0.0001626	0.001	1	0%			0%	
Barium	A	mg/L	0.00006429	0.00006429		0	0	0	8.917E-05	0.001	1	0%			0%	
Beryllium	A	mg/L	0.00009254	0.00009254		0	0	0	0.0001137	0.001	1	0%			0%	
Boron	A	mg/L	0.0007405	0.0007405		0	0	0	0.0036397	0.01	1	0%			0%	
Cadmium	A	mg/L	0.0001245	0.0001245		0	0	0	2.969E-05	0.001	1	0%			0%	
Calcium	A	mg/L	126.2	126.2		120	0	0	0.0254163	0.0625	50	105%	80	120	0%	
Cerium	A	mg/L	6.042E-07	6.042E-07		0	0	0	8.97E-06	0.001	0.1	0%			0%	
Chromium	A	mg/L	0.0009884	0.0009884		0	0	0	0.0002078	0.001	1	0%			0%	
Cobalt	A	mg/L	0.0005283	0.0005283		0	0	0	2.037E-05	0.001	1	0%			0%	
Copper	A	mg/L	0.001115	0.001115		0	0	0	0.000121	0.001	1	0%			0%	
Iron	A	mg/L	108.9	108.9		100	0	0	0.0011177	0.025	5	109%	80	120	0%	
Lanthanum	A	mg/L	0.00001166	0.00001166		0	0	0	1.209E-05	0.001	0.1	0%			0%	
Lead	A	mg/L	0.00002653	0.00002653		0	0	0	3.957E-05	0.001	1	0%			0%	
Lithium	A	mg/L	0.00267	0.00267		0	0	0	0.00122	0.05	2.5	0%			0%	
Magnesium	A	mg/L	43.71	43.71		50	0	0	0.0084694	0.025	50	87%			0%	
Manganese	A	mg/L	0.0001712	0.0001712		0	0	0	5.319E-05	0.001	1	0%			0%	
Molybdenum	A	mg/L	0.7809	0.7809		0.8	0	0	7.382E-05	0.001	0.1	98%	80	120	0%	
Nickel	A	mg/L	0.0001785	0.0001785		0	0	0	0.0001477	0.001	1	0%			0%	
Potassium	A	mg/L	44.57	44.57		50	0	0	0.0951865	0.125	50	89%			0%	
Selenium	A	mg/L	0.0001102	0.0001102		0	0	0	6.961E-05	0.001	1	0%			0%	
Silicon	A	mg/L	0.001056	0.001056		0	0	0	0.0786454	0.2	0.4	0%			0%	
Silver	A	mg/L	7.191E-06	7.191E-06		0	0	0	1.756E-05	0.001	0.04	0%			0%	
Sodium	A	mg/L	108.1	108.1		100	0	0	0.0321039	0.125	50	108%			0%	
Strontium	A	mg/L	0.001282	0.001282		0	0	0	0.0001116	0.001	1	0%			0%	
Tellurium	A	mg/L	0	0		0	0	0	0.0004865	0.001	0.1	0%			0%	
Thallium	A	mg/L	0.0001539	0.0001539		0	0	0	4.044E-05	0.001	1	0%			0%	
Tin	A	mg/L	0.0001199	0.0001199		0	0	0	0.0025355	0.01	0.1	0%			0%	
Titanium	A	mg/L	0.7561	0.7561		0.8	0	0	0.0001844	0.001	1	95%			0%	
Uranium	A	mg/L	4.048E-06	4.048E-06		0	0	0	1.948E-05	0.0003	1	0%			0%	
Vanadium	A	mg/L	-7.947E-05	-7.947E-05		0	0	0	0.004194	0.01	1	0%			0%	
Zinc	A	mg/L	0.0002746	0.0002746		0	0	0	0.0006119	0.002	1	0%			0%	
Iron, Ferrous	C	mg/L	108.9	108.9		0	0	0	0.0011177	0.025	5	0%			0%	

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14986308	ICSAB	ICPMS-6020-W-	ICSAB		12/23/2021 12:5	1	R372324		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	39.64	39.64		40	0	0	0.0006966	0.001	1	99%	80	120	0%	
Antimony	A	mg/L	0.00008936	0.00008936		0	0	0	0.0002882	0.001	0.1	0%			0%	
Arsenic	A	mg/L	0.0111	0.0111		0.01	0	0	0.0001626	0.001	1	111%	80	120	0%	
Barium	A	mg/L	0.00007883	0.00007883		0	0	0	8.917E-05	0.001	1	0%			0%	
Beryllium	A	mg/L	0.00006059	0.00006059		0	0	0	0.0001137	0.001	1	0%			0%	
Boron	A	mg/L	0.0004243	0.0004243		0	0	0	0.0036397	0.01	1	0%			0%	
Cadmium	A	mg/L	0.01051	0.01051		0.01	0	0	2.969E-05	0.001	1	105%	80	120	0%	
Calcium	A	mg/L	126.7	126.7		120	0	0	0.0254163	0.0625	50	106%	80	120	0%	
Cerium	A	mg/L	3.195E-07	3.195E-07		0	0	0	8.97E-06	0.001	0.1	0%			0%	
Chromium	A	mg/L	0.02239	0.02239		0.02	0	0	0.0002078	0.001	1	112%	80	120	0%	
Cobalt	A	mg/L	0.0219	0.0219		0.02	0	0	2.037E-05	0.001	1	109%	80	120	0%	
Copper	A	mg/L	0.02161	0.02161		0.02	0	0	0.000121	0.001	1	108%	80	120	0%	
Iron	A	mg/L	108.6	108.6		100	0	0	0.0011177	0.025	5	109%	80	120	0%	
Lanthanum	A	mg/L	8.594E-06	8.594E-06		0	0	0	1.209E-05	0.001	0.1	0%			0%	
Lead	A	mg/L	0.00002199	0.00002199		0	0	0	3.957E-05	0.001	1	0%			0%	
Lithium	A	mg/L	0.001287	0.001287		0	0	0	0.00122	0.05	2.5	0%			0%	
Magnesium	A	mg/L	43.83	43.83		40	0	0	0.0084694	0.025	50	110%	80	120	0%	
Manganese	A	mg/L	0.02178	0.02178		0.02	0	0	5.319E-05	0.001	1	109%	80	120	0%	
Molybdenum	A	mg/L	0.7802	0.7802		0.8	0	0	7.382E-05	0.001	0.1	98%	80	120	0%	
Nickel	A	mg/L	0.02153	0.02153		0.02	0	0	0.0001477	0.001	1	108%	80	120	0%	
Potassium	A	mg/L	44.63	44.63		40	0	0	0.0951865	0.125	50	112%	80	120	0%	
Selenium	A	mg/L	0.01117	0.01117		0.01	0	0	6.961E-05	0.001	1	112%	80	120	0%	
Silicon	A	mg/L	0.001132	0.001132		0	0	0	0.0786454	0.2	0.4	0%			0%	
Silver	A	mg/L	0.005276	0.005276		0.005	0	0	1.756E-05	0.001	0.04	106%	80	120	0%	
Sodium	A	mg/L	108.8	108.8		100	0	0	0.0321039	0.125	50	109%	80	120	0%	
Strontium	A	mg/L	0.001329	0.001329		0	0	0	0.0001116	0.001	1	0%			0%	
Tellurium	A	mg/L	0.02504	0.02504		0	0	0	0.0004865	0.001	0.1	0%			0%	
Thallium	A	mg/L	0.00007078	0.00007078		0	0	0	4.044E-05	0.001	1	0%			0%	
Tin	A	mg/L	0.00007649	0.00007649		0	0	0	0.0025355	0.01	0.1	0%			0%	
Titanium	A	mg/L	0.7641	0.7641		0.8	0	0	0.0001844	0.001	1	96%	80	120	0%	
Uranium	A	mg/L	3.202E-06	3.202E-06		0	0	0	1.948E-05	0.0003	1	0%			0%	
Vanadium	A	mg/L	0.02177	0.02177		0.02	0	0	0.004194	0.01	1	109%	80	120	0%	
Zinc	A	mg/L	0.01059	0.01059		0.01	0	0	0.0006119	0.002	1	106%	80	120	0%	
Iron, Ferrous	C	mg/L	108.6	108.6		0	0	0	0.0011177	0.025	5	0%			0%	

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14986309	Rinse	ICPMS-6020-W-	SAMP		12/23/2021 1:02:	1	R372324		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.002222	0.002222		0	0	0	0.0006966	0.001	1	0%	0	0	0%	
Arsenic	A	mg/L	3.027E-06	0		0	0	0	0.0001626	0.001	1	0%	0	0	0%	
Beryllium	A	mg/L	0.00004962	0		0	0	0	0.0001137	0.001	1	0%	0	0	0%	
Boron	A	mg/L	-0.0001235	0		0	0	0	0.0036397	0.01	1	0%	0	0	0%	L
Cadmium	A	mg/L	3.765E-06	0		0	0	0	2.969E-05	0.001	1	0%	0	0	0%	
Calcium	A	mg/L	0.001705	0		0	0	0	0.0254163	0.0625	50	0%	0	0	0%	L
Cerium	A	mg/L	-1.814E-06	0		0	0	0	8.97E-06	0.001	0.1	0%	0	0	0%	
Chromium	A	mg/L	-2.015E-05	0		0	0	0	0.0002078	0.001	1	0%	0	0	0%	
Cobalt	A	mg/L	-2.754E-06	0		0	0	0	2.037E-05	0.001	1	0%	0	0	0%	
Copper	A	mg/L	0.000063	0		0	0	0	0.000121	0.001	1	0%	0	0	0%	
Lanthanum	A	mg/L	1.34E-07	0		0	0	0	1.209E-05	0.001	0.1	0%	0	0	0%	
Lead	A	mg/L	3.257E-06	0		0	0	0	3.957E-05	0.001	1	0%	0	0	0%	
Lithium	A	mg/L	0.0001805	0		0	0	0	0.00122	0.05	2.5	0%	0	0	0%	L
Magnesium	A	mg/L	-0.02288	0		0	0	0	0.0084694	0.025	50	0%	0	0	0%	L
Manganese	A	mg/L	-4.688E-05	0		0	0	0	5.319E-05	0.001	1	0%	0	0	0%	
Nickel	A	mg/L	-3.581E-05	0		0	0	0	0.0001477	0.001	1	0%	0	0	0%	
Potassium	A	mg/L	0.006648	0		0	0	0	0.0951865	0.125	50	0%	0	0	0%	L
Selenium	A	mg/L	9.184E-06	0		0	0	0	6.961E-05	0.001	1	0%	0	0	0%	
Silver	A	mg/L	6.285E-07	0		0	0	0	1.756E-05	0.001	0.04	0%	0	0	0%	
Sodium	A	mg/L	0.001208	0		0	0	0	0.0321039	0.125	50	0%	0	0	0%	L
Strontium	A	mg/L	-5.681E-05	0		0	0	0	0.0001116	0.001	1	0%	0	0	0%	
Tellurium	A	mg/L	0	0		0	0	0	0.0004865	0.001	0.1	0%	0	0	0%	
Thallium	A	mg/L	0.00004807	0.00004807		0	0	0	4.044E-05	0.001	1	0%	0	0	0%	J
Uranium	A	mg/L	1.427E-06	0		0	0	0	1.948E-05	0.0003	1	0%	0	0	0%	
Zinc	A	mg/L	-0.0001309	0		0	0	0	0.0006119	0.002	1	0%	0	0	0%	L
Barium	B	mg/L	-2.428E-06	0		0	0	0	8.917E-05	0.001	1	0%	0	0	0%	
Iron	B	mg/L	0.004997	0.004997		0	0	0	0.0011177	0.025	5	0%	0	0	0%	JL
Iron, Ferrous	B	mg/L	0.004997	0.004997		0	0	0	0.0011177	0.025	5	0%	0	0	0%	JL
Silicon	B	mg/L	-0.0002855	0		0	0	0	0.0786454	0.2	0.4	0%	0	0	0%	L
Vanadium	B	mg/L	-0.0001208	0		0	0	0	0.004194	0.01	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
14986310	Rinse	ICPMS-6020-W-	SAMP		12/23/2021 1:08:	1	R372324		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
14986310	Rinse	ICPMS-6020-W-	SAMP		12/23/2021 1:08:	1	R372324		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.00185	0.00185		0	0	0	0.0006966	0.001	1	0%	0	0	0%	
Arsenic	A	mg/L	3.768E-06	0		0	0	0	0.0001626	0.001	1	0%	0	0	0%	
Beryllium	A	mg/L	0.00004931	0		0	0	0	0.0001137	0.001	1	0%	0	0	0%	
Boron	A	mg/L	-0.0001951	0		0	0	0	0.0036397	0.01	1	0%	0	0	0%	L
Cadmium	A	mg/L	1.926E-06	0		0	0	0	2.969E-05	0.001	1	0%	0	0	0%	
Calcium	A	mg/L	0.0002841	0		0	0	0	0.0254163	0.0625	50	0%	0	0	0%	L
Cerium	A	mg/L	-2.216E-06	0		0	0	0	8.97E-06	0.001	0.1	0%	0	0	0%	
Chromium	A	mg/L	-1.553E-05	0		0	0	0	0.0002078	0.001	1	0%	0	0	0%	
Cobalt	A	mg/L	-3.102E-06	0		0	0	0	2.037E-05	0.001	1	0%	0	0	0%	
Copper	A	mg/L	0.00003096	0		0	0	0	0.000121	0.001	1	0%	0	0	0%	
Lanthanum	A	mg/L	-1.036E-07	0		0	0	0	1.209E-05	0.001	0.1	0%	0	0	0%	
Lead	A	mg/L	1.907E-07	0		0	0	0	3.957E-05	0.001	1	0%	0	0	0%	
Lithium	A	mg/L	-1.758E-05	0		0	0	0	0.00122	0.05	2.5	0%	0	0	0%	L
Magnesium	A	mg/L	-0.02303	0		0	0	0	0.0084694	0.025	50	0%	0	0	0%	L
Manganese	A	mg/L	-4.471E-05	0		0	0	0	5.319E-05	0.001	1	0%	0	0	0%	
Nickel	A	mg/L	-2.908E-05	0		0	0	0	0.0001477	0.001	1	0%	0	0	0%	
Potassium	A	mg/L	0.004618	0		0	0	0	0.0951865	0.125	50	0%	0	0	0%	L
Selenium	A	mg/L	6.292E-06	0		0	0	0	6.961E-05	0.001	1	0%	0	0	0%	
Silver	A	mg/L	2.374E-08	0		0	0	0	1.756E-05	0.001	0.04	0%	0	0	0%	
Sodium	A	mg/L	-0.00576	0		0	0	0	0.0321039	0.125	50	0%	0	0	0%	L
Strontium	A	mg/L	-6.012E-05	0		0	0	0	0.0001116	0.001	1	0%	0	0	0%	
Tellurium	A	mg/L	0	0		0	0	0	0.0004865	0.001	0.1	0%	0	0	0%	
Thallium	A	mg/L	0.00002376	0		0	0	0	4.044E-05	0.001	1	0%	0	0	0%	
Uranium	A	mg/L	7.061E-07	0		0	0	0	1.948E-05	0.0003	1	0%	0	0	0%	
Zinc	A	mg/L	-0.0001402	0		0	0	0	0.0006119	0.002	1	0%	0	0	0%	L
Barium	B	mg/L	-2.931E-06	0		0	0	0	8.917E-05	0.001	1	0%	0	0	0%	
Iron	B	mg/L	0.003571	0.003571		0	0	0	0.0011177	0.025	5	0%	0	0	0%	JL
Iron, Ferrous	B	mg/L	0.003571	0.003571		0	0	0	0.0011177	0.025	5	0%	0	0	0%	JL
Silicon	B	mg/L	-0.0002403	0		0	0	0	0.0786454	0.2	0.4	0%	0	0	0%	L
Vanadium	B	mg/L	-0.0001345	0		0	0	0	0.004194	0.01	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
14986311	CCV	ICPMS-6020-W-	CCV		12/23/2021 1:14:	1	R372324		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
14986311	CCV	ICPMS-6020-W-	CCV		12/23/2021 1:14:	1	R372324		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.04852	0.04852		0.05	0	0	0.0006966	0.001	1	97%	90	110	0%	
Antimony	A	mg/L	0.04359	0.04359		0.05	0	0	0.0002882	0.001	0.1	87%	90	110	0%	S
Arsenic	A	mg/L	0.04907	0.04907		0.05	0	0	0.0001626	0.001	1	98%	90	110	0%	
Barium	A	mg/L	0.04758	0.04758		0.05	0	0	8.917E-05	0.001	1	95%	90	110	0%	
Beryllium	A	mg/L	0.04743	0.04743		0.05	0	0	0.0001137	0.001	1	95%	90	110	0%	
Boron	A	mg/L	0.04764	0.04764		0.05	0	0	0.0036397	0.01	1	95%	90	110	0%	
Cadmium	A	mg/L	0.04867	0.04867		0.05	0	0	2.969E-05	0.001	1	97%	90	110	0%	
Calcium	A	mg/L	13.2	13.2		12.5	0	0	0.0254163	0.0625	50	106%	90	110	0%	
Cerium	A	mg/L	0.04938	0.04938		0.05	0	0	8.97E-06	0.001	0.1	99%	90	110	0%	
Chromium	A	mg/L	0.04881	0.04881		0.05	0	0	0.0002078	0.001	1	98%	90	110	0%	
Cobalt	A	mg/L	0.04654	0.04654		0.05	0	0	2.037E-05	0.001	1	93%	90	110	0%	
Copper	A	mg/L	0.04588	0.04588		0.05	0	0	0.000121	0.001	1	92%	90	110	0%	
Iron	A	mg/L	1.312	1.312		1.3	0	0	0.0011177	0.025	5	101%	90	110	0%	
Lanthanum	A	mg/L	0.05002	0.05002		0.05	0	0	1.209E-05	0.001	0.1	100%	90	110	0%	
Lead	A	mg/L	0.04761	0.04761		0.05	0	0	3.957E-05	0.001	1	95%	90	110	0%	
Lithium	A	mg/L	0.6393	0.6393		0.625	0	0	0.00122	0.05	2.5	102%	90	110	0%	
Magnesium	A	mg/L	13.07	13.07		12.5	0	0	0.0084694	0.025	50	105%	90	110	0%	
Manganese	A	mg/L	0.04858	0.04858		0.05	0	0	5.319E-05	0.001	1	97%	90	110	0%	
Molybdenum	A	mg/L	0.04424	0.04424		0.05	0	0	7.382E-05	0.001	0.1	88%	90	110	0%	S
Nickel	A	mg/L	0.04884	0.04884		0.05	0	0	0.0001477	0.001	1	98%	90	110	0%	
Potassium	A	mg/L	12.92	12.92		12.5	0	0	0.0951865	0.125	50	103%	90	110	0%	
Selenium	A	mg/L	0.04936	0.04936		0.05	0	0	6.961E-05	0.001	1	99%	90	110	0%	
Silicon	A	mg/L	0.1902	0.1902		0.2	0	0	0.0786454	0.2	0.4	95%	90	110	0%	
Silver	A	mg/L	0.01948	0.01948		0.02	0	0	1.756E-05	0.001	0.04	97%	90	110	0%	
Sodium	A	mg/L	12.95	12.95		12.5	0	0	0.0321039	0.125	50	104%	90	110	0%	
Strontium	A	mg/L	0.04739	0.04739		0.05	0	0	0.0001116	0.001	1	95%	90	110	0%	
Tellurium	A	mg/L	0.04871	0.04871		0	0	0	0.0004865	0.001	0.1	0%	0	0	0%	
Thallium	A	mg/L	0.04806	0.04806		0.05	0	0	4.044E-05	0.001	1	96%	90	110	0%	
Tin	A	mg/L	0.04407	0.04407		0.05	0	0	0.0025355	0.01	0.1	88%	90	110	0%	S
Titanium	A	mg/L	0.04101	0.04101		0.05	0	0	0.0001844	0.001	1	82%	90	110	0%	S
Uranium	A	mg/L	0.04785	0.04785		0.05	0	0	1.948E-05	0.0003	1	96%	90	110	0%	
Vanadium	A	mg/L	0.04836	0.04836		0.05	0	0	0.004194	0.01	1	97%	90	110	0%	
Zinc	A	mg/L	0.04855	0.04855		0.05	0	0	0.0006119	0.002	1	97%	90	110	0%	
Iron, Ferrous	C	mg/L	1.312	1.312		0	0	0	0.0011177	0.025	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
14986312	CCB	ICPMS-6020-W-	CCB		12/23/2021 1:20:	1	R372324		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.0003221	0.0003221		0	0	0	0.0006966	0.001	1	0%			0%	
Antimony	A	mg/L	0.00002585	0.00002585		0	0	0	0.0002882	0.001	0.1	0%			0%	
Arsenic	A	mg/L	0.0000071	0.0000071		0	0	0	0.0001626	0.001	1	0%			0%	
Barium	A	mg/L	-4.558E-06	-4.558E-06		0	0	0	8.917E-05	0.001	1	0%			0%	
Beryllium	A	mg/L	0.00008213	0.00008213		0	0	0	0.0001137	0.001	1	0%			0%	
Boron	A	mg/L	-0.0001408	-0.0001408		0	0	0	0.0036397	0.01	1	0%			0%	
Cadmium	A	mg/L	3.685E-06	3.685E-06		0	0	0	2.969E-05	0.001	1	0%			0%	
Calcium	A	mg/L	-0.0001263	-0.0001263		0	0	0	0.0254163	0.0625	50	0%			0%	
Cerium	A	mg/L	4.175E-07	4.175E-07		0	0	0	8.97E-06	0.001	0.1	0%	0	0	0%	
Chromium	A	mg/L	-1.017E-05	-1.017E-05		0	0	0	0.0002078	0.001	1	0%			0%	
Cobalt	A	mg/L	2.163E-06	2.163E-06		0	0	0	2.037E-05	0.001	1	0%			0%	
Copper	A	mg/L	0.00001736	0.00001736		0	0	0	0.000121	0.001	1	0%			0%	
Iron	A	mg/L	0.00273	0.00273		0	0	0	0.0011177	0.025	5	0%			0%	
Lanthanum	A	mg/L	7.775E-08	7.775E-08		0	0	0	1.209E-05	0.001	0.1	0%	0	0	0%	
Lead	A	mg/L	6.585E-06	6.585E-06		0	0	0	3.957E-05	0.001	1	0%			0%	
Lithium	A	mg/L	0.0004174	0.0004174		0	0	0	0.00122	0.05	2.5	0%			0%	
Magnesium	A	mg/L	-0.02344	-0.02344		0	0	0	0.0084694	0.025	50	0%			0%	
Manganese	A	mg/L	-6.692E-06	-6.692E-06		0	0	0	5.319E-05	0.001	1	0%			0%	
Molybdenum	A	mg/L	0.00003515	0.00003515		0	0	0	7.382E-05	0.001	0.1	0%			0%	
Nickel	A	mg/L	-0.0000147	-0.0000147		0	0	0	0.0001477	0.001	1	0%			0%	
Potassium	A	mg/L	0.004006	0.004006		0	0	0	0.0951865	0.125	50	0%			0%	
Selenium	A	mg/L	0.00001429	0.00001429		0	0	0	6.961E-05	0.001	1	0%			0%	
Silicon	A	mg/L	-0.000225	-0.000225		0	0	0	0.0786454	0.2	0.4	0%	0	0	0%	
Silver	A	mg/L	2.721E-07	2.721E-07		0	0	0	1.756E-05	0.001	0.04	0%			0%	
Sodium	A	mg/L	-0.006941	-0.006941		0	0	0	0.0321039	0.125	50	0%			0%	
Strontium	A	mg/L	-5.768E-05	-5.768E-05		0	0	0	0.0001116	0.001	1	0%	0	0	0%	
Tellurium	A	mg/L	0.0234	0.0234		0	0	0	0.0004865	0.001	0.1	0%	0	0	0%	
Thallium	A	mg/L	0.0002219	0.0002219		0	0	0	4.044E-05	0.001	1	0%	0	0	0%	
Tin	A	mg/L	-1.505E-06	-1.505E-06		0	0	0	0.0025355	0.01	0.1	0%	0	0	0%	
Titanium	A	mg/L	-5.617E-06	-5.617E-06		0	0	0	0.0001844	0.001	1	0%	0	0	0%	
Uranium	A	mg/L	1.656E-06	1.656E-06		0	0	0	1.948E-05	0.0003	1	0%	0	0	0%	
Vanadium	A	mg/L	-0.0001161	-0.0001161		0	0	0	0.004194	0.01	1	0%	0	0	0%	
Zinc	A	mg/L	-0.0001001	-0.0001001		0	0	0	0.0006119	0.002	1	0%	0	0	0%	
Iron, Ferrous	C	mg/L	0.00273	0.00273		0	0	0	0.0011177	0.025	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
14986313	MB-162360	ICPMS-6020-W-	MBLK		12/23/2021 1:27:	1	162360	12/20/2021	0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.001835	0		0	0	0	0.0038747	0.0031975	1	0%	0	0	0%	
Antimony	A	mg/L	0.00002202	0		0	0	0	0.0002799	0.001	0.1	0%	0	0	0%	
Arsenic	A	mg/L	0.00005636	0		0	0	0	0.0003412	0.001	1	0%	0	0	0%	
Barium	A	mg/L	0.00001619	0		0	0	0	0.0002682	0.001	1	0%	0	0	0%	
Beryllium	A	mg/L	0.00007075	0		0	0	0	0.0001071	0.01	1	0%	0	0	0%	
Boron	A	mg/L	0.0007539	0		0	0	0	0.0203802	0.01467	1	0%	0	0	0%	
Cadmium	A	mg/L	8.414E-07	0		0	0	0	1.821E-05	0.005	1	0%	0	0	0%	
Calcium	A	mg/L	0.008554	0		0	0	0	0.0372936	0.1103481	50	0%	0	0	0%	
Cerium	A	mg/L	-1.034E-06	0		0	0	0	2.738E-05	0.001	0.1	0%	0	0	0%	
Chromium	A	mg/L	0.0001888	0		0	0	0	0.0015375	0.0015375	1	0%	0	0	0%	
Cobalt	A	mg/L	0.00003258	0		0	0	0	9.541E-05	0.001	1	0%	0	0	0%	
Copper	A	mg/L	0.0001755	0		0	0	0	0.0008747	0.00198	1	0%	0	0	0%	
Iron	A	mg/L	0.003016	0		0	0	0	0.007424	0.00513	5	0%	0	0	0%	
Lanthanum	A	mg/L	4.917E-07	0		0	0	0	0.000055	0.001	0.1	0%	0	0	0%	
Lead	A	mg/L	0.00007392	0		0	0	0	7.716E-05	0.0005	1	0%	0	0	0%	
Magnesium	A	mg/L	-0.02366	0		0	0	0	0.0104254	0.0081522	50	0%	0	0	0%	
Manganese	A	mg/L	0.00002168	0		0	0	0	0.0005399	0.001	1	0%	0	0	0%	
Molybdenum	A	mg/L	0.00003262	0		0	0	0	0.0001763	0.001	0.1	0%	0	0	0%	
Nickel	A	mg/L	-3.182E-05	0		0	0	0	0.0002288	0.0024200	1	0%	0	0	0%	
Potassium	A	mg/L	0.003982	0		0	0	0	0.0765619	0.0261205	50	0%	0	0	0%	
Selenium	A	mg/L	0.00002787	0		0	0	0	0.0001357	0.001	1	0%	0	0	0%	
Silicon	A	mg/L	0.01117	0		0	0	0	0.0422089	0.0053212	0.4	0%	0	0	0%	
Silver	A	mg/L	2.467E-06	0		0	0	0	4.281E-05	0.001	0.04	0%	0	0	0%	
Sodium	A	mg/L	-0.0002955	0		0	0	0	0.1019461	0.7330269	50	0%	0	0	0%	
Strontium	A	mg/L	-1.858E-05	0		0	0	0	0.0002433	0.001	1	0%	0	0	0%	
Tellurium	A	mg/L	0	0		0	0	0		0.001	0.1	0%	0	0	0%	
Thallium	A	mg/L	0.0001166	0.0001166		0	0	0	0.0001114	0.001	1	0%	0	0	0%	
Thorium	A	mg/L	0.00004641	0		0	0	0	0.0003796	0.00415	1	0%	0	0	0%	
Tin	A	mg/L	0.0001116	0		0	0	0	0.0018932	0.0011175	0.1	0%	0	0	0%	
Titanium	A	mg/L	0.0002263	0		0	0	0	0.0005733	0.001	1	0%	0	0	0%	
Uranium	A	mg/L	9.989E-07	0		0	0	0	1.699E-05	0.0003	1	0%	0	0	0%	
Vanadium	A	mg/L	0.0004026	0		0	0	0	0.0039127	0.0021085	1	0%	0	0	0%	
Zinc	A	mg/L	0.0001852	0		0	0	0	0.0011617	0.0065544	1	0%	0	0	0%	
Silica	C	mg/L	0.02389486	0		0	0	0	0.0902933	0.0113831	5	0%	0	0	0%	
Silicon as SiO2	C	mg/L	0.02389486	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
14986314	LCS4-162360	ICPMS-6020-W-	LCS4		12/23/2021 1:33:	1	162360	12/20/2021	0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.4923	0.4923		0.5	0	0	0.0038747	0.0031975	1	98%	80	120	0%	
Antimony	A	mg/L	0.09057	0.09057		0.1	0	0	0.0002799	0.001	0.1	91%	80	120	0%	
Arsenic	A	mg/L	0.09633	0.09633		0.1	0	0	0.0003412	0.001	1	96%	80	120	0%	
Barium	A	mg/L	0.09228	0.09228		0.1	0	0	0.0002682	0.001	1	92%	80	120	0%	
Beryllium	A	mg/L	0.04724	0.04724		0.05	0	0	0.0001071	0.01	1	94%	80	120	0%	
Boron	A	mg/L	0.09745	0.09745		0.1	0	0	0.0203802	0.01467	1	97%	80	120	0%	
Cadmium	A	mg/L	0.04759	0.04759		0.05	0	0	1.821E-05	0.005	1	95%	80	120	0%	
Calcium	A	mg/L	5.456	5.456		5	0	0	0.0372936	0.1103481	50	109%	80	120	0%	
Cerium	A	mg/L	0.1027	0.1027		0.1	0	0	2.738E-05	0.001	0.1	103%	80	120	0%	
Chromium	A	mg/L	0.1013	0.1013		0.1	0	0	0.0015375	0.0015375	1	101%	80	120	0%	
Cobalt	A	mg/L	0.09064	0.09064		0.1	0	0	9.541E-05	0.001	1	91%	80	120	0%	
Copper	A	mg/L	0.1008	0.1008		0.1	0	0	0.0008747	0.00198	1	101%	80	120	0%	
Iron	A	mg/L	0.5159	0.5159		0.5	0	0	0.007424	0.00513	5	103%	80	120	0%	
Lanthanum	A	mg/L	0.1048	0.1048		0.1	0	0	0.000055	0.001	0.1	105%	80	120	0%	
Lead	A	mg/L	0.101	0.101		0.1	0	0	7.716E-05	0.001	1	101%	88	115	0%	
Magnesium	A	mg/L	5.299	5.299		5	0	0	0.0104254	0.0081522	50	106%	80	120	0%	
Manganese	A	mg/L	0.508	0.508		0.5	0	0	0.0005399	0.001	1	102%	80	120	0%	
Molybdenum	A	mg/L	0.08752	0.08752		0.1	0	0	0.0001763	0.001	0.1	88%	80	120	0%	
Nickel	A	mg/L	0.101	0.101		0.1	0	0	0.0002288	0.0024200	1	101%	80	120	0%	
Potassium	A	mg/L	5.25	5.25		5	0	0	0.0765619	0.0261205	50	105%	80	120	0%	
Selenium	A	mg/L	0.09833	0.09833		0.1	0	0	0.0001357	0.001	1	98%	80	120	0%	
Silicon	A	mg/L	0.9076	0.9076		1	0	0	0.0422089	0.0053212	0.4	91%	80	120	0%	
Silver	A	mg/L	0.009585	0.009585		0.01	0	0	4.281E-05	0.001	0.04	96%	80	120	0%	
Sodium	A	mg/L	5.216	5.216		5	0	0	0.1019461	0.7330269	50	104%	80	120	0%	
Strontium	A	mg/L	0.1015	0.1015		0.1	0	0	0.0002433	0.001	1	101%	80	120	0%	
Tellurium	A	mg/L	327.2	327.2		0	0	0		0.001	0.1	0%	0	0	0%	
Thallium	A	mg/L	0.1017	0.1017		0.1	0	0	0.0001114	0.001	1	102%	80	120	0%	
Thorium	A	mg/L	0.1018	0.1018		0.1	0	0	0.0003796	0.00415	1	102%	80	120	0%	
Tin	A	mg/L	0.09105	0.09105		0.1	0	0	0.0018932	0.0011175	0.1	91%	80	120	0%	
Titanium	A	mg/L	0.07933	0.07933		0.1	0	0	0.0005733	0.001	1	79%	80	120	0%	S
Uranium	A	mg/L	0.1014	0.1014		0.1	0	0	1.699E-05	0.0003	1	101%	80	120	0%	
Vanadium	A	mg/L	0.09942	0.09942		0.1	0	0	0.0039127	0.0021085	1	99%	80	120	0%	
Zinc	A	mg/L	0.09531	0.09531		0.1	0	0	0.0011617	0.0065544	1	95%	80	120	0%	
Silica	C	mg/L	1.94153792	1.94153792		0	0	0	0.0902933	0.0113831	5	0%	0	0	0%	
Silicon as SiO2	C	mg/L	1.94153792	1.94153792		2.14	0	0	0.0902933	0.0113831	5	91%	80	120	0%	

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14986315	Rinse	ICPMS-6020-W-	SAMP		12/23/2021 1:39:	1	R372324		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.0017	0.0017		0	0	0	0.0006966	0.001	1	0%	0	0	0%	
Arsenic	A	mg/L	0.00001444	0		0	0	0	0.0001626	0.001	1	0%	0	0	0%	
Beryllium	A	mg/L	0.00006679	0		0	0	0	0.0001137	0.001	1	0%	0	0	0%	
Boron	A	mg/L	-7.049E-05	0		0	0	0	0.0036397	0.01	1	0%	0	0	0%	L
Cadmium	A	mg/L	6.174E-06	0		0	0	0	2.969E-05	0.001	1	0%	0	0	0%	
Calcium	A	mg/L	-0.0001079	0		0	0	0	0.0254163	0.0625	50	0%	0	0	0%	L
Cerium	A	mg/L	-9.974E-07	0		0	0	0	8.97E-06	0.001	0.1	0%	0	0	0%	
Chromium	A	mg/L	-0.0000232	0		0	0	0	0.0002078	0.001	1	0%	0	0	0%	
Cobalt	A	mg/L	0.00001117	0		0	0	0	2.037E-05	0.001	1	0%	0	0	0%	
Copper	A	mg/L	-3.767E-06	0		0	0	0	0.000121	0.001	1	0%	0	0	0%	
Lanthanum	A	mg/L	1.996E-06	0		0	0	0	1.209E-05	0.001	0.1	0%	0	0	0%	
Lead	A	mg/L	0.0000203	0		0	0	0	3.957E-05	0.001	1	0%	0	0	0%	
Lithium	A	mg/L	-0.0004983	0		0	0	0	0.00122	0.05	2.5	0%	0	0	0%	L
Magnesium	A	mg/L	-0.02138	0		0	0	0	0.0084694	0.025	50	0%	0	0	0%	L
Manganese	A	mg/L	-4.646E-06	0		0	0	0	5.319E-05	0.001	1	0%	0	0	0%	
Nickel	A	mg/L	-2.368E-05	0		0	0	0	0.0001477	0.001	1	0%	0	0	0%	
Potassium	A	mg/L	0.0005484	0		0	0	0	0.0951865	0.125	50	0%	0	0	0%	L
Selenium	A	mg/L	6.731E-06	0		0	0	0	6.961E-05	0.001	1	0%	0	0	0%	
Silver	A	mg/L	1.655E-06	0		0	0	0	1.756E-05	0.001	0.04	0%	0	0	0%	
Sodium	A	mg/L	-0.006893	0		0	0	0	0.0321039	0.125	50	0%	0	0	0%	L
Strontium	A	mg/L	-6.058E-05	0		0	0	0	0.0001116	0.001	1	0%	0	0	0%	
Thallium	A	mg/L	0.0002664	0.0002664		0	0	0	4.044E-05	0.001	1	0%	0	0	0%	J
Uranium	A	mg/L	2.233E-06	0		0	0	0	1.948E-05	0.0003	1	0%	0	0	0%	
Zinc	A	mg/L	-0.0001118	0		0	0	0	0.0006119	0.002	1	0%	0	0	0%	L
Barium	B	mg/L	7.436E-06	0		0	0	0	8.917E-05	0.001	1	0%	0	0	0%	
Iron	B	mg/L	0.001855	0.001855		0	0	0	0.0011177	0.025	5	0%	0	0	0%	JL
Iron, Ferrous	B	mg/L	0.001855	0.001855		0	0	0	0.0011177	0.025	5	0%	0	0	0%	JL
Silicon	B	mg/L	-7.099E-05	0		0	0	0	0.0786454	0.2	0.4	0%	0	0	0%	L
Vanadium	B	mg/L	-0.00015	0		0	0	0	0.004194	0.01	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
14986316	B21121605-001	ICPMS-6020-W-	SAMP		12/23/2021 1:45:	1	162360	12/20/2021	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
14986316	B21121605-001	ICPMS-6020-W-	SAMP		12/23/2021 1:45:	1	162360	12/20/2021	0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Arsenic	A	mg/L	0.0001521	0		0	0	0	0.0003412	0.001	1	0%	0	0	0%	U
Barium	A	mg/L	0.008178	0.008178		0	0	0	0.0002682	0.001	1	0%	0	0	0%	
Beryllium	A	mg/L	0.000057	0		0	0	0	0.0001071	0.01	1	0%	0	0	0%	U
Cadmium	A	mg/L	0.00000481	0		0	0	0	1.821E-05	0.005	1	0%	0	0	0%	U
Cerium	A	mg/L	1.417E-06	0		0	0	0	2.738E-05	0.001	0.1	0%	0	0	0%	U
Cobalt	A	mg/L	0.0001107	0.0001107		0	0	0	9.541E-05	0.001	1	0%	0	0	0%	J
Lanthanum	A	mg/L	1.496E-06	0		0	0	0	0.000055	0.001	0.1	0%	0	0	0%	U
Lead	A	mg/L	0.00007706	0		0	0	0	7.716E-05	0.001	1	0%	0	0	0%	U
Manganese	A	mg/L	0.01278	0.01278		0	0	0	0.0005399	0.001	1	0%	0	0	0%	
Selenium	A	mg/L	0.0003677	0.0003677		0	0	0	0.0001357	0.001	1	0%	0	0	0%	J
Silver	A	mg/L	3.934E-06	0		0	0	0	4.281E-05	0.001	0.04	0%	0	0	0%	U
Strontium	A	mg/L	0.167	0.167		0	0	0	0.0002433	0.001	1	0%	0	0	0%	
Thallium	A	mg/L	0.00008493	0		0	0	0	0.0001114	0.001	1	0%	0	0	0%	U
Uranium	A	mg/L	0.00002762	0.00002762		0	0	0	1.699E-05	0.0003	1	0%	0	0	0%	J
Aluminum	B	mg/L	0.003507	0		0	0	0	0.0038747	0.0031975	1	0%	0	0	0%	LU
Boron	B	mg/L	0.0567	0.0567		0	0	0	0.0203802	0.01467	1	0%	0	0	0%	D
Calcium	B	mg/L	24.01	24.01		0	0	0	0.0372936	0.1103481	50	0%	0	0	0%	D
Chromium	B	mg/L	0.001995	0.001995		0	0	0	0.0015375	0.0015375	1	0%	0	0	0%	DU
Copper	B	mg/L	0.0009146	0.0009146		0	0	0	0.0008747	0.00198	1	0%	0	0	0%	JL
Iron	B	mg/L	0.04296	0.04296		0	0	0	0.007424	0.00513	5	0%	0	0	0%	D
Magnesium	B	mg/L	21.71	21.71		0	0	0	0.0104254	0.0081522	50	0%	0	0	0%	D
Nickel	B	mg/L	0.0004582	0.0004582		0	0	0	0.0002288	0.0024200	1	0%	0	0	0%	JL
Potassium	B	mg/L	2.79	2.79		0	0	0	0.0765619	0.0261205	50	0%	0	0	0%	D
Sodium	B	mg/L	49.22	49.22		0	0	0	0.1019461	0.7330269	50	0%	0	0	0%	D
Tellurium	B	mg/L	0	0		0	0	0		0.001	0.1	0%	0	0	0%	
Thorium	B	mg/L	0.00004917	0		0	0	0	0.0003796	0.00415	1	0%	0	0	0%	LU
Vanadium	B	mg/L	0.01485	0.01485		0	0	0	0.0039127	0.0021085	1	0%	0	0	0%	D
Zinc	B	mg/L	0.001466	0.001466		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
14986317	B21121605-002	ICPMS-6020-W-	SAMP		12/23/2021 1:51:	1	162360	12/20/2021	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
14986317	B21121605-002	ICPMS-6020-W-	SAMP		12/23/2021 1:51:	1	162360	12/20/2021	0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Arsenic	A	mg/L	0.0001406	0		0	0	0	0.0003412	0.001	1	0%	0	0	0%	U
Barium	A	mg/L	0.008832	0.008832		0	0	0	0.0002682	0.001	1	0%	0	0	0%	
Beryllium	A	mg/L	0.00003883	0		0	0	0	0.0001071	0.01	1	0%	0	0	0%	U
Cadmium	A	mg/L	0.00001335	0		0	0	0	1.821E-05	0.005	1	0%	0	0	0%	U
Cerium	A	mg/L	0.00000513	0		0	0	0	2.738E-05	0.001	0.1	0%	0	0	0%	U
Cobalt	A	mg/L	0.0001447	0.0001447		0	0	0	9.541E-05	0.001	1	0%	0	0	0%	J
Lanthanum	A	mg/L	3.742E-06	0		0	0	0	0.000055	0.001	0.1	0%	0	0	0%	U
Lead	A	mg/L	0.0001016	0.0001016		0	0	0	7.716E-05	0.001	1	0%	0	0	0%	J
Manganese	A	mg/L	0.02263	0.02263		0	0	0	0.0005399	0.001	1	0%	0	0	0%	
Selenium	A	mg/L	0.0004485	0.0004485		0	0	0	0.0001357	0.001	1	0%	0	0	0%	J
Silver	A	mg/L	3.922E-06	0		0	0	0	4.281E-05	0.001	0.04	0%	0	0	0%	U
Strontium	A	mg/L	0.1722	0.1722		0	0	0	0.0002433	0.001	1	0%	0	0	0%	
Thallium	A	mg/L	0.00004282	0		0	0	0	0.0001114	0.001	1	0%	0	0	0%	U
Uranium	A	mg/L	0.00002746	0.00002746		0	0	0	1.699E-05	0.0003	1	0%	0	0	0%	J
Aluminum	B	mg/L	0.006348	0.006348		0	0	0	0.0038747	0.0031975	1	0%	0	0	0%	DU
Boron	B	mg/L	0.06202	0.06202		0	0	0	0.0203802	0.01467	1	0%	0	0	0%	D
Calcium	B	mg/L	24.59	24.59		0	0	0	0.0372936	0.1103481	50	0%	0	0	0%	D
Chromium	B	mg/L	0.001987	0.001987		0	0	0	0.0015375	0.0015375	1	0%	0	0	0%	DU
Copper	B	mg/L	0.0009084	0.0009084		0	0	0	0.0008747	0.00198	1	0%	0	0	0%	JL
Iron	B	mg/L	0.0935	0.0935		0	0	0	0.007424	0.00513	5	0%	0	0	0%	D
Magnesium	B	mg/L	22.16	22.16		0	0	0	0.0104254	0.0081522	50	0%	0	0	0%	D
Nickel	B	mg/L	0.0007682	0.0007682		0	0	0	0.0002288	0.0024200	1	0%	0	0	0%	JL
Potassium	B	mg/L	2.775	2.775		0	0	0	0.0765619	0.0261205	50	0%	0	0	0%	D
Sodium	B	mg/L	49.83	49.83		0	0	0	0.1019461	0.7330269	50	0%	0	0	0%	D
Tellurium	B	mg/L	0	0		0	0	0		0.001	0.1	0%	0	0	0%	
Thorium	B	mg/L	0.00002843	0		0	0	0	0.0003796	0.00415	1	0%	0	0	0%	LU
Vanadium	B	mg/L	0.01437	0.01437		0	0	0	0.0039127	0.0021085	1	0%	0	0	0%	D
Zinc	B	mg/L	0.007951	0.007951		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
14986318	B21121605-002	ICPMS-6020-W-	SD		12/23/2021 1:57:	5	162360	12/20/2021	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
14986318	B21121605-002	ICPMS-6020-W-	SD		12/23/2021 1:57:	5	162360	12/20/2021	0	1E+07	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.002028	0		0	0	0.006348	0.0193736	0.0159875	1	0%	0	0		
Antimony	A	mg/L	0.00000762	0		0	0	0	0.0013997	0.0049	0.1	0%	0	0		
Arsenic	A	mg/L	0.0000248	0		0	0	0	0.0017061	0.0013383	1	0%	0	0		
Barium	A	mg/L	0.001755	0.008775		0	0	0.008832	0.0013411	0.0012039	1	0%	0	0		N
Beryllium	A	mg/L	0.00002299	0		0	0	0	0.0005353	0.01	1	0%	0	0		
Boron	A	mg/L	0.01211	0		0	0	0.06202	0.1019008	0.07335	1	0%	0	0		
Cadmium	A	mg/L	3.884E-06	0		0	0	0	9.105E-05	0.005	1	0%	0	0		
Calcium	A	mg/L	4.906	24.53		0	0	24.59	0.1864681	0.5517403	50	0%	0	0	0%	
Cerium	A	mg/L	-7.578E-07	0		0	0	0	0.0001369	0.001	0.1	0%	0	0		
Chromium	A	mg/L	0.0003809	0		0	0	0.001987	0.0076875	0.0076875	1	0%	0	0		
Cobalt	A	mg/L	0.0000275	0		0	0	0.0001447	0.0004771	0.001	1	0%	0	0		
Copper	A	mg/L	0.0002002	0		0	0	0.0009084	0.0043735	0.0099	1	0%	0	0		
Iron	A	mg/L	0.01992	0.0996		0	0	0.0935	0.0371198	0.02565	5	0%	0	0		N
Lanthanum	A	mg/L	-1.133E-07	0		0	0	0	0.000275	0.001	0.1	0%	0	0		
Lead	A	mg/L	0.00003215	0		0	0	0.0001016	0.0003858	0.001	1	0%	0	0		
Magnesium	A	mg/L	4.635	23.175		0	0	22.16	0.0521269	0.0407608	50	0%	0	0	4%	
Manganese	A	mg/L	0.004632	0.02316		0	0	0.02263	0.0026994	0.0010695	1	0%	0	0		N
Molybdenum	A	mg/L	0.0000487	0		0	0	0.0002498	0.0008814	0.001	0.1	0%	0	0		
Nickel	A	mg/L	0.0001404	0		0	0	0.0007682	0.0011441	0.0121000	1	0%	0	0		
Potassium	A	mg/L	0.5609	2.8045		0	0	2.775	0.3828097	0.1306027	50	0%	0	0		N
Selenium	A	mg/L	0.00008816	0		0	0	0.0004485	0.0006787	0.0029274	1	0%	0	0		
Silicon	A	mg/L	3.911	19.555		0	0	19.08	0.2110446	0.026606	0.4	0%	0	0	2%	
Silver	A	mg/L	3.162E-06	0		0	0	0	0.0002141	0.001	0.04	0%	0	0		
Sodium	A	mg/L	10.45	52.25		0	0	49.83	0.5097304	3.6651346	50	0%	0	0	5%	
Strontium	A	mg/L	0.0342	0.171		0	0	0.1722	0.0012164	0.001	1	0%	0	0	1%	
Tellurium	A	mg/L	0	0		0	0	0		0.001	0.1	0%	0	0		
Thallium	A	mg/L	0.00002659	0		0	0	0	0.0005569	0.001	1	0%	0	0		
Thorium	A	mg/L	0.00000234	0		0	0	0	0.0018981	0.02075	1	0%	0	0		
Tin	A	mg/L	-4.924E-06	0		0	0	0	0.0094659	0.0055874	0.1	0%	0	0		
Titanium	A	mg/L	0.0005713	0		0	0	0.002873	0.0028666	0.001	1	0%	0	0		
Uranium	A	mg/L	5.408E-06	0		0	0	2.746E-05	8.495E-05	0.0004224	1	0%	0	0		
Vanadium	A	mg/L	0.002909	0		0	0	0.01437	0.0195637	0.0105423	1	0%	0	0		
Zinc	A	mg/L	0.001634	0.00817		0	0	0.007951	0.0058087	0.0327721	1	0%	0	0		N
Silica	C	mg/L	8.3664112	41.832056		0	0	0	0.4514666	0.0569155	5	0%	0	0		N
Silicon as SiO2	C	mg/L	8.3664112	41.832056		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
14986319	B21121605-002	ICPMS-6020-W- PDS1			12/23/2021 2:03:	1.03	162360	12/20/2021	1E+07	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.05153	0.0530759		0.0515	0.006348	0	0.003991	0.0032934	1	91%	75	125	0%	
Antimony	A	mg/L	0.04288	0.0441664		0.0515	0	0	0.0002883	0.0010094	0.1	86%	75	125	0%	
Arsenic	A	mg/L	0.04704	0.0484512		0.0515	0	0	0.0003514	0.001	1	94%	75	125	0%	
Barium	A	mg/L	0.05816	0.0599048		0.0515	0.008832	0	0.0002763	0.001	1	99%	75	125	0%	
Beryllium	A	mg/L	0.04331	0.0446093		0.0515	0	0	0.0001103	0.01	1	87%	75	125	0%	
Boron	A	mg/L	0.1085	0.111755		0.0515	0.06202	0	0.0209916	0.0151101	1	97%	75	125	0%	
Cadmium	A	mg/L	0.04603	0.0474109		0.0515	0	0	1.876E-05	0.005	1	92%	75	125	0%	
Calcium	A	mg/L	69.38	71.4614		51.5	24.59	0	0.0384124	0.1136585	50	91%	75	125	0%	
Cerium	A	mg/L	0.04745	0.0488735		0.0515	0	0	2.820E-05	0.001	0.1	95%	75	125	0%	
Chromium	A	mg/L	0.04887	0.0503361		0.0515	0.001987	0	0.0015836	0.0015836	1	94%	75	125	0%	
Cobalt	A	mg/L	0.04466	0.0459998		0.0515	0.0001447	0	9.827E-05	0.001	1	89%	75	125	0%	
Copper	A	mg/L	0.04713	0.0485439		0.0515	0.0009084	0	0.0009009	0.0020394	1	92%	75	125	0%	
Iron	A	mg/L	4.882	5.02846		5.15	0.0935	0	0.0076467	0.0052839	5	96%	75	125	0%	
Lanthanum	A	mg/L	0.04765	0.0490795		0.0515	0	0	5.665E-05	0.001	0.1	95%	75	125	0%	
Lead	A	mg/L	0.04871	0.0501713		0.0515	0.0001016	0	7.947E-05	0.001	1	97%	80	120	0%	
Magnesium	A	mg/L	67.59	69.6177		51.5	22.16	0	0.0107381	0.0083967	50	92%	75	125	0%	
Manganese	A	mg/L	0.06894	0.0710082		0.0515	0.02263	0	0.0005561	0.001	1	94%	75	125	0%	
Molybdenum	A	mg/L	0.0457	0.047071		0.0515	0.0002498	0	0.0001816	0.001	0.1	91%	75	125	0%	
Nickel	A	mg/L	0.0459	0.047277		0.0515	0.0007682	0	0.0002357	0.0024926	1	90%	75	125	0%	
Potassium	A	mg/L	50.01	51.5103		51.5	2.775	0	0.0788588	0.0269042	50	95%	75	125	0%	
Selenium	A	mg/L	0.04719	0.0486057		0.0515	0.0004485	0	0.0001398	0.001	1	94%	75	125	0%	
Silicon	A	mg/L	18.57	19.1271		0.206	19.08	0	0.0434752	0.0054808	0.4		0	0	0%	A
Silver	A	mg/L	0.0195	0.020085		0.0206	0	0	4.409E-05	0.001	0.04	98%	75	125	0%	
Sodium	A	mg/L	93.86	96.6758		51.5	49.83	0	0.1050045	0.7550177	50	91%	75	125	0%	
Strontium	A	mg/L	0.2156	0.222068		0.0515	0.1722	0	0.0002506	0.001	1	97%	75	125	0%	
Tellurium	A	mg/L	0.1045	0.107635		0	0	0		0.001	0.1	0%	0	0	0%	
Thallium	A	mg/L	0.04803	0.0494709		0.0515	0	0	0.0001147	0.001	1	96%	75	125	0%	
Thorium	A	mg/L	0.04897	0.0504391		0.0515	0	0	0.000391	0.0042745	1	98%	75	125	0%	
Tin	A	mg/L	0.04582	0.0471946		0.0515	0	0	0.00195	0.001151	0.1	92%	75	125	0%	
Titanium	A	mg/L	0.04714	0.0485542		0.0515	0.002873	0	0.0005905	0.001	1	89%	75	125	0%	
Uranium	A	mg/L	0.05067	0.0521901		0.0515	2.746E-05	0	1.75E-05	0.0003	1	101%	75	125	0%	
Vanadium	A	mg/L	0.06178	0.0636334		0.0515	0.01437	0	0.0040301	0.0021717	1	96%	75	125	0%	
Zinc	A	mg/L	0.05295	0.0545385		0.0515	0.007951	0	0.0011966	0.0067511	1	90%	75	125	0%	
Silica	C	mg/L	39.724944	40.9166923		0	0	0	0.0930021	0.0117246	5	0%	0	0	0%	
Silicon as SiO2	C	mg/L	39.724944	40.9166923		0.0515	0	0	0.0930021	0.0117246	5	79450%	75	125	0%	S

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14986320	B21121613-001	ICPMS-6020-W- MS4			12/23/2021 2:09:	1	162360	12/20/2021	1E+07	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	1.602	1.602		0.5	0.7667	0	0.0038747	0.0031975	1	167%	75	125	0%	S
Antimony	A	mg/L	0.09178	0.09178		0.1	0	0	0.0002799	0.001	0.1	92%	75	125	0%	
Arsenic	A	mg/L	0.09902	0.09902		0.1	0.0003421	0	0.0003412	0.001	1	99%	75	125	0%	
Barium	A	mg/L	0.1015	0.1015		0.1	0.005931	0	0.0002682	0.001	1	96%	75	125	0%	
Beryllium	A	mg/L	0.04517	0.04517		0.05	0	0	0.0001071	0.01	1	90%	75	125	0%	
Boron	A	mg/L	0.2915	0.2915		0.1	0.1912	0	0.0203802	0.01467	1	100%	75	125	0%	
Cadmium	A	mg/L	0.04976	0.04976		0.05	0	0	1.821E-05	0.005	1	100%	75	125	0%	
Calcium	A	mg/L	10.91	10.91		5	5.6	0	0.0372936	0.1103481	50	106%	75	125	0%	
Cerium	A	mg/L	0.1049	0.1049		0.1	0.0007823	0	2.738E-05	0.001	0.1	104%	75	125	0%	
Chromium	A	mg/L	0.1045	0.1045		0.1	0.006521	0	0.0015375	0.0015375	1	98%	75	125	0%	
Cobalt	A	mg/L	0.08988	0.08988		0.1	0.0005457	0	9.541E-05	0.001	1	89%	75	125	0%	
Copper	A	mg/L	0.1006	0.1006		0.1	0.001826	0	0.0008747	0.00198	1	99%	75	125	0%	
Iron	A	mg/L	1.355	1.355		0.5	0.7542	0	0.007424	0.00513	5	120%	75	125	0%	
Lanthanum	A	mg/L	0.1052	0.1052		0.1	0.0002182	0	0.000055	0.001	0.1	105%	75	125	0%	
Lead	A	mg/L	0.1009	0.1009		0.1	0.0002772	0	7.716E-05	0.001	1	101%	88	115	0%	
Magnesium	A	mg/L	13.91	13.91		5	8.57	0	0.0104254	0.0081522	50	107%	75	125	0%	
Manganese	A	mg/L	0.5098	0.5098		0.5	0.01635	0	0.0005399	0.001	1	99%	75	125	0%	
Molybdenum	A	mg/L	0.09106	0.09106		0.1	0.0006112	0	0.0001763	0.001	0.1	90%	75	125	0%	
Nickel	A	mg/L	0.09913	0.09913		0.1	0.001332	0	0.0002288	0.0024200	1	98%	75	125	0%	
Potassium	A	mg/L	8.399	8.399		5	3.4	0	0.0765619	0.0261205	50	100%	75	125	0%	
Selenium	A	mg/L	0.1001	0.1001		0.1	0.0003433	0	0.0001357	0.001	1	100%	75	125	0%	
Silicon	A	mg/L	26.11	26.11		1	30.25	0	0.0422089	0.0053212	0.4		75	125	0%	A
Silver	A	mg/L	0.009575	0.009575		0.01	0	0	4.281E-05	0.001	0.04	96%	75	125	0%	
Sodium	A	mg/L	98.79	98.79		5	90.62	0	0.1019461	0.7330269	50		75	125	0%	A
Strontium	A	mg/L	0.1599	0.1599		0.1	0.05345	0	0.0002433	0.001	1	106%	75	125	0%	
Tellurium	A	mg/L	338.2	338.2		0	0	0		0.001	0.1	0%	0	0	0%	
Thallium	A	mg/L	0.1009	0.1009		0.1	0	0	0.0001114	0.001	1	101%	75	125	0%	
Thorium	A	mg/L	0.104	0.104		0.1	0	0	0.0003796	0.00415	1	104%	75	125	0%	
Tin	A	mg/L	0.09279	0.09279		0.1	0	0	0.0018932	0.0011175	0.1	93%	75	125	0%	
Titanium	A	mg/L	0.1208	0.1208		0.1	0.04307	0	0.0005733	0.001	1	78%	75	125	0%	
Uranium	A	mg/L	0.1012	0.1012		0.1	3.176E-05	0	1.699E-05	0.0003	1	101%	75	125	0%	
Vanadium	A	mg/L	0.1443	0.1443		0.1	0.04586	0	0.0039127	0.0021085	1	98%	75	125	0%	
Zinc	A	mg/L	0.09823	0.09823		0.1	0.001935	0	0.0011617	0.0065544	1	96%	75	125	0%	
Silica	C	mg/L	55.854512	55.854512		0	0	0	0.0902933	0.0113831	5	0%	0	0	0%	
Silicon as SiO2	C	mg/L	55.854512	55.854512		2.14	0	0	0.0902933	0.0113831	5	2610%	75	125	0%	S

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist				
14986321	B21121613-001	ICPMS-6020-W- MSD4			12/23/2021 2:15:	1	162360	12/20/2021	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	1.591	1.591		0.5	0.7667	1.602	0.0038747	0.0031975	1	165%	75	125	1%	S
Antimony	A	mg/L	0.09356	0.09356		0.1	0	0.09178	0.0002799	0.001	0.1	94%	75	125	2%	
Arsenic	A	mg/L	0.1022	0.1022		0.1	0.0003421	0.09902	0.0003412	0.001	1	102%	75	125	3%	
Barium	A	mg/L	0.1021	0.1021		0.1	0.005931	0.1015	0.0002682	0.001	1	96%	75	125	1%	
Beryllium	A	mg/L	0.04506	0.04506		0.05	0	0.04517	0.0001071	0.01	1	90%	75	125	0%	
Boron	A	mg/L	0.2917	0.2917		0.1	0.1912	0.2915	0.0203802	0.01467	1	101%	75	125	0%	
Cadmium	A	mg/L	0.05096	0.05096		0.05	0	0.04976	1.821E-05	0.005	1	102%	75	125	2%	
Calcium	A	mg/L	11.15	11.15		5	5.6	10.91	0.0372936	0.1103481	50	111%	75	125	2%	
Cerium	A	mg/L	0.1086	0.1086		0.1	0.0007823	0.1049	2.738E-05	0.001	0.1	108%	75	125	3%	
Chromium	A	mg/L	0.1077	0.1077		0.1	0.006521	0.1045	0.0015375	0.0015375	1	101%	75	125	3%	
Cobalt	A	mg/L	0.09367	0.09367		0.1	0.0005457	0.08988	9.541E-05	0.001	1	93%	75	125	4%	
Copper	A	mg/L	0.1039	0.1039		0.1	0.001826	0.1006	0.0008747	0.00198	1	102%	75	125	3%	
Iron	A	mg/L	1.364	1.364		0.5	0.7542	1.355	0.007424	0.00513	5	122%	75	125	1%	
Lanthanum	A	mg/L	0.1092	0.1092		0.1	0.0002182	0.1052	0.000055	0.001	0.1	109%	75	125	4%	
Lead	A	mg/L	0.1034	0.1034		0.1	0.0002772	0.1009	7.716E-05	0.001	1	103%	88	115	2%	
Magnesium	A	mg/L	14.23	14.23		5	8.57	13.91	0.0104254	0.0081522	50	113%	75	125	2%	
Manganese	A	mg/L	0.5323	0.5323		0.5	0.01635	0.5098	0.0005399	0.001	1	103%	75	125	4%	
Molybdenum	A	mg/L	0.09149	0.09149		0.1	0.0006112	0.09106	0.0001763	0.001	0.1	91%	75	125	0%	
Nickel	A	mg/L	0.1031	0.1031		0.1	0.001332	0.09913	0.0002288	0.0024200	1	102%	75	125	4%	
Potassium	A	mg/L	8.85	8.85		5	3.4	8.399	0.0765619	0.0261205	50	109%	75	125	5%	
Selenium	A	mg/L	0.1019	0.1019		0.1	0.0003433	0.1001	0.0001357	0.001	1	102%	75	125	2%	
Silicon	A	mg/L	30.76	30.76		1	30.25	26.11	0.0422089	0.0053212	0.4		75	125	16%	A
Silver	A	mg/L	0.009721	0.009721		0.01	0	0.009575	4.281E-05	0.001	0.04	97%	75	125	2%	
Sodium	A	mg/L	100.8	100.8		5	90.62	98.79	0.1019461	0.7330269	50		75	125	2%	A
Strontium	A	mg/L	0.167	0.167		0.1	0.05345	0.1599	0.0002433	0.001	1	114%	75	125	4%	
Tellurium	A	mg/L	346.7	346.7		0	0	338.2		0.001	0.1	0%	0	0	2%	
Thallium	A	mg/L	0.1019	0.1019		0.1	0	0.1009	0.0001114	0.001	1	102%	75	125	1%	
Thorium	A	mg/L	0.1061	0.1061		0.1	0	0.104	0.0003796	0.00415	1	106%	75	125	2%	
Tin	A	mg/L	0.09183	0.09183		0.1	0	0.09279	0.0018932	0.0011175	0.1	92%	75	125	1%	
Titanium	A	mg/L	0.122	0.122		0.1	0.04307	0.1208	0.0005733	0.001	1	79%	75	125	1%	
Uranium	A	mg/L	0.1039	0.1039		0.1	3.176E-05	0.1012	1.699E-05	0.0003	1	104%	75	125	3%	
Vanadium	A	mg/L	0.1502	0.1502		0.1	0.04586	0.1443	0.0039127	0.0021085	1	104%	75	125	4%	
Zinc	A	mg/L	0.1001	0.1001		0.1	0.001935	0.09823	0.0011617	0.0065544	1	98%	75	125	2%	
Silica	C	mg/L	65.801792	65.801792		0	0	55.854512	0.0902933	0.0113831	5	0%	0	0	16%	
Silicon as SiO2	C	mg/L	65.801792	65.801792		2.14	0	55.854512	0.0902933	0.0113831	5	3075%	75	125	16%	S

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14986322	Rinse	ICPMS-6020-W-	SAMP		12/23/2021 2:21:	1	R372324		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.001641	0.001641		0	0	0	0.0006966	0.001	1	0%	0	0	0%	
Arsenic	A	mg/L	0.00002204	0		0	0	0	0.0001626	0.001	1	0%	0	0	0%	
Beryllium	A	mg/L	0.00005654	0		0	0	0	0.0001137	0.001	1	0%	0	0	0%	
Boron	A	mg/L	0.001588	0		0	0	0	0.0036397	0.01	1	0%	0	0	0%	L
Cadmium	A	mg/L	4.423E-06	0		0	0	0	2.969E-05	0.001	1	0%	0	0	0%	
Calcium	A	mg/L	-0.0003846	0		0	0	0	0.0254163	0.0625	50	0%	0	0	0%	L
Cerium	A	mg/L	-5.356E-09	0		0	0	0	8.97E-06	0.001	0.1	0%	0	0	0%	
Chromium	A	mg/L	1.119E-07	0		0	0	0	0.0002078	0.001	1	0%	0	0	0%	
Cobalt	A	mg/L	0.00001246	0		0	0	0	2.037E-05	0.001	1	0%	0	0	0%	
Copper	A	mg/L	0.0000424	0		0	0	0	0.000121	0.001	1	0%	0	0	0%	
Lanthanum	A	mg/L	1.598E-06	0		0	0	0	1.209E-05	0.001	0.1	0%	0	0	0%	
Lead	A	mg/L	0.00002732	0		0	0	0	3.957E-05	0.001	1	0%	0	0	0%	
Lithium	A	mg/L	-0.0002128	0		0	0	0	0.00122	0.05	2.5	0%	0	0	0%	L
Magnesium	A	mg/L	-0.01842	0		0	0	0	0.0084694	0.025	50	0%	0	0	0%	L
Manganese	A	mg/L	0.00003239	0		0	0	0	5.319E-05	0.001	1	0%	0	0	0%	
Nickel	A	mg/L	-2.573E-05	0		0	0	0	0.0001477	0.001	1	0%	0	0	0%	
Potassium	A	mg/L	-0.005491	0		0	0	0	0.0951865	0.125	50	0%	0	0	0%	L
Selenium	A	mg/L	0.00002064	0		0	0	0	6.961E-05	0.001	1	0%	0	0	0%	
Silver	A	mg/L	5.075E-07	0		0	0	0	1.756E-05	0.001	0.04	0%	0	0	0%	
Sodium	A	mg/L	0.01363	0		0	0	0	0.0321039	0.125	50	0%	0	0	0%	L
Strontium	A	mg/L	-5.355E-05	0		0	0	0	0.0001116	0.001	1	0%	0	0	0%	
Tellurium	A	mg/L	0	0		0	0	0	0.0004865	0.001	0.1	0%	0	0	0%	
Thallium	A	mg/L	0.0002766	0.0002766		0	0	0	4.044E-05	0.001	1	0%	0	0	0%	J
Uranium	A	mg/L	2.234E-06	0		0	0	0	1.948E-05	0.0003	1	0%	0	0	0%	
Zinc	A	mg/L	0.0003528	0		0	0	0	0.0006119	0.002	1	0%	0	0	0%	L
Barium	B	mg/L	6.065E-06	0		0	0	0	8.917E-05	0.001	1	0%	0	0	0%	
Iron	B	mg/L	0.0007825	0		0	0	0	0.0011177	0.025	5	0%	0	0	0%	L
Iron, Ferrous	B	mg/L	0.0007825	0		0	0	0	0.0011177	0.025	5	0%	0	0	0%	L
Silicon	B	mg/L	0.01747	0		0	0	0	0.0786454	0.2	0.4	0%	0	0	0%	L
Vanadium	B	mg/L	0.00003342	0		0	0	0	0.004194	0.01	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
14986323	MB-162405	ICPMS-6020-W-	MBLK		12/23/2021 2:27:	1	162405	12/21/2021	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
14986323	MB-162405	ICPMS-6020-W-	MBLK		12/23/2021 2:27:	1	162405	12/21/2021	0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.001703	0		0	0	0	0.0038747	0.0031975	1	0%	0	0	0%	
Antimony	A	mg/L	0.00003084	0		0	0	0	0.0002799	0.001	0.1	0%	0	0	0%	
Arsenic	A	mg/L	0.00005599	0		0	0	0	0.0003412	0.001	1	0%	0	0	0%	
Barium	A	mg/L	0.00001737	0		0	0	0	0.0002682	0.001	1	0%	0	0	0%	
Beryllium	A	mg/L	0.00005103	0		0	0	0	0.0001071	0.01	1	0%	0	0	0%	
Boron	A	mg/L	0.00167	0		0	0	0	0.0203802	0.01467	1	0%	0	0	0%	
Cadmium	A	mg/L	4.647E-07	0		0	0	0	1.821E-05	0.005	1	0%	0	0	0%	
Calcium	A	mg/L	0.01393	0		0	0	0	0.0372936	0.1103481	50	0%	0	0	0%	
Cerium	A	mg/L	-1.482E-06	0		0	0	0	2.738E-05	0.001	0.1	0%	0	0	0%	
Chromium	A	mg/L	0.0001862	0		0	0	0	0.0015375	0.0015375	1	0%	0	0	0%	
Cobalt	A	mg/L	0.00002722	0		0	0	0	9.541E-05	0.001	1	0%	0	0	0%	
Copper	A	mg/L	0.0002187	0		0	0	0	0.0008747	0.00198	1	0%	0	0	0%	
Iron	A	mg/L	0.001262	0		0	0	0	0.007424	0.00513	5	0%	0	0	0%	
Lanthanum	A	mg/L	-1.766E-07	0		0	0	0	0.000055	0.001	0.1	0%	0	0	0%	
Lead	A	mg/L	0.00003597	0		0	0	0	7.716E-05	0.0005	1	0%	0	0	0%	
Magnesium	A	mg/L	-0.0209	0		0	0	0	0.0104254	0.0081522	50	0%	0	0	0%	
Manganese	A	mg/L	0.00004114	0		0	0	0	0.0005399	0.001	1	0%	0	0	0%	
Molybdenum	A	mg/L	0.00001084	0		0	0	0	0.0001763	0.001	0.1	0%	0	0	0%	
Nickel	A	mg/L	-3.249E-05	0		0	0	0	0.0002288	0.0024200	1	0%	0	0	0%	
Potassium	A	mg/L	-0.003263	0		0	0	0	0.0765619	0.0261205	50	0%	0	0	0%	
Selenium	A	mg/L	0.00002298	0		0	0	0	0.0001357	0.001	1	0%	0	0	0%	
Silicon	A	mg/L	0.03848	0		0	0	0	0.0422089	0.0053212	0.4	0%	0	0	0%	
Silver	A	mg/L	1.373E-06	0		0	0	0	4.281E-05	0.001	0.04	0%	0	0	0%	
Sodium	A	mg/L	0.008719	0		0	0	0	0.1019461	0.7330269	50	0%	0	0	0%	
Strontium	A	mg/L	-1.472E-05	0		0	0	0	0.0002433	0.001	1	0%	0	0	0%	
Tellurium	A	mg/L	0.02345	0.02345		0	0	0		0.001	0.1	0%	0	0	0%	
Thallium	A	mg/L	0.0000834	0		0	0	0	0.0001114	0.001	1	0%	0	0	0%	
Thorium	A	mg/L	0.00004865	0		0	0	0	0.0003796	0.00415	1	0%	0	0	0%	
Tin	A	mg/L	0.00009646	0		0	0	0	0.0018932	0.0011175	0.1	0%	0	0	0%	
Titanium	A	mg/L	0.0002531	0		0	0	0	0.0005733	0.001	1	0%	0	0	0%	
Uranium	A	mg/L	1.445E-07	0		0	0	0	1.699E-05	0.0003	1	0%	0	0	0%	
Vanadium	A	mg/L	0.0006302	0		0	0	0	0.0039127	0.0021085	1	0%	0	0	0%	
Zinc	A	mg/L	0.0001005	0		0	0	0	0.0011617	0.0065544	1	0%	0	0	0%	
Silica	C	mg/L	0.08231642	0		0	0	0	0.0902933	0.0113831	5	0%	0	0	0%	
Silicon as SiO2	C	mg/L	0.08231642	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
14986324	LCS4-162405	ICPMS-6020-W-	LCS4		12/23/2021 2:33:	1	162405	12/21/2021	0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.5025	0.5025		0.5	0	0	0.0038747	0.0031975	1	101%	80	120	0%	
Antimony	A	mg/L	0.09105	0.09105		0.1	0	0	0.0002799	0.001	0.1	91%	80	120	0%	
Arsenic	A	mg/L	0.1002	0.1002		0.1	0	0	0.0003412	0.001	1	100%	80	120	0%	
Barium	A	mg/L	0.095	0.095		0.1	0	0	0.0002682	0.001	1	95%	80	120	0%	
Beryllium	A	mg/L	0.04802	0.04802		0.05	0	0	0.0001071	0.01	1	96%	80	120	0%	
Boron	A	mg/L	0.09885	0.09885		0.1	0	0	0.0203802	0.01467	1	99%	80	120	0%	
Cadmium	A	mg/L	0.04932	0.04932		0.05	0	0	1.821E-05	0.005	1	99%	80	120	0%	
Calcium	A	mg/L	5.531	5.531		5	0	0	0.0372936	0.1103481	50	111%	80	120	0%	
Cerium	A	mg/L	0.104	0.104		0.1	0	0	2.738E-05	0.001	0.1	104%	80	120	0%	
Chromium	A	mg/L	0.1039	0.1039		0.1	0	0	0.0015375	0.0015375	1	104%	80	120	0%	
Cobalt	A	mg/L	0.0936	0.0936		0.1	0	0	9.541E-05	0.001	1	94%	80	120	0%	
Copper	A	mg/L	0.1036	0.1036		0.1	0	0	0.0008747	0.00198	1	104%	80	120	0%	
Iron	A	mg/L	0.5278	0.5278		0.5	0	0	0.007424	0.00513	5	106%	80	120	0%	
Lanthanum	A	mg/L	0.1057	0.1057		0.1	0	0	0.000055	0.001	0.1	106%	80	120	0%	
Lead	A	mg/L	0.1024	0.1024		0.1	0	0	7.716E-05	0.001	1	102%	88	115	0%	
Magnesium	A	mg/L	5.335	5.335		5	0	0	0.0104254	0.0081522	50	107%	80	120	0%	
Manganese	A	mg/L	0.5271	0.5271		0.5	0	0	0.0005399	0.001	1	105%	80	120	0%	
Molybdenum	A	mg/L	0.08818	0.08818		0.1	0	0	0.0001763	0.001	0.1	88%	80	120	0%	
Nickel	A	mg/L	0.1032	0.1032		0.1	0	0	0.0002288	0.0024200	1	103%	80	120	0%	
Potassium	A	mg/L	5.349	5.349		5	0	0	0.0765619	0.0261205	50	107%	80	120	0%	
Selenium	A	mg/L	0.1003	0.1003		0.1	0	0	0.0001357	0.001	1	100%	80	120	0%	
Silicon	A	mg/L	0.9247	0.9247		1	0	0	0.0422089	0.0053212	0.4	92%	80	120	0%	
Silver	A	mg/L	0.009605	0.009605		0.01	0	0	4.281E-05	0.001	0.04	96%	80	120	0%	
Sodium	A	mg/L	5.302	5.302		5	0	0	0.1019461	0.7330269	50	106%	80	120	0%	
Strontium	A	mg/L	0.1088	0.1088		0.1	0	0	0.0002433	0.001	1	109%	80	120	0%	
Tellurium	A	mg/L	335.7	335.7		0	0	0		0.001	0.1	0%	0	0	0%	
Thallium	A	mg/L	0.106	0.106		0.1	0	0	0.0001114	0.001	1	106%	80	120	0%	
Thorium	A	mg/L	0.1049	0.1049		0.1	0	0	0.0003796	0.00415	1	105%	80	120	0%	
Tin	A	mg/L	0.09224	0.09224		0.1	0	0	0.0018932	0.0011175	0.1	92%	80	120	0%	
Titanium	A	mg/L	0.0816	0.0816		0.1	0	0	0.0005733	0.001	1	82%	80	120	0%	
Uranium	A	mg/L	0.1021	0.1021		0.1	0	0	1.699E-05	0.0003	1	102%	80	120	0%	
Vanadium	A	mg/L	0.1023	0.1023		0.1	0	0	0.0039127	0.0021085	1	102%	80	120	0%	
Zinc	A	mg/L	0.09816	0.09816		0.1	0	0	0.0011617	0.0065544	1	98%	80	120	0%	
Silica	C	mg/L	1.97811824	1.97811824		0	0	0	0.0902933	0.0113831	5	0%	0	0	0%	
Silicon as SiO2	C	mg/L	1.97811824	1.97811824		2.14	0	0	0.0902933	0.0113831	5	92%	80	120	0%	

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist				
14986325	CCV	ICPMS-6020-W-	CCV		12/23/2021 2:39:	1	R372324		0	0					

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.0474	0.0474		0.05	0	0	0.0006966	0.001	1	95%	90	110	0%	
Antimony	A	mg/L	0.0434	0.0434		0.05	0	0	0.0002882	0.001	0.1	87%	90	110	0%	S
Arsenic	A	mg/L	0.04878	0.04878		0.05	0	0	0.0001626	0.001	1	98%	90	110	0%	
Barium	A	mg/L	0.04789	0.04789		0.05	0	0	8.917E-05	0.001	1	96%	90	110	0%	
Beryllium	A	mg/L	0.04609	0.04609		0.05	0	0	0.0001137	0.001	1	92%	90	110	0%	
Boron	A	mg/L	0.04734	0.04734		0.05	0	0	0.0036397	0.01	1	95%	90	110	0%	
Cadmium	A	mg/L	0.04859	0.04859		0.05	0	0	2.969E-05	0.001	1	97%	90	110	0%	
Calcium	A	mg/L	13.37	13.37		12.5	0	0	0.0254163	0.0625	50	107%	90	110	0%	
Cerium	A	mg/L	0.04929	0.04929		0.05	0	0	8.97E-06	0.001	0.1	99%	90	110	0%	
Chromium	A	mg/L	0.04862	0.04862		0.05	0	0	0.0002078	0.001	1	97%	90	110	0%	
Cobalt	A	mg/L	0.04878	0.04878		0.05	0	0	2.037E-05	0.001	1	98%	90	110	0%	
Copper	A	mg/L	0.0481	0.0481		0.05	0	0	0.000121	0.001	1	96%	90	110	0%	
Iron	A	mg/L	1.311	1.311		1.3	0	0	0.0011177	0.025	5	101%	90	110	0%	
Lanthanum	A	mg/L	0.0492	0.0492		0.05	0	0	1.209E-05	0.001	0.1	98%	90	110	0%	
Lead	A	mg/L	0.04808	0.04808		0.05	0	0	3.957E-05	0.001	1	96%	90	110	0%	
Lithium	A	mg/L	0.6256	0.6256		0.625	0	0	0.00122	0.05	2.5	100%	90	110	0%	
Magnesium	A	mg/L	12.89	12.89		12.5	0	0	0.0084694	0.025	50	103%	90	110	0%	
Manganese	A	mg/L	0.04918	0.04918		0.05	0	0	5.319E-05	0.001	1	98%	90	110	0%	
Molybdenum	A	mg/L	0.04352	0.04352		0.05	0	0	7.382E-05	0.001	0.1	87%	90	110	0%	S
Nickel	A	mg/L	0.04945	0.04945		0.05	0	0	0.0001477	0.001	1	99%	90	110	0%	
Potassium	A	mg/L	12.84	12.84		12.5	0	0	0.0951865	0.125	50	103%	90	110	0%	
Selenium	A	mg/L	0.04865	0.04865		0.05	0	0	6.961E-05	0.001	1	97%	90	110	0%	
Silicon	A	mg/L	0.1927	0.1927		0.2	0	0	0.0786454	0.2	0.4	96%	90	110	0%	
Silver	A	mg/L	0.01941	0.01941		0.02	0	0	1.756E-05	0.001	0.04	97%	90	110	0%	
Sodium	A	mg/L	12.81	12.81		12.5	0	0	0.0321039	0.125	50	102%	90	110	0%	
Strontium	A	mg/L	0.04943	0.04943		0.05	0	0	0.0001116	0.001	1	99%	90	110	0%	
Tellurium	A	mg/L	0.07103	0.07103		0	0	0	0.0004865	0.001	0.1	0%	0	0	0%	
Thallium	A	mg/L	0.04811	0.04811		0.05	0	0	4.044E-05	0.001	1	96%	90	110	0%	
Tin	A	mg/L	0.04343	0.04343		0.05	0	0	0.0025355	0.01	0.1	87%	90	110	0%	S
Titanium	A	mg/L	0.04293	0.04293		0.05	0	0	0.0001844	0.001	1	86%	90	110	0%	S
Uranium	A	mg/L	0.04884	0.04884		0.05	0	0	1.948E-05	0.0003	1	98%	90	110	0%	
Vanadium	A	mg/L	0.04881	0.04881		0.05	0	0	0.004194	0.01	1	98%	90	110	0%	
Zinc	A	mg/L	0.04914	0.04914		0.05	0	0	0.0006119	0.002	1	98%	90	110	0%	
Iron, Ferrous	C	mg/L	1.311	1.311		0	0	0	0.0011177	0.025	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
14986326	CCB	ICPMS-6020-W-	CCB		12/23/2021 2:45:	1	R372324		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.00005539	0.00005539		0	0	0	0.0006966	0.001	1	0%			0%	
Antimony	A	mg/L	0.00003333	0.00003333		0	0	0	0.0002882	0.001	0.1	0%			0%	
Arsenic	A	mg/L	9.897E-06	9.897E-06		0	0	0	0.0001626	0.001	1	0%			0%	
Barium	A	mg/L	1.917E-06	1.917E-06		0	0	0	8.917E-05	0.001	1	0%			0%	
Beryllium	A	mg/L	0.00005909	0.00005909		0	0	0	0.0001137	0.001	1	0%			0%	
Boron	A	mg/L	0.0003338	0.0003338		0	0	0	0.0036397	0.01	1	0%			0%	
Cadmium	A	mg/L	3.507E-06	3.507E-06		0	0	0	2.969E-05	0.001	1	0%			0%	
Calcium	A	mg/L	-0.001494	-0.001494		0	0	0	0.0254163	0.0625	50	0%			0%	
Cerium	A	mg/L	9.01E-08	9.01E-08		0	0	0	8.97E-06	0.001	0.1	0%	0	0	0%	
Chromium	A	mg/L	-4.598E-06	-4.598E-06		0	0	0	0.0002078	0.001	1	0%			0%	
Cobalt	A	mg/L	8.045E-06	8.045E-06		0	0	0	2.037E-05	0.001	1	0%			0%	
Copper	A	mg/L	0.00003472	0.00003472		0	0	0	0.000121	0.001	1	0%			0%	
Iron	A	mg/L	0.0004617	0.0004617		0	0	0	0.0011177	0.025	5	0%			0%	
Lanthanum	A	mg/L	1.075E-06	1.075E-06		0	0	0	1.209E-05	0.001	0.1	0%	0	0	0%	
Lead	A	mg/L	0.00001397	0.00001397		0	0	0	3.957E-05	0.001	1	0%			0%	
Lithium	A	mg/L	-6.313E-05	-6.313E-05		0	0	0	0.00122	0.05	2.5	0%			0%	
Magnesium	A	mg/L	-0.02102	-0.02102		0	0	0	0.0084694	0.025	50	0%			0%	
Manganese	A	mg/L	0.0000395	0.0000395		0	0	0	5.319E-05	0.001	1	0%			0%	
Molybdenum	A	mg/L	0.00001887	0.00001887		0	0	0	7.382E-05	0.001	0.1	0%			0%	
Nickel	A	mg/L	-2.407E-05	-2.407E-05		0	0	0	0.0001477	0.001	1	0%			0%	
Potassium	A	mg/L	-0.001682	-0.001682		0	0	0	0.0951865	0.125	50	0%			0%	
Selenium	A	mg/L	0.00001263	0.00001263		0	0	0	6.961E-05	0.001	1	0%			0%	
Silicon	A	mg/L	0.00377	0.00377		0	0	0	0.0786454	0.2	0.4	0%	0	0	0%	
Silver	A	mg/L	-8.226E-08	-8.226E-08		0	0	0	1.756E-05	0.001	0.04	0%			0%	
Sodium	A	mg/L	-0.003327	-0.003327		0	0	0	0.0321039	0.125	50	0%			0%	
Strontium	A	mg/L	-6.112E-05	-6.112E-05		0	0	0	0.0001116	0.001	1	0%	0	0	0%	
Tellurium	A	mg/L	0.02338	0.02338		0	0	0	0.0004865	0.001	0.1	0%	0	0	0%	
Thallium	A	mg/L	0.0002061	0.0002061		0	0	0	4.044E-05	0.001	1	0%	0	0	0%	
Tin	A	mg/L	-4.382E-06	-4.382E-06		0	0	0	0.0025355	0.01	0.1	0%	0	0	0%	
Titanium	A	mg/L	-9.667E-07	-9.667E-07		0	0	0	0.0001844	0.001	1	0%	0	0	0%	
Uranium	A	mg/L	1.385E-06	1.385E-06		0	0	0	1.948E-05	0.0003	1	0%	0	0	0%	
Vanadium	A	mg/L	-1.265E-05	-1.265E-05		0	0	0	0.004194	0.01	1	0%	0	0	0%	
Zinc	A	mg/L	-6.791E-05	-6.791E-05		0	0	0	0.0006119	0.002	1	0%	0	0	0%	
Iron, Ferrous	C	mg/L	0.0004617	0.0004617		0	0	0	0.0011177	0.025	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
14986327	Rinse	ICPMS-6020-W-	SAMP		12/23/2021 2:51:	1	R372324		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.001511	0.001511		0	0	0	0.0006966	0.001	1	0%	0	0	0%	
Arsenic	A	mg/L	4.536E-06	0		0	0	0	0.0001626	0.001	1	0%	0	0	0%	
Beryllium	A	mg/L	0.00003976	0		0	0	0	0.0001137	0.001	1	0%	0	0	0%	
Boron	A	mg/L	-2.249E-05	0		0	0	0	0.0036397	0.01	1	0%	0	0	0%	L
Cadmium	A	mg/L	1.435E-06	0		0	0	0	2.969E-05	0.001	1	0%	0	0	0%	
Calcium	A	mg/L	-0.001674	0		0	0	0	0.0254163	0.0625	50	0%	0	0	0%	L
Cerium	A	mg/L	-1.437E-06	0		0	0	0	8.97E-06	0.001	0.1	0%	0	0	0%	
Chromium	A	mg/L	-1.015E-05	0		0	0	0	0.0002078	0.001	1	0%	0	0	0%	
Cobalt	A	mg/L	5.113E-06	0		0	0	0	2.037E-05	0.001	1	0%	0	0	0%	
Copper	A	mg/L	8.364E-06	0		0	0	0	0.000121	0.001	1	0%	0	0	0%	
Lanthanum	A	mg/L	5.258E-09	0		0	0	0	1.209E-05	0.001	0.1	0%	0	0	0%	
Lead	A	mg/L	5.325E-06	0		0	0	0	3.957E-05	0.001	1	0%	0	0	0%	
Lithium	A	mg/L	-0.0005529	0		0	0	0	0.00122	0.05	2.5	0%	0	0	0%	L
Magnesium	A	mg/L	-0.01977	0		0	0	0	0.0084694	0.025	50	0%	0	0	0%	L
Manganese	A	mg/L	-1.181E-05	0		0	0	0	5.319E-05	0.001	1	0%	0	0	0%	
Nickel	A	mg/L	-3.229E-05	0		0	0	0	0.0001477	0.001	1	0%	0	0	0%	
Potassium	A	mg/L	-0.002247	0		0	0	0	0.0951865	0.125	50	0%	0	0	0%	L
Selenium	A	mg/L	-3.476E-06	0		0	0	0	6.961E-05	0.001	1	0%	0	0	0%	
Silver	A	mg/L	3.287E-08	0		0	0	0	1.756E-05	0.001	0.04	0%	0	0	0%	
Sodium	A	mg/L	-0.006125	0		0	0	0	0.0321039	0.125	50	0%	0	0	0%	L
Strontium	A	mg/L	-0.0000649	0		0	0	0	0.0001116	0.001	1	0%	0	0	0%	
Thallium	A	mg/L	0.00005527	0.00005527		0	0	0	4.044E-05	0.001	1	0%	0	0	0%	J
Uranium	A	mg/L	-8.11E-08	0		0	0	0	1.948E-05	0.0003	1	0%	0	0	0%	
Zinc	A	mg/L	-0.0001617	0		0	0	0	0.0006119	0.002	1	0%	0	0	0%	L
Barium	B	mg/L	0.00000292	0		0	0	0	8.917E-05	0.001	1	0%	0	0	0%	
Iron	B	mg/L	0.0003917	0		0	0	0	0.0011177	0.025	5	0%	0	0	0%	L
Iron, Ferrous	B	mg/L	0.0003917	0		0	0	0	0.0011177	0.025	5	0%	0	0	0%	L
Silicon	B	mg/L	0.003019	0		0	0	0	0.0786454	0.2	0.4	0%	0	0	0%	L
Vanadium	B	mg/L	-3.381E-05	0		0	0	0	0.004194	0.01	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
14986328	B21121613-002	ICPMS-6020-W-	SAMP		12/23/2021 2:57:	1	162405	12/21/2021	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
14986328	B21121613-002	ICPMS-6020-W-	SAMP		12/23/2021 2:57:	1	162405	12/21/2021	0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Arsenic	A	mg/L	0.0002068	0		0	0	0	0.0003412	0.001	1	0%	0	0	0%	U
Barium	A	mg/L	0.002599	0.002599		0	0	0	0.0002682	0.001	1	0%	0	0	0%	
Beryllium	A	mg/L	0.00003919	0		0	0	0	0.0001071	0.01	1	0%	0	0	0%	U
Cadmium	A	mg/L	-4.796E-05	0		0	0	0	1.821E-05	0.005	1	0%	0	0	0%	U
Cerium	A	mg/L	6.227E-06	0		0	0	0	2.738E-05	0.001	0.1	0%	0	0	0%	U
Cobalt	A	mg/L	0.0001342	0.0001342		0	0	0	9.541E-05	0.001	1	0%	0	0	0%	J
Lanthanum	A	mg/L	1.581E-06	0		0	0	0	0.000055	0.001	0.1	0%	0	0	0%	U
Lead	A	mg/L	0.00004268	0		0	0	0	7.716E-05	0.001	1	0%	0	0	0%	U
Manganese	A	mg/L	0.04597	0.04597		0	0	0	0.0005399	0.001	1	0%	0	0	0%	
Selenium	A	mg/L	0.00004175	0		0	0	0	0.0001357	0.001	1	0%	0	0	0%	U
Silver	A	mg/L	1.235E-06	0		0	0	0	4.281E-05	0.001	0.04	0%	0	0	0%	U
Strontium	A	mg/L	0.08174	0.08174		0	0	0	0.0002433	0.001	1	0%	0	0	0%	
Thallium	A	mg/L	0.00003675	0		0	0	0	0.0001114	0.001	1	0%	0	0	0%	U
Uranium	A	mg/L	2.726E-06	0		0	0	0	1.699E-05	0.0003	1	0%	0	0	0%	U
Aluminum	B	mg/L	0.004013	0.004013		0	0	0	0.0038747	0.0031975	1	0%	0	0	0%	DU
Boron	B	mg/L	0.06472	0.06472		0	0	0	0.0203802	0.01467	1	0%	0	0	0%	D
Calcium	B	mg/L	13.27	13.27		0	0	0	0.0372936	0.1103481	50	0%	0	0	0%	D
Chromium	B	mg/L	0.0009762	0		0	0	0	0.0015375	0.0015375	1	0%	0	0	0%	LU
Copper	B	mg/L	0.0003003	0		0	0	0	0.0008747	0.00198	1	0%	0	0	0%	LU
Iron	B	mg/L	0.1073	0.1073		0	0	0	0.007424	0.00513	5	0%	0	0	0%	D
Magnesium	B	mg/L	12.8	12.8		0	0	0	0.0104254	0.0081522	50	0%	0	0	0%	D
Nickel	B	mg/L	0.0008348	0.0008348		0	0	0	0.0002288	0.0024200	1	0%	0	0	0%	JL
Potassium	B	mg/L	6.846	6.846		0	0	0	0.0765619	0.0261205	50	0%	0	0	0%	D
Thorium	B	mg/L	0.00004243	0		0	0	0	0.0003796	0.00415	1	0%	0	0	0%	LU
Vanadium	B	mg/L	0.0005377	0		0	0	0	0.0039127	0.0021085	1	0%	0	0	0%	LU
Zinc	B	mg/L	0.002443	0.002443		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
14986329	B21121613-002	ICPMS-6020-W-	SD		12/23/2021 3:03:	5	162405	12/21/2021	0	1E+07	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.001322	0		0	0	0.004013	0.0193736	0.0159875	1	0%	0	0		
Antimony	A	mg/L	6.645E-06	0		0	0	0	0.0013997	0.0049	0.1	0%	0	0		
Arsenic	A	mg/L	0.00004327	0		0	0	0	0.0017061	0.0013383	1	0%	0	0		
Barium	A	mg/L	0.0005104	0.002552		0	0	0.002599	0.0013411	0.0012039	1	0%	0	0		N

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14986329	B21121613-002	ICPMS-6020-W-	SD		12/23/2021 3:03:	5	162405	12/21/2021	0	1E+07	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Beryllium	A	mg/L	0.00001815	0		0	0	0	0.0005353	0.01	1	0%	0	0		
Boron	A	mg/L	0.01297	0		0	0	0.06472	0.1019008	0.07335	1	0%	0	0		
Cadmium	A	mg/L	-7.437E-06	0		0	0	0	9.105E-05	0.005	1	0%	0	0		
Calcium	A	mg/L	2.645	13.225		0	0	13.27	0.1864681	0.5517403	50	0%	0	0	0%	
Cerium	A	mg/L	-1.372E-06	0		0	0	0	0.0001369	0.001	0.1	0%	0	0		
Chromium	A	mg/L	0.0001922	0		0	0	0	0.0076875	0.0076875	1	0%	0	0		
Cobalt	A	mg/L	0.00002542	0		0	0	0.0001342	0.0004771	0.001	1	0%	0	0		
Copper	A	mg/L	0.00008207	0		0	0	0	0.0043735	0.0099	1	0%	0	0		
Iron	A	mg/L	0.02122	0.1061		0	0	0.1073	0.0371198	0.02565	5	0%	0	0		N
Lanthanum	A	mg/L	-5.55E-07	0		0	0	0	0.000275	0.001	0.1	0%	0	0		
Lead	A	mg/L	0.00001297	0		0	0	0	0.0003858	0.001	1	0%	0	0		
Magnesium	A	mg/L	2.622	13.11		0	0	12.8	0.0521269	0.0407608	50	0%	0	0	2%	
Manganese	A	mg/L	0.009393	0.046965		0	0	0.04597	0.0026994	0.0010695	1	0%	0	0	2%	
Molybdenum	A	mg/L	0.003587	0.017935		0	0	0.01816	0.0008814	0.001	0.1	0%	0	0	1%	
Nickel	A	mg/L	0.0001602	0		0	0	0.0008348	0.0011441	0.0121000	1	0%	0	0		
Potassium	A	mg/L	1.323	6.615		0	0	6.846	0.3828097	0.1306027	50	0%	0	0	3%	
Selenium	A	mg/L	7.382E-06	0		0	0	0	0.0006787	0.0029274	1	0%	0	0		
Silicon	A	mg/L	1.193	5.965		0	0	5.918	0.2110446	0.026606	0.4	0%	0	0	1%	
Silver	A	mg/L	9.081E-08	0		0	0	0	0.0002141	0.001	0.04	0%	0	0		
Sodium	A	mg/L	10.26	51.3		0	0	50.24	0.5097304	3.6651346	50	0%	0	0	2%	
Strontium	A	mg/L	0.0162	0.081		0	0	0.08174	0.0012164	0.001	1	0%	0	0	1%	
Tellurium	A	mg/L	0	0		0	0	0.02415		0.001	0.1	0%	0	0		
Thallium	A	mg/L	6.802E-07	0		0	0	0	0.0005569	0.001	1	0%	0	0		
Thorium	A	mg/L	3.241E-06	0		0	0	0	0.0018981	0.02075	1	0%	0	0		
Tin	A	mg/L	0.00319	0.01595		0	0	0.01649	0.0094659	0.0055874	0.1	0%	0	0		N
Titanium	A	mg/L	0.0003144	0		0	0	0.001084	0.0028666	0.001	1	0%	0	0		
Uranium	A	mg/L	-2.325E-07	0		0	0	0	8.495E-05	0.0004224	1	0%	0	0		
Vanadium	A	mg/L	0.00006147	0		0	0	0	0.0195637	0.0105423	1	0%	0	0		
Zinc	A	mg/L	0.0003942	0		0	0	0.002443	0.0058087	0.0327721	1	0%	0	0		
Silica	C	mg/L	2.5520656	12.760328		0	0	0	0.4514666	0.0569155	5	0%	0	0		N
Silicon as SiO2	C	mg/L	2.5520656	12.760328		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
14986330	B21121613-002	ICPMS-6020-W- PDS1			12/23/2021 3:10:	1.03	162405	12/21/2021	1E+07	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.04939	0.0508717		0.0515	0.004013	0	0.003991	0.0032934	1	91%	75	125	0%	
Antimony	A	mg/L	0.04132	0.0425596		0.0515	0	0	0.0002883	0.0010094	0.1	83%	75	125	0%	
Arsenic	A	mg/L	0.04702	0.0484306		0.0515	0	0	0.0003514	0.001	1	94%	75	125	0%	
Barium	A	mg/L	0.0496	0.051088		0.0515	0.002599	0	0.0002763	0.001	1	94%	75	125	0%	
Beryllium	A	mg/L	0.04365	0.0449595		0.0515	0	0	0.0001103	0.01	1	87%	75	125	0%	
Boron	A	mg/L	0.1112	0.114536		0.0515	0.06472	0	0.0209916	0.0151101	1	97%	75	125	0%	
Cadmium	A	mg/L	0.0464	0.047792		0.0515	0	0	1.876E-05	0.005	1	93%	75	125	0%	
Calcium	A	mg/L	60.47	62.2841		51.5	13.27	0	0.0384124	0.1136585	50	95%	75	125	0%	
Cerium	A	mg/L	0.04743	0.0488529		0.0515	0	0	2.820E-05	0.001	0.1	95%	75	125	0%	
Chromium	A	mg/L	0.04877	0.0502331		0.0515	0	0	0.0015836	0.0015836	1	98%	75	125	0%	
Cobalt	A	mg/L	0.04352	0.0448256		0.0515	0.0001342	0	9.827E-05	0.001	1	87%	75	125	0%	
Copper	A	mg/L	0.04742	0.0488426		0.0515	0	0	0.0009009	0.0020394	1	95%	75	125	0%	
Iron	A	mg/L	4.948	5.09644		5.15	0.1073	0	0.0076467	0.0052839	5	97%	75	125	0%	
Lanthanum	A	mg/L	0.04793	0.0493679		0.0515	0	0	5.665E-05	0.001	0.1	96%	75	125	0%	
Lead	A	mg/L	0.04741	0.0488323		0.0515	0	0	7.947E-05	0.001	1	95%	80	120	0%	
Magnesium	A	mg/L	60.68	62.5004		51.5	12.8	0	0.0107381	0.0083967	50	97%	75	125	0%	
Manganese	A	mg/L	0.09159	0.0943377		0.0515	0.04597	0	0.0005561	0.001	1	94%	75	125	0%	
Molybdenum	A	mg/L	0.06258	0.0644574		0.0515	0.01816	0	0.0001816	0.001	0.1	90%	75	125	0%	
Nickel	A	mg/L	0.04705	0.0484615		0.0515	0.0008348	0	0.0002357	0.0024926	1	92%	75	125	0%	
Potassium	A	mg/L	54.58	56.2174		51.5	6.846	0	0.0788588	0.0269042	50	96%	75	125	0%	
Selenium	A	mg/L	0.04698	0.0483894		0.0515	0	0	0.0001398	0.001	1	94%	75	125	0%	
Silicon	A	mg/L	5.886	6.06258		0.206	5.918	0	0.0434752	0.0054808	0.4		0	0	0%	A
Silver	A	mg/L	0.01872	0.0192816		0.0206	0	0	4.409E-05	0.001	0.04	94%	75	125	0%	
Sodium	A	mg/L	95.85	98.7255		51.5	50.24	0	0.1050045	0.7550177	50	94%	75	125	0%	
Strontium	A	mg/L	0.1277	0.131531		0.0515	0.08174	0	0.0002506	0.001	1	97%	75	125	0%	
Tellurium	A	mg/L	0.1033	0.106399		0	0.02415	0		0.001	0.1	0%	0	0	0%	
Thallium	A	mg/L	0.04813	0.0495739		0.0515	0	0	0.0001147	0.001	1	96%	75	125	0%	
Thorium	A	mg/L	0.04887	0.0503361		0.0515	0	0	0.000391	0.0042745	1	98%	75	125	0%	
Tin	A	mg/L	0.0613	0.063139		0.0515	0.01649	0	0.00195	0.001151	0.1	91%	75	125	0%	
Titanium	A	mg/L	0.04431	0.0456393		0.0515	0.001084	0	0.0005905	0.001	1	87%	75	125	0%	
Uranium	A	mg/L	0.04971	0.0512013		0.0515	0	0	1.75E-05	0.0003	1	99%	75	125	0%	
Vanadium	A	mg/L	0.04836	0.0498108		0.0515	0	0	0.0040301	0.0021717	1	97%	75	125	0%	
Zinc	A	mg/L	0.04838	0.0498314		0.0515	0.002443	0	0.0011966	0.0067511	1	92%	75	125	0%	
Silica	C	mg/L	12.5913312	12.9690711		0	0	0	0.0930021	0.0117246	5	0%	0	0	0%	
Silicon as SiO2	C	mg/L	12.5913312	12.9690711		0.0515	0	0	0.0930021	0.0117246	5	25183%	75	125	0%	S

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14986331	B21121613-002	ICPMS-6020-W-	MS4		12/23/2021 3:16:	1	162405	12/21/2021	1E+07	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.4835	0.4835		0.5	0.004013	0	0.0038747	0.0031975	1	96%	75	125	0%	
Antimony	A	mg/L	0.0932	0.0932		0.1	0	0	0.0002799	0.001	0.1	93%	75	125	0%	
Arsenic	A	mg/L	0.0999	0.0999		0.1	0	0	0.0003412	0.001	1	100%	75	125	0%	
Barium	A	mg/L	0.09672	0.09672		0.1	0.002599	0	0.0002682	0.001	1	94%	75	125	0%	
Beryllium	A	mg/L	0.04702	0.04702		0.05	0	0	0.0001071	0.01	1	94%	75	125	0%	
Boron	A	mg/L	0.1623	0.1623		0.1	0.06472	0	0.0203802	0.01467	1	98%	75	125	0%	
Cadmium	A	mg/L	0.04948	0.04948		0.05	0	0	1.821E-05	0.005	1	99%	75	125	0%	
Calcium	A	mg/L	17.81	17.81		5	13.27	0	0.0372936	0.1103481	50	91%	75	125	0%	
Cerium	A	mg/L	0.1045	0.1045		0.1	0	0	2.738E-05	0.001	0.1	104%	75	125	0%	
Chromium	A	mg/L	0.104	0.104		0.1	0	0	0.0015375	0.0015375	1	104%	75	125	0%	
Cobalt	A	mg/L	0.09213	0.09213		0.1	0.0001342	0	9.541E-05	0.001	1	92%	75	125	0%	
Copper	A	mg/L	0.1006	0.1006		0.1	0	0	0.0008747	0.00198	1	101%	75	125	0%	
Iron	A	mg/L	0.6214	0.6214		0.5	0.1073	0	0.007424	0.00513	5	103%	75	125	0%	
Lanthanum	A	mg/L	0.1051	0.1051		0.1	0	0	0.000055	0.001	0.1	105%	75	125	0%	
Lead	A	mg/L	0.102	0.102		0.1	0	0	7.716E-05	0.001	1	102%	88	115	0%	
Magnesium	A	mg/L	17.69	17.69		5	12.8	0	0.0104254	0.0081522	50	98%	75	125	0%	
Manganese	A	mg/L	0.5557	0.5557		0.5	0.04597	0	0.0005399	0.001	1	102%	75	125	0%	
Molybdenum	A	mg/L	0.1096	0.1096		0.1	0.01816	0	0.0001763	0.001	0.1	91%	75	125	0%	
Nickel	A	mg/L	0.1014	0.1014		0.1	0.0008348	0	0.0002288	0.0024200	1	101%	75	125	0%	
Potassium	A	mg/L	11.77	11.77		5	6.846	0	0.0765619	0.0261205	50	98%	75	125	0%	
Selenium	A	mg/L	0.09912	0.09912		0.1	0	0	0.0001357	0.001	1	99%	75	125	0%	
Silicon	A	mg/L	6.731	6.731		1	5.918	0	0.0422089	0.0053212	0.4		75	125	0%	A
Silver	A	mg/L	0.009607	0.009607		0.01	0	0	4.281E-05	0.001	0.04	96%	75	125	0%	
Sodium	A	mg/L	53.79	53.79		5	50.24	0	0.1019461	0.7330269	50		75	125	0%	A
Strontium	A	mg/L	0.189	0.189		0.1	0.08174	0	0.0002433	0.001	1	107%	75	125	0%	
Tellurium	A	mg/L	338.9	338.9		0	0.02415	0		0.001	0.1	0%	0	0	0%	
Thallium	A	mg/L	0.1063	0.1063		0.1	0	0	0.0001114	0.001	1	106%	75	125	0%	
Thorium	A	mg/L	0.1062	0.1062		0.1	0	0	0.0003796	0.00415	1	106%	75	125	0%	
Tin	A	mg/L	0.1093	0.1093		0.1	0.01649	0	0.0018932	0.0011175	0.1	93%	75	125	0%	
Titanium	A	mg/L	0.08318	0.08318		0.1	0.001084	0	0.0005733	0.001	1	82%	75	125	0%	
Uranium	A	mg/L	0.1031	0.1031		0.1	0	0	1.699E-05	0.0003	1	103%	75	125	0%	
Vanadium	A	mg/L	0.1024	0.1024		0.1	0	0	0.0039127	0.0021085	1	102%	75	125	0%	
Zinc	A	mg/L	0.09875	0.09875		0.1	0.002443	0	0.0011617	0.0065544	1	96%	75	125	0%	
Silica	C	mg/L	14.3989552	14.3989552		0	0	0	0.0902933	0.0113831	5	0%	0	0	0%	
Silicon as SiO2	C	mg/L	14.3989552	14.3989552		2.14	0	0	0.0902933	0.0113831	5	673%	75	125	0%	S

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist				
14986332	B21121613-002	ICPMS-6020-W-	MSD4		12/23/2021 3:21:	1	162405	12/21/2021	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	0.4937	0.4937		0.5	0.004013	0.4835	0.0038747	0.0031975	1	98%	75	125	2%	
Antimony	A	mg/L	0.09258	0.09258		0.1	0	0.0932	0.0002799	0.001	0.1	93%	75	125	1%	
Arsenic	A	mg/L	0.1004	0.1004		0.1	0	0.0999	0.0003412	0.001	1	100%	75	125	0%	
Barium	A	mg/L	0.0979	0.0979		0.1	0.002599	0.09672	0.0002682	0.001	1	95%	75	125	1%	
Beryllium	A	mg/L	0.04699	0.04699		0.05	0	0.04702	0.0001071	0.01	1	94%	75	125	0%	
Boron	A	mg/L	0.1644	0.1644		0.1	0.06472	0.1623	0.0203802	0.01467	1	100%	75	125	1%	
Cadmium	A	mg/L	0.04979	0.04979		0.05	0	0.04948	1.821E-05	0.005	1	100%	75	125	1%	
Calcium	A	mg/L	18.13	18.13		5	13.27	17.81	0.0372936	0.1103481	50	97%	75	125	2%	
Cerium	A	mg/L	0.1035	0.1035		0.1	0	0.1045	2.738E-05	0.001	0.1	103%	75	125	1%	
Chromium	A	mg/L	0.1043	0.1043		0.1	0	0.104	0.0015375	0.0015375	1	104%	75	125	0%	
Cobalt	A	mg/L	0.09158	0.09158		0.1	0.0001342	0.09213	9.541E-05	0.001	1	91%	75	125	1%	
Copper	A	mg/L	0.1024	0.1024		0.1	0	0.1006	0.0008747	0.00198	1	102%	75	125	2%	
Iron	A	mg/L	0.6285	0.6285		0.5	0.1073	0.6214	0.007424	0.00513	5	104%	75	125	1%	
Lanthanum	A	mg/L	0.1059	0.1059		0.1	0	0.1051	0.000055	0.001	0.1	106%	75	125	1%	
Lead	A	mg/L	0.103	0.103		0.1	0	0.102	7.716E-05	0.001	1	103%	88	115	1%	
Magnesium	A	mg/L	17.72	17.72		5	12.8	17.69	0.0104254	0.0081522	50	98%	75	125	0%	
Manganese	A	mg/L	0.564	0.564		0.5	0.04597	0.5557	0.0005399	0.001	1	104%	75	125	1%	
Molybdenum	A	mg/L	0.1111	0.1111		0.1	0.01816	0.1096	0.0001763	0.001	0.1	93%	75	125	1%	
Nickel	A	mg/L	0.1027	0.1027		0.1	0.0008348	0.1014	0.0002288	0.0024200	1	102%	75	125	1%	
Potassium	A	mg/L	11.91	11.91		5	6.846	11.77	0.0765619	0.0261205	50	101%	75	125	1%	
Selenium	A	mg/L	0.1008	0.1008		0.1	0	0.09912	0.0001357	0.001	1	101%	75	125	2%	
Silicon	A	mg/L	6.858	6.858		1	5.918	6.731	0.0422089	0.0053212	0.4		75	125	2%	A
Silver	A	mg/L	0.009728	0.009728		0.01	0	0.009607	4.281E-05	0.001	0.04	97%	75	125	1%	
Sodium	A	mg/L	53.76	53.76		5	50.24	53.79	0.1019461	0.7330269	50		75	125	0%	A
Strontium	A	mg/L	0.1882	0.1882		0.1	0.08174	0.189	0.0002433	0.001	1	106%	75	125	0%	
Tellurium	A	mg/L	332.1	332.1		0	0.02415	338.9		0.001	0.1	0%	0	0	2%	
Thallium	A	mg/L	0.1044	0.1044		0.1	0	0.1063	0.0001114	0.001	1	104%	75	125	2%	
Thorium	A	mg/L	0.1068	0.1068		0.1	0	0.1062	0.0003796	0.00415	1	107%	75	125	1%	
Tin	A	mg/L	0.1091	0.1091		0.1	0.01649	0.1093	0.0018932	0.0011175	0.1	93%	75	125	0%	
Titanium	A	mg/L	0.08317	0.08317		0.1	0.001084	0.08318	0.0005733	0.001	1	82%	75	125	0%	
Uranium	A	mg/L	0.1028	0.1028		0.1	0	0.1031	1.699E-05	0.0003	1	103%	75	125	0%	
Vanadium	A	mg/L	0.1036	0.1036		0.1	0	0.1024	0.0039127	0.0021085	1	104%	75	125	1%	
Zinc	A	mg/L	0.09953	0.09953		0.1	0.002443	0.09875	0.0011617	0.0065544	1	97%	75	125	1%	
Silica	C	mg/L	14.6706336	14.6706336		0	0	14.398955	0.0902933	0.0113831	5	0%	0	0	2%	
Silicon as SiO2	C	mg/L	14.6706336	14.6706336		2.14	0	14.398955	0.0902933	0.0113831	5	686%	75	125	2%	S

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14986333	Rinse	ICPMS-6020-W-	SAMP		12/23/2021 3:27:	1	R372324		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.001518	0.001518		0	0	0	0.0006966	0.001	1	0%	0	0	0%	
Arsenic	A	mg/L	0.00001737	0		0	0	0	0.0001626	0.001	1	0%	0	0	0%	
Beryllium	A	mg/L	0.00006244	0		0	0	0	0.0001137	0.001	1	0%	0	0	0%	
Boron	A	mg/L	0.000652	0		0	0	0	0.0036397	0.01	1	0%	0	0	0%	L
Cadmium	A	mg/L	1.433E-06	0		0	0	0	2.969E-05	0.001	1	0%	0	0	0%	
Calcium	A	mg/L	-0.0007292	0		0	0	0	0.0254163	0.0625	50	0%	0	0	0%	L
Cerium	A	mg/L	1.733E-07	0		0	0	0	8.97E-06	0.001	0.1	0%	0	0	0%	
Chromium	A	mg/L	-3.146E-06	0		0	0	0	0.0002078	0.001	1	0%	0	0	0%	
Cobalt	A	mg/L	0.00001631	0		0	0	0	2.037E-05	0.001	1	0%	0	0	0%	
Copper	A	mg/L	0.00003785	0		0	0	0	0.000121	0.001	1	0%	0	0	0%	
Lanthanum	A	mg/L	2.122E-06	0		0	0	0	1.209E-05	0.001	0.1	0%	0	0	0%	
Lead	A	mg/L	0.00001689	0		0	0	0	3.957E-05	0.001	1	0%	0	0	0%	
Lithium	A	mg/L	-0.0001921	0		0	0	0	0.00122	0.05	2.5	0%	0	0	0%	L
Magnesium	A	mg/L	-0.02106	0		0	0	0	0.0084694	0.025	50	0%	0	0	0%	L
Manganese	A	mg/L	0.00003086	0		0	0	0	5.319E-05	0.001	1	0%	0	0	0%	
Nickel	A	mg/L	-3.135E-05	0		0	0	0	0.0001477	0.001	1	0%	0	0	0%	
Potassium	A	mg/L	-0.005546	0		0	0	0	0.0951865	0.125	50	0%	0	0	0%	L
Selenium	A	mg/L	0.00001557	0		0	0	0	6.961E-05	0.001	1	0%	0	0	0%	
Silver	A	mg/L	1.583E-07	0		0	0	0	1.756E-05	0.001	0.04	0%	0	0	0%	
Sodium	A	mg/L	0.003907	0		0	0	0	0.0321039	0.125	50	0%	0	0	0%	L
Strontium	A	mg/L	-5.998E-05	0		0	0	0	0.0001116	0.001	1	0%	0	0	0%	
Thallium	A	mg/L	0.0002313	0.0002313		0	0	0	4.044E-05	0.001	1	0%	0	0	0%	J
Uranium	A	mg/L	1.993E-06	0		0	0	0	1.948E-05	0.0003	1	0%	0	0	0%	
Zinc	A	mg/L	-0.0001142	0		0	0	0	0.0006119	0.002	1	0%	0	0	0%	L
Barium	B	mg/L	1.036E-06	0		0	0	0	8.917E-05	0.001	1	0%	0	0	0%	
Iron	B	mg/L	0.0003178	0		0	0	0	0.0011177	0.025	5	0%	0	0	0%	L
Iron, Ferrous	B	mg/L	0.0003178	0		0	0	0	0.0011177	0.025	5	0%	0	0	0%	L
Silicon	B	mg/L	0.002083	0		0	0	0	0.0786454	0.2	0.4	0%	0	0	0%	L
Vanadium	B	mg/L	-3.927E-05	0		0	0	0	0.004194	0.01	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
14986334	MB-162444	ICPMS-6020-W-	MBLK		12/23/2021 3:33:	1	162444	12/22/2021	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
14986334	MB-162444	ICPMS-6020-W-	MBLK		12/23/2021 3:33:	1	162444	12/22/2021	0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.001747	0		0	0	0	0.0038747	0.0031975	1	0%	0	0	0%	
Antimony	A	mg/L	0.0000279	0		0	0	0	0.0002799	0.001	0.1	0%	0	0	0%	
Arsenic	A	mg/L	0.0000635	0		0	0	0	0.0003412	0.001	1	0%	0	0	0%	
Barium	A	mg/L	0.00001719	0		0	0	0	0.0002682	0.001	1	0%	0	0	0%	
Beryllium	A	mg/L	0.0000545	0		0	0	0	0.0001071	0.01	1	0%	0	0	0%	
Boron	A	mg/L	0.0009838	0		0	0	0	0.0203802	0.01467	1	0%	0	0	0%	
Cadmium	A	mg/L	8.324E-07	0		0	0	0	1.821E-05	0.005	1	0%	0	0	0%	
Calcium	A	mg/L	0.007568	0		0	0	0	0.0372936	0.1103481	50	0%	0	0	0%	
Cerium	A	mg/L	-1.823E-06	0		0	0	0	2.738E-05	0.001	0.1	0%	0	0	0%	
Chromium	A	mg/L	0.000191	0		0	0	0	0.0015375	0.0015375	1	0%	0	0	0%	
Cobalt	A	mg/L	0.0000319	0		0	0	0	9.541E-05	0.001	1	0%	0	0	0%	
Copper	A	mg/L	0.0001684	0		0	0	0	0.0008747	0.00198	1	0%	0	0	0%	
Iron	A	mg/L	0.0007486	0		0	0	0	0.007424	0.00513	5	0%	0	0	0%	
Lanthanum	A	mg/L	5.346E-07	0		0	0	0	0.000055	0.001	0.1	0%	0	0	0%	
Lead	A	mg/L	0.0000311	0		0	0	0	7.716E-05	0.0005	1	0%	0	0	0%	
Magnesium	A	mg/L	-0.0231	0		0	0	0	0.0104254	0.0081522	50	0%	0	0	0%	
Manganese	A	mg/L	0.00004263	0		0	0	0	0.0005399	0.001	1	0%	0	0	0%	
Molybdenum	A	mg/L	9.397E-06	0		0	0	0	0.0001763	0.001	0.1	0%	0	0	0%	
Nickel	A	mg/L	-0.000015	0		0	0	0	0.0002288	0.0024200	1	0%	0	0	0%	
Potassium	A	mg/L	-0.0003481	0		0	0	0	0.0765619	0.0261205	50	0%	0	0	0%	
Selenium	A	mg/L	0.00001601	0		0	0	0	0.0001357	0.001	1	0%	0	0	0%	
Silicon	A	mg/L	0.01577	0		0	0	0	0.0422089	0.0053212	0.4	0%	0	0	0%	
Silver	A	mg/L	4.501E-07	0		0	0	0	4.281E-05	0.001	0.04	0%	0	0	0%	
Sodium	A	mg/L	0.003792	0		0	0	0	0.1019461	0.7330269	50	0%	0	0	0%	
Strontium	A	mg/L	-2.636E-05	0		0	0	0	0.0002433	0.001	1	0%	0	0	0%	
Tellurium	A	mg/L	0.04789	0.04789		0	0	0		0.001	0.1	0%	0	0	0%	
Thallium	A	mg/L	0.00007172	0		0	0	0	0.0001114	0.001	1	0%	0	0	0%	
Thorium	A	mg/L	0.00004656	0		0	0	0	0.0003796	0.00415	1	0%	0	0	0%	
Tin	A	mg/L	0.0001827	0		0	0	0	0.0018932	0.0011175	0.1	0%	0	0	0%	
Titanium	A	mg/L	0.0002488	0		0	0	0	0.0005733	0.001	1	0%	0	0	0%	
Uranium	A	mg/L	-8.398E-08	0		0	0	0	1.699E-05	0.0003	1	0%	0	0	0%	
Vanadium	A	mg/L	0.0004984	0		0	0	0	0.0039127	0.0021085	1	0%	0	0	0%	
Zinc	A	mg/L	0.0007927	0		0	0	0	0.0011617	0.0065544	1	0%	0	0	0%	
Silica	C	mg/L	0.03373518	0		0	0	0	0.0902933	0.0113831	5	0%	0	0	0%	
Silicon as SiO2	C	mg/L	0.03373518	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
14986335	LCS4-162444	ICPMS-6020-W-	LCS4		12/23/2021 3:40:	1	162444	12/22/2021	0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.4852	0.4852		0.5	0	0	0.0038747	0.0031975	1	97%	80	120	0%	
Antimony	A	mg/L	0.09071	0.09071		0.1	0	0	0.0002799	0.001	0.1	91%	80	120	0%	
Arsenic	A	mg/L	0.09521	0.09521		0.1	0	0	0.0003412	0.001	1	95%	80	120	0%	
Barium	A	mg/L	0.09033	0.09033		0.1	0	0	0.0002682	0.001	1	90%	80	120	0%	
Beryllium	A	mg/L	0.04579	0.04579		0.05	0	0	0.0001071	0.01	1	92%	80	120	0%	
Boron	A	mg/L	0.09453	0.09453		0.1	0	0	0.0203802	0.01467	1	95%	80	120	0%	
Cadmium	A	mg/L	0.04737	0.04737		0.05	0	0	1.821E-05	0.005	1	95%	80	120	0%	
Calcium	A	mg/L	5.361	5.361		5	0	0	0.0372936	0.1103481	50	107%	80	120	0%	
Cerium	A	mg/L	0.1026	0.1026		0.1	0	0	2.738E-05	0.001	0.1	103%	80	120	0%	
Chromium	A	mg/L	0.1011	0.1011		0.1	0	0	0.0015375	0.0015375	1	101%	80	120	0%	
Cobalt	A	mg/L	0.09134	0.09134		0.1	0	0	9.541E-05	0.001	1	91%	80	120	0%	
Copper	A	mg/L	0.1009	0.1009		0.1	0	0	0.0008747	0.00198	1	101%	80	120	0%	
Iron	A	mg/L	0.511	0.511		0.5	0	0	0.007424	0.00513	5	102%	80	120	0%	
Lanthanum	A	mg/L	0.1042	0.1042		0.1	0	0	0.000055	0.001	0.1	104%	80	120	0%	
Lead	A	mg/L	0.09982	0.09982		0.1	0	0	7.716E-05	0.001	1	100%	88	115	0%	
Magnesium	A	mg/L	5.222	5.222		5	0	0	0.0104254	0.0081522	50	104%	80	120	0%	
Manganese	A	mg/L	0.5089	0.5089		0.5	0	0	0.0005399	0.001	1	102%	80	120	0%	
Molybdenum	A	mg/L	0.08793	0.08793		0.1	0	0	0.0001763	0.001	0.1	88%	80	120	0%	
Nickel	A	mg/L	0.09986	0.09986		0.1	0	0	0.0002288	0.0024200	1	100%	80	120	0%	
Potassium	A	mg/L	5.206	5.206		5	0	0	0.0765619	0.0261205	50	104%	80	120	0%	
Selenium	A	mg/L	0.09629	0.09629		0.1	0	0	0.0001357	0.001	1	96%	80	120	0%	
Silicon	A	mg/L	0.9117	0.9117		1	0	0	0.0422089	0.0053212	0.4	91%	80	120	0%	
Silver	A	mg/L	0.009589	0.009589		0.01	0	0	4.281E-05	0.001	0.04	96%	80	120	0%	
Sodium	A	mg/L	5.095	5.095		5	0	0	0.1019461	0.7330269	50	102%	80	120	0%	
Strontium	A	mg/L	0.1011	0.1011		0.1	0	0	0.0002433	0.001	1	101%	80	120	0%	
Tellurium	A	mg/L	335.7	335.7		0	0	0		0.001	0.1	0%	0	0	0%	
Thallium	A	mg/L	0.1013	0.1013		0.1	0	0	0.0001114	0.001	1	101%	80	120	0%	
Thorium	A	mg/L	0.0997	0.0997		0.1	0	0	0.0003796	0.00415	1	100%	80	120	0%	
Tin	A	mg/L	0.09105	0.09105		0.1	0	0	0.0018932	0.0011175	0.1	91%	80	120	0%	
Titanium	A	mg/L	0.07976	0.07976		0.1	0	0	0.0005733	0.001	1	80%	80	120	0%	
Uranium	A	mg/L	0.09896	0.09896		0.1	0	0	1.699E-05	0.0003	1	99%	80	120	0%	
Vanadium	A	mg/L	0.09943	0.09943		0.1	0	0	0.0039127	0.0021085	1	99%	80	120	0%	
Zinc	A	mg/L	0.09449	0.09449		0.1	0	0	0.0011617	0.0065544	1	94%	80	120	0%	
Silica	C	mg/L	1.95030864	1.95030864		0	0	0	0.0902933	0.0113831	5	0%	0	0	0%	
Silicon as SiO2	C	mg/L	1.95030864	1.95030864		2.14	0	0	0.0902933	0.0113831	5	91%	80	120	0%	

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14986336	Rinse	ICPMS-6020-W-	SAMP		12/23/2021 3:45:	1	R372324		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.001524	0.001524		0	0	0	0.0006966	0.001	1	0%	0	0	0%	
Arsenic	A	mg/L	0.00001904	0		0	0	0	0.0001626	0.001	1	0%	0	0	0%	
Beryllium	A	mg/L	0.00004682	0		0	0	0	0.0001137	0.001	1	0%	0	0	0%	
Boron	A	mg/L	0.0001227	0		0	0	0	0.0036397	0.01	1	0%	0	0	0%	L
Cadmium	A	mg/L	2.581E-06	0		0	0	0	2.969E-05	0.001	1	0%	0	0	0%	
Calcium	A	mg/L	-0.0013	0		0	0	0	0.0254163	0.0625	50	0%	0	0	0%	L
Cerium	A	mg/L	1.814E-07	0		0	0	0	8.97E-06	0.001	0.1	0%	0	0	0%	
Chromium	A	mg/L	-1.578E-05	0		0	0	0	0.0002078	0.001	1	0%	0	0	0%	
Cobalt	A	mg/L	0.00001265	0		0	0	0	2.037E-05	0.001	1	0%	0	0	0%	
Copper	A	mg/L	0.00001885	0		0	0	0	0.000121	0.001	1	0%	0	0	0%	
Lanthanum	A	mg/L	1.715E-06	0		0	0	0	1.209E-05	0.001	0.1	0%	0	0	0%	
Lead	A	mg/L	0.00001431	0		0	0	0	3.957E-05	0.001	1	0%	0	0	0%	
Lithium	A	mg/L	-0.000795	0		0	0	0	0.00122	0.05	2.5	0%	0	0	0%	L
Magnesium	A	mg/L	-0.02195	0		0	0	0	0.0084694	0.025	50	0%	0	0	0%	L
Manganese	A	mg/L	0.00002663	0		0	0	0	5.319E-05	0.001	1	0%	0	0	0%	
Nickel	A	mg/L	-3.393E-05	0		0	0	0	0.0001477	0.001	1	0%	0	0	0%	
Potassium	A	mg/L	-0.007214	0		0	0	0	0.0951865	0.125	50	0%	0	0	0%	L
Selenium	A	mg/L	8.238E-06	0		0	0	0	6.961E-05	0.001	1	0%	0	0	0%	
Silver	A	mg/L	5.727E-07	0		0	0	0	1.756E-05	0.001	0.04	0%	0	0	0%	
Sodium	A	mg/L	-0.004629	0		0	0	0	0.0321039	0.125	50	0%	0	0	0%	L
Strontium	A	mg/L	-6.296E-05	0		0	0	0	0.0001116	0.001	1	0%	0	0	0%	
Thallium	A	mg/L	0.0001841	0.0001841		0	0	0	4.044E-05	0.001	1	0%	0	0	0%	J
Uranium	A	mg/L	1.505E-06	0		0	0	0	1.948E-05	0.0003	1	0%	0	0	0%	
Zinc	A	mg/L	-0.0001438	0		0	0	0	0.0006119	0.002	1	0%	0	0	0%	L
Barium	B	mg/L	0.00000313	0		0	0	0	8.917E-05	0.001	1	0%	0	0	0%	
Iron	B	mg/L	0.0001858	0		0	0	0	0.0011177	0.025	5	0%	0	0	0%	L
Iron, Ferrous	B	mg/L	0.0001858	0		0	0	0	0.0011177	0.025	5	0%	0	0	0%	L
Silicon	B	mg/L	0.001084	0		0	0	0	0.0786454	0.2	0.4	0%	0	0	0%	L
Vanadium	B	mg/L	-5.945E-05	0		0	0	0	0.004194	0.01	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
14986337	B21121841-003	ICPMS-6020-W-	SAMP		12/23/2021 3:52:	1	162444	12/22/2021	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
14986337	B21121841-003	ICPMS-6020-W-	SAMP		12/23/2021 3:52:	1	162444	12/22/2021	0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Arsenic	A	mg/L	0.006894	0.006894		0	0	0	0.0003412	0.001	1	0%	0	0	0%	
Barium	A	mg/L	0.003347	0.003347		0	0	0	0.0002682	0.001	1	0%	0	0	0%	
Beryllium	A	mg/L	0.00003948	0		0	0	0	0.0001071	0.01	1	0%	0	0	0%	U
Cadmium	A	mg/L	0.0000104	0		0	0	0	1.821E-05	0.005	1	0%	0	0	0%	U
Cerium	A	mg/L	0.00008108	0.00008108		0	0	0	2.738E-05	0.001	0.1	0%	0	0	0%	J
Cobalt	A	mg/L	0.0002078	0.0002078		0	0	0	9.541E-05	0.001	1	0%	0	0	0%	J
Lanthanum	A	mg/L	0.00003531	0		0	0	0	0.000055	0.001	0.1	0%	0	0	0%	U
Lead	A	mg/L	0.0003138	0.0003138		0	0	0	7.716E-05	0.001	1	0%	0	0	0%	J
Manganese	A	mg/L	0.003751	0.003751		0	0	0	0.0005399	0.001	1	0%	0	0	0%	
Selenium	A	mg/L	0.000814	0.000814		0	0	0	0.0001357	0.001	1	0%	0	0	0%	J
Silver	A	mg/L	0.00007869	0.00007869		0	0	0	4.281E-05	0.001	0.04	0%	0	0	0%	J
Strontium	A	mg/L	0.1072	0.1072		0	0	0	0.0002433	0.001	1	0%	0	0	0%	
Thallium	A	mg/L	0.00005684	0		0	0	0	0.0001114	0.001	1	0%	0	0	0%	U
Uranium	A	mg/L	0.0003596	0.0003596		0	0	0	1.699E-05	0.0003	1	0%	0	0	0%	
Aluminum	B	mg/L	0.06833	0.06833		0	0	0	0.0038747	0.0031975	1	0%	0	0	0%	D
Boron	B	mg/L	0.09737	0.09737		0	0	0	0.0203802	0.01467	1	0%	0	0	0%	D
Calcium	B	mg/L	24.99	24.99		0	0	0	0.0372936	0.1103481	50	0%	0	0	0%	D
Chromium	B	mg/L	0.004861	0.004861		0	0	0	0.0015375	0.0015375	1	0%	0	0	0%	DU
Copper	B	mg/L	0.001697	0.001697		0	0	0	0.0008747	0.00198	1	0%	0	0	0%	JL
Iron	B	mg/L	0.1205	0.1205		0	0	0	0.007424	0.00513	5	0%	0	0	0%	D
Magnesium	B	mg/L	24.1	24.1		0	0	0	0.0104254	0.0081522	50	0%	0	0	0%	D
Nickel	B	mg/L	0.001516	0.001516		0	0	0	0.0002288	0.0024200	1	0%	0	0	0%	JL
Potassium	B	mg/L	2.943	2.943		0	0	0	0.0765619	0.0261205	50	0%	0	0	0%	D
Thorium	B	mg/L	0.0000521	0		0	0	0	0.0003796	0.00415	1	0%	0	0	0%	LU
Vanadium	B	mg/L	0.03832	0.03832		0	0	0	0.0039127	0.0021085	1	0%	0	0	0%	D
Zinc	B	mg/L	0.06073	0.06073		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
14986338	B21121841-004	ICPMS-6020-W-	SAMP		12/23/2021 3:58:	1	162444	12/22/2021	0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Arsenic	A	mg/L	0.0002083	0		0	0	0	0.0003412	0.001	1	0%	0	0	0%	U
Barium	A	mg/L	0.00237	0.00237		0	0	0	0.0002682	0.001	1	0%	0	0	0%	
Beryllium	A	mg/L	0.00002912	0		0	0	0	0.0001071	0.01	1	0%	0	0	0%	U
Cadmium	A	mg/L	3.393E-06	0		0	0	0	1.821E-05	0.005	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
14986338	B21121841-004	ICPMS-6020-W-	SAMP		12/23/2021 3:58:	1	162444	12/22/2021	0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Cerium	A	mg/L	1.687E-06	0		0	0	0	2.738E-05	0.001	0.1	0%	0	0	0%	U
Cobalt	A	mg/L	0.0002215	0.0002215		0	0	0	9.541E-05	0.001	1	0%	0	0	0%	J
Lanthanum	A	mg/L	9.525E-08	0		0	0	0	0.000055	0.001	0.1	0%	0	0	0%	U
Lead	A	mg/L	0.00002048	0		0	0	0	7.716E-05	0.001	1	0%	0	0	0%	U
Manganese	A	mg/L	0.3747	0.3747		0	0	0	0.0005399	0.001	1	0%	0	0	0%	
Selenium	A	mg/L	0.00002064	0		0	0	0	0.0001357	0.001	1	0%	0	0	0%	U
Silver	A	mg/L	2.244E-06	0		0	0	0	4.281E-05	0.001	0.04	0%	0	0	0%	U
Strontium	A	mg/L	0.155	0.155		0	0	0	0.0002433	0.001	1	0%	0	0	0%	
Thallium	A	mg/L	0.00001801	0		0	0	0	0.0001114	0.001	1	0%	0	0	0%	U
Uranium	A	mg/L	5.847E-06	0		0	0	0	1.699E-05	0.0003	1	0%	0	0	0%	U
Aluminum	B	mg/L	0.002116	0		0	0	0	0.0038747	0.0031975	1	0%	0	0	0%	LU
Boron	B	mg/L	0.04096	0.04096		0	0	0	0.0203802	0.01467	1	0%	0	0	0%	DU
Calcium	B	mg/L	18.92	18.92		0	0	0	0.0372936	0.1103481	50	0%	0	0	0%	D
Chromium	B	mg/L	0.0003165	0		0	0	0	0.0015375	0.0015375	1	0%	0	0	0%	LU
Copper	B	mg/L	0.0003294	0		0	0	0	0.0008747	0.00198	1	0%	0	0	0%	LU
Iron	B	mg/L	0.1509	0.1509		0	0	0	0.007424	0.00513	5	0%	0	0	0%	D
Magnesium	B	mg/L	18.49	18.49		0	0	0	0.0104254	0.0081522	50	0%	0	0	0%	D
Nickel	B	mg/L	0.0005937	0.0005937		0	0	0	0.0002288	0.0024200	1	0%	0	0	0%	JL
Potassium	B	mg/L	1.362	1.362		0	0	0	0.0765619	0.0261205	50	0%	0	0	0%	D
Sodium	B	mg/L	40.13	40.13		0	0	0	0.1019461	0.7330269	50	0%	0	0	0%	D
Thorium	B	mg/L	0.00002392	0		0	0	0	0.0003796	0.00415	1	0%	0	0	0%	LU
Vanadium	B	mg/L	0.001269	0		0	0	0	0.0039127	0.0021085	1	0%	0	0	0%	LU
Zinc	B	mg/L	0.0351	0.0351		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
14986339	B21121841-001	ICPMS-6020-W-	SAMP		12/23/2021 4:04:	1	162444	12/22/2021	0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Arsenic	A	mg/L	0.0003129	0		0	0	0	0.0003412	0.001	1	0%	0	0	0%	U
Barium	A	mg/L	0.02683	0.02683		0	0	0	0.0002682	0.001	1	0%	0	0	0%	
Beryllium	A	mg/L	0.00002454	0		0	0	0	0.0001071	0.01	1	0%	0	0	0%	U
Cadmium	A	mg/L	0.00001088	0		0	0	0	1.821E-05	0.005	1	0%	0	0	0%	U
Cerium	A	mg/L	0.0002285	0.0002285		0	0	0	2.738E-05	0.001	0.1	0%	0	0	0%	J
Cobalt	A	mg/L	0.0003324	0.0003324		0	0	0	9.541E-05	0.001	1	0%	0	0	0%	J
Lanthanum	A	mg/L	0.0001019	0.0001019		0	0	0	0.000055	0.001	0.1	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
14986339	B21121841-001	ICPMS-6020-W-	SAMP		12/23/2021 4:04:	1	162444	12/22/2021	0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Lead	A	mg/L	0.002466	0.002466		0	0	0	7.716E-05	0.001	1	0%	0	0	0%	
Manganese	A	mg/L	0.009178	0.009178		0	0	0	0.0005399	0.001	1	0%	0	0	0%	
Selenium	A	mg/L	0.0002034	0.0002034		0	0	0	0.0001357	0.001	1	0%	0	0	0%	J
Silver	A	mg/L	0.0004955	0.0004955		0	0	0	4.281E-05	0.001	0.04	0%	0	0	0%	J
Strontium	A	mg/L	0.08566	0.08566		0	0	0	0.0002433	0.001	1	0%	0	0	0%	
Thallium	A	mg/L	4.618E-06	0		0	0	0	0.0001114	0.001	1	0%	0	0	0%	U
Uranium	A	mg/L	0.000025	0.000025		0	0	0	1.699E-05	0.0003	1	0%	0	0	0%	J
Aluminum	B	mg/L	0.2231	0.2231		0	0	0	0.0038747	0.0031975	1	0%	0	0	0%	D
Boron	B	mg/L	0.05177	0.05177		0	0	0	0.0203802	0.01467	1	0%	0	0	0%	D
Calcium	B	mg/L	13.68	13.68		0	0	0	0.0372936	0.1103481	50	0%	0	0	0%	D
Chromium	B	mg/L	0.01309	0.01309		0	0	0	0.0015375	0.0015375	1	0%	0	0	0%	D
Copper	B	mg/L	0.02366	0.02366		0	0	0	0.0008747	0.00198	1	0%	0	0	0%	D
Iron	B	mg/L	0.7758	0.7758		0	0	0	0.007424	0.00513	5	0%	0	0	0%	D
Magnesium	B	mg/L	11.84	11.84		0	0	0	0.0104254	0.0081522	50	0%	0	0	0%	D
Nickel	B	mg/L	0.004947	0.004947		0	0	0	0.0002288	0.0024200	1	0%	0	0	0%	D
Potassium	B	mg/L	2.452	2.452		0	0	0	0.0765619	0.0261205	50	0%	0	0	0%	D
Sodium	B	mg/L	38.12	38.12		0	0	0	0.1019461	0.7330269	50	0%	0	0	0%	D
Tellurium	B	mg/L	0	0		0	0	0		0.001	0.1	0%	0	0	0%	
Thorium	B	mg/L	0.00003654	0		0	0	0	0.0003796	0.00415	1	0%	0	0	0%	LU
Vanadium	B	mg/L	0.01765	0.01765		0	0	0	0.0039127	0.0021085	1	0%	0	0	0%	D
Zinc	B	mg/L	0.6314	0.6314		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
14986340	CCV	ICPMS-6020-W-	CCV		12/23/2021 4:10:	1	R372324		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.0476	0.0476		0.05	0	0	0.0006966	0.001	1	95%	90	110	0%	
Antimony	A	mg/L	0.04356	0.04356		0.05	0	0	0.0002882	0.001	0.1	87%	90	110	0%	S
Arsenic	A	mg/L	0.048	0.048		0.05	0	0	0.0001626	0.001	1	96%	90	110	0%	
Barium	A	mg/L	0.04842	0.04842		0.05	0	0	8.917E-05	0.001	1	97%	90	110	0%	
Beryllium	A	mg/L	0.04635	0.04635		0.05	0	0	0.0001137	0.001	1	93%	90	110	0%	
Boron	A	mg/L	0.04673	0.04673		0.05	0	0	0.0036397	0.01	1	93%	90	110	0%	
Cadmium	A	mg/L	0.04766	0.04766		0.05	0	0	2.969E-05	0.001	1	95%	90	110	0%	
Calcium	A	mg/L	13.07	13.07		12.5	0	0	0.0254163	0.0625	50	105%	90	110	0%	
Cerium	A	mg/L	0.04921	0.04921		0.05	0	0	8.97E-06	0.001	0.1	98%	90	110	0%	

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14986340	CCV	ICPMS-6020-W-	CCV		12/23/2021 4:10:	1	R372324		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Chromium	A	mg/L	0.04869	0.04869		0.05	0	0	0.0002078	0.001	1	97%	90	110	0%	
Cobalt	A	mg/L	0.04866	0.04866		0.05	0	0	2.037E-05	0.001	1	97%	90	110	0%	
Copper	A	mg/L	0.04833	0.04833		0.05	0	0	0.000121	0.001	1	97%	90	110	0%	
Iron	A	mg/L	1.295	1.295		1.3	0	0	0.0011177	0.025	5	100%	90	110	0%	
Lanthanum	A	mg/L	0.04872	0.04872		0.05	0	0	1.209E-05	0.001	0.1	97%	90	110	0%	
Lead	A	mg/L	0.04766	0.04766		0.05	0	0	3.957E-05	0.001	1	95%	90	110	0%	
Lithium	A	mg/L	0.6357	0.6357		0.625	0	0	0.00122	0.05	2.5	102%	90	110	0%	
Magnesium	A	mg/L	13	13		12.5	0	0	0.0084694	0.025	50	104%	90	110	0%	
Manganese	A	mg/L	0.04839	0.04839		0.05	0	0	5.319E-05	0.001	1	97%	90	110	0%	
Molybdenum	A	mg/L	0.04327	0.04327		0.05	0	0	7.382E-05	0.001	0.1	87%	90	110	0%	S
Nickel	A	mg/L	0.0487	0.0487		0.05	0	0	0.0001477	0.001	1	97%	90	110	0%	
Potassium	A	mg/L	12.83	12.83		12.5	0	0	0.0951865	0.125	50	103%	90	110	0%	
Selenium	A	mg/L	0.0484	0.0484		0.05	0	0	6.961E-05	0.001	1	97%	90	110	0%	
Silicon	A	mg/L	0.2166	0.2166		0.2	0	0	0.0786454	0.2	0.4	108%	90	110	0%	
Silver	A	mg/L	0.0193	0.0193		0.02	0	0	1.756E-05	0.001	0.04	97%	90	110	0%	
Sodium	A	mg/L	12.88	12.88		12.5	0	0	0.0321039	0.125	50	103%	90	110	0%	
Strontium	A	mg/L	0.04933	0.04933		0.05	0	0	0.0001116	0.001	1	99%	90	110	0%	
Tellurium	A	mg/L	0.02367	0.02367		0	0	0	0.0004865	0.001	0.1	0%	0	0	0%	
Thallium	A	mg/L	0.04791	0.04791		0.05	0	0	4.044E-05	0.001	1	96%	90	110	0%	
Tin	A	mg/L	0.04327	0.04327		0.05	0	0	0.0025355	0.01	0.1	87%	90	110	0%	S
Titanium	A	mg/L	0.04371	0.04371		0.05	0	0	0.0001844	0.001	1	87%	90	110	0%	S
Uranium	A	mg/L	0.04885	0.04885		0.05	0	0	1.948E-05	0.0003	1	98%	90	110	0%	
Vanadium	A	mg/L	0.04859	0.04859		0.05	0	0	0.004194	0.01	1	97%	90	110	0%	
Zinc	A	mg/L	0.04849	0.04849		0.05	0	0	0.0006119	0.002	1	97%	90	110	0%	
Iron, Ferrous	C	mg/L	1.295	1.295		0	0	0	0.0011177	0.025	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
14986341	CCB	ICPMS-6020-W-	CCB		12/23/2021 4:16:	1	R372324		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.0000101	0.0000101		0	0	0	0.0006966	0.001	1	0%			0%	
Antimony	A	mg/L	0.00002645	0.00002645		0	0	0	0.0002882	0.001	0.1	0%			0%	
Arsenic	A	mg/L	1.888E-06	1.888E-06		0	0	0	0.0001626	0.001	1	0%			0%	
Barium	A	mg/L	-1.445E-06	-1.445E-06		0	0	0	8.917E-05	0.001	1	0%			0%	
Beryllium	A	mg/L	0.00003766	0.00003766		0	0	0	0.0001137	0.001	1	0%			0%	

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14986341	CCB	ICPMS-6020-W-	CCB		12/23/2021 4:16:	1	R372324		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Boron	A	mg/L	-8.589E-05	-8.589E-05		0	0	0	0.0036397	0.01	1	0%			0%	
Cadmium	A	mg/L	1.428E-06	1.428E-06		0	0	0	2.969E-05	0.001	1	0%			0%	
Calcium	A	mg/L	-0.001686	-0.001686		0	0	0	0.0254163	0.0625	50	0%			0%	
Cerium	A	mg/L	2.14E-07	2.14E-07		0	0	0	8.97E-06	0.001	0.1	0%	0	0	0%	
Chromium	A	mg/L	-1.381E-05	-1.381E-05		0	0	0	0.0002078	0.001	1	0%			0%	
Cobalt	A	mg/L	0.0000012	0.0000012		0	0	0	2.037E-05	0.001	1	0%			0%	
Copper	A	mg/L	0.00001988	0.00001988		0	0	0	0.000121	0.001	1	0%			0%	
Iron	A	mg/L	0.0001032	0.0001032		0	0	0	0.0011177	0.025	5	0%			0%	
Lanthanum	A	mg/L	8.778E-07	8.778E-07		0	0	0	1.209E-05	0.001	0.1	0%	0	0	0%	
Lead	A	mg/L	6.879E-06	6.879E-06		0	0	0	3.957E-05	0.001	1	0%			0%	
Lithium	A	mg/L	-0.0005961	-0.0005961		0	0	0	0.00122	0.05	2.5	0%			0%	
Magnesium	A	mg/L	-0.02185	-0.02185		0	0	0	0.0084694	0.025	50	0%			0%	
Manganese	A	mg/L	0.00002888	0.00002888		0	0	0	5.319E-05	0.001	1	0%			0%	
Molybdenum	A	mg/L	0.00001372	0.00001372		0	0	0	7.382E-05	0.001	0.1	0%			0%	
Nickel	A	mg/L	-2.275E-05	-2.275E-05		0	0	0	0.0001477	0.001	1	0%			0%	
Potassium	A	mg/L	-0.00458	-0.00458		0	0	0	0.0951865	0.125	50	0%			0%	
Selenium	A	mg/L	6.985E-06	6.985E-06		0	0	0	6.961E-05	0.001	1	0%			0%	
Silicon	A	mg/L	0.01725	0.01725		0	0	0	0.0786454	0.2	0.4	0%	0	0	0%	
Silver	A	mg/L	-5.695E-07	-5.695E-07		0	0	0	1.756E-05	0.001	0.04	0%			0%	
Sodium	A	mg/L	-0.001111	-0.001111		0	0	0	0.0321039	0.125	50	0%			0%	
Strontium	A	mg/L	-6.582E-05	-6.582E-05		0	0	0	0.0001116	0.001	1	0%	0	0	0%	
Tellurium	A	mg/L	0	0		0	0	0	0.0004865	0.001	0.1	0%	0	0	0%	
Thallium	A	mg/L	0.00008554	0.00008554		0	0	0	4.044E-05	0.001	1	0%	0	0	0%	
Tin	A	mg/L	8.989E-06	8.989E-06		0	0	0	0.0025355	0.01	0.1	0%	0	0	0%	
Titanium	A	mg/L	-7.963E-06	-7.963E-06		0	0	0	0.0001844	0.001	1	0%	0	0	0%	
Uranium	A	mg/L	2.332E-07	2.332E-07		0	0	0	1.948E-05	0.0003	1	0%	0	0	0%	
Vanadium	A	mg/L	0.00004398	0.00004398		0	0	0	0.004194	0.01	1	0%	0	0	0%	
Zinc	A	mg/L	-8.895E-05	-8.895E-05		0	0	0	0.0006119	0.002	1	0%	0	0	0%	
Iron, Ferrous	C	mg/L	0.0001032	0.0001032		0	0	0	0.0011177	0.025	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
14986342	B21121841-001	ICPMS-6020-W-	SD		12/23/2021 4:22:	5	162444	12/22/2021	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
14986342	B21121841-001	ICPMS-6020-W-	SD		12/23/2021 4:22:	5	162444	12/22/2021	0	1E+07	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.04498	0.2249		0	0	0.2231	0.0193736	0.0159875	1	0%	0	0	1%	
Antimony	A	mg/L	0.0006851	0.0034255		0	0	0.003479	0.0013997	0.0049	0.1	0%	0	0		N
Arsenic	A	mg/L	0.00007026	0		0	0	0	0.0017061	0.0013383	1	0%	0	0		
Barium	A	mg/L	0.005181	0.025905		0	0	0.02683	0.0013411	0.0012039	1	0%	0	0	4%	
Beryllium	A	mg/L	0.00002388	0		0	0	0	0.0005353	0.01	1	0%	0	0		
Boron	A	mg/L	0.01005	0		0	0	0.05177	0.1019008	0.07335	1	0%	0	0		
Cadmium	A	mg/L	4.442E-06	0		0	0	0	9.105E-05	0.005	1	0%	0	0		
Calcium	A	mg/L	2.801	14.005		0	0	13.68	0.1864681	0.5517403	50	0%	0	0	2%	
Cerium	A	mg/L	0.00004109	0.00020545		0	0	0.0002285	0.0001369	0.001	0.1	0%	0	0		N
Chromium	A	mg/L	0.002634	0.01317		0	0	0.01309	0.0076875	0.0076875	1	0%	0	0		N
Cobalt	A	mg/L	0.00006635	0		0	0	0.0003324	0.0004771	0.001	1	0%	0	0		
Copper	A	mg/L	0.004931	0.024655		0	0	0.02366	0.0043735	0.0099	1	0%	0	0		N
Iron	A	mg/L	0.1597	0.7985		0	0	0.7758	0.0371198	0.02565	5	0%	0	0	3%	
Lanthanum	A	mg/L	0.00002058	0		0	0	0.0001019	0.000275	0.001	0.1	0%	0	0		
Lead	A	mg/L	0.0004873	0.0024365		0	0	0.002466	0.0003858	0.001	1	0%	0	0		N
Magnesium	A	mg/L	2.417	12.085		0	0	11.84	0.0521269	0.0407608	50	0%	0	0	2%	
Manganese	A	mg/L	0.00185	0.00925		0	0	0.009178	0.0026994	0.0010695	1	0%	0	0		N
Molybdenum	A	mg/L	0.0002197	0.0010985		0	0	0.001067	0.0008814	0.001	0.1	0%	0	0		N
Nickel	A	mg/L	0.000955	0.004775		0	0	0.004947	0.0011441	0.0121000	1	0%	0	0		N
Potassium	A	mg/L	0.4945	2.4725		0	0	2.452	0.3828097	0.1306027	50	0%	0	0		N
Selenium	A	mg/L	0.00004194	0		0	0	0.0002034	0.0006787	0.0029274	1	0%	0	0		
Silicon	A	mg/L	4.077	20.385		0	0	20.05	0.2110446	0.026606	0.4	0%	0	0	2%	
Silver	A	mg/L	0.0000996	0.000498		0	0	0.0004955	0.0002141	0.001	0.04	0%	0	0		N
Sodium	A	mg/L	7.848	39.24		0	0	38.12	0.5097304	3.6651346	50	0%	0	0	3%	
Strontium	A	mg/L	0.01681	0.08405		0	0	0.08566	0.0012164	0.001	1	0%	0	0	2%	
Tellurium	A	mg/L	0	0		0	0	0		0.001	0.1	0%	0	0		
Thallium	A	mg/L	-8.865E-06	0		0	0	0	0.0005569	0.001	1	0%	0	0		
Thorium	A	mg/L	0.00001324	0		0	0	0	0.0018981	0.02075	1	0%	0	0		
Tin	A	mg/L	0.0003982	0		0	0	0.002205	0.0094659	0.0055874	0.1	0%	0	0		
Titanium	A	mg/L	0.0028	0.014		0	0	0.01384	0.0028666	0.001	1	0%	0	0		N
Uranium	A	mg/L	0.0000039	0		0	0	0.000025	8.495E-05	0.0004224	1	0%	0	0		
Vanadium	A	mg/L	0.003563	0		0	0	0.01765	0.0195637	0.0105423	1	0%	0	0		
Zinc	A	mg/L	0.1299	0.6495		0	0	0.6314	0.0058087	0.0327721	1	0%	0	0	3%	
Silica	C	mg/L	8.7215184	43.607592		0	0	0	0.4514666	0.0569155	5	0%	0	0		N
Silicon as SiO2	C	mg/L	8.7215184	43.607592		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
14986343	B21121841-001	ICPMS-6020-W- PDS1			12/23/2021 4:28:	1.03	162444	12/22/2021	1E+07	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.259	0.26677		0.0515	0.2231	0	0.003991	0.0032934	1		75	125	0%	A
Antimony	A	mg/L	0.04562	0.0469886		0.0515	0.003479	0	0.0002883	0.0010094	0.1	84%	75	125	0%	
Arsenic	A	mg/L	0.04757	0.0489971		0.0515	0	0	0.0003514	0.001	1	95%	75	125	0%	
Barium	A	mg/L	0.07523	0.0774869		0.0515	0.02683	0	0.0002763	0.001	1	98%	75	125	0%	
Beryllium	A	mg/L	0.04258	0.0438574		0.0515	0	0	0.0001103	0.01	1	85%	75	125	0%	
Boron	A	mg/L	0.09625	0.0991375		0.0515	0.05177	0	0.0209916	0.0151101	1	92%	75	125	0%	
Cadmium	A	mg/L	0.0458	0.047174		0.0515	0	0	1.876E-05	0.005	1	92%	75	125	0%	
Calcium	A	mg/L	60.66	62.4798		51.5	13.68	0	0.0384124	0.1136585	50	95%	75	125	0%	
Cerium	A	mg/L	0.04717	0.0485851		0.0515	0.0002285	0	2.820E-05	0.001	0.1	94%	75	125	0%	
Chromium	A	mg/L	0.0601	0.061903		0.0515	0.01309	0	0.0015836	0.0015836	1	95%	75	125	0%	
Cobalt	A	mg/L	0.04314	0.0444342		0.0515	0.0003324	0	9.827E-05	0.001	1	86%	75	125	0%	
Copper	A	mg/L	0.06933	0.0714099		0.0515	0.02366	0	0.0009009	0.0020394	1	93%	75	125	0%	
Iron	A	mg/L	5.512	5.67736		5.15	0.7758	0	0.0076467	0.0052839	5	95%	75	125	0%	
Lanthanum	A	mg/L	0.04744	0.0488632		0.0515	0.0001019	0	5.665E-05	0.001	0.1	95%	75	125	0%	
Lead	A	mg/L	0.05001	0.0515103		0.0515	0.002466	0	7.947E-05	0.001	1	95%	80	120	0%	
Magnesium	A	mg/L	58.79	60.5537		51.5	11.84	0	0.0107381	0.0083967	50	95%	75	125	0%	
Manganese	A	mg/L	0.05607	0.0577521		0.0515	0.009178	0	0.0005561	0.001	1	94%	75	125	0%	
Molybdenum	A	mg/L	0.04648	0.0478744		0.0515	0.001067	0	0.0001816	0.001	0.1	91%	75	125	0%	
Nickel	A	mg/L	0.05103	0.0525609		0.0515	0.004947	0	0.0002357	0.0024926	1	92%	75	125	0%	
Potassium	A	mg/L	50.12	51.6236		51.5	2.452	0	0.0788588	0.0269042	50	95%	75	125	0%	
Selenium	A	mg/L	0.04746	0.0488838		0.0515	0.0002034	0	0.0001398	0.001	1	95%	75	125	0%	
Silicon	A	mg/L	19.78	20.3734		0.206	20.05	0	0.0434752	0.0054808	0.4		0	0	0%	A
Silver	A	mg/L	0.02003	0.0206309		0.0206	0.0004955	0	4.409E-05	0.001	0.04	98%	75	125	0%	
Sodium	A	mg/L	82.66	85.1398		51.5	38.12	0	0.1050045	0.7550177	50	91%	75	125	0%	
Strontium	A	mg/L	0.1315	0.135445		0.0515	0.08566	0	0.0002506	0.001	1	97%	75	125	0%	
Tellurium	A	mg/L	0.1024	0.105472		0	0	0		0.001	0.1	0%	0	0	0%	
Thallium	A	mg/L	0.04818	0.0496254		0.0515	0	0	0.0001147	0.001	1	96%	75	125	0%	
Thorium	A	mg/L	0.05054	0.0520562		0.0515	0	0	0.000391	0.0042745	1	101%	75	125	0%	
Tin	A	mg/L	0.04678	0.0481834		0.0515	0.002205	0	0.00195	0.001151	0.1	89%	75	125	0%	
Titanium	A	mg/L	0.0559	0.057577		0.0515	0.01384	0	0.0005905	0.001	1	85%	75	125	0%	
Uranium	A	mg/L	0.04924	0.0507172		0.0515	0.000025	0	1.75E-05	0.0003	1	98%	75	125	0%	
Vanadium	A	mg/L	0.06465	0.0665895		0.0515	0.01765	0	0.0040301	0.0021717	1	95%	75	125	0%	
Zinc	A	mg/L	0.6443	0.663629		0.0515	0.6314	0	0.0011966	0.0067511	1		75	125	0%	A
Silica	C	mg/L	42.313376	43.5827773		0	0	0	0.0930021	0.0117246	5	0%	0	0	0%	
Silicon as SiO2	C	mg/L	42.313376	43.5827773		0.0515	0	0	0.0930021	0.0117246	5	84627%	75	125	0%	S

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14986344	B21121841-001	ICPMS-6020-W-	MS4		12/23/2021 4:34:	1	162444	12/22/2021	1E+07	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.6771	0.6771		0.5	0.2231	0	0.0038747	0.0031975	1	91%	75	125	0%	
Antimony	A	mg/L	0.09344	0.09344		0.1	0.003479	0	0.0002799	0.001	0.1	90%	75	125	0%	
Arsenic	A	mg/L	0.09894	0.09894		0.1	0	0	0.0003412	0.001	1	99%	75	125	0%	
Barium	A	mg/L	0.1199	0.1199		0.1	0.02683	0	0.0002682	0.001	1	93%	75	125	0%	
Beryllium	A	mg/L	0.04541	0.04541		0.05	0	0	0.0001071	0.01	1	91%	75	125	0%	
Boron	A	mg/L	0.1451	0.1451		0.1	0.05177	0	0.0203802	0.01467	1	93%	75	125	0%	
Cadmium	A	mg/L	0.04902	0.04902		0.05	0	0	1.821E-05	0.005	1	98%	75	125	0%	
Calcium	A	mg/L	18.49	18.49		5	13.68	0	0.0372936	0.1103481	50	96%	75	125	0%	
Cerium	A	mg/L	0.1052	0.1052		0.1	0.0002285	0	2.738E-05	0.001	0.1	105%	75	125	0%	
Chromium	A	mg/L	0.1119	0.1119		0.1	0.01309	0	0.0015375	0.0015375	1	99%	75	125	0%	
Cobalt	A	mg/L	0.09094	0.09094		0.1	0.0003324	0	9.541E-05	0.001	1	91%	75	125	0%	
Copper	A	mg/L	0.114	0.114		0.1	0.02366	0	0.0008747	0.00198	1	90%	75	125	0%	
Iron	A	mg/L	1.157	1.157		0.5	0.7758	0	0.007424	0.00513	5	76%	75	125	0%	
Lanthanum	A	mg/L	0.1068	0.1068		0.1	0.0001019	0	0.000055	0.001	0.1	107%	75	125	0%	
Lead	A	mg/L	0.103	0.103		0.1	0.002466	0	7.716E-05	0.001	1	101%	88	115	0%	
Magnesium	A	mg/L	16.59	16.59		5	11.84	0	0.0104254	0.0081522	50	95%	75	125	0%	
Manganese	A	mg/L	0.5217	0.5217		0.5	0.009178	0	0.0005399	0.001	1	103%	75	125	0%	
Molybdenum	A	mg/L	0.09029	0.09029		0.1	0.001067	0	0.0001763	0.001	0.1	89%	75	125	0%	
Nickel	A	mg/L	0.1046	0.1046		0.1	0.004947	0	0.0002288	0.0024200	1	100%	75	125	0%	
Potassium	A	mg/L	7.757	7.757		5	2.452	0	0.0765619	0.0261205	50	106%	75	125	0%	
Selenium	A	mg/L	0.09841	0.09841		0.1	0.0002034	0	0.0001357	0.001	1	98%	75	125	0%	
Silicon	A	mg/L	13.56	13.56		1	20.05	0	0.0422089	0.0053212	0.4		75	125	0%	A
Silver	A	mg/L	0.009801	0.009801		0.01	0.0004955	0	4.281E-05	0.001	0.04	93%	75	125	0%	
Sodium	A	mg/L	42.07	42.07		5	38.12	0	0.1019461	0.7330269	50		75	125	0%	A
Strontium	A	mg/L	0.187	0.187		0.1	0.08566	0	0.0002433	0.001	1	101%	75	125	0%	
Tellurium	A	mg/L	345.5	345.5		0	0	0		0.001	0.1	0%	0	0	0%	
Thallium	A	mg/L	0.1028	0.1028		0.1	0	0	0.0001114	0.001	1	103%	75	125	0%	
Thorium	A	mg/L	0.1041	0.1041		0.1	0	0	0.0003796	0.00415	1	104%	75	125	0%	
Tin	A	mg/L	0.09301	0.09301		0.1	0.002205	0	0.0018932	0.0011175	0.1	91%	75	125	0%	
Titanium	A	mg/L	0.09155	0.09155		0.1	0.01384	0	0.0005733	0.001	1	78%	75	125	0%	
Uranium	A	mg/L	0.1024	0.1024		0.1	0.000025	0	1.699E-05	0.0003	1	102%	75	125	0%	
Vanadium	A	mg/L	0.1172	0.1172		0.1	0.01765	0	0.0039127	0.0021085	1	100%	75	125	0%	
Zinc	A	mg/L	0.7099	0.7099		0.1	0.6314	0	0.0011617	0.0065544	1		75	125	0%	A
Silica	C	mg/L	29.007552	29.007552		0	0	0	0.0902933	0.0113831	5	0%	0	0	0%	
Silicon as SiO2	C	mg/L	29.007552	29.007552		2.14	0	0	0.0902933	0.0113831	5	1355%	75	125	0%	S

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14986345	B21121841-001	ICPMS-6020-W- MSD4			12/23/2021 4:40:	1	162444	12/22/2021	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	0.6677	0.6677		0.5	0.2231	0.6771	0.0038747	0.0031975	1	89%	75	125	1%	
Antimony	A	mg/L	0.09365	0.09365		0.1	0.003479	0.09344	0.0002799	0.001	0.1	90%	75	125	0%	
Arsenic	A	mg/L	0.09919	0.09919		0.1	0	0.09894	0.0003412	0.001	1	99%	75	125	0%	
Barium	A	mg/L	0.1201	0.1201		0.1	0.02683	0.1199	0.0002682	0.001	1	93%	75	125	0%	
Beryllium	A	mg/L	0.04569	0.04569		0.05	0	0.04541	0.0001071	0.01	1	91%	75	125	1%	
Boron	A	mg/L	0.1457	0.1457		0.1	0.05177	0.1451	0.0203802	0.01467	1	94%	75	125	0%	
Cadmium	A	mg/L	0.04945	0.04945		0.05	0	0.04902	1.821E-05	0.005	1	99%	75	125	1%	
Calcium	A	mg/L	18.56	18.56		5	13.68	18.49	0.0372936	0.1103481	50	98%	75	125	0%	
Cerium	A	mg/L	0.1039	0.1039		0.1	0.0002285	0.1052	2.738E-05	0.001	0.1	104%	75	125	1%	
Chromium	A	mg/L	0.1087	0.1087		0.1	0.01309	0.1119	0.0015375	0.0015375	1	96%	75	125	3%	
Cobalt	A	mg/L	0.09059	0.09059		0.1	0.0003324	0.09094	9.541E-05	0.001	1	90%	75	125	0%	
Copper	A	mg/L	0.1133	0.1133		0.1	0.02366	0.114	0.0008747	0.00198	1	90%	75	125	1%	
Iron	A	mg/L	1.142	1.142		0.5	0.7758	1.157	0.007424	0.00513	5	73%	75	125	1%	S
Lanthanum	A	mg/L	0.105	0.105		0.1	0.0001019	0.1068	0.000055	0.001	0.1	105%	75	125	2%	
Lead	A	mg/L	0.1015	0.1015		0.1	0.002466	0.103	7.716E-05	0.001	1	99%	88	115	1%	
Magnesium	A	mg/L	16.57	16.57		5	11.84	16.59	0.0104254	0.0081522	50	95%	75	125	0%	
Manganese	A	mg/L	0.5061	0.5061		0.5	0.009178	0.5217	0.0005399	0.001	1	99%	75	125	3%	
Molybdenum	A	mg/L	0.09048	0.09048		0.1	0.001067	0.09029	0.0001763	0.001	0.1	89%	75	125	0%	
Nickel	A	mg/L	0.1035	0.1035		0.1	0.004947	0.1046	0.0002288	0.0024200	1	99%	75	125	1%	
Potassium	A	mg/L	7.626	7.626		5	2.452	7.757	0.0765619	0.0261205	50	103%	75	125	2%	
Selenium	A	mg/L	0.09933	0.09933		0.1	0.0002034	0.09841	0.0001357	0.001	1	99%	75	125	1%	
Silicon	A	mg/L	17.01	17.01		1	20.05	13.56	0.0422089	0.0053212	0.4		75	125	23%	AR
Silver	A	mg/L	0.009867	0.009867		0.01	0.0004955	0.009801	4.281E-05	0.001	0.04	94%	75	125	1%	
Sodium	A	mg/L	42.2	42.2		5	38.12	42.07	0.1019461	0.7330269	50		75	125	0%	A
Strontium	A	mg/L	0.1898	0.1898		0.1	0.08566	0.187	0.0002433	0.001	1	104%	75	125	1%	
Tellurium	A	mg/L	334.3	334.3		0	0	345.5		0.001	0.1	0%	0	0	3%	
Thallium	A	mg/L	0.1006	0.1006		0.1	0	0.1028	0.0001114	0.001	1	101%	75	125	2%	
Thorium	A	mg/L	0.1036	0.1036		0.1	0	0.1041	0.0003796	0.00415	1	104%	75	125	0%	
Tin	A	mg/L	0.09284	0.09284		0.1	0.002205	0.09301	0.0018932	0.0011175	0.1	91%	75	125	0%	
Titanium	A	mg/L	0.09102	0.09102		0.1	0.01384	0.09155	0.0005733	0.001	1	77%	75	125	1%	
Uranium	A	mg/L	0.1015	0.1015		0.1	0.000025	0.1024	1.699E-05	0.0003	1	101%	75	125	1%	
Vanadium	A	mg/L	0.1158	0.1158		0.1	0.01765	0.1172	0.0039127	0.0021085	1	98%	75	125	1%	
Zinc	A	mg/L	0.7182	0.7182		0.1	0.6314	0.7099	0.0011617	0.0065544	1		75	125	1%	A
Silica	C	mg/L	36.387792	36.387792		0	0	29.007552	0.0902933	0.0113831	5	0%	0	0	23%	
Silicon as SiO2	C	mg/L	36.387792	36.387792		2.14	0	29.007552	0.0902933	0.0113831	5	1700%	75	125	23%	SR

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14986346	Rinse	ICPMS-6020-W-	SAMP		12/23/2021 4:46:	1	R372324		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.001556	0.001556		0	0	0	0.0006966	0.001	1	0%	0	0	0%	
Arsenic	A	mg/L	0.00001355	0		0	0	0	0.0001626	0.001	1	0%	0	0	0%	
Beryllium	A	mg/L	0.00005781	0		0	0	0	0.0001137	0.001	1	0%	0	0	0%	
Boron	A	mg/L	0.0004577	0		0	0	0	0.0036397	0.01	1	0%	0	0	0%	L
Cadmium	A	mg/L	0.00000509	0		0	0	0	2.969E-05	0.001	1	0%	0	0	0%	
Calcium	A	mg/L	-0.0004742	0		0	0	0	0.0254163	0.0625	50	0%	0	0	0%	L
Cerium	A	mg/L	3.752E-07	0		0	0	0	8.97E-06	0.001	0.1	0%	0	0	0%	
Chromium	A	mg/L	-0.0000147	0		0	0	0	0.0002078	0.001	1	0%	0	0	0%	
Cobalt	A	mg/L	0.00001198	0		0	0	0	2.037E-05	0.001	1	0%	0	0	0%	
Copper	A	mg/L	0.00002163	0		0	0	0	0.000121	0.001	1	0%	0	0	0%	
Lanthanum	A	mg/L	0.00000221	0		0	0	0	1.209E-05	0.001	0.1	0%	0	0	0%	
Lead	A	mg/L	0.00001203	0		0	0	0	3.957E-05	0.001	1	0%	0	0	0%	
Lithium	A	mg/L	-0.0004059	0		0	0	0	0.00122	0.05	2.5	0%	0	0	0%	L
Magnesium	A	mg/L	-0.02012	0		0	0	0	0.0084694	0.025	50	0%	0	0	0%	L
Manganese	A	mg/L	0.00003662	0		0	0	0	5.319E-05	0.001	1	0%	0	0	0%	
Nickel	A	mg/L	-2.878E-05	0		0	0	0	0.0001477	0.001	1	0%	0	0	0%	
Potassium	A	mg/L	-0.009766	0		0	0	0	0.0951865	0.125	50	0%	0	0	0%	L
Selenium	A	mg/L	0.00001387	0		0	0	0	6.961E-05	0.001	1	0%	0	0	0%	
Silver	A	mg/L	7.052E-07	0		0	0	0	1.756E-05	0.001	0.04	0%	0	0	0%	
Sodium	A	mg/L	0.001675	0		0	0	0	0.0321039	0.125	50	0%	0	0	0%	L
Strontium	A	mg/L	-5.553E-05	0		0	0	0	0.0001116	0.001	1	0%	0	0	0%	
Tellurium	A	mg/L	0.04601	0.04601		0	0	0	0.0004865	0.001	0.1	0%	0	0	0%	
Thallium	A	mg/L	0.0006472	0.0006472		0	0	0	4.044E-05	0.001	1	0%	0	0	0%	J
Uranium	A	mg/L	2.994E-06	0		0	0	0	1.948E-05	0.0003	1	0%	0	0	0%	
Zinc	A	mg/L	-0.0001373	0		0	0	0	0.0006119	0.002	1	0%	0	0	0%	L
Barium	B	mg/L	-3.218E-06	0		0	0	0	8.917E-05	0.001	1	0%	0	0	0%	
Iron	B	mg/L	0.0001866	0		0	0	0	0.0011177	0.025	5	0%	0	0	0%	L
Iron, Ferrous	B	mg/L	0.0001866	0		0	0	0	0.0011177	0.025	5	0%	0	0	0%	L
Silicon	B	mg/L	0.04098	0		0	0	0	0.0786454	0.2	0.4	0%	0	0	0%	L
Vanadium	B	mg/L	0.00003776	0		0	0	0	0.004194	0.01	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
14986347	CCV	ICPMS-6020-W-	CCV		12/23/2021 4:52:	1	R372324		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				
14986347	CCV	ICPMS-6020-W-	CCV		12/23/2021 4:52:	1	R372324		0	0					

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.04757	0.04757		0.05	0	0	0.0006966	0.001	1	95%	90	110	0%	
Antimony	A	mg/L	0.04338	0.04338		0.05	0	0	0.0002882	0.001	0.1	87%	90	110	0%	S
Arsenic	A	mg/L	0.04865	0.04865		0.05	0	0	0.0001626	0.001	1	97%	90	110	0%	
Barium	A	mg/L	0.04746	0.04746		0.05	0	0	8.917E-05	0.001	1	95%	90	110	0%	
Beryllium	A	mg/L	0.04613	0.04613		0.05	0	0	0.0001137	0.001	1	92%	90	110	0%	
Boron	A	mg/L	0.04663	0.04663		0.05	0	0	0.0036397	0.01	1	93%	90	110	0%	
Cadmium	A	mg/L	0.0487	0.0487		0.05	0	0	2.969E-05	0.001	1	97%	90	110	0%	
Calcium	A	mg/L	13.05	13.05		12.5	0	0	0.0254163	0.0625	50	104%	90	110	0%	
Cerium	A	mg/L	0.04901	0.04901		0.05	0	0	8.97E-06	0.001	0.1	98%	90	110	0%	
Chromium	A	mg/L	0.04897	0.04897		0.05	0	0	0.0002078	0.001	1	98%	90	110	0%	
Cobalt	A	mg/L	0.04844	0.04844		0.05	0	0	2.037E-05	0.001	1	97%	90	110	0%	
Copper	A	mg/L	0.04835	0.04835		0.05	0	0	0.000121	0.001	1	97%	90	110	0%	
Iron	A	mg/L	1.301	1.301		1.3	0	0	0.0011177	0.025	5	100%	90	110	0%	
Lanthanum	A	mg/L	0.04857	0.04857		0.05	0	0	1.209E-05	0.001	0.1	97%	90	110	0%	
Lead	A	mg/L	0.04773	0.04773		0.05	0	0	3.957E-05	0.001	1	95%	90	110	0%	
Lithium	A	mg/L	0.6351	0.6351		0.625	0	0	0.00122	0.05	2.5	102%	90	110	0%	
Magnesium	A	mg/L	13.03	13.03		12.5	0	0	0.0084694	0.025	50	104%	90	110	0%	
Manganese	A	mg/L	0.04874	0.04874		0.05	0	0	5.319E-05	0.001	1	97%	90	110	0%	
Molybdenum	A	mg/L	0.04283	0.04283		0.05	0	0	7.382E-05	0.001	0.1	86%	90	110	0%	S
Nickel	A	mg/L	0.04868	0.04868		0.05	0	0	0.0001477	0.001	1	97%	90	110	0%	
Potassium	A	mg/L	12.95	12.95		12.5	0	0	0.0951865	0.125	50	104%	90	110	0%	
Selenium	A	mg/L	0.04897	0.04897		0.05	0	0	6.961E-05	0.001	1	98%	90	110	0%	
Silicon	A	mg/L	0.2122	0.2122		0.2	0	0	0.0786454	0.2	0.4	106%	90	110	0%	
Silver	A	mg/L	0.01968	0.01968		0.02	0	0	1.756E-05	0.001	0.04	98%	90	110	0%	
Sodium	A	mg/L	12.94	12.94		12.5	0	0	0.0321039	0.125	50	104%	90	110	0%	
Strontium	A	mg/L	0.04966	0.04966		0.05	0	0	0.0001116	0.001	1	99%	90	110	0%	
Tellurium	A	mg/L	0.142	0.142		0	0	0	0.0004865	0.001	0.1	0%	0	0	0%	
Thallium	A	mg/L	0.04696	0.04696		0.05	0	0	4.044E-05	0.001	1	94%	90	110	0%	
Tin	A	mg/L	0.04323	0.04323		0.05	0	0	0.0025355	0.01	0.1	86%	90	110	0%	S
Titanium	A	mg/L	0.04341	0.04341		0.05	0	0	0.0001844	0.001	1	87%	90	110	0%	S
Uranium	A	mg/L	0.04816	0.04816		0.05	0	0	1.948E-05	0.0003	1	96%	90	110	0%	
Vanadium	A	mg/L	0.04845	0.04845		0.05	0	0	0.004194	0.01	1	97%	90	110	0%	
Zinc	A	mg/L	0.04919	0.04919		0.05	0	0	0.0006119	0.002	1	98%	90	110	0%	
Iron, Ferrous	C	mg/L	1.301	1.301		0	0	0	0.0011177	0.025	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			
14986348	CCB	ICPMS-6020-W-	CCB		12/23/2021 4:58:	1	R372324		0	0				

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	2.966E-06	2.966E-06		0	0	0	0.0006966	0.001	1	0%			0%	
Antimony	A	mg/L	0.00003897	0.00003897		0	0	0	0.0002882	0.001	0.1	0%			0%	
Arsenic	A	mg/L	6.449E-06	6.449E-06		0	0	0	0.0001626	0.001	1	0%			0%	
Barium	A	mg/L	8.593E-06	8.593E-06		0	0	0	8.917E-05	0.001	1	0%			0%	
Beryllium	A	mg/L	0.00005868	0.00005868		0	0	0	0.0001137	0.001	1	0%			0%	
Boron	A	mg/L	0.00006395	0.00006395		0	0	0	0.0036397	0.01	1	0%			0%	
Cadmium	A	mg/L	2.779E-06	2.779E-06		0	0	0	2.969E-05	0.001	1	0%			0%	
Calcium	A	mg/L	-0.001431	-0.001431		0	0	0	0.0254163	0.0625	50	0%			0%	
Cerium	A	mg/L	8.596E-07	8.596E-07		0	0	0	8.97E-06	0.001	0.1	0%	0	0	0%	
Chromium	A	mg/L	-4.354E-06	-4.354E-06		0	0	0	0.0002078	0.001	1	0%			0%	
Cobalt	A	mg/L	8.338E-06	8.338E-06		0	0	0	2.037E-05	0.001	1	0%			0%	
Copper	A	mg/L	8.502E-06	8.502E-06		0	0	0	0.000121	0.001	1	0%			0%	
Iron	A	mg/L	0.0001191	0.0001191		0	0	0	0.0011177	0.025	5	0%			0%	
Lanthanum	A	mg/L	0.00000106	0.00000106		0	0	0	1.209E-05	0.001	0.1	0%	0	0	0%	
Lead	A	mg/L	0.00000776	0.00000776		0	0	0	3.957E-05	0.001	1	0%			0%	
Lithium	A	mg/L	2.947E-06	2.947E-06		0	0	0	0.00122	0.05	2.5	0%			0%	
Magnesium	A	mg/L	-0.02273	-0.02273		0	0	0	0.0084694	0.025	50	0%			0%	
Manganese	A	mg/L	0.00002977	0.00002977		0	0	0	5.319E-05	0.001	1	0%			0%	
Molybdenum	A	mg/L	0.00001258	0.00001258		0	0	0	7.382E-05	0.001	0.1	0%			0%	
Nickel	A	mg/L	-1.971E-05	-1.971E-05		0	0	0	0.0001477	0.001	1	0%			0%	
Potassium	A	mg/L	-0.002543	-0.002543		0	0	0	0.0951865	0.125	50	0%			0%	
Selenium	A	mg/L	0.00001399	0.00001399		0	0	0	6.961E-05	0.001	1	0%			0%	
Silicon	A	mg/L	0.01436	0.01436		0	0	0	0.0786454	0.2	0.4	0%	0	0	0%	
Silver	A	mg/L	3.311E-08	3.311E-08		0	0	0	1.756E-05	0.001	0.04	0%			0%	
Sodium	A	mg/L	-0.003266	-0.003266		0	0	0	0.0321039	0.125	50	0%			0%	
Strontium	A	mg/L	-6.623E-05	-6.623E-05		0	0	0	0.0001116	0.001	1	0%	0	0	0%	
Tellurium	A	mg/L	0	0		0	0	0	0.0004865	0.001	0.1	0%	0	0	0%	
Thallium	A	mg/L	0.0003891	0.0003891		0	0	0	4.044E-05	0.001	1	0%	0	0	0%	
Tin	A	mg/L	9.723E-06	9.723E-06		0	0	0	0.0025355	0.01	0.1	0%	0	0	0%	
Titanium	A	mg/L	0.0000153	0.0000153		0	0	0	0.0001844	0.001	1	0%	0	0	0%	
Uranium	A	mg/L	6.536E-07	6.536E-07		0	0	0	1.948E-05	0.0003	1	0%	0	0	0%	
Vanadium	A	mg/L	0.00001169	0.00001169		0	0	0	0.004194	0.01	1	0%	0	0	0%	
Zinc	A	mg/L	-0.0001053	-0.0001053		0	0	0	0.0006119	0.002	1	0%	0	0	0%	
Iron, Ferrous	C	mg/L	0.0001191	0.0001191		0	0	0	0.0011177	0.025	5	0%	0	0	0%	

Batch Summary Report

Batch Folder: D:\Agilent\ICPMH\1\DATA\211223A_DoD.b\
Analysis File: 211223A_DoD.batch.bin
Tune Step: #1 No Gas
#2 H2
#3 He

	Rjct	Acq. Date-Time	Data File	Sample Name	Type	Level	Dilution
1		2021-12-23 10:50:45	001BLKV.d	Rinse	BlkVrfy		1.0000
2		2021-12-23 10:56:54	002BLKV.d	Rinse	BlkVrfy		1.0000
3		2021-12-23 11:03:04	003CALB.d	Cal Blk	CalBlk	1	1.0000
4		2021-12-23 11:09:54	004CALS.d	0.025 ppb STD	CalStd	2	1.0000
5		2021-12-23 11:16:29	005CALS.d	0.05 ppb STD	CalStd	3	1.0000
6		2021-12-23 11:23:03	006CALS.d	0.10 ppb STD	CalStd	4	1.0000
7		2021-12-23 11:29:38	007CALS.d	0.5 ppb STD	CalStd	5	1.0000
8		2021-12-23 11:36:12	008CALS.d	1 ppb STD	CalStd	6	1.0000
9		2021-12-23 11:42:46	009CALS.d	10 ppb STD	CalStd	7	1.0000
10		2021-12-23 11:49:18	010CALS.d	50 ppb STD	CalStd	8	1.0000
11		2021-12-23 11:55:41	011CALS.d	100 ppb STD	CalStd	9	1.0000
12		2021-12-23 12:01:44	012CALS.d	1000 ppb STD	CalStd	10	1.0000
13		2021-12-23 12:07:26	013CALS.d	100 ppb Br STD	CalStd	11	1.0000
14		2021-12-23 12:13:44	014BLKV.d	Rinse	BlkVrfy		1.0000
15		2021-12-23 12:19:54	015_QC1.d	QCS	QC1		1.0000
16		2021-12-23 12:25:57	016_CCV.d	CCV	CCV		1.0000
17		2021-12-23 12:31:59	017_CCB.d	CCB	CCB		1.0000
18		2021-12-23 12:38:09	018MBLK.d	LRB	MBLK		1.0000
19		2021-12-23 12:44:20	019_LFB.d	LFB	LFB		1.0300
20		2021-12-23 12:50:24	020ICSA.d	ICSA	ICSA		1.0000
21		2021-12-23 12:56:33	021ICSB.d	ICSAB	ICSAB		1.0000
22		2021-12-23 13:02:39	022BLKV.d	Rinse	BlkVrfy		1.0000
23		2021-12-23 13:08:47	023BLKV.d	Rinse	BlkVrfy		1.0000
24		2021-12-23 13:14:56	024_CCV.d	CCV	CCV		1.0000
25		2021-12-23 13:20:57	025_CCB.d	CCB	CCB		1.0000

	Rjct	Acq. Date-Time	Data File	Sample Name	Type	Level	Dilution
26		2021-12-23 13:27:06	026SMPL.d	MB-162360	Sample		1.0000
27		2021-12-23 13:33:16	027SMPL.d	LCS4-162360	Sample		1.0000
28		2021-12-23 13:39:08	028BLKV.d	Rinse	BlkVrfy		1.0000
29		2021-12-23 13:45:16	029SMPL.d	B21121605-001C	Sample		1.0000
30		2021-12-23 13:51:23	030SMPL.d	B21121605-002C	Sample		1.0000
31		2021-12-23 13:57:30	031SMPL.d	B21121605-002CDIL	Sample		5.0000
32		2021-12-23 14:03:37	032SMPL.d	B21121605-002CPDS1	Sample		1.0300
33		2021-12-23 14:09:39	033SMPL.d	B21121613-001AMS4	Sample		1.0000
34		2021-12-23 14:15:31	034SMPL.d	B21121613-001AMSD4	Sample		1.0000
35		2021-12-23 14:21:21	035BLKV.d	Rinse	BlkVrfy		1.0000
36		2021-12-23 14:27:30	036SMPL.d	MB-162405	Sample		1.0000
37		2021-12-23 14:33:39	037SMPL.d	LCS4-162405	Sample		1.0000
38		2021-12-23 14:39:30	038_CCV.d	CCV	CCV		1.0000
39		2021-12-23 14:45:32	039_CCB.d	CCB	CCB		1.0000
40		2021-12-23 14:51:41	040BLKV.d	Rinse	BlkVrfy		1.0000
41		2021-12-23 14:57:50	041SMPL.d	B21121613-002H	Sample		1.0000
42		2021-12-23 15:03:56	042SMPL.d	B21121613-002HDIL	Sample		5.0000
43		2021-12-23 15:10:03	043SMPL.d	B21121613-002HPDS1	Sample		1.0300
44		2021-12-23 15:16:04	044SMPL.d	B21121613-002HMS4	Sample		1.0000
45		2021-12-23 15:21:55	045SMPL.d	B21121613-002HMSD4	Sample		1.0000
46		2021-12-23 15:27:46	046BLKV.d	Rinse	BlkVrfy		1.0000
47		2021-12-23 15:33:56	047SMPL.d	MB-162444	Sample		1.0000
48		2021-12-23 15:40:05	048SMPL.d	LCS4-162444	Sample		1.0000
49		2021-12-23 15:45:57	049BLKV.d	Rinse	BlkVrfy		1.0000
50		2021-12-23 15:52:05	050SMPL.d	B21121841-003H	Sample		1.0000
51		2021-12-23 15:58:12	051SMPL.d	B21121841-004H	Sample		1.0000
52		2021-12-23 16:04:19	052SMPL.d	B21121841-001H	Sample		1.0000
53		2021-12-23 16:10:24	053_CCV.d	CCV	CCV		1.0000
54		2021-12-23 16:16:26	054_CCB.d	CCB	CCB		1.0000
55		2021-12-23 16:22:35	055SMPL.d	B21121841-001HDIL	Sample		5.0000
56		2021-12-23 16:28:43	056SMPL.d	B21121841-001HPDS1	Sample		1.0300
57		2021-12-23 16:34:43	057SMPL.d	B21121841-001HMS4	Sample		1.0000

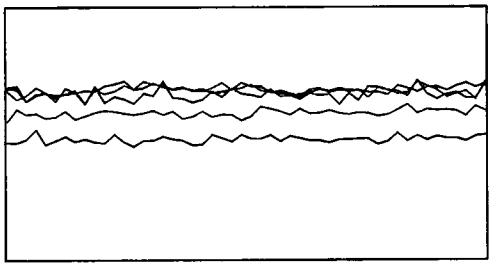
	Rjct	Acq. Date-Time	Data File	Sample Name	Type	Level	Dilution
58		2021-12-23 16:40:32	058SMPL.d	B21121841-001HMSD4	Sample		1.0000
59		2021-12-23 16:46:23	059BLKV.d	Rinse	BlkVrfy		1.0000
60		2021-12-23 16:52:31	060_CCV.d	CCV	CCV		1.0000
61		2021-12-23 16:58:33	061_CCB.d	CCB	CCB		1.0000

Tune Report

Operator Name	elim
Acq/Data Batch	D:\Agilent\ICPMH\1\DATA\211220ADoD b
Acq. Date-Time	2021-12-20 10 14.47
Report Comment	ICPMS207-B JPV
Instrument Name	G8403A JP17281923

[No Gas]

Sensitivity



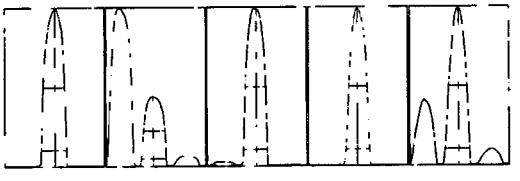
Mass	Range	Count	RSD%	Background
9	200000	131860	3.469	3.100
24	50000	33743	2.765	1.700
59	100000	67930	2.312	0.800
115	100000	58515	2.443	2.800
208	50000	24041	2.829	5.400

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

Oxide/Doubly Charged Ratio

Oxide	156 / 140 1.234 %
Doubly Charged	70 / 140 0.863 %

Resolution/Axis



Mass	Peak Height	Axis	W-50%	W-10%
9	133367.21	9.05	0.64	0.771
24	34817.31	23.95	0.65	0.766
59	67141.08	59.00	0.62	0.728
115	58684.93	115.00	0.55	0.715
208	23801.49	208.00	0.55	0.740

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

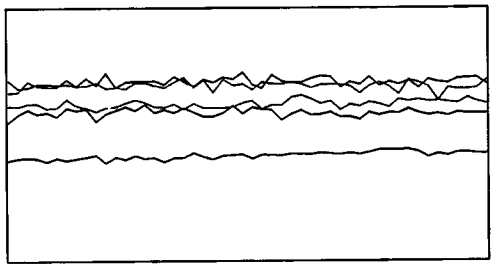
Extract 1	0.0 V	Omega Lens	10.8 V	Deflect	15.2 V
Extract 2	-250.0 V	Cell Entrance	-30 V	Plate Bias	-35 V

Tune Report

Omega Bias	-80 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 9990	QP Bias	-3.0 V
Mass Offset	126	Axis Offset	0.10		
Hardware Settings					
Torch					
Torch H	-0.9 mm	Torch V	0.4 mm		
EM					
Discriminator	5.8 mV	Analog HV	2241 V	Pulse HV	1573 V

[H2]

Sensitivity



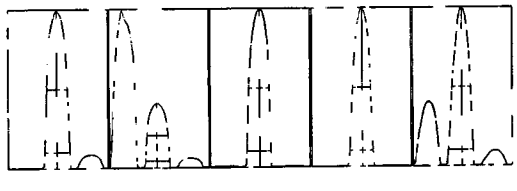
Mass	Range	Count	RSD%	Background
9	50000	35595	2.204	0.400
24	20000	13915	2.499	0.300
59	50000	29426	2.549	0.000
115	100000	62326	2.325	0.200
208	50000	20906	3.010	0.300

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

Oxide/Doubly Charged Ratio

Oxide	—
Doubly Charged	70 / 140 0.840 %

Resolution/Axis



Mass	Peak Height	Axis	W-50%	W-10%
9	36130.99	9.00	0.63	0.766
24	13881.76	23.95	0.65	0.735
59	28993.83	59.00	0.61	0.726
115	62160.85	115.05	0.55	0.704
208	22018.14	208.00	0.56	0.741

Integration Time [sec]	0 1
Acquisition Time [sec]	37.4
Y Axis	Linear

Tune Parameters

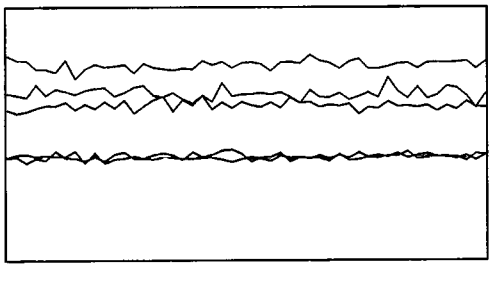
Plasma Parameters

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 0 V	Deflect	4.0 V
Extract 2	-240 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	180 V		
QP Parameters					
Mass Gain	126	Axis Gain	0.9990	QP Bias	-13.0 V
Mass Offset	126	Axis Offset	0.10		
Hardware Settings					
Torch					
Torch H	-0 9 mm	Torch V	0.4 mm		
EM					
Discriminator	5.8 mV	Analog HV	2241 V	Pulse HV	1573 V

[He]

Sensitivity



Mass	Range	Count	RSD%	Background
9	5000	2038	3.090	2.600
24	2000	1322	3.294	1.200
59	50000	20223	2.428	0.600
115	20000	15513	2.330	0.600
208	20000	12267	2.731	1.600

Sampling Period [sec] 0.514

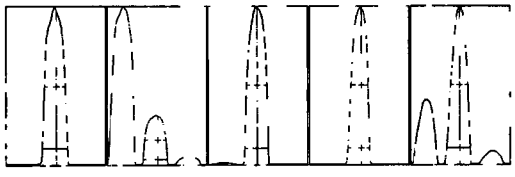
Integration Time [sec] 0.1

Oxide/Doubly Charged Ratio

Oxide	—
Doubly Charged	70 / 140 1.015 %

Resolution/Axis

Tune Report



Mass	Peak Height	Axis	W-50%	W-10%
9	2026.16	9.05	0.63	0.765
24	1274.33	24.05	0.64	0.732
59	20421.78	59.00	0.60	0.723
115	15755.77	115.10	0.53	0.666
208	12299.13	208.00	0.53	0.720

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	11.2 V	Deflect	1.6 V
Extract 2	-240.0 V	Cell Entrance	-30 V	Plate Bias	-80 V
Omega Bias	-95 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	0.9990	QP Bias	-13.0 V
Mass Offset	126	Axis Offset	0.10		

Hardware Settings

Torch

Torch H	-0.9 mm	Torch V	0.4 mm		

EM

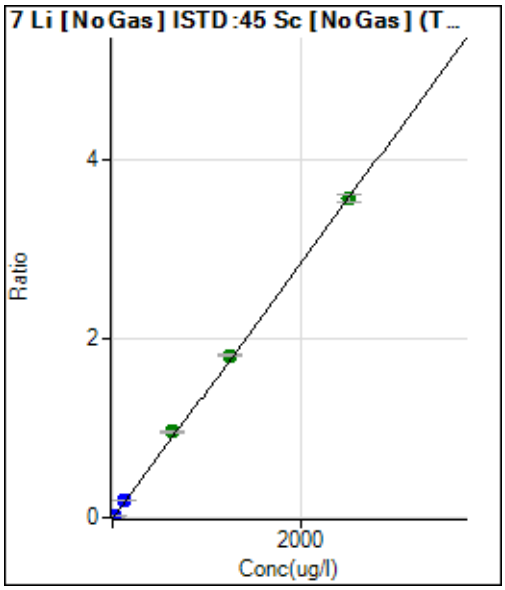
Discriminator	5.8 mV	Analog HV	2241 V	Pulse HV	1573 V

Calibration for 015_QC1.d

Batch Folder: D:\Agilent\ICPMH\1\DATA\211223A_DoD.b\
Analysis File: 211223A_DoD.batch.bin
DA Date-Time: 2021-12-23 12:28:37
Calibration Title:
Calibration Method: External Calibration
VIS Interpolation Fit:

Level	Standard Data File	Sample Name	Acq. Date-Time
1	003CALB.d	Cal Blk	2021-12-23 11:03:04
2	004CALS.d	0.025 ppb STD	2021-12-23 11:09:54
3	005CALS.d	0.05 ppb STD	2021-12-23 11:16:29
4	006CALS.d	0.10 ppb STD	2021-12-23 11:23:03
5	007CALS.d	0.5 ppb STD	2021-12-23 11:29:38
6	008CALS.d	1 ppb STD	2021-12-23 11:36:12
7	009CALS.d	10 ppb STD	2021-12-23 11:42:46
8	010CALS.d	50 ppb STD	2021-12-23 11:49:18
9	011CALS.d	100 ppb STD	2021-12-23 11:55:41
10	012CALS.d	1000 ppb STD	2021-12-23 12:01:44
11	013CALS.d	100 ppb Br STD	2021-12-23 12:07:26

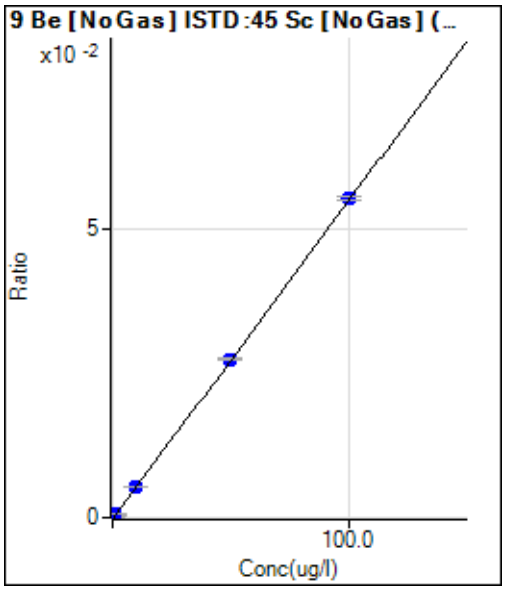
Calibration for 015_QC1.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	18673.59	0.0042	P	2.2	
2	☐	0.313	0.219	19969.06	0.0045	P	2.0	-29.9
3	☐	0.625	0.532	21704.14	0.0050	P	1.9	-14.8
4	☐	1.250	1.216	25760.69	0.0059	P	0.7	-2.7
5	☐	6.250	5.934	55905.65	0.0127	P	1.1	-5.1
6	☐	12.500	13.461	103608.00	0.0235	P	1.0	7.7
7	☐	125.000	128.084	818770.83	0.1879	P	1.3	2.5
8	☐	625.000	666.786	4171379.67	0.9605	A	2.8	6.7
9	☐	1250.000	1261.816	7850587.39	1.8139	A	1.5	0.9
10	☐	2500.000	2483.488	15595178.55	3.5661	A	1.9	-0.7
11	☐			38866.26	0.0088	P	1.7	

y = 0.0014 * x + 0.0042
R = 0.9998
DL = 0.1969 ug/l
BEC = 2.923 ug/l

Weight: 1/y
Min Conc: <None>

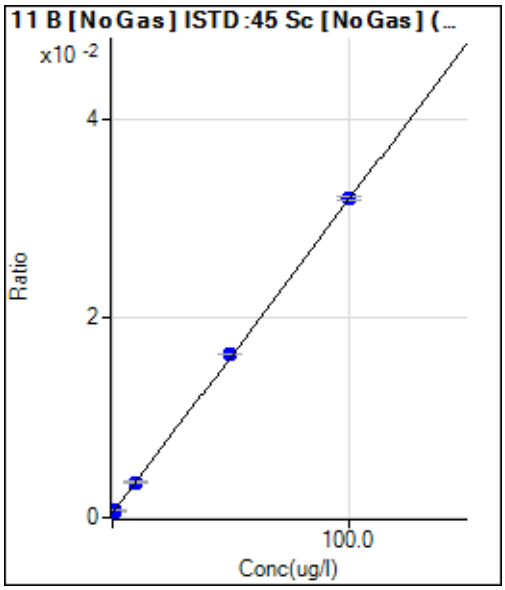


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	77.32	0.0000	P	9.8	
2	☐	0.025	0.015	112.65	0.0000	P	10.4	-41.8
3	☐	0.050	0.041	174.30	0.0000	P	5.3	-18.8
4	☐	0.100	0.097	308.61	0.0001	P	6.2	-2.8
5	☐	0.500	0.471	1222.81	0.0003	P	3.4	-5.7
6	☐	1.000	1.029	2584.71	0.0006	P	0.6	2.9
7	☐	10.000	9.791	23655.25	0.0054	P	1.6	-2.1
8	☐	50.000	49.616	119209.04	0.0274	P	1.5	-0.8
9	☐	100.000	100.213	239790.43	0.0554	P	1.3	0.2
10	☐			2578160.30	0.5896	A	1.8	
11	☐			1663.09	0.0004	P	5.2	

y = 5.5270E-004 * x + 1.7354E-005
R = 1.0000
DL = 0.009186 ug/l
BEC = 0.0314 ug/l

Weight: 1/y
Min Conc: <None>

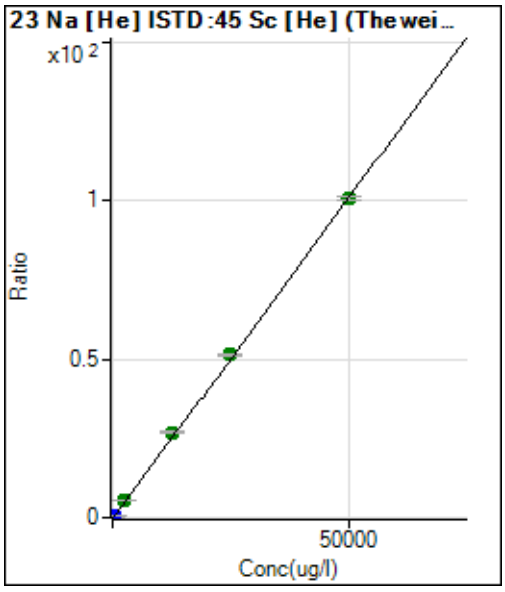
Calibration for 015_QC1.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	2772.71	0.0006	P	2.2	
2	☐			2610.61	0.0006	P	0.9	
3	☐	0.050	-0.075	2623.28	0.0006	P	1.8	-249.3
4	☐	0.100	-0.114	2545.24	0.0006	P	5.2	-213.8
5	☐	0.500	0.154	2951.48	0.0007	P	2.9	-69.3
6	☐	1.000	0.647	3641.91	0.0008	P	3.1	-35.3
7	☐	10.000	9.372	15552.87	0.0036	P	1.1	-6.3
8	☐	50.000	50.221	71304.21	0.0164	P	0.7	0.4
9	☐	100.000	99.958	138706.42	0.0320	P	1.5	0.0
10	☐			1473814.17	0.3371	A	3.2	
11	☐			11597.75	0.0026	P	2.9	

y = 3.1440E-004 * x + 6.2241E-004
R = 1.0000
DL = 0.1299 ug/l
BEC = 1.98 ug/l

Weight: 1/y
Min Conc: <None>

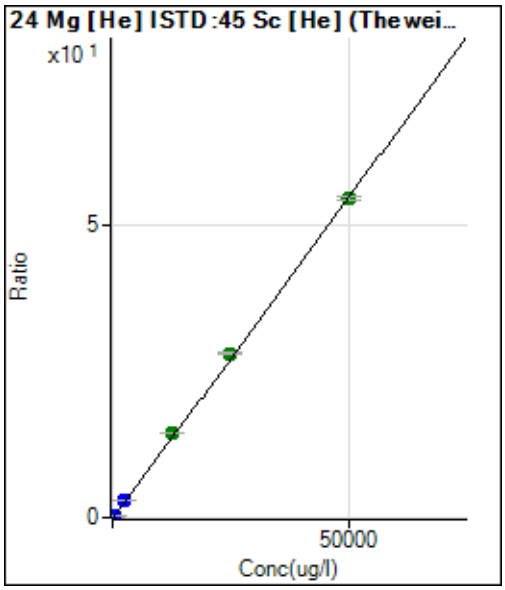


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	24941.80	0.0971	P	1.4	
2	☐	6.250	6.034	27888.05	0.1094	P	1.3	-3.5
3	☐	12.500	12.402	30815.96	0.1223	P	1.6	-0.8
4	☐	25.000	28.015	38724.13	0.1539	P	1.5	12.1
5	☐	125.000	127.099	89718.79	0.3550	P	0.5	1.7
6	☐	250.000	281.986	169167.91	0.6692	P	0.3	12.8
7	☐	2500.000	2595.138	1372146.63	5.3621	A	1.7	3.8
8	☐	12500.00	13191.20	6920922.12	26.8593	A	1.4	5.5
9	☐	25000.00	25306.40	13361927.86	51.4385	A	0.7	1.2
10	☐	50000.00	49669.07	25717709.34	100.865	A	1.5	-0.7
11	☐			26452.12	0.1050	P	1.4	

y = 0.0020 * x + 0.0971
R = 0.9999
DL = 2.046 ug/l
BEC = 47.87 ug/l

Weight: 1/y
Min Conc: <None>

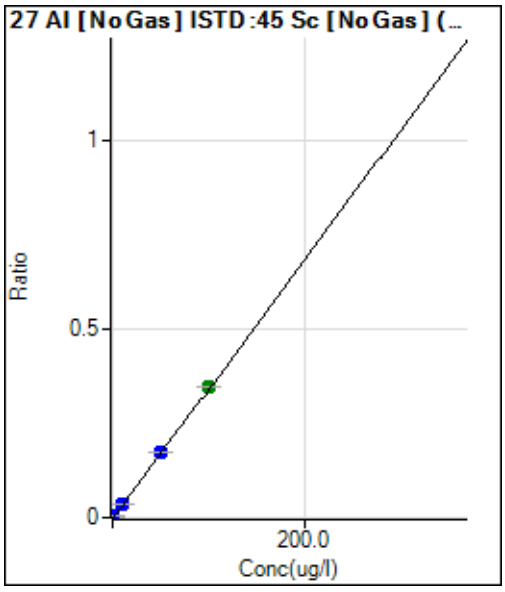
Calibration for 015_QC1.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	8032.94	0.0313	P	5.8	
2	☐	6.250	5.293	9460.90	0.0371	P	1.4	-15.3
3	☐	12.500	9.350	10466.23	0.0415	P	3.7	-25.2
4	☐	25.000	25.554	14927.92	0.0593	P	3.4	2.2
5	☐	125.000	129.835	43946.84	0.1739	P	1.8	3.9
6	☐	250.000	288.779	88084.54	0.3485	P	1.2	15.5
7	☐	2500.000	2629.205	747027.01	2.9191	P	0.9	5.2
8	☐	12500.00	13170.65	3735591.93	14.4975	A	0.1	5.4
9	☐	25000.00	25436.36	7265467.79	27.9697	A	1.3	1.7
10	☐	50000.00	49607.48	13900813.31	54.5184	A	1.2	-0.8
11	☐			1806.53	0.0072	P	10.9	

y = 0.0011 * x + 0.0313
R = 0.9999
DL = 4.962 ug/l
BEC = 28.48 ug/l

Weight: 1/y
Min Conc: <None>

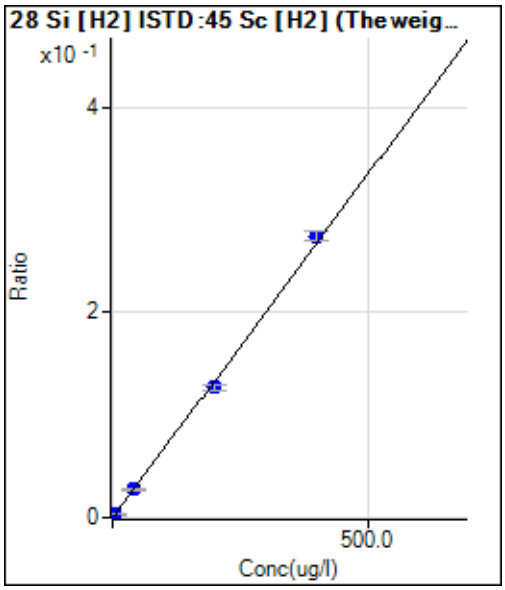


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	6308.03	0.0014	P	2.1	
2	☐			7186.20	0.0016	P	2.5	
3	☐	0.050	0.100	7714.25	0.0018	P	0.6	100.8
4	☐	0.100	0.152	8411.28	0.0019	P	2.2	51.9
5	☐	0.500	0.533	14304.65	0.0032	P	1.1	6.7
6	☐	1.000	1.090	22760.64	0.0052	P	1.7	9.0
7	☐	10.000	9.825	153309.53	0.0352	P	1.2	-1.8
8	☐	50.000	49.770	749227.13	0.1725	P	1.3	-0.5
9	☐	100.000	100.131	1495558.73	0.3456	A	1.0	0.1
10	☐			16283005.73	3.7245	A	3.0	
11	☐			9320.71	0.0021	P	2.9	

y = 0.0034 * x + 0.0014
R = 1.0000
DL = 0.02555 ug/l
BEC = 0.412 ug/l

Weight: 1/y
Min Conc: <None>

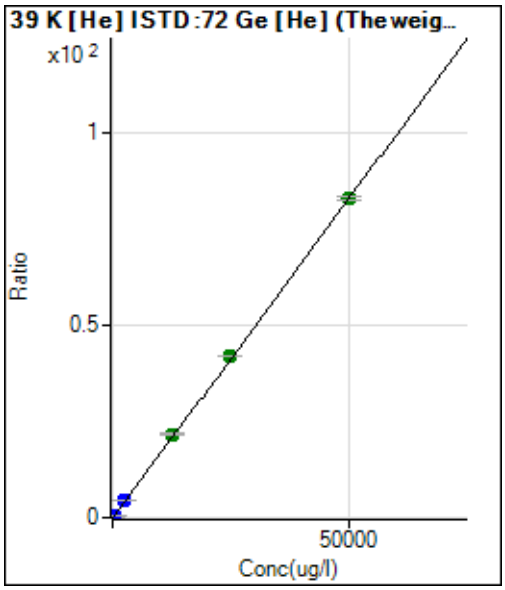
Calibration for 015_QC1.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	2834.75	0.0013	P	2.2	
2	☐			3012.18	0.0014	P	4.2	
3	☐	0.200	0.152	3012.85	0.0014	P	2.1	-24.1
4	☐	0.400	0.421	3452.46	0.0016	P	4.8	5.3
5	☐	2.000	1.915	5477.21	0.0026	P	2.0	-4.3
6	☐	4.000	4.282	8853.53	0.0042	P	6.1	7.0
7	☐	40.000	39.307	58149.82	0.0277	P	4.0	-1.7
8	☐	200.000	187.103	263836.25	0.1269	P	4.2	-6.4
9	☐	400.000	406.515	554067.25	0.2742	P	3.3	1.6
10	☐			5106.27	0.0025	P	3.8	
11	☐			3949.45	0.0019	P	6.0	

y = 6.7120E-004 * x + 0.0013
R = 0.9993
DL = 0.132 ug/l
BEC = 1.994 ug/l

Weight: 1/y
Min Conc: <None>

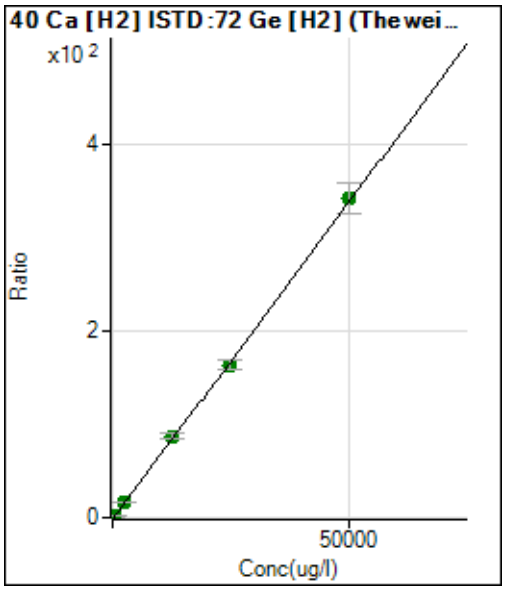


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	50082.97	0.2463	P	0.7	
2	☐	6.250	7.981	51724.01	0.2596	P	0.3	27.7
3	☐	12.500	12.659	52959.45	0.2674	P	0.9	1.3
4	☐	25.000	30.378	58424.19	0.2968	P	2.2	21.5
5	☐	125.000	124.105	90079.65	0.4524	P	1.3	-0.7
6	☐	250.000	281.311	140305.23	0.7135	P	0.9	12.5
7	☐	2500.000	2467.351	880068.16	4.3440	P	0.8	-1.3
8	☐	12500.00	12931.47	4426184.17	21.7222	A	1.0	3.5
9	☐	25000.00	25155.28	8447501.12	42.0229	A	0.2	0.6
10	☐	50000.00	49815.96	16505897.25	82.9780	A	0.8	-0.4
11	☐			283270.54	1.4252	P	0.6	

y = 0.0017 * x + 0.2463
R = 1.0000
DL = 3.043 ug/l
BEC = 148.3 ug/l

Weight: 1/y
Min Conc: <None>

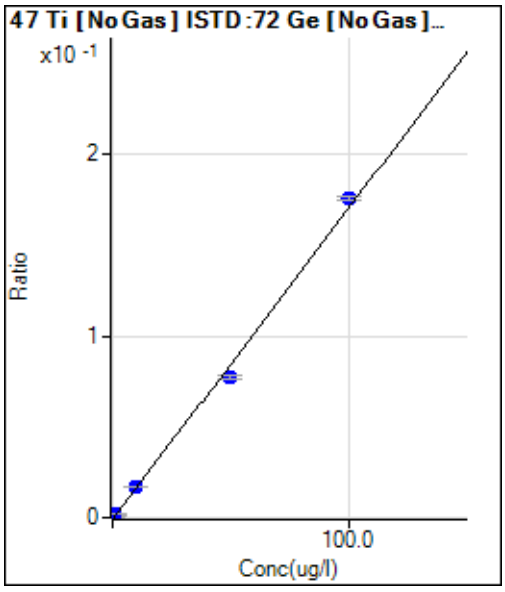
Calibration for 015_QC1.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	69674.05	0.0823	P	3.5	
2	☐	6.250	7.047	109012.72	0.1301	P	4.6	12.8
3	☐	12.500	12.939	139566.51	0.1700	P	4.9	3.5
4	☐	25.000	30.068	236923.09	0.2862	P	6.4	20.3
5	☐	125.000	128.639	783233.43	0.9548	P	5.1	2.9
6	☐	250.000	281.381	1650781.60	1.9907	A	5.0	12.6
7	☐	2500.000	2473.219	14226801.92	16.8567	A	6.9	-1.1
8	☐	12500.00	12816.17	73201694.95	87.0071	A	7.0	2.5
9	☐	25000.00	24075.66	137001842.0	163.373	A	6.3	-3.7
10	☐	50000.00	50384.29	278772792.9	341.810	A	9.1	0.8
11	☐			93313.21	0.1123	P	5.0	

y = 0.0068 * x + 0.0823
R = 0.9998
DL = 1.262 ug/l
BEC = 12.13 ug/l

Weight: 1/y
Min Conc: <None>

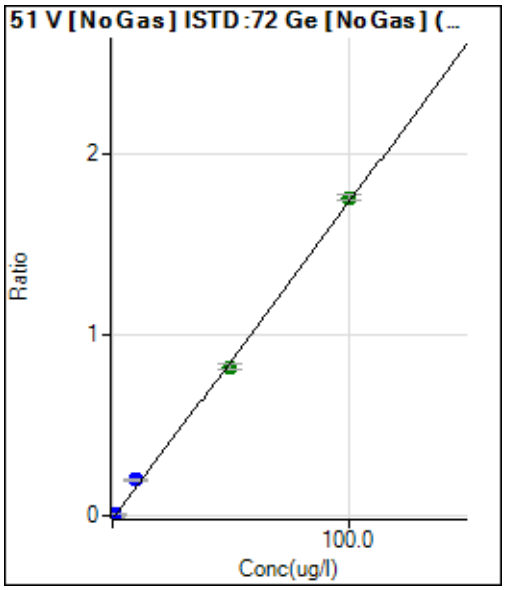


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	200.20	0.0002	P	4.3	
2	☐	0.025	0.030	266.94	0.0002	P	14.9	22.0
3	☐	0.050	0.072	357.03	0.0003	P	11.3	43.4
4	☐	0.100	0.144	517.20	0.0004	P	7.4	43.9
5	☐	0.500	0.480	1244.64	0.0010	P	6.8	-4.0
6	☐	1.000	1.051	2494.40	0.0020	P	3.3	5.1
7	☐	10.000	9.718	21577.38	0.0168	P	1.2	-2.8
8	☐	50.000	44.972	97623.90	0.0773	P	3.7	-10.1
9	☐	100.000	102.542	221735.89	0.1761	P	1.4	2.5
10	☐			14451.35	0.0113	P	3.3	
11	☐			323.66	0.0003	P	11.6	

y = 0.0017 * x + 1.5429E-004
R = 0.9984
DL = 0.01169 ug/l
BEC = 0.08993 ug/l

Weight: 1/y
Min Conc: <None>

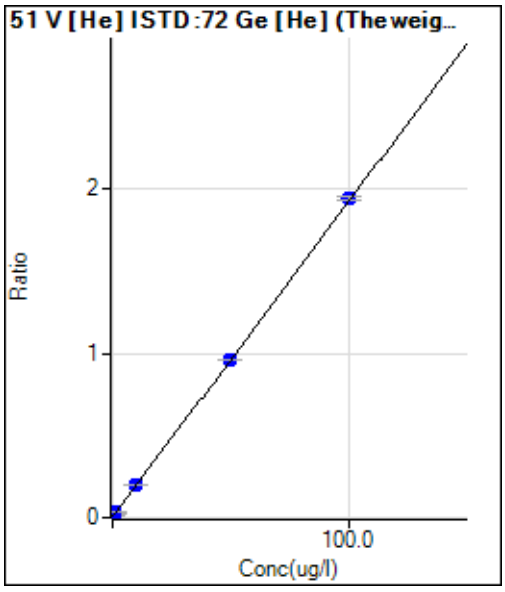
Calibration for 015_QC1.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	-12855.49	-0.0099	P	-73.3	
2	☐	0.025	0.350	-4911.66	-0.0038	P	-12.8	1299.0
3	☐	0.050	0.342	-5047.37	-0.0039	P	-133.	584.7
4	☐	0.100	0.423	-3264.08	-0.0025	P	-218.	322.7
5	☐	0.500	0.584	433.33	0.0003	P	1656.	16.7
6	☐	1.000	1.352	17577.99	0.0138	P	35.4	35.2
7	☐	10.000	11.956	256176.52	0.1998	P	4.1	19.6
8	☐	50.000	47.653	1043500.72	0.8261	A	3.5	-4.7
9	☐	100.000	100.974	2218250.97	1.7615	A	2.0	1.0
10	☐			25259035.05	19.7739	A	4.3	
11	☐			-22222.25	-0.0172	P	-84.8	

y = 0.0175 * x - 0.0099
R = 0.9995
DL = 1.245 ug/l
BEC = -0.5663 ug/l

Weight: 1/y
Min Conc: <None>

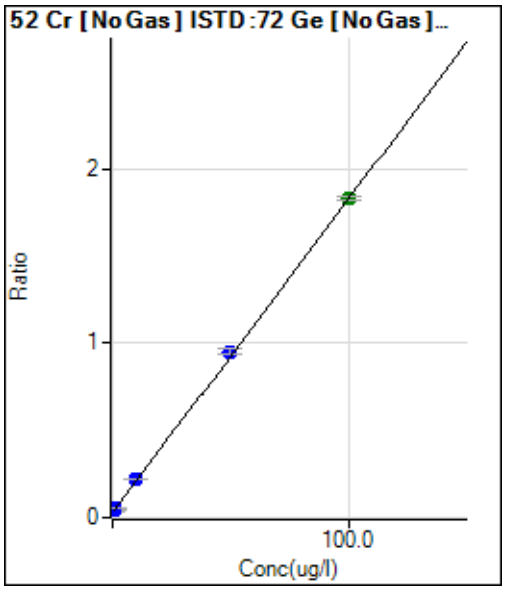


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	2911.42	0.0143	P	1.2	
2	☐	0.025	0.074	3138.13	0.0157	P	3.0	197.2
3	☐	0.050	0.102	3224.82	0.0163	P	1.7	104.0
4	☐	0.100	0.148	3378.19	0.0172	P	5.5	48.1
5	☐	0.500	0.502	4771.91	0.0240	P	3.9	0.4
6	☐	1.000	1.164	7211.81	0.0367	P	1.1	16.4
7	☐	10.000	9.532	39999.62	0.1974	P	2.3	-4.7
8	☐	50.000	49.079	195049.62	0.9572	P	0.4	-1.8
9	☐	100.000	100.505	391022.50	1.9453	P	1.0	0.5
10	☐			4245532.20	21.3427	A	1.3	
11	☐			3514.88	0.0177	P	1.5	

y = 0.0192 * x + 0.0143
R = 0.9999
DL = 0.02601 ug/l
BEC = 0.7454 ug/l

Weight: 1/y
Min Conc: <None>

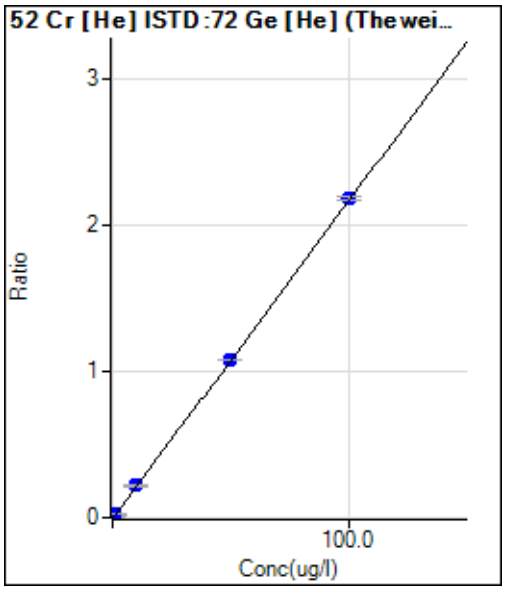
Calibration for 015_QC1.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	50292.59	0.0388	P	4.9	
2	☐	0.025	0.036	50970.10	0.0394	P	0.8	42.4
3	☐	0.050	0.083	51838.22	0.0403	P	3.3	65.6
4	☐	0.100	0.103	52389.02	0.0406	P	3.2	3.0
5	☐	0.500	0.539	61739.48	0.0485	P	1.0	7.8
6	☐	1.000	1.104	74740.19	0.0587	P	3.6	10.4
7	☐	10.000	9.921	278960.08	0.2175	P	0.7	-0.8
8	☐	50.000	50.802	1205015.67	0.9541	P	3.5	1.6
9	☐	100.000	99.606	2309150.07	1.8335	A	0.8	-0.4
10	☐			24394302.23	19.0952	A	3.9	
11	☐			58075.51	0.0452	P	2.2	

y = 0.0180 * x + 0.0388
R = 1.0000
DL = 0.3184 ug/l
BEC = 2.152 ug/l

Weight: 1/y
Min Conc: <None>

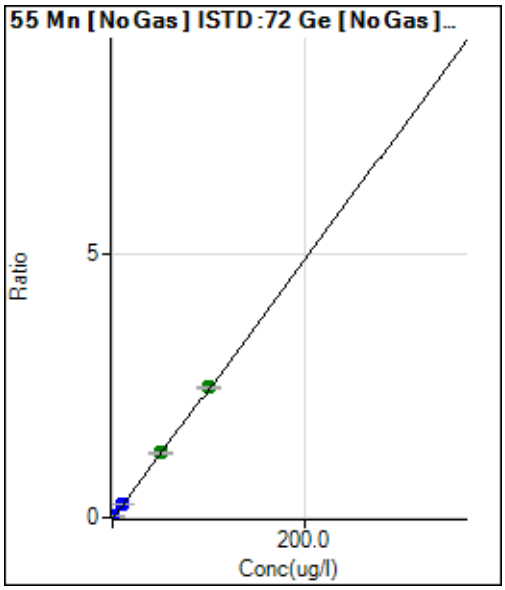


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	520.01	0.0026	P	1.1	
2	☐	0.025	0.027	625.57	0.0031	P	1.6	7.0
3	☐	0.050	0.031	638.91	0.0032	P	6.9	-38.5
4	☐	0.100	0.113	988.93	0.0050	P	4.1	13.3
5	☐	0.500	0.495	2653.59	0.0133	P	4.1	-1.0
6	☐	1.000	1.096	5189.83	0.0264	P	1.0	9.6
7	☐	10.000	9.915	44212.76	0.2182	P	1.6	-0.8
8	☐	50.000	49.413	219536.87	1.0774	P	0.7	-1.2
9	☐	100.000	100.301	439090.99	2.1844	P	1.1	0.3
10	☐			4826989.93	24.2659	A	0.2	
11	☐			696.69	0.0035	P	7.3	

y = 0.0218 * x + 0.0026
R = 1.0000
DL = 0.004016 ug/l
BEC = 0.1176 ug/l

Weight: 1/y
Min Conc: <None>

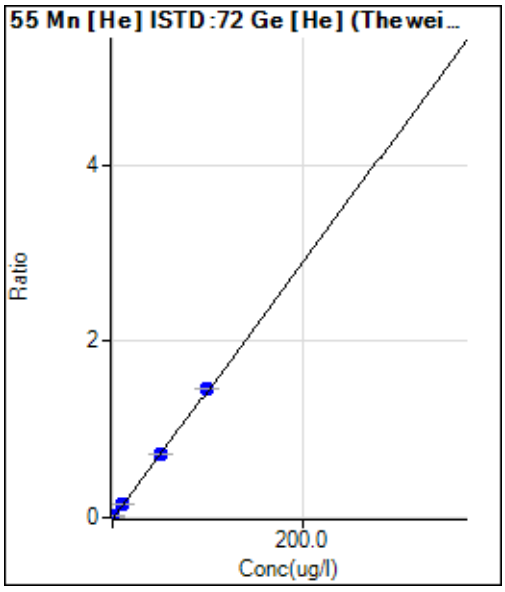
Calibration for 015_QC1.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	7953.07	0.0061	P	3.8	
2	☐	0.025	-0.004	7799.94	0.0060	P	3.0	-116.0
3	☐	0.050	0.020	8538.91	0.0066	P	0.9	-59.4
4	☐	0.100	0.076	10333.13	0.0080	P	2.0	-23.7
5	☐	0.500	0.465	22435.92	0.0176	P	2.1	-6.9
6	☐	1.000	1.065	41302.55	0.0324	P	1.7	6.5
7	☐	10.000	10.092	327372.26	0.2553	P	2.1	0.9
8	☐	50.000	49.985	1566193.46	1.2400	A	2.4	0.0
9	☐	100.000	99.998	3116481.02	2.4746	A	1.1	0.0
10	☐			34142050.11	26.7266	A	4.1	
11	☐			12001.10	0.0093	P	2.6	

y = 0.0247 * x + 0.0061
R = 1.0000
DL = 0.02798 ug/l
BEC = 0.2484 ug/l

Weight: 1/y
Min Conc: <None>

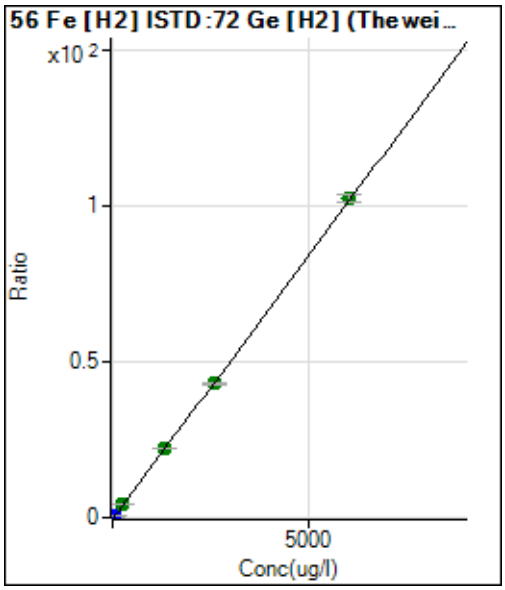


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	229.96	0.0011	P	10.1	
2	☐	0.025	-0.018	171.97	0.0009	P	6.7	-173.4
3	☐	0.050	0.015	266.62	0.0013	P	5.7	-70.6
4	☐	0.100	0.077	443.59	0.0023	P	1.6	-23.3
5	☐	0.500	0.455	1548.11	0.0078	P	2.0	-9.1
6	☐	1.000	1.065	3284.05	0.0167	P	1.7	6.5
7	☐	10.000	9.833	29354.57	0.1449	P	0.8	-1.7
8	☐	50.000	49.089	146462.66	0.7188	P	0.6	-1.8
9	☐	100.000	100.472	295498.28	1.4700	P	0.4	0.5
10	☐			3199590.54	16.0849	A	0.9	
11	☐			359.60	0.0018	P	5.2	

y = 0.0146 * x + 0.0011
R = 0.9999
DL = 0.02352 ug/l
BEC = 0.07736 ug/l

Weight: 1/y
Min Conc: <None>

Calibration for 015_QC1.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	17629.93	0.0208	P	0.7	
2	☐	0.650	0.631	26438.57	0.0316	P	1.3	-2.9
3	☐	1.300	1.254	34578.60	0.0422	P	0.9	-3.6
4	☐	2.600	2.940	58574.68	0.0708	P	2.3	13.1
5	☐	13.000	12.760	194939.55	0.2378	P	0.3	-1.8
6	☐	26.000	28.623	420736.31	0.5076	P	2.3	10.1
7	☐	260.000	254.688	3670716.37	4.3523	A	0.4	-2.0
8	☐	1300.000	1314.114	18811493.12	22.3701	A	1.3	1.1
9	☐	2600.000	2532.604	36115977.62	43.0932	A	1.1	-2.6
10	☐	6000.000	6026.366	83562372.76	102.512	A	2.3	0.4
11	☐			22214.08	0.0268	P	1.0	

y = 0.0170 * x + 0.0208

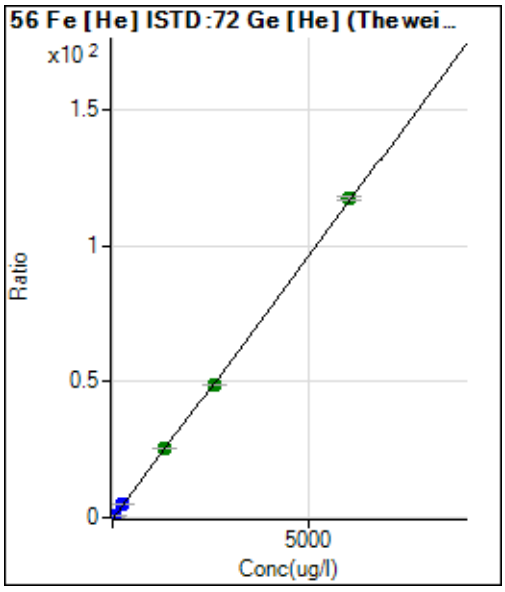
R = 0.9999

DL = 0.02621 ug/l

BEC = 1.225 ug/l

Weight: 1/y

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	6553.08	0.0322	P	1.9	
2	☐	0.650	0.636	8888.32	0.0446	P	1.0	-2.1
3	☐	1.300	1.267	11267.33	0.0569	P	1.0	-2.5
4	☐	2.600	2.917	17514.75	0.0890	P	2.3	12.2
5	☐	13.000	12.602	55223.52	0.2774	P	1.1	-3.1
6	☐	26.000	28.646	115912.05	0.5895	P	0.8	10.2
7	☐	260.000	255.152	1012101.39	4.9957	P	1.5	-1.9
8	☐	1300.000	1316.023	5222899.75	25.6328	A	0.9	1.2
9	☐	2600.000	2504.291	9799021.49	48.7481	A	1.0	-3.7
10	☐	6000.000	6038.202	23371425.81	117.493	A	1.5	0.6
11	☐			8040.30	0.0405	P	0.9	

y = 0.0195 * x + 0.0322

R = 0.9998

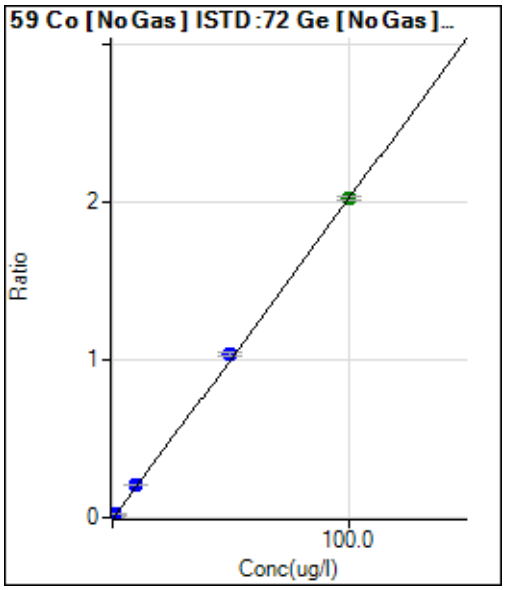
DL = 0.0961 ug/l

BEC = 1.657 ug/l

Weight: 1/y

Min Conc: <None>

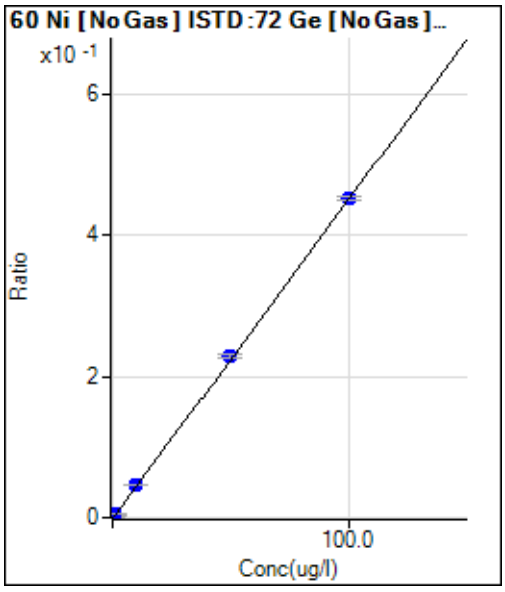
Calibration for 015_QC1.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	509.00	0.0004	P	19.3	
2	☐	0.025	0.022	1094.54	0.0008	P	3.9	-10.6
3	☐	0.050	0.049	1786.57	0.0014	P	5.0	-2.0
4	☐	0.100	0.112	3450.25	0.0027	P	1.4	12.4
5	☐	0.500	0.504	13536.08	0.0106	P	2.9	0.8
6	☐	1.000	1.096	28851.05	0.0226	P	1.3	9.6
7	☐	10.000	9.968	260026.73	0.2028	P	1.0	-0.3
8	☐	50.000	50.840	1304167.44	1.0325	P	2.4	1.7
9	☐	100.000	99.582	2546622.37	2.0221	A	1.1	-0.4
10	☐			27353724.30	21.4107	A	3.7	
11	☐			3530.11	0.0027	P	8.1	

y = 0.0203 * x + 3.9257E-004
R = 1.0000
DL = 0.01118 ug/l
BEC = 0.01934 ug/l

Weight: 1/y
Min Conc: <None>

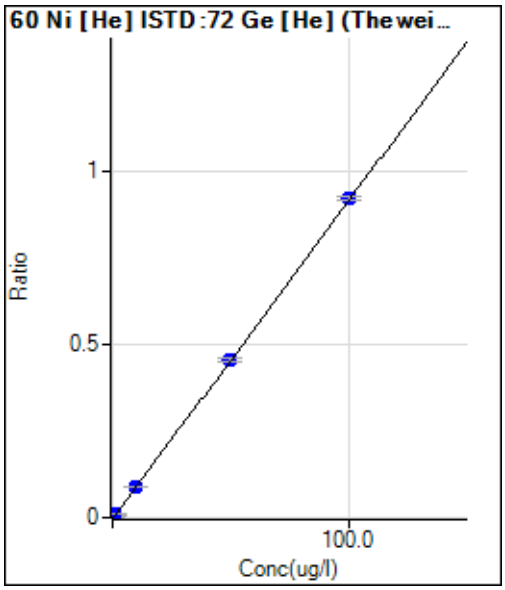


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	864.98	0.0007	P	14.9	
2	☐	0.025	-0.007	821.73	0.0006	P	3.3	-127.8
3	☐	0.050	0.018	964.79	0.0007	P	11.7	-63.4
4	☐	0.100	0.088	1370.69	0.0011	P	4.0	-12.4
5	☐	0.500	0.429	3317.15	0.0026	P	3.7	-14.2
6	☐	1.000	1.019	6721.55	0.0053	P	1.6	1.9
7	☐	10.000	9.914	58333.43	0.0455	P	2.3	-0.9
8	☐	50.000	50.417	288744.24	0.2286	P	1.4	0.8
9	☐	100.000	99.800	569047.87	0.4518	P	1.4	-0.2
10	☐			5986893.03	4.6870	A	4.4	
11	☐			1224.30	0.0010	P	4.5	

y = 0.0045 * x + 6.6679E-004
R = 1.0000
DL = 0.06592 ug/l
BEC = 0.1475 ug/l

Weight: 1/y
Min Conc: <None>

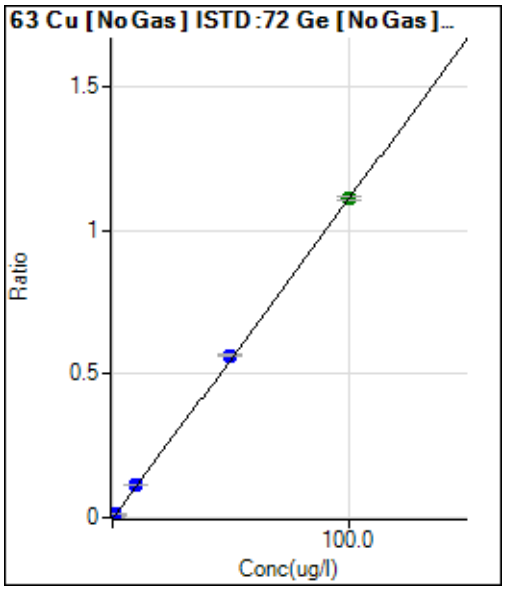
Calibration for 015_QC1.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	234.45	0.0012	P	16.4	
2	☐	0.025	-0.003	224.45	0.0011	P	20.2	-111.1
3	☐	0.050	0.017	258.89	0.0013	P	4.5	-66.5
4	☐	0.100	0.105	416.68	0.0021	P	13.0	4.6
5	☐	0.500	0.480	1108.94	0.0056	P	7.5	-4.0
6	☐	1.000	1.079	2179.06	0.0111	P	2.3	7.9
7	☐	10.000	9.826	18553.99	0.0916	P	0.1	-1.7
8	☐	50.000	49.467	92991.73	0.4564	P	1.4	-1.1
9	☐	100.000	100.283	185736.67	0.9240	P	1.5	0.3
10	☐			2030911.41	10.2098	A	1.9	
11	☐			287.78	0.0014	P	15.2	

y = 0.0092 * x + 0.0012
R = 1.0000
DL = 0.06164 ug/l
BEC = 0.1253 ug/l

Weight: 1/y
Min Conc: <None>

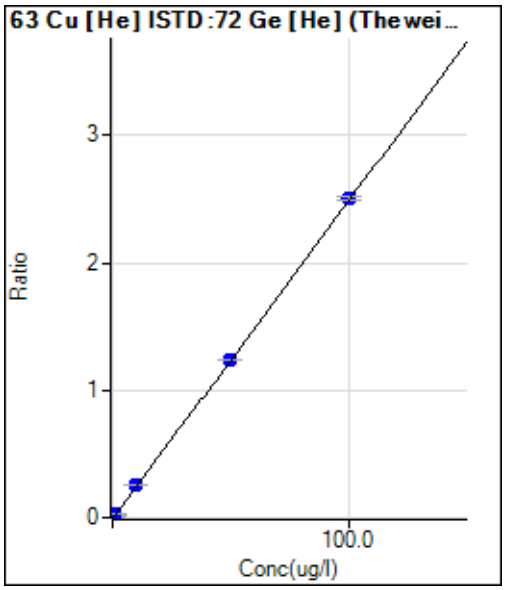


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	2158.36	0.0017	P	6.1	
2	☐	0.025	0.030	2582.61	0.0020	P	2.1	19.7
3	☐	0.050	0.056	2940.15	0.0023	P	1.5	11.4
4	☐	0.100	0.121	3880.75	0.0030	P	5.1	21.0
5	☐	0.500	0.501	9220.61	0.0072	P	1.8	0.3
6	☐	1.000	1.085	17506.79	0.0137	P	0.4	8.5
7	☐	10.000	10.028	145216.06	0.1132	P	0.9	0.3
8	☐	50.000	50.581	712960.90	0.5644	P	1.8	1.2
9	☐	100.000	99.706	1399106.49	1.1110	A	1.5	-0.3
10	☐			15181342.69	11.8822	A	3.5	
11	☐			3910.10	0.0030	P	1.8	

y = 0.0111 * x + 0.0017
R = 1.0000
DL = 0.02716 ug/l
BEC = 0.1496 ug/l

Weight: 1/y
Min Conc: <None>

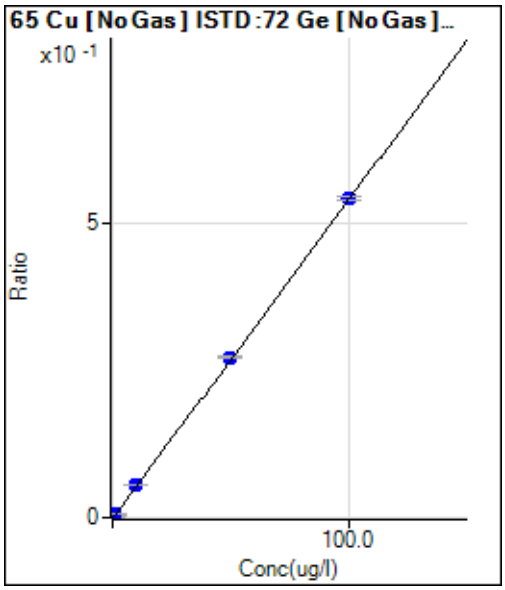
Calibration for 015_QC1.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	733.87	0.0036	P	3.8	
2	☐	0.025	0.031	871.19	0.0044	P	2.6	22.3
3	☐	0.050	0.043	929.18	0.0047	P	2.8	-13.4
4	☐	0.100	0.115	1273.80	0.0065	P	2.1	14.5
5	☐	0.500	0.520	3303.72	0.0166	P	2.6	4.0
6	☐	1.000	1.140	6310.10	0.0321	P	0.4	14.0
7	☐	10.000	10.123	51952.47	0.2564	P	0.8	1.2
8	☐	50.000	49.381	252031.06	1.2369	P	0.5	-1.2
9	☐	100.000	100.296	504255.83	2.5085	P	0.8	0.3
10	☐			5426962.89	27.2820	A	0.8	
11	☐			1221.81	0.0061	P	2.9	

y = 0.0250 * x + 0.0036
R = 1.0000
DL = 0.01642 ug/l
BEC = 0.1445 ug/l

Weight: 1/y
Min Conc: <None>

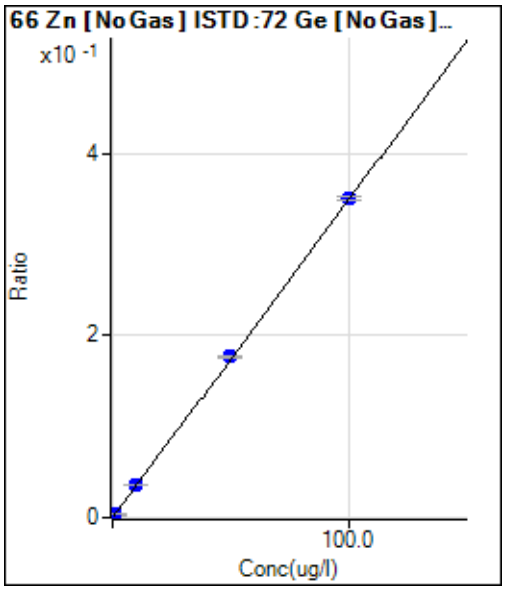


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	1066.47	0.0008	P	6.7	
2	☐	0.025	0.028	1256.56	0.0010	P	2.8	10.7
3	☐	0.050	0.047	1388.63	0.0011	P	1.7	-5.2
4	☐	0.100	0.103	1775.49	0.0014	P	5.6	2.6
5	☐	0.500	0.503	4507.85	0.0035	P	3.8	0.5
6	☐	1.000	1.097	8602.00	0.0068	P	1.5	9.7
7	☐	10.000	9.896	69672.69	0.0543	P	0.7	-1.0
8	☐	50.000	50.084	343098.46	0.2716	P	1.3	0.2
9	☐	100.000	99.967	681783.27	0.5413	P	0.8	0.0
10	☐			7224557.91	5.6554	A	4.2	
11	☐			1862.87	0.0014	P	4.3	

y = 0.0054 * x + 8.2230E-004
R = 1.0000
DL = 0.0305 ug/l
BEC = 0.1521 ug/l

Weight: 1/y
Min Conc: <None>

Calibration for 015_QC1.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	2238.42	0.0017	P	11.8	
2	☐			1978.65	0.0015	P	3.1	
3	☐	0.050	-0.094	1799.18	0.0014	P	5.7	-287.8
4	☐	0.100	-0.027	2102.01	0.0016	P	0.9	-127.3
5	☐	0.500	0.365	3821.85	0.0030	P	1.8	-26.9
6	☐	1.000	0.944	6400.53	0.0050	P	1.3	-5.6
7	☐	10.000	9.647	45418.35	0.0354	P	0.2	-3.5
8	☐	50.000	50.215	223695.70	0.1771	P	1.2	0.4
9	☐	100.000	99.929	441718.95	0.3507	P	1.1	-0.1
10	☐			4383249.01	3.4306	A	3.4	
11	☐			4028.41	0.0031	P	2.7	

y = 0.0035 * x + 0.0017

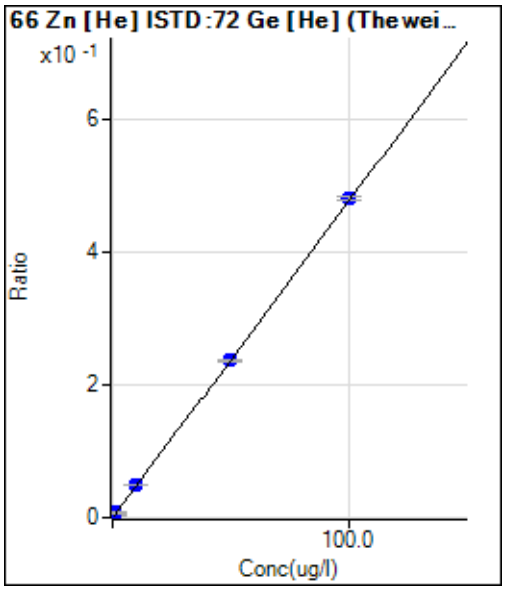
R = 1.0000

DL = 0.1753 ug/l

BEC = 0.4941 ug/l

Weight: 1/y

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	445.56	0.0022	P	9.9	
2	☐			440.01	0.0022	P	11.2	
3	☐	0.050	0.007	441.12	0.0022	P	10.8	-85.1
4	☐	0.100	0.024	454.46	0.0023	P	14.2	-75.7
5	☐	0.500	0.454	867.81	0.0044	P	5.1	-9.2
6	☐	1.000	1.088	1452.30	0.0074	P	4.8	8.8
7	☐	10.000	9.741	9866.72	0.0487	P	0.3	-2.6
8	☐	50.000	49.212	48322.97	0.2372	P	1.3	-1.6
9	☐	100.000	100.419	96827.28	0.4817	P	0.7	0.4
10	☐			1041392.41	5.2352	P	0.8	
11	☐			818.92	0.0041	P	11.3	

y = 0.0048 * x + 0.0022

R = 1.0000

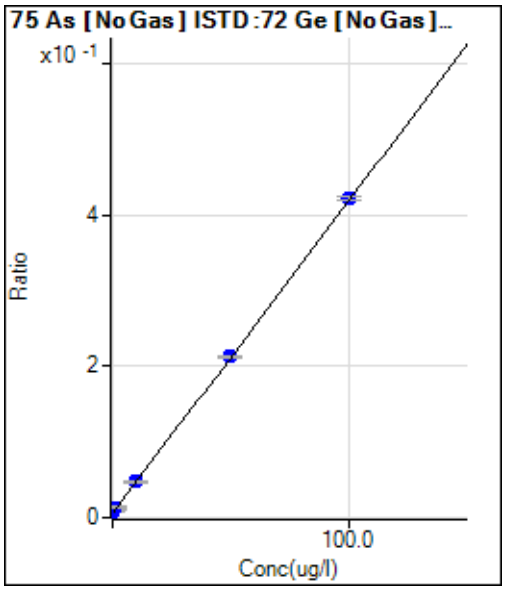
DL = 0.137 ug/l

BEC = 0.4589 ug/l

Weight: 1/y

Min Conc: <None>

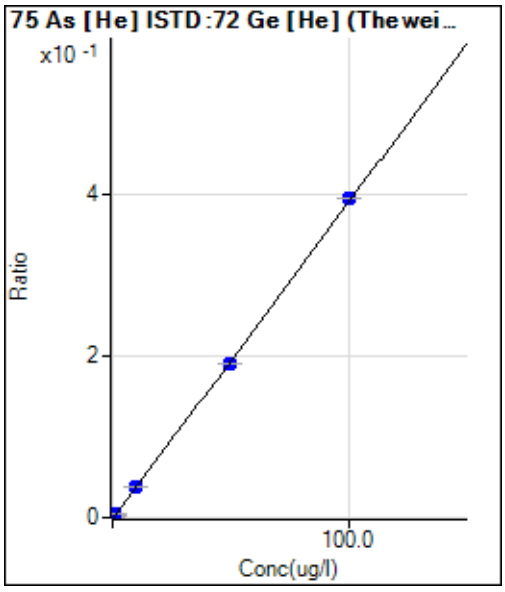
Calibration for 015_QC1.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	10381.72	0.0080	P	14.0	
2	☐	0.025	0.156	11189.74	0.0087	P	11.2	525.5
3	☐	0.050	0.244	11607.76	0.0090	P	4.2	388.2
4	☐	0.100	0.324	12066.17	0.0093	P	16.5	224.3
5	☐	0.500	1.049	15696.34	0.0123	P	17.8	109.7
6	☐	1.000	1.289	17004.90	0.0133	P	10.3	28.9
7	☐	10.000	9.626	61322.90	0.0478	P	3.7	-3.7
8	☐	50.000	49.492	268765.59	0.2128	P	1.1	-1.0
9	☐	100.000	100.286	532567.97	0.4229	P	1.3	0.3
10	☐			5745544.40	4.4978	A	4.3	
11	☐			18765.30	0.0146	P	14.2	

y = 0.0041 * x + 0.0080
R = 1.0000
DL = 0.8136 ug/l
BEC = 1.935 ug/l

Weight: 1/y
Min Conc: <None>

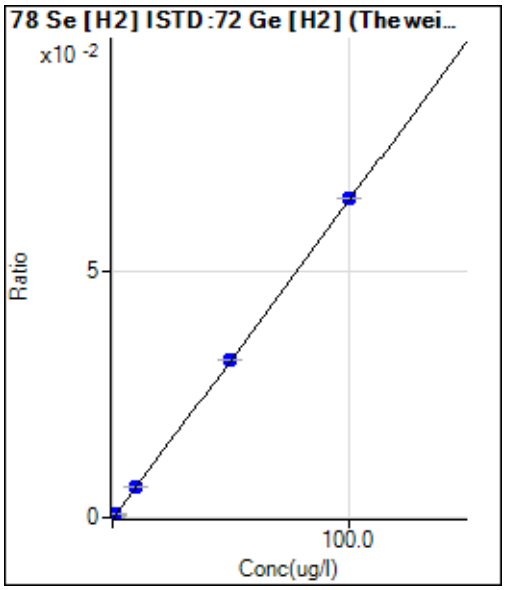


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	59.33	0.0003	P	6.0	
2	☐	0.025	0.030	81.27	0.0004	P	3.7	18.6
3	☐	0.050	0.048	95.27	0.0005	P	11.6	-3.4
4	☐	0.100	0.112	143.60	0.0007	P	0.9	11.7
5	☐	0.500	0.475	428.80	0.0022	P	2.9	-4.9
6	☐	1.000	1.086	893.54	0.0045	P	1.1	8.6
7	☐	10.000	9.627	7696.74	0.0380	P	0.5	-3.7
8	☐	50.000	48.679	38901.68	0.1909	P	0.1	-2.6
9	☐	100.000	100.697	79326.98	0.3946	P	0.5	0.7
10	☐			876876.62	4.4082	P	0.6	
11	☐			151.13	0.0008	P	5.9	

y = 0.0039 * x + 2.9181E-004
R = 0.9999
DL = 0.01341 ug/l
BEC = 0.07452 ug/l

Weight: 1/y
Min Conc: <None>

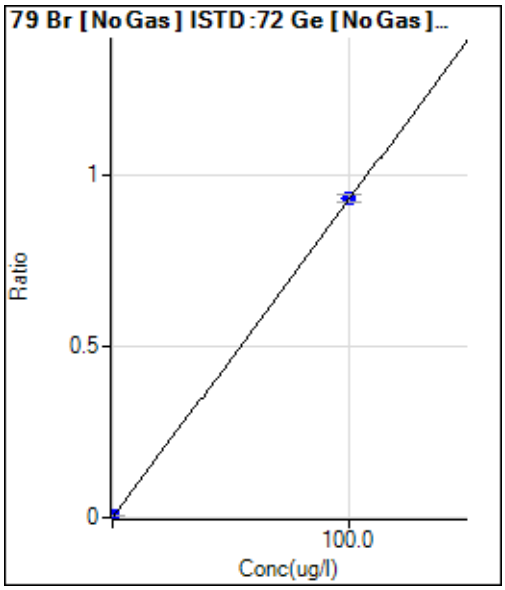
Calibration for 015_QC1.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	21.33	0.0000	P	6.3	
2	☐	0.025	0.024	34.11	0.0000	P	14.9	-4.4
3	☐	0.050	0.041	42.22	0.0001	P	15.5	-18.9
4	☐	0.100	0.108	78.44	0.0001	P	4.4	7.5
5	☐	0.500	0.477	273.67	0.0003	P	1.5	-4.6
6	☐	1.000	1.077	598.13	0.0007	P	2.1	7.7
7	☐	10.000	9.857	5401.78	0.0064	P	0.9	-1.4
8	☐	50.000	49.494	26956.14	0.0321	P	0.7	-1.0
9	☐	100.000	100.267	54400.59	0.0649	P	0.5	0.3
10	☐			584707.14	0.7174	P	0.9	
11	☐			115.33	0.0001	P	2.2	

y = 6.4724E-004 * x + 2.5213E-005
R = 1.0000
DL = 0.007383 ug/l
BEC = 0.03896 ug/l

Weight: 1/y
Min Conc: <None>

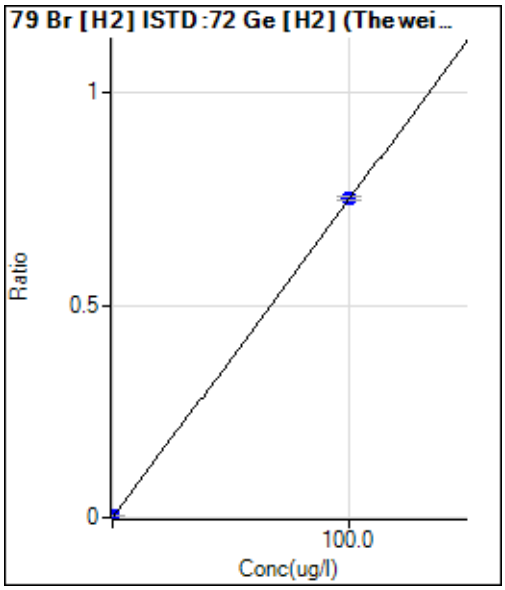


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	6538.52	0.0050	P	5.3	
2	☐			8682.13	0.0067	P	1.3	
3	☐			8439.07	0.0066	P	3.2	
4	☐			8961.69	0.0070	P	4.9	
5	☐			8023.02	0.0063	P	3.4	
6	☐			9321.21	0.0073	P	1.5	
7	☐			9161.44	0.0071	P	3.6	
8	☐			7517.07	0.0060	P	3.0	
9	☐			9374.47	0.0074	P	1.8	
10	☐			12630.47	0.0099	P	4.1	
11	☐	100.000	100.000	1197487.73	0.9310	P	2.1	0.0

y = 0.0093 * x + 0.0050
R = 1.0000
DL = 0.08667 ug/l
BEC = 0.5444 ug/l

Weight: 1/y
Min Conc: <None>

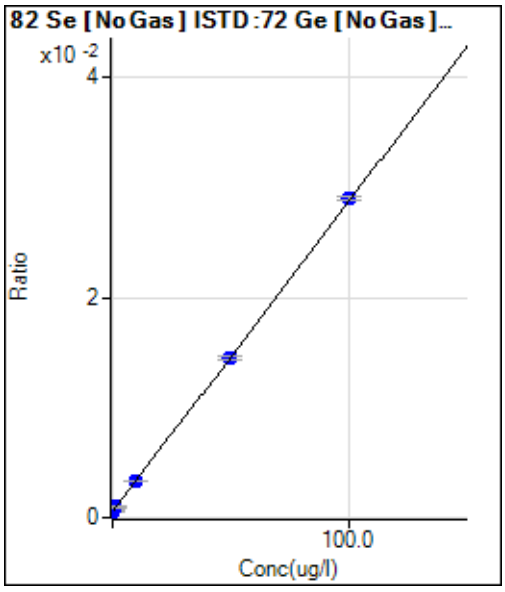
Calibration for 015_QC1.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	3213.99	0.0038	P	4.7	
2	☐			4288.81	0.0051	P	2.9	
3	☐			4288.81	0.0052	P	4.6	
4	☐			4644.90	0.0056	P	8.6	
5	☐			4049.24	0.0049	P	6.9	
6	☐			4854.52	0.0059	P	2.5	
7	☐			4871.17	0.0058	P	2.0	
8	☐			3699.84	0.0044	P	6.8	
9	☐			4558.35	0.0054	P	2.1	
10	☐			11881.39	0.0146	P	3.2	
11	☐	100.000	100.000	624501.76	0.7520	P	1.8	0.0

y = 0.0075 * x + 0.0038
R = 1.0000
DL = 0.07092 ug/l
BEC = 0.5077 ug/l

Weight: 1/y
Min Conc: <None>

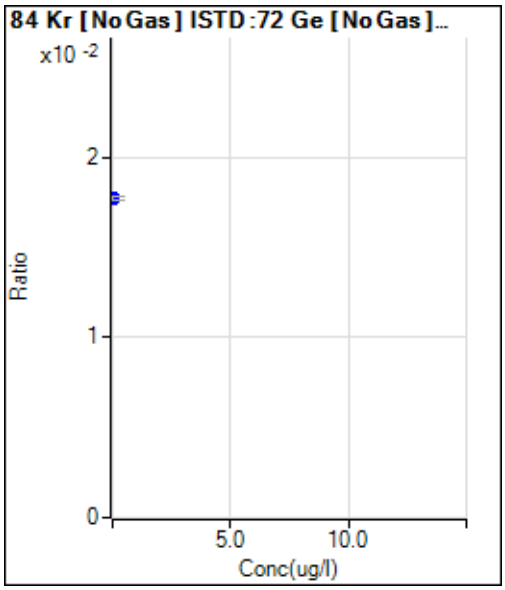


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	902.76	0.0007	P	28.3	
2	☐	0.025	0.024	906.90	0.0007	P	14.9	-3.7
3	☐	0.050	-0.451	731.28	0.0006	P	29.0	-1002.
4	☐	0.100	0.006	898.63	0.0007	P	2.5	-93.7
5	☐	0.500	0.546	1080.13	0.0008	P	12.7	9.2
6	☐	1.000	0.948	1225.21	0.0010	P	21.0	-5.2
7	☐	10.000	9.222	4222.79	0.0033	P	0.9	-7.8
8	☐	50.000	49.112	18357.26	0.0145	P	1.6	-1.8
9	☐	100.000	100.522	36541.13	0.0290	P	1.3	0.5
10	☐			384245.59	0.3008	P	4.4	
11	☐			2862.50	0.0022	P	2.3	

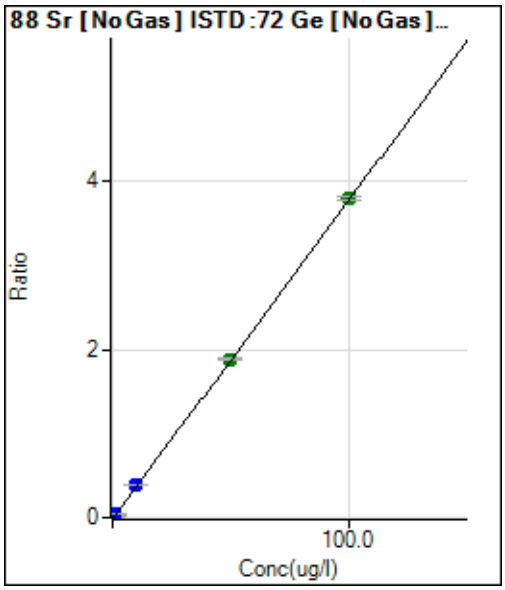
y = 2.8172E-004 * x + 6.9500E-004
R = 0.9999
DL = 2.095 ug/l
BEC = 2.467 ug/l

Weight: 1/y
Min Conc: <None>

Calibration for 015_QC1.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000		22989.42	0.0177	P	1.6	
2	☐			22646.24	0.0175	P	0.6	
3	☐			22552.86	0.0175	P	1.2	
4	☐			23002.69	0.0178	P	1.7	
5	☐			24888.91	0.0195	P	0.1	
6	☐			24232.36	0.0190	P	3.6	
7	☐			27101.69	0.0211	P	3.1	
8	☐			40689.95	0.0322	P	3.9	
9	☐			56387.99	0.0448	P	0.3	
10	☐			357703.14	0.2800	P	4.4	
11	☐			24169.03	0.0188	P	6.7	



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	4488.50	0.0035	P	8.6	
2	☐	0.025	0.013	5110.78	0.0040	P	7.5	-48.2
3	☐	0.050	0.021	5500.16	0.0043	P	1.6	-57.2
4	☐	0.100	0.090	8851.87	0.0069	P	2.2	-10.2
5	☐	0.500	0.472	27191.92	0.0214	P	1.4	-5.6
6	☐	1.000	1.066	55853.63	0.0438	P	1.5	6.6
7	☐	10.000	10.140	497170.09	0.3877	P	1.0	1.4
8	☐	50.000	49.638	2380182.72	1.8844	A	1.9	-0.7
9	☐	100.000	100.166	4784632.68	3.7990	A	0.6	0.2
10	☐			52940624.28	41.4363	A	3.5	
11	☐			5070.84	0.0039	P	3.5	

y = 0.0379 * x + 0.0035

R = 1.0000

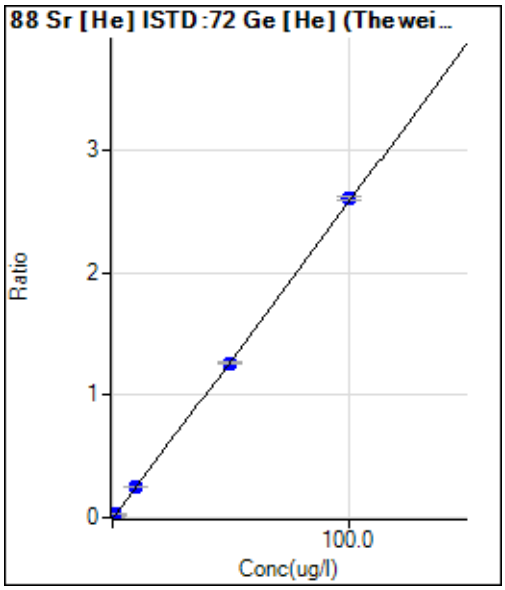
DL = 0.02369 ug/l

BEC = 0.09132 ug/l

Weight: 1/y

Min Conc: <None>

Calibration for 015_QC1.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	537.79	0.0026	P	3.8	
2	☐	0.025	0.029	674.47	0.0034	P	1.7	14.4
3	☐	0.050	0.043	746.69	0.0038	P	6.4	-13.0
4	☐	0.100	0.094	1001.15	0.0051	P	8.7	-5.6
5	☐	0.500	0.464	2918.09	0.0147	P	1.1	-7.1
6	☐	1.000	1.072	5972.39	0.0304	P	1.2	7.2
7	☐	10.000	9.742	51573.31	0.2546	P	0.6	-2.6
8	☐	50.000	48.676	257010.94	1.2614	P	0.4	-2.6
9	☐	100.000	100.687	523900.19	2.6063	P	1.1	0.7
10	☐			5793045.61	29.1221	A	1.0	
11	☐			673.35	0.0034	P	5.2	

y = 0.0259 * x + 0.0026

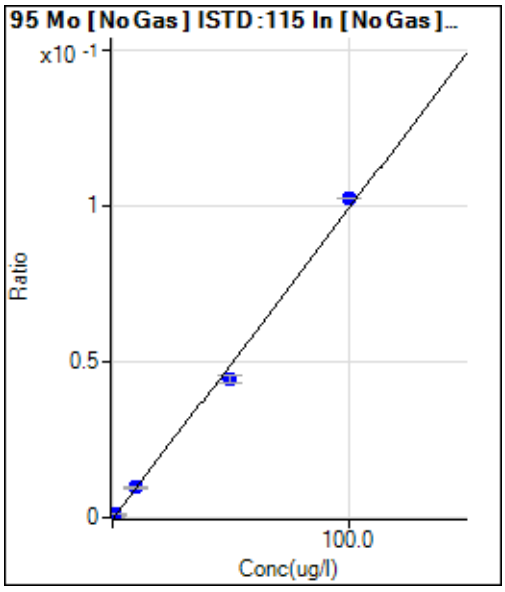
R = 0.9999

DL = 0.01164 ug/l

BEC = 0.1023 ug/l

Weight: 1/y

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	78.89	0.0000	P	25.1	
2	☐	0.025	0.026	378.90	0.0000	P	2.0	5.7
3	☐	0.050	0.046	606.68	0.0001	P	4.5	-7.7
4	☐	0.100	0.110	1311.18	0.0001	P	1.2	10.2
5	☐	0.500	0.454	5192.08	0.0005	P	0.3	-9.1
6	☐	1.000	1.040	11791.56	0.0010	P	3.5	4.0
7	☐	10.000	9.724	107767.86	0.0097	P	3.7	-2.8
8	☐	50.000	44.462	488831.08	0.0444	P	4.9	-11.1
9	☐	100.000	102.797	1114121.73	0.1026	P	0.1	2.8
10	☐			882.25	0.0001	P	2.6	
11	☐			230.00	0.0000	P	24.0	

y = 9.9834E-004 * x + 6.9142E-006

R = 0.9981

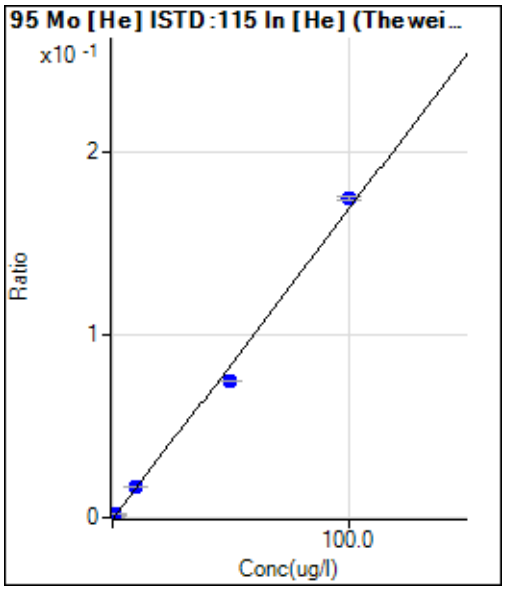
DL = 0.005223 ug/l

BEC = 0.006926 ug/l

Weight: 1/y

Min Conc: <None>

Calibration for 015_QC1.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	33.33	0.0000	P	59.9	
2	☐	0.025	0.023	128.89	0.0001	P	15.9	-6.9
3	☐	0.050	0.044	210.00	0.0001	P	14.5	-12.6
4	☐	0.100	0.109	480.01	0.0002	P	7.9	8.9
5	☐	0.500	0.461	1912.36	0.0008	P	3.9	-7.8
6	☐	1.000	1.015	4238.43	0.0017	P	6.4	1.5
7	☐	10.000	9.779	39323.95	0.0166	P	1.3	-2.2
8	☐	50.000	44.041	175622.57	0.0748	P	0.5	-11.9
9	☐	100.000	103.002	406893.29	0.1749	P	1.2	3.0
10	☐			257.78	0.0001	P	13.6	
11	☐			100.00	0.0000	P	15.1	

y = 0.0017 * x + 1.3645E-005

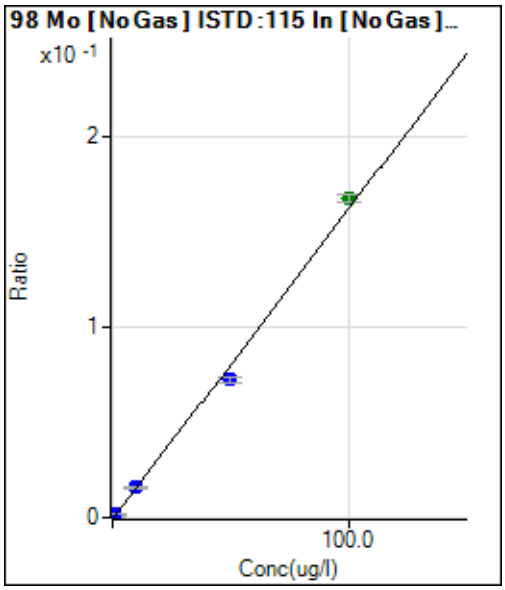
R = 0.9978

DL = 0.01444 ug/l

BEC = 0.008038 ug/l

Weight: 1/y

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	178.89	0.0000	P	6.9	
2	☐	0.025	0.021	573.97	0.0001	P	7.3	-14.7
3	☐	0.050	0.046	1038.93	0.0001	P	5.5	-7.9
4	☐	0.100	0.104	2079.68	0.0002	P	5.8	4.2
5	☐	0.500	0.454	8531.00	0.0008	P	2.9	-9.1
6	☐	1.000	1.006	18692.27	0.0017	P	0.7	0.6
7	☐	10.000	9.642	174598.18	0.0157	P	2.0	-3.6
8	☐	50.000	44.344	796248.57	0.0723	P	5.1	-11.3
9	☐	100.000	102.864	1820478.03	0.1677	A	2.6	2.9
10	☐			1623.94	0.0002	P	9.6	
11	☐			316.67	0.0000	P	13.0	

y = 0.0016 * x + 1.5669E-005

R = 0.9980

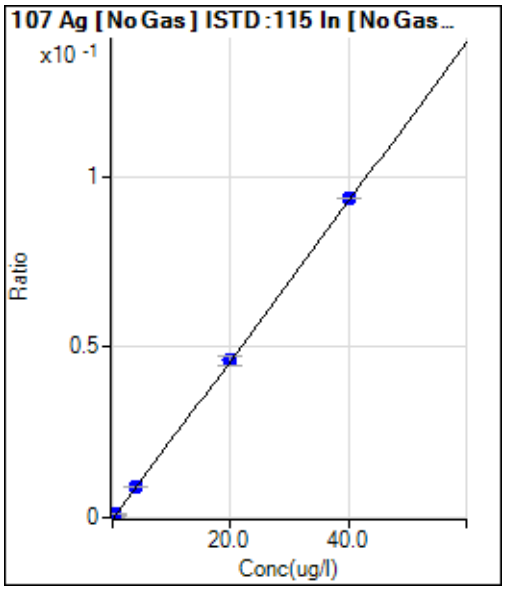
DL = 0.001988 ug/l

BEC = 0.00961 ug/l

Weight: 1/y

Min Conc: <None>

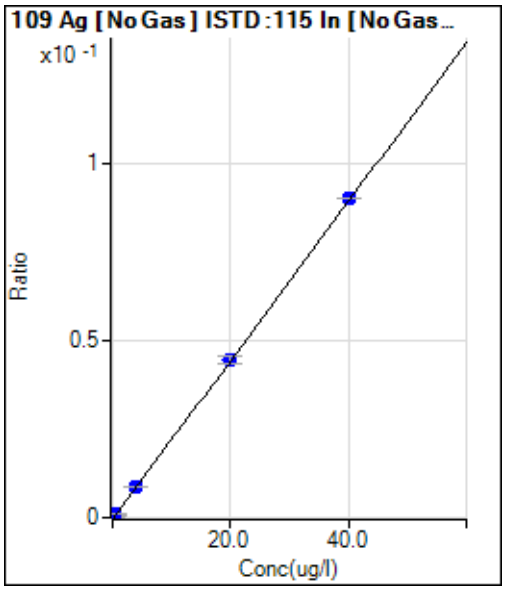
Calibration for 015_QC1.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	64.69	0.0000	P	20.6	
2	☐	0.010	0.010	340.81	0.0000	P	4.3	4.1
3	☐	0.020	0.020	590.25	0.0001	P	6.2	-1.7
4	☐	0.040	0.046	1266.57	0.0001	P	3.0	14.9
5	☐	0.200	0.189	5027.58	0.0004	P	0.6	-5.7
6	☐	0.400	0.425	11257.65	0.0010	P	3.1	6.3
7	☐	4.000	3.929	101806.11	0.0092	P	2.2	-1.8
8	☐	20.000	19.736	507263.25	0.0461	P	5.4	-1.3
9	☐	40.000	40.139	1017167.64	0.0937	P	0.5	0.3
10	☐			7779143.31	0.7292	A	0.8	
11	☐			10485.45	0.0009	P	11.5	

y = 0.0023 * x + 5.6621E-006
R = 1.0000
DL = 0.001499 ug/l
BEC = 0.002426 ug/l

Weight: 1/y
Min Conc: <None>

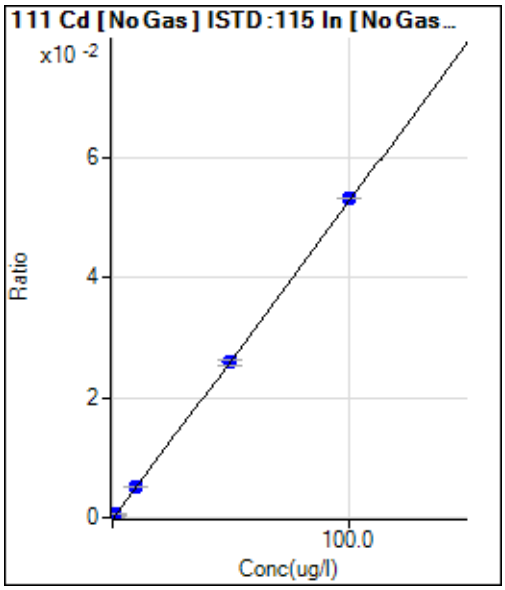


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	74.70	0.0000	P	22.3	
2	☐	0.010	0.009	302.79	0.0000	P	3.8	-11.0
3	☐	0.020	0.020	584.25	0.0001	P	4.7	-1.3
4	☐	0.040	0.045	1201.20	0.0001	P	2.3	11.6
5	☐	0.200	0.187	4832.10	0.0004	P	3.1	-6.4
6	☐	0.400	0.419	10731.03	0.0010	P	1.9	4.8
7	☐	4.000	3.888	97288.11	0.0088	P	2.6	-2.8
8	☐	20.000	19.762	490416.95	0.0445	P	5.2	-1.2
9	☐	40.000	40.130	981822.50	0.0904	P	0.4	0.3
10	☐			7597030.01	0.7121	A	18.9	
11	☐			10023.59	0.0009	P	10.7	

y = 0.0023 * x + 6.5414E-006
R = 1.0000
DL = 0.001944 ug/l
BEC = 0.002903 ug/l

Weight: 1/y
Min Conc: <None>

Calibration for 015_QC1.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	44.78	0.0000	P	15.5	
2	☐	0.025	0.024	187.34	0.0000	P	4.9	-5.1
3	☐	0.050	0.049	343.18	0.0000	P	5.7	-1.5
4	☐	0.100	0.099	632.86	0.0001	P	1.8	-0.6
5	☐	0.500	0.461	2792.33	0.0002	P	1.2	-7.8
6	☐	1.000	1.011	6073.32	0.0005	P	1.3	1.1
7	☐	10.000	9.626	56490.57	0.0051	P	2.9	-3.7
8	☐	50.000	48.894	284650.66	0.0258	P	4.1	-2.2
9	☐	100.000	100.590	577203.65	0.0532	P	0.1	0.6
10	☐			6311480.07	0.5918	A	1.2	
11	☐			274.28	0.0000	P	8.8	

y = 5.2856E-004 * x + 3.9208E-006

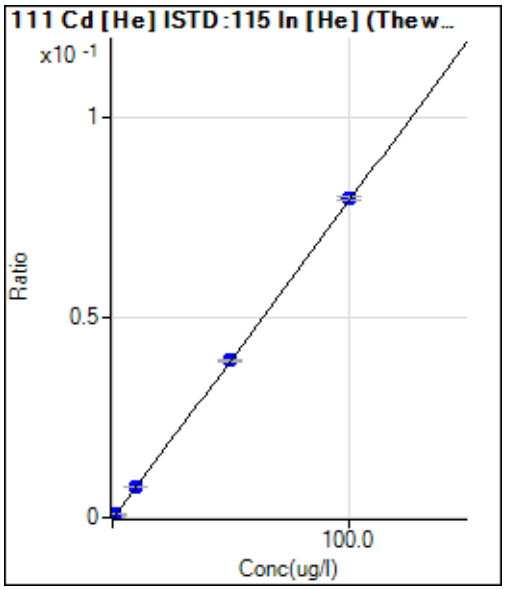
R = 0.9999

DL = 0.003448 ug/l

BEC = 0.007418 ug/l

Weight: 1/y

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	6.22	0.0000	P	25.3	
2	☐	0.025	0.022	49.55	0.0000	P	7.3	-10.0
3	☐	0.050	0.050	101.11	0.0000	P	6.2	0.0
4	☐	0.100	0.107	210.78	0.0001	P	5.7	6.6
5	☐	0.500	0.477	915.36	0.0004	P	3.4	-4.7
6	☐	1.000	1.027	1997.25	0.0008	P	1.0	2.7
7	☐	10.000	9.752	18351.48	0.0078	P	0.8	-2.5
8	☐	50.000	49.312	92054.70	0.0392	P	0.4	-1.4
9	☐	100.000	100.368	185622.65	0.0798	P	1.0	0.4
10	☐			1998443.93	0.8763	A	1.7	
11	☐			65.89	0.0000	P	6.8	

y = 7.9482E-004 * x + 2.5574E-006

R = 1.0000

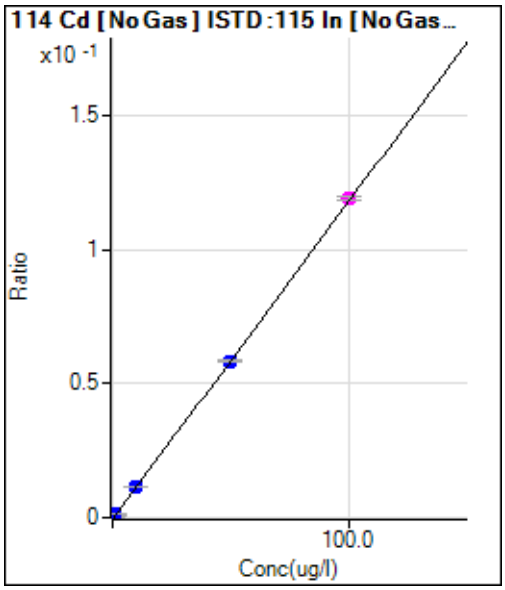
DL = 0.002446 ug/l

BEC = 0.003218 ug/l

Weight: 1/y

Min Conc: <None>

Calibration for 015_QC1.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	53.47	0.0000	P	14.3	
2	☐	0.025	0.024	372.35	0.0000	P	9.7	-5.5
3	☐	0.050	0.047	693.73	0.0001	P	1.5	-5.8
4	☐	0.100	0.105	1456.41	0.0001	P	2.3	5.5
5	☐	0.500	0.458	6181.89	0.0005	P	0.3	-8.5
6	☐	1.000	1.027	13813.03	0.0012	P	1.7	2.7
7	☐	10.000	9.685	127638.32	0.0115	P	2.5	-3.2
8	☐	50.000	49.110	642539.96	0.0583	P	1.5	-1.8
9	☐	100.000	100.477	1295145.43	0.1193	M	0.9	0.5
10	☐			14207119.58	1.3322	A	1.9	
11	☐			537.19	0.0000	P	11.1	

y = 0.0012 * x + 4.6824E-006

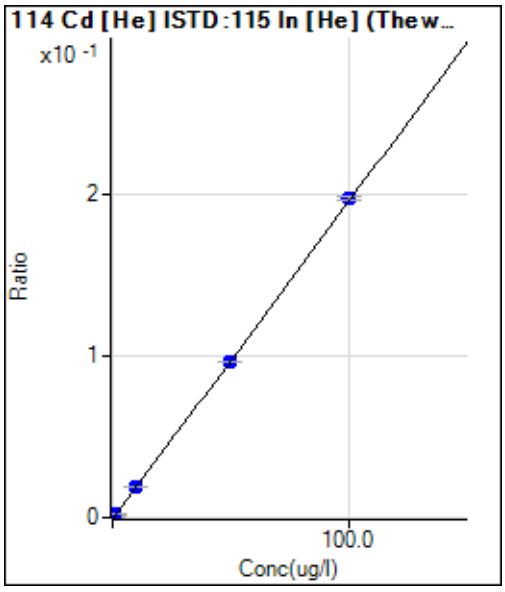
R = 0.9999

DL = 0.001687 ug/l

BEC = 0.003943 ug/l

Weight: 1/y

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	14.49	0.0000	P	51.0	
2	☐	0.025	0.023	125.93	0.0001	P	6.8	-6.3
3	☐	0.050	0.048	237.57	0.0001	P	1.4	-4.8
4	☐	0.100	0.106	518.35	0.0002	P	1.2	6.3
5	☐	0.500	0.467	2212.32	0.0009	P	2.5	-6.7
6	☐	1.000	1.036	4972.25	0.0020	P	0.9	3.6
7	☐	10.000	9.765	45370.01	0.0192	P	1.1	-2.3
8	☐	50.000	49.061	226109.64	0.0963	P	0.5	-1.9
9	☐	100.000	100.493	458844.42	0.1972	P	0.9	0.5
10	☐			5011769.31	2.1976	A	1.3	
11	☐			162.62	0.0001	P	6.2	

y = 0.0020 * x + 5.9641E-006

R = 0.9999

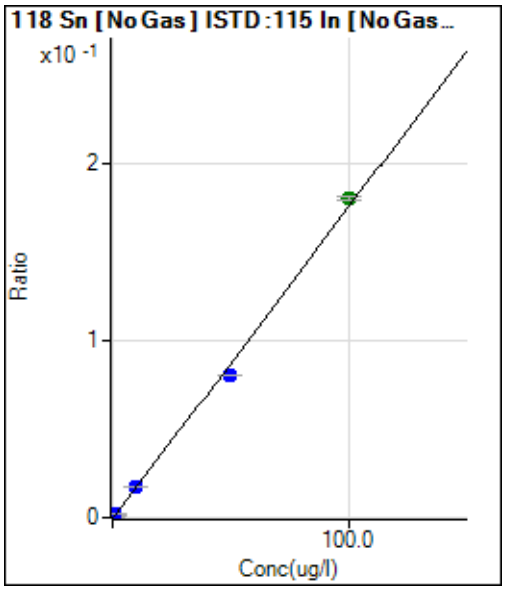
DL = 0.004646 ug/l

BEC = 0.003039 ug/l

Weight: 1/y

Min Conc: <None>

Calibration for 015_QC1.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	2798.07	0.0002	P	5.2	
2	☐	0.025	-0.004	2698.25	0.0002	P	2.2	-117.9
3	☐	0.050	0.025	3313.83	0.0003	P	5.9	-49.7
4	☐	0.100	0.088	4481.83	0.0004	P	7.8	-12.0
5	☐	0.500	0.460	11908.06	0.0011	P	2.5	-7.9
6	☐	1.000	1.030	23236.45	0.0021	P	2.4	3.0
7	☐	10.000	9.943	197079.78	0.0178	P	1.8	-0.6
8	☐	50.000	45.476	885458.44	0.0804	P	1.1	-9.0
9	☐	100.000	102.267	1958497.94	0.1804	A	0.8	2.3
10	☐			3570.07	0.0003	P	3.1	
11	☐			14482.10	0.0013	P	6.2	

y = 0.0018 * x + 2.4501E-004

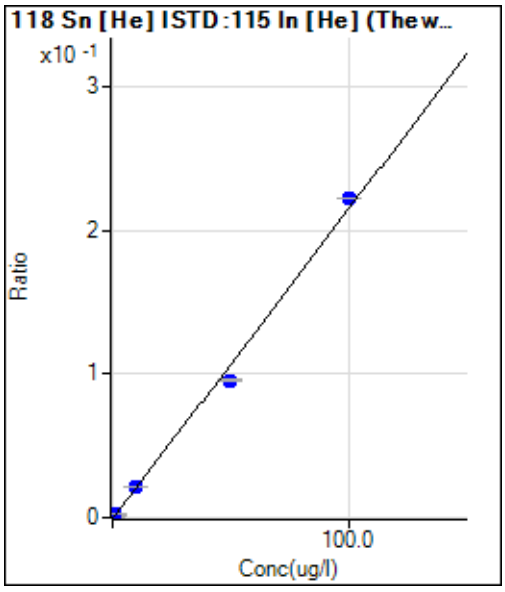
R = 0.9987

DL = 0.02157 ug/l

BEC = 0.1391 ug/l

Weight: 1/y

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	714.47	0.0003	P	12.7	
2	☐	0.025	-0.005	685.58	0.0003	P	6.9	-119.8
3	☐	0.050	0.027	838.92	0.0004	P	11.8	-46.4
4	☐	0.100	0.088	1164.50	0.0005	P	3.2	-12.4
5	☐	0.500	0.448	3023.68	0.0013	P	1.8	-10.5
6	☐	1.000	1.002	5987.98	0.0025	P	3.9	0.2
7	☐	10.000	9.728	50367.29	0.0213	P	0.6	-2.7
8	☐	50.000	44.245	224844.52	0.0957	P	1.1	-11.5
9	☐	100.000	102.905	517213.70	0.2223	P	0.3	2.9
10	☐			791.14	0.0003	P	8.6	
11	☐			3532.69	0.0014	P	3.4	

y = 0.0022 * x + 2.9329E-004

R = 0.9980

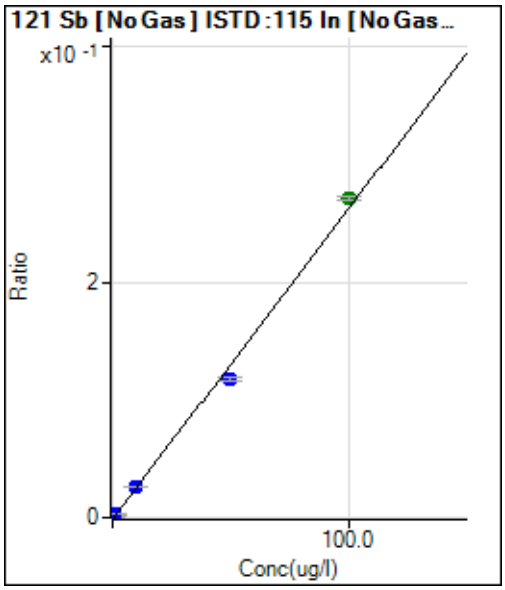
DL = 0.05174 ug/l

BEC = 0.136 ug/l

Weight: 1/y

Min Conc: <None>

Calibration for 015_QC1.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	384.37	0.0000	P	1.4	
2	☐	0.025	0.023	1065.15	0.0001	P	2.6	-9.2
3	☐	0.050	0.045	1758.96	0.0002	P	4.5	-9.1
4	☐	0.100	0.107	3542.14	0.0003	P	0.1	6.9
5	☐	0.500	0.468	14323.37	0.0013	P	1.0	-6.3
6	☐	1.000	1.025	30928.88	0.0027	P	1.3	2.5
7	☐	10.000	9.692	284340.69	0.0256	P	2.1	-3.1
8	☐	50.000	44.541	1296633.88	0.1177	P	1.7	-10.9
9	☐	100.000	102.760	2945906.93	0.2714	A	1.7	2.8
10	☐			2999.62	0.0003	P	2.2	
11	☐			1057.48	0.0001	P	2.4	

y = 0.0026 * x + 3.3663E-005

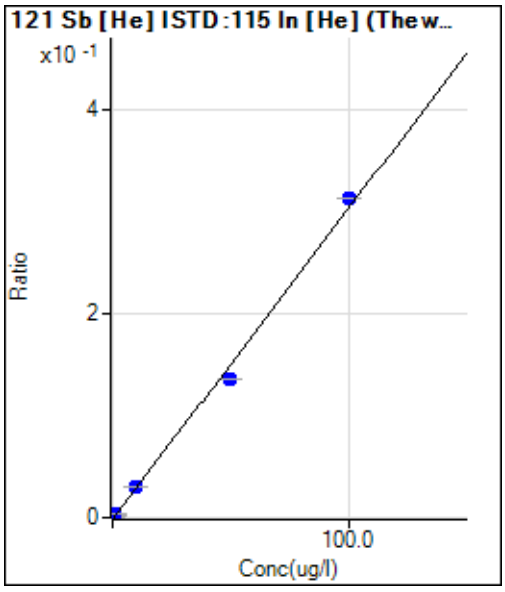
R = 0.9982

DL = 0.0005359 ug/l

BEC = 0.01275 ug/l

Weight: 1/y

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	96.34	0.0000	P	6.3	
2	☐	0.025	0.024	271.36	0.0001	P	9.9	-5.3
3	☐	0.050	0.048	445.05	0.0002	P	1.1	-4.0
4	☐	0.100	0.108	895.45	0.0004	P	3.2	8.3
5	☐	0.500	0.468	3526.47	0.0015	P	0.5	-6.5
6	☐	1.000	1.036	7817.29	0.0032	P	0.6	3.6
7	☐	10.000	9.779	70830.14	0.0299	P	1.4	-2.2
8	☐	50.000	44.647	320528.42	0.1365	P	0.2	-10.7
9	☐	100.000	102.698	730347.88	0.3139	P	0.6	2.7
10	☐			677.75	0.0003	P	7.8	
11	☐			246.70	0.0001	P	6.0	

y = 0.0031 * x + 3.9574E-005

R = 0.9982

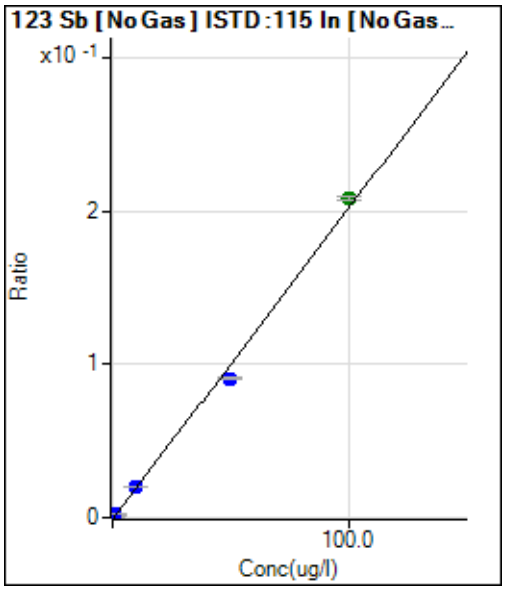
DL = 0.00244 ug/l

BEC = 0.01295 ug/l

Weight: 1/y

Min Conc: <None>

Calibration for 015_QC1.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	436.05	0.0000	P	3.3	
2	☐	0.025	0.023	963.80	0.0001	P	2.9	-8.3
3	☐	0.050	0.045	1482.23	0.0001	P	2.2	-10.0
4	☐	0.100	0.107	2864.92	0.0003	P	2.2	7.1
5	☐	0.500	0.461	10975.04	0.0010	P	1.0	-7.8
6	☐	1.000	1.039	24221.54	0.0021	P	1.2	3.9
7	☐	10.000	9.753	219934.12	0.0198	P	2.6	-2.5
8	☐	50.000	44.777	1001449.02	0.0909	P	2.4	-10.4
9	☐	100.000	102.636	2260478.52	0.2082	A	1.3	2.6
10	☐			3127.67	0.0003	P	3.7	
11	☐			1025.14	0.0001	P	4.5	

y = 0.0020 * x + 3.8192E-005

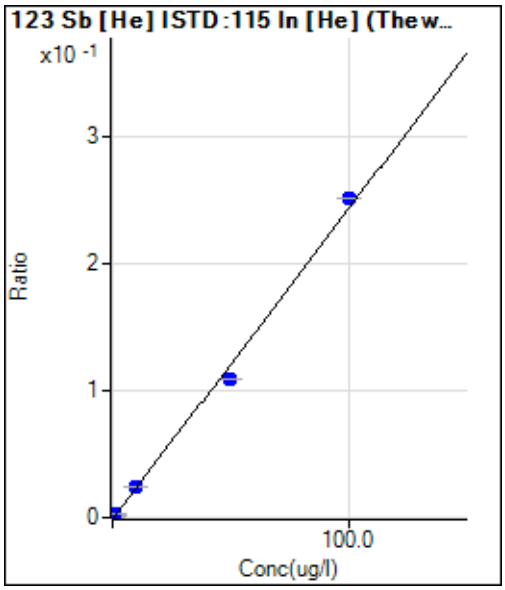
R = 0.9983

DL = 0.001873 ug/l

BEC = 0.01883 ug/l

Weight: 1/y

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	79.68	0.0000	P	4.7	
2	☐	0.025	0.022	211.69	0.0001	P	9.0	-10.6
3	☐	0.050	0.048	360.37	0.0002	P	1.9	-3.3
4	☐	0.100	0.102	680.42	0.0003	P	0.7	2.0
5	☐	0.500	0.469	2826.24	0.0012	P	2.3	-6.3
6	☐	1.000	1.038	6260.70	0.0026	P	2.1	3.8
7	☐	10.000	9.801	56728.23	0.0240	P	1.0	-2.0
8	☐	50.000	44.452	255003.48	0.1086	P	0.5	-11.1
9	☐	100.000	102.794	584140.99	0.2510	P	0.5	2.8
10	☐			552.40	0.0002	P	1.8	
11	☐			198.35	0.0001	P	3.5	

y = 0.0024 * x + 3.2728E-005

R = 0.9981

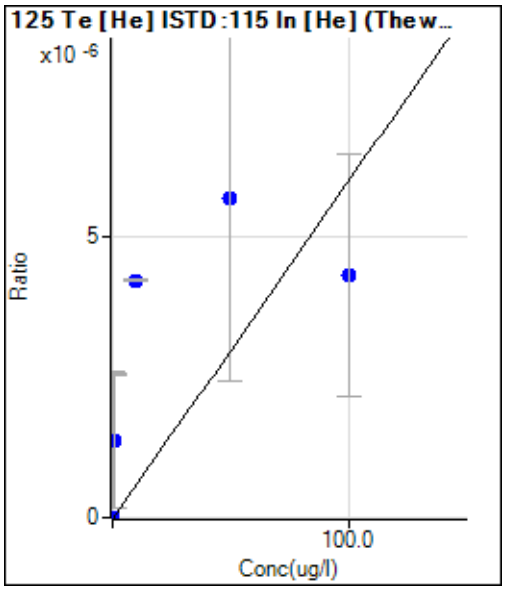
DL = 0.00187 ug/l

BEC = 0.0134 ug/l

Weight: 1/y

Min Conc: <None>

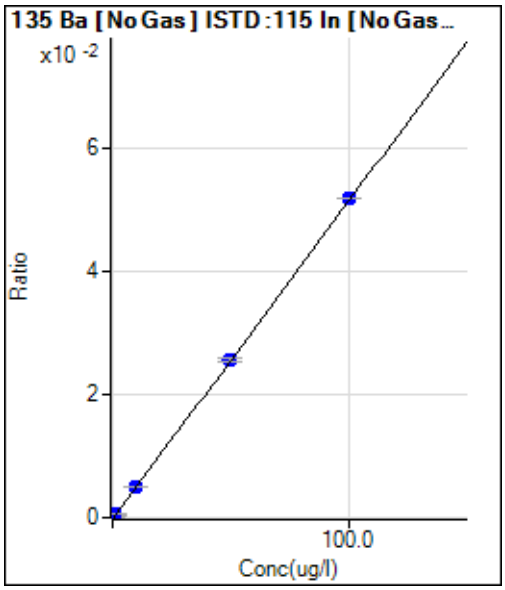
Calibration for 015_QC1.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	0.00	0.0000	P		
2	☐	0.025	23.006	3.34	0.0000	P	173.2	91923.
3	☐	0.050	0.000	0.00	0.0000	P		-100.0
4	☐	0.100	0.000	0.00	0.0000	P		-100.0
5	☐	0.500	22.828	3.34	0.0000	P	173.2	4465.6
6	☐	1.000	22.664	3.34	0.0000	P	173.2	2166.4
7	☐	10.000	70.141	10.01	0.0000	P	0.9	601.4
8	☐	50.000	94.329	13.35	0.0000	P	114.6	88.7
9	☐	100.000	71.488	10.01	0.0000	P	100.3	-28.5
10	☐			130.13	0.0001	P	19.7	
11	☐			0.00	0.0000	P		

y = 6.0295E-008 * x + 0.0000E+000
R = 0.7174
DL = 0 ug/l
BEC = 0 ug/l

Weight: 1/y
Min Conc: <None>

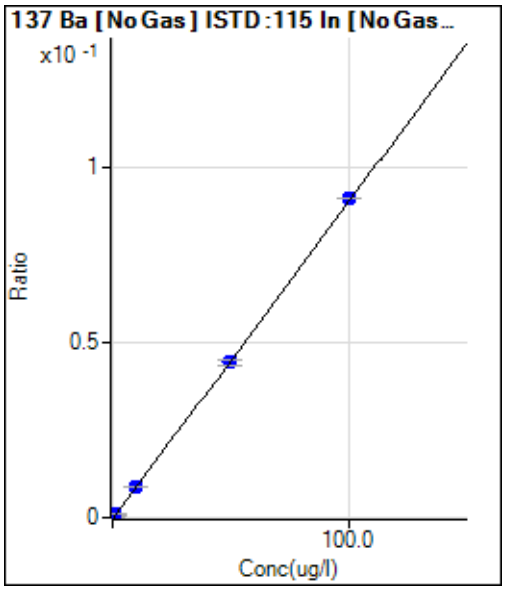


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	442.47	0.0000	P	14.2	
2	☐	0.025	0.009	492.37	0.0000	P	8.3	-65.0
3	☐	0.050	0.026	595.50	0.0001	P	11.9	-48.6
4	☐	0.100	0.097	998.06	0.0001	P	4.3	-2.6
5	☐	0.500	0.440	2994.41	0.0003	P	8.2	-12.1
6	☐	1.000	1.008	6305.63	0.0006	P	9.0	0.8
7	☐	10.000	9.500	54815.54	0.0049	P	1.6	-5.0
8	☐	50.000	49.400	281358.57	0.0255	P	2.6	-1.2
9	☐	100.000	100.350	562482.96	0.0518	P	0.5	0.4
10	☐			5958320.13	0.5588	A	3.2	
11	☐			918.21	0.0001	P	2.8	

y = 5.1598E-004 * x + 3.8764E-005
R = 1.0000
DL = 0.03196 ug/l
BEC = 0.07513 ug/l

Weight: 1/y
Min Conc: <None>

Calibration for 015_QC1.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	665.37	0.0001	P	18.9	
2	☐	0.025	0.027	941.50	0.0001	P	6.5	8.5
3	☐	0.050	0.045	1134.46	0.0001	P	5.8	-9.6
4	☐	0.100	0.114	1809.87	0.0002	P	10.1	14.3
5	☐	0.500	0.459	5333.78	0.0005	P	3.9	-8.2
6	☐	1.000	1.003	10879.35	0.0010	P	1.2	0.3
7	☐	10.000	9.482	95727.26	0.0086	P	2.6	-5.2
8	☐	50.000	48.896	487595.19	0.0442	P	3.5	-2.2
9	☐	100.000	100.604	987502.61	0.0910	P	0.5	0.6
10	☐			10531025.51	0.9877	A	3.4	
11	☐			1420.59	0.0001	P	11.9	

y = 9.0366E-004 * x + 5.8241E-005

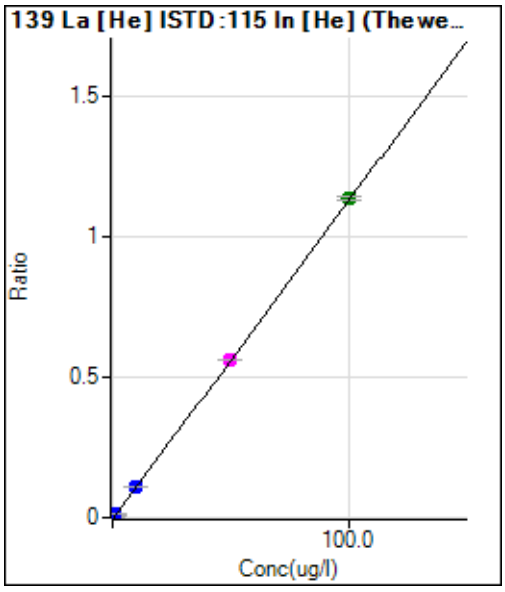
R = 0.9999

DL = 0.03655 ug/l

BEC = 0.06445 ug/l

Weight: 1/y

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	57.78	0.0000	P	9.4	
2	☐	0.025	0.024	708.91	0.0003	P	3.8	-5.2
3	☐	0.050	0.048	1354.52	0.0006	P	5.1	-4.1
4	☐	0.100	0.109	3039.24	0.0013	P	7.7	9.1
5	☐	0.500	0.474	12931.59	0.0054	P	2.7	-5.3
6	☐	1.000	1.008	27894.63	0.0114	P	1.7	0.8
7	☐	10.000	9.612	257628.82	0.1088	P	1.1	-3.9
8	☐	50.000	49.645	1320025.53	0.5621	M	0.6	-0.7
9	☐	100.000	100.217	2639908.89	1.1346	A	1.8	0.2
10	☐			396.67	0.0002	P	11.5	
11	☐			110.00	0.0000	P	13.0	

y = 0.0113 * x + 2.3745E-005

R = 1.0000

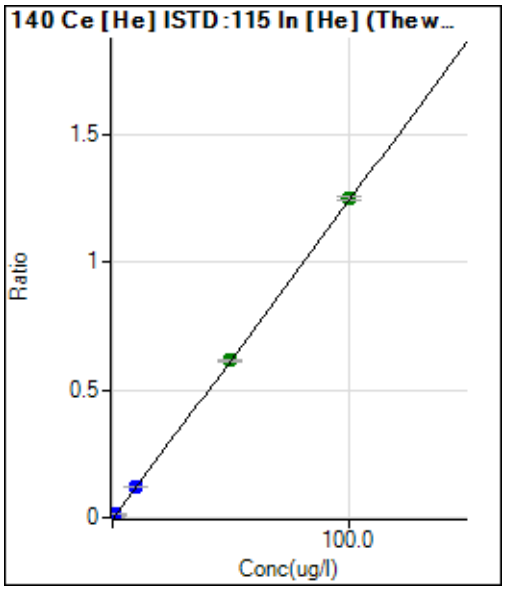
DL = 0.0005937 ug/l

BEC = 0.002097 ug/l

Weight: 1/y

Min Conc: <None>

Calibration for 015_QC1.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	127.78	0.0001	P	9.3	
2	☐	0.025	0.021	775.58	0.0003	P	2.4	-14.1
3	☐	0.050	0.045	1458.97	0.0006	P	7.6	-10.3
4	☐	0.100	0.106	3328.20	0.0014	P	1.7	6.5
5	☐	0.500	0.456	13760.21	0.0057	P	2.7	-8.7
6	☐	1.000	0.996	30364.26	0.0124	P	0.7	-0.4
7	☐	10.000	9.477	279325.68	0.1180	P	0.5	-5.2
8	☐	50.000	49.447	1445566.85	0.6155	A	1.2	-1.1
9	☐	100.000	100.329	2905728.77	1.2489	A	1.7	0.3
10	☐			865.59	0.0004	P	6.1	
11	☐			135.56	0.0001	P	6.1	

y = 0.0124 * x + 5.2495E-005

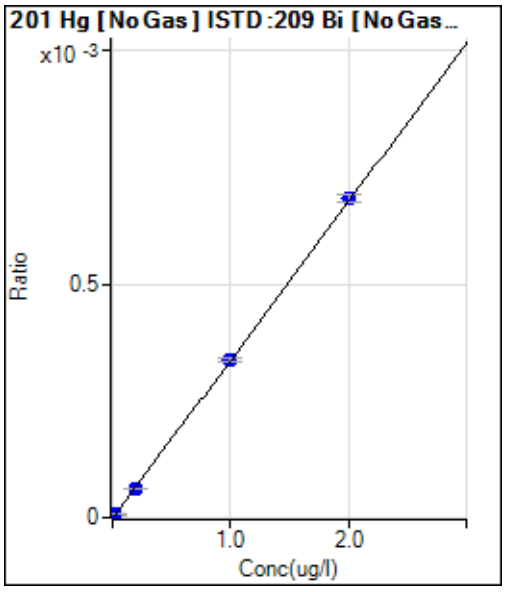
R = 1.0000

DL = 0.001171 ug/l

BEC = 0.004217 ug/l

Weight: 1/y

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	26.99	0.0000	P	24.3	
2	☐			25.66	0.0000	P	6.3	
3	☐	0.001	0.000	27.66	0.0000	P	2.5	-71.9
4	☐	0.002	0.002	32.99	0.0000	P	14.2	-10.7
5	☐	0.010	0.010	62.66	0.0000	P	18.2	-4.2
6	☐	0.020	0.016	85.98	0.0000	P	15.3	-20.9
7	☐	0.200	0.178	696.88	0.0001	P	3.7	-11.2
8	☐	1.000	0.989	3615.77	0.0003	P	1.5	-1.1
9	☐	2.000	2.008	7100.13	0.0007	P	2.2	0.4
10	☐			47.66	0.0000	P	30.0	
11	☐			41.66	0.0000	P	28.9	

y = 3.3939E-004 * x + 2.3912E-006

R = 0.9999

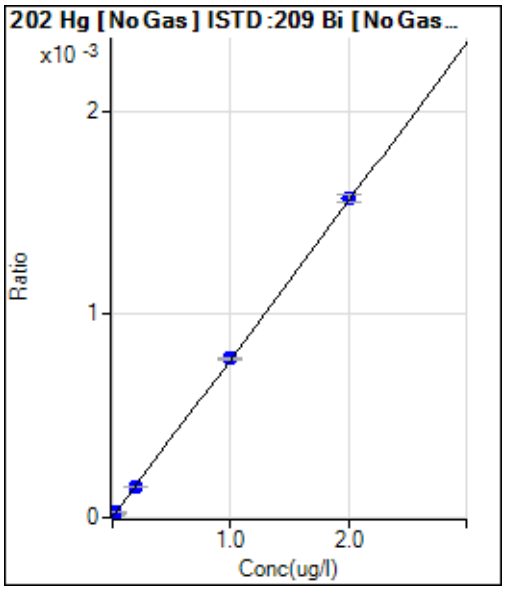
DL = 0.005133 ug/l

BEC = 0.007046 ug/l

Weight: 1/y

Min Conc: <None>

Calibration for 015_QC1.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	132.97	0.0000	P	5.2	
2	☐			125.64	0.0000	P	7.0	
3	☐	0.001	-0.001	118.98	0.0000	P	7.0	-243.2
4	☐	0.002	0.000	133.31	0.0000	P	10.1	-80.9
5	☐	0.010	0.009	209.29	0.0000	P	2.6	-9.5
6	☐	0.020	0.019	290.95	0.0000	P	1.7	-7.0
7	☐	0.200	0.178	1667.78	0.0002	P	3.4	-11.1
8	☐	1.000	0.993	8389.96	0.0008	P	1.5	-0.7
9	☐	2.000	2.006	16318.98	0.0016	P	1.8	0.3
10	☐			185.96	0.0000	P	2.0	
11	☐			159.64	0.0000	P	1.5	

y = 7.7776E-004 * x + 1.1808E-005

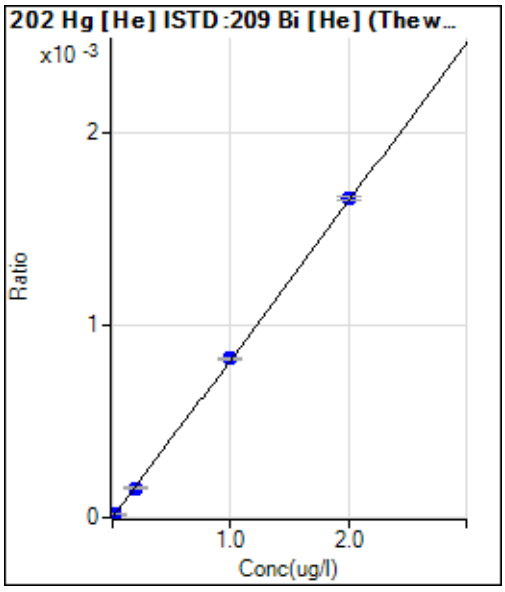
R = 0.9999

DL = 0.002382 ug/l

BEC = 0.01518 ug/l

Weight: 1/y

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	38.66	0.0000	P	11.8	
2	☐			38.66	0.0000	P	22.5	
3	☐	0.001	0.000	38.32	0.0000	P	23.4	-111.5
4	☐	0.002	0.002	45.66	0.0000	P	7.7	-9.3
5	☐	0.010	0.005	57.32	0.0000	P	21.8	-49.7
6	☐	0.020	0.018	107.65	0.0000	P	0.5	-8.6
7	☐	0.200	0.176	696.55	0.0002	P	4.8	-12.2
8	☐	1.000	0.993	3662.11	0.0008	P	0.7	-0.7
9	☐	2.000	2.006	7174.82	0.0017	P	1.5	0.3
10	☐			78.98	0.0000	P	6.3	
11	☐			59.32	0.0000	P	12.3	

y = 8.2267E-004 * x + 8.4077E-006

R = 0.9999

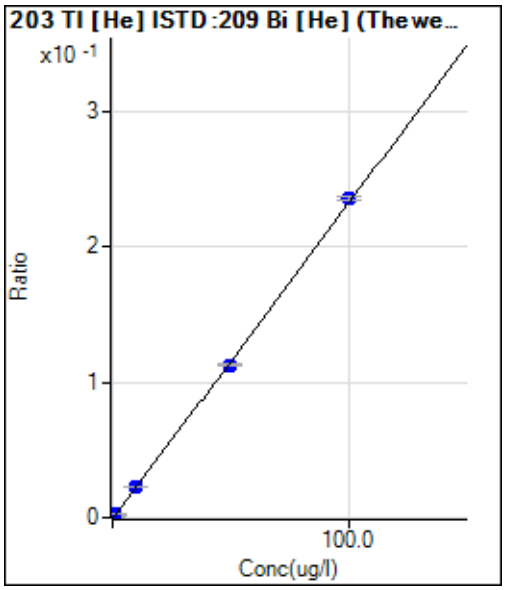
DL = 0.003607 ug/l

BEC = 0.01022 ug/l

Weight: 1/y

Min Conc: <None>

Calibration for 015_QC1.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	1235.89	0.0003	P	0.7	
2	☐	0.025	0.013	1377.96	0.0003	P	5.1	-47.2
3	☐	0.050	0.028	1542.71	0.0003	P	4.2	-43.7
4	☐	0.100	0.090	2207.07	0.0005	P	4.6	-10.3
5	☐	0.500	0.427	5791.59	0.0013	P	1.4	-14.6
6	☐	1.000	0.982	11773.25	0.0026	P	1.4	-1.8
7	☐	10.000	9.468	102094.93	0.0224	P	2.7	-5.3
8	☐	50.000	48.133	500225.67	0.1127	P	1.7	-3.7
9	☐	100.000	100.987	1022028.04	0.2363	P	0.8	1.0
10	☐			11132365.77	2.6633	A	1.0	
11	☐			8893.22	0.0019	P	7.5	

y = 0.0023 * x + 2.6888E-004

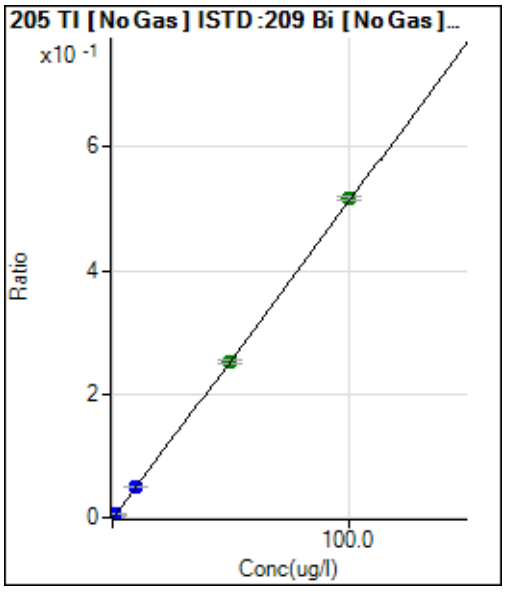
R = 0.9998

DL = 0.002554 ug/l

BEC = 0.1151 ug/l

Weight: 1/y

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	5493.40	0.0005	P	13.3	
2	☐	0.025	0.007	5789.09	0.0005	P	14.4	-73.6
3	☐	0.050	0.023	6748.46	0.0006	P	14.6	-53.6
4	☐	0.100	0.082	10001.60	0.0009	P	9.6	-18.1
5	☐	0.500	0.431	29989.27	0.0027	P	4.2	-13.9
6	☐	1.000	0.999	62260.20	0.0056	P	2.1	-0.1
7	☐	10.000	9.562	551865.05	0.0496	P	1.4	-4.4
8	☐	50.000	49.039	2700050.07	0.2526	A	2.8	-1.9
9	☐	100.000	100.524	5371549.12	0.5173	A	1.2	0.5
10	☐			58489921.35	5.7953	A	0.7	
11	☐			45292.67	0.0041	P	18.9	

y = 0.0051 * x + 4.8727E-004

R = 0.9999

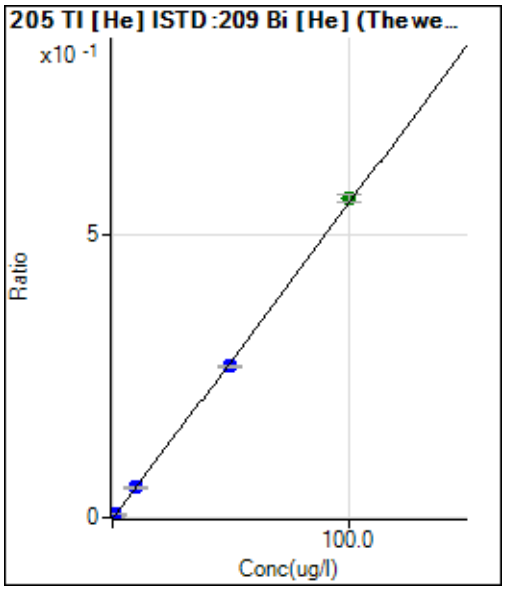
DL = 0.03781 ug/l

BEC = 0.09478 ug/l

Weight: 1/y

Min Conc: <None>

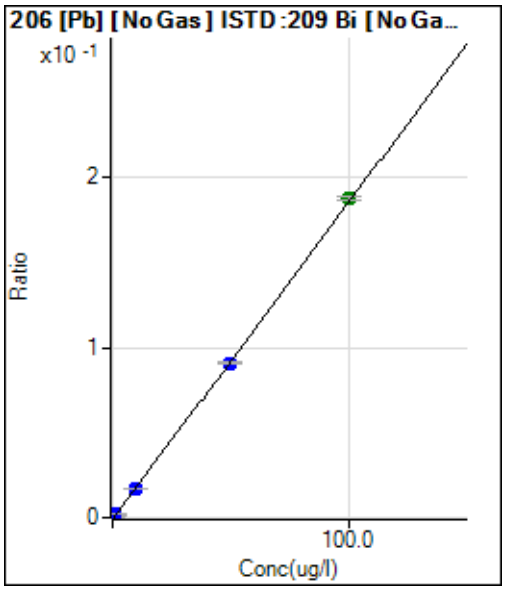
Calibration for 015_QC1.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	2879.47	0.0006	P	1.7	
2	☐	0.025	0.013	3225.02	0.0007	P	1.8	-46.1
3	☐	0.050	0.032	3704.01	0.0008	P	2.8	-36.5
4	☐	0.100	0.090	5205.78	0.0011	P	4.1	-10.0
5	☐	0.500	0.438	14026.33	0.0031	P	1.4	-12.4
6	☐	1.000	0.982	28015.20	0.0061	P	0.2	-1.8
7	☐	10.000	9.412	242119.75	0.0531	P	2.0	-5.9
8	☐	50.000	47.927	1188363.37	0.2678	P	1.5	-4.1
9	☐	100.000	101.096	2441041.19	0.5643	A	1.9	1.1
10	☐			26046531.68	6.2314	A	0.8	
11	☐			21529.33	0.0047	P	7.6	

y = 0.0056 * x + 6.2642E-004
R = 0.9997
DL = 0.005854 ug/l
BEC = 0.1124 ug/l

Weight: 1/y
Min Conc: <None>

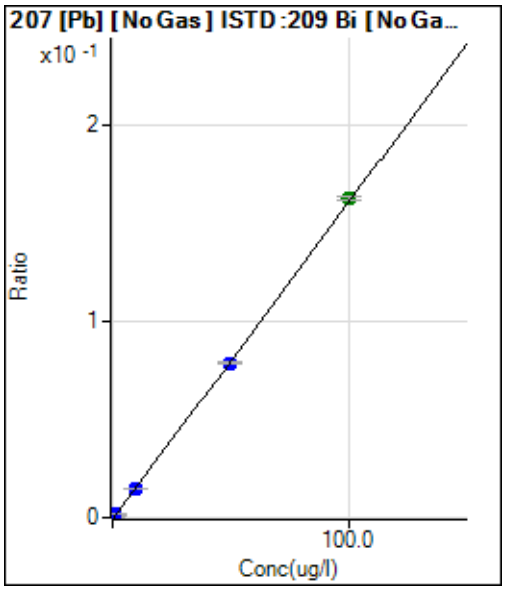


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	475.57	0.0000	P	19.4	
2	☐	0.025	0.021	907.82	0.0001	P	7.8	-14.8
3	☐	0.050	0.044	1377.86	0.0001	P	3.3	-12.3
4	☐	0.100	0.100	2524.70	0.0002	P	2.0	0.4
5	☐	0.500	0.446	9701.35	0.0009	P	2.5	-10.7
6	☐	1.000	1.011	21317.12	0.0019	P	0.8	1.1
7	☐	10.000	9.211	191255.49	0.0172	P	1.4	-7.9
8	☐	50.000	48.682	970450.90	0.0908	P	0.7	-2.6
9	☐	100.000	100.738	1949652.06	0.1878	A	1.5	0.7
10	☐			20768151.08	2.0577	A	0.9	
11	☐			1786.80	0.0002	P	6.5	

y = 0.0019 * x + 4.2217E-005
R = 0.9999
DL = 0.01316 ug/l
BEC = 0.02266 ug/l

Weight: 1/y
Min Conc: <None>

Calibration for 015_QC1.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	428.90	0.0000	P	12.3	
2	☐	0.025	0.019	754.47	0.0001	P	7.7	-25.6
3	☐	0.050	0.042	1180.06	0.0001	P	4.8	-15.7
4	☐	0.100	0.104	2272.43	0.0002	P	0.8	4.3
5	☐	0.500	0.451	8498.31	0.0008	P	3.1	-9.8
6	☐	1.000	0.980	17930.97	0.0016	P	1.1	-2.0
7	☐	10.000	9.233	166017.18	0.0149	P	1.1	-7.7
8	☐	50.000	48.712	840884.40	0.0786	P	1.5	-2.6
9	☐	100.000	100.721	1687868.10	0.1625	A	0.9	0.7
10	☐			18136170.70	1.7970	A	1.8	
11	☐			1561.21	0.0001	P	5.3	

y = 0.0016 * x + 3.8076E-005

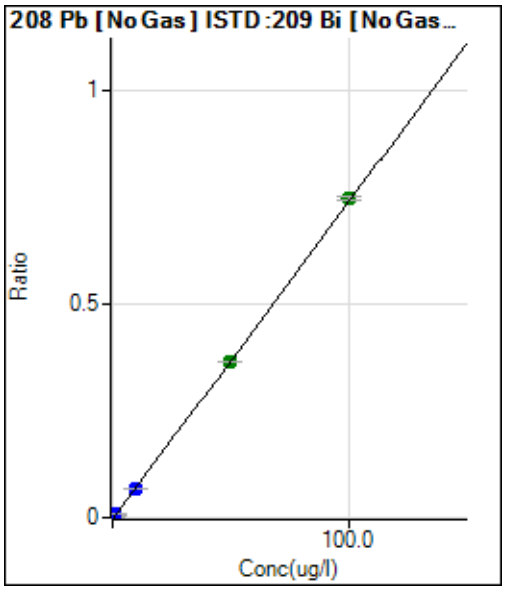
R = 0.9999

DL = 0.008742 ug/l

BEC = 0.0236 ug/l

Weight: 1/y

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	1888.95	0.0002	P	3.5	
2	☐	0.025	0.020	3517.99	0.0003	P	3.9	-19.5
3	☐	0.050	0.043	5401.57	0.0005	P	4.9	-14.5
4	☐	0.100	0.103	10299.41	0.0009	P	1.4	3.2
5	☐	0.500	0.450	39011.48	0.0035	P	2.4	-10.0
6	☐	1.000	0.988	83189.23	0.0075	P	0.5	-1.2
7	☐	10.000	9.213	763430.00	0.0687	P	1.2	-7.9
8	☐	50.000	48.907	3890865.07	0.3639	A	0.2	-2.2
9	☐	100.000	100.625	7772165.93	0.7485	A	0.6	0.6
10	☐			83139247.79	8.2377	A	1.1	
11	☐			7299.74	0.0007	P	0.6	

y = 0.0074 * x + 1.6773E-004

R = 0.9999

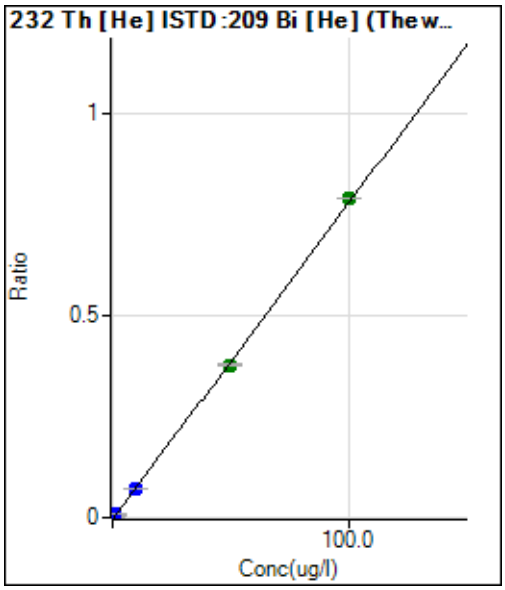
DL = 0.002343 ug/l

BEC = 0.02255 ug/l

Weight: 1/y

Min Conc: <None>

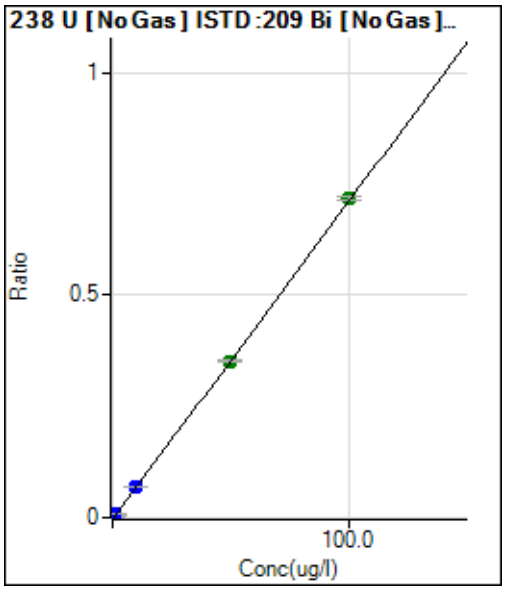
Calibration for 015_QC1.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	297.46	0.0001	P	6.3	
2	☐	0.025	0.014	815.69	0.0002	P	2.0	-42.3
3	☐	0.050	0.031	1425.32	0.0003	P	4.4	-37.4
4	☐	0.100	0.077	3060.26	0.0007	P	2.2	-23.4
5	☐	0.500	0.393	14336.90	0.0031	P	0.3	-21.4
6	☐	1.000	0.913	33029.93	0.0072	P	0.5	-8.7
7	☐	10.000	9.092	324152.53	0.0711	P	1.9	-9.1
8	☐	50.000	48.261	1673405.64	0.3771	A	1.1	-3.5
9	☐	100.000	100.962	3412701.67	0.7889	A	0.6	1.0
10	☐			36910810.81	8.8309	A	2.0	
11	☐			3394.48	0.0007	P	4.9	

y = 0.0078 * x + 6.4706E-005
R = 0.9998
DL = 0.001566 ug/l
BEC = 0.008282 ug/l

Weight: 1/y
Min Conc: <None>

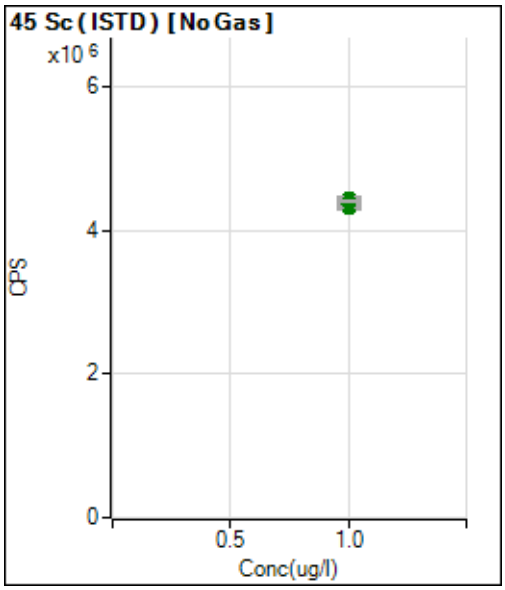


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	243.96	0.0000	P	13.7	
2	☐	0.025	0.023	2033.75	0.0002	P	1.4	-9.4
3	☐	0.050	0.045	3838.13	0.0003	P	0.8	-9.4
4	☐	0.100	0.104	8431.37	0.0008	P	1.4	4.3
5	☐	0.500	0.453	36146.77	0.0033	P	0.9	-9.4
6	☐	1.000	1.021	80939.86	0.0073	P	0.4	2.1
7	☐	10.000	9.580	760257.16	0.0684	P	1.0	-4.2
8	☐	50.000	49.124	3749408.33	0.3506	A	1.3	-1.8
9	☐	100.000	100.480	7446159.02	0.7171	A	1.8	0.5
10	☐			80815738.84	8.0075	A	0.9	
11	☐			2195.75	0.0002	P	3.9	

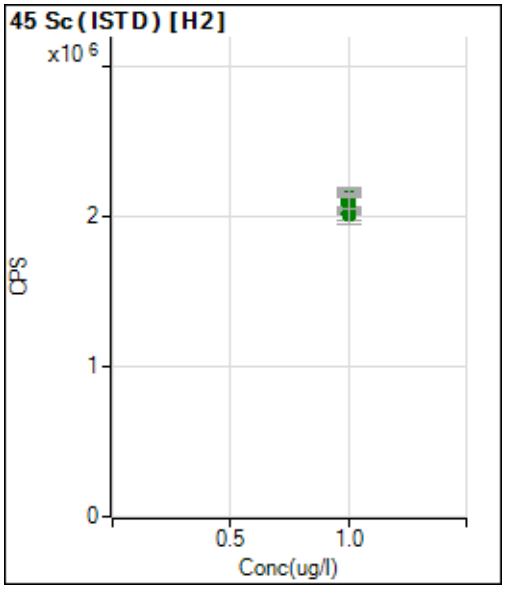
y = 0.0071 * x + 2.1702E-005
R = 0.9999
DL = 0.00125 ug/l
BEC = 0.003041 ug/l

Weight: 1/y
Min Conc: <None>

Calibration for 015_QC1.d

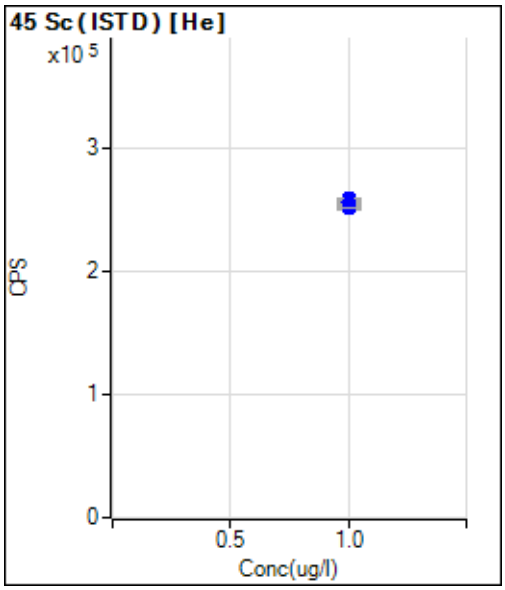


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	1.000		4454608.76		A	0.4	
2	☐	1.000		4432206.22		A	1.8	
3	☐	1.000		4380172.84		A	0.6	
4	☐	1.000		4340012.12		A	1.1	
5	☐	1.000		4401654.04		A	1.5	
6	☐	1.000		4409170.52		A	0.2	
7	☐	1.000		4357923.90		A	1.4	
8	☐	1.000		4344739.70		A	2.8	
9	☐	1.000		4328030.56		A	0.3	
10	☐	1.000		4374146.77		A	2.6	
11	☐	1.000		4407833.61		A	0.8	

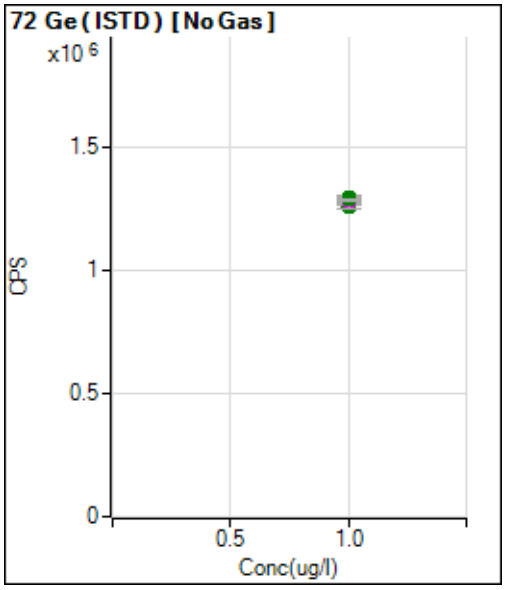


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	1.000		2116650.86		A	5.6	
2	☐	1.000		2111720.22		A	5.5	
3	☐	1.000		2091230.57		A	5.0	
4	☐	1.000		2127621.58		A	6.1	
5	☐	1.000		2086683.40		A	6.5	
6	☐	1.000		2097359.63		A	5.4	
7	☐	1.000		2095490.08		A	4.1	
8	☐	1.000		2075774.35		A	5.2	
9	☐	1.000		2019099.14		A	4.5	
10	☐	1.000		2009230.92		A	5.9	
11	☐	1.000		2088114.68		A	4.2	

Calibration for 015_QC1.d

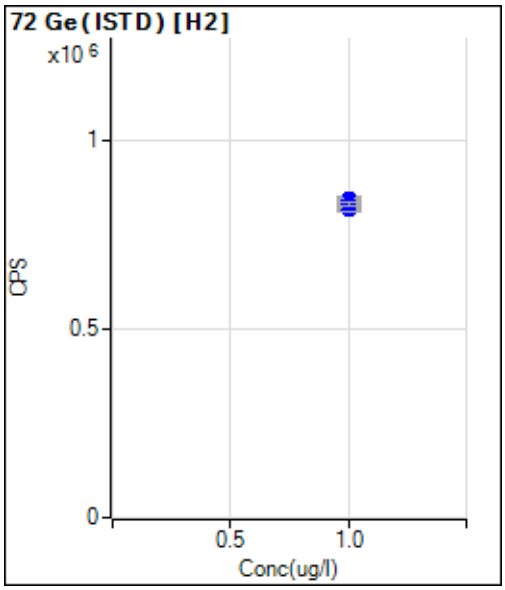


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	1.000		256830.04		P	0.1	
2	☐	1.000		255042.05		P	1.2	
3	☐	1.000		251983.70		P	1.3	
4	☐	1.000		251535.05		P	0.2	
5	☐	1.000		252747.85		P	0.5	
6	☐	1.000		252791.27		P	0.6	
7	☐	1.000		255927.09		P	1.2	
8	☐	1.000		257672.56		P	0.2	
9	☐	1.000		259766.94		P	0.3	
10	☐	1.000		254988.50		P	0.7	
11	☐	1.000		251841.14		P	0.4	

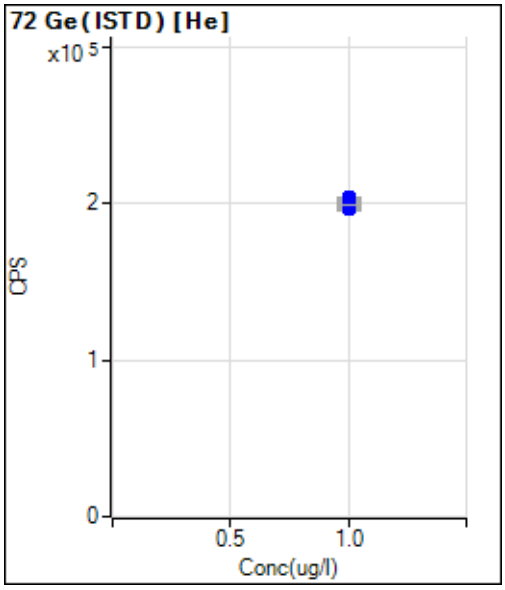


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	1.000		1297328.76		A	0.7	
2	☐	1.000		1293110.92		A	0.8	
3	☐	1.000		1287442.26		A	0.2	
4	☐	1.000		1289536.50		M	0.9	
5	☐	1.000		1273491.03		A	1.4	
6	☐	1.000		1274156.72		A	1.0	
7	☐	1.000		1282377.13		A	0.8	
8	☐	1.000		1263244.30		A	1.8	
9	☐	1.000		1259494.95		A	1.2	
10	☐	1.000		1278818.52		M	4.0	
11	☐	1.000		1286319.75		A	0.6	

Calibration for 015_QC1.d

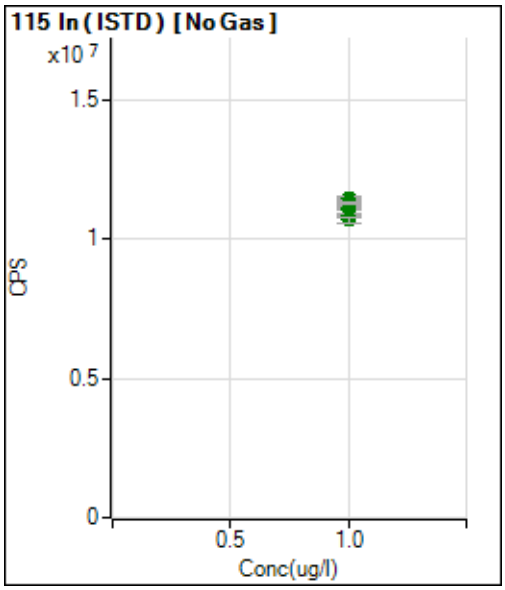


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	1.000		846490.65		P	1.6	
2	☐	1.000		837645.21		P	1.5	
3	☐	1.000		820306.00		P	1.8	
4	☐	1.000		827147.16		P	2.3	
5	☐	1.000		819684.16		P	2.4	
6	☐	1.000		828525.10		P	2.6	
7	☐	1.000		843361.23		P	1.7	
8	☐	1.000		840817.31		P	1.5	
9	☐	1.000		837992.08		P	1.7	
10	☐	1.000		815000.66		P	1.2	
11	☐	1.000		830323.47		P	1.4	

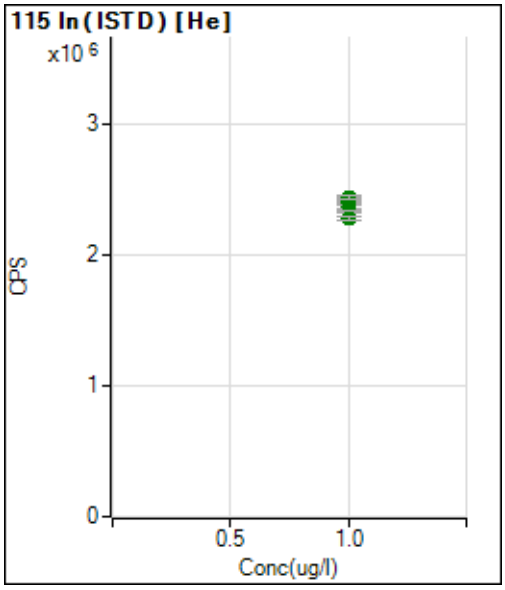


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	1.000		203306.01		P	0.3	
2	☐	1.000		199247.54		P	0.8	
3	☐	1.000		198074.19		P	0.4	
4	☐	1.000		196893.28		P	1.4	
5	☐	1.000		199104.49		P	0.6	
6	☐	1.000		196636.86		P	0.5	
7	☐	1.000		202599.41		P	0.5	
8	☐	1.000		203759.17		P	0.3	
9	☐	1.000		201021.65		P	0.7	
10	☐	1.000		198920.67		P	0.2	
11	☐	1.000		198764.92		P	0.5	

Calibration for 015_QC1.d

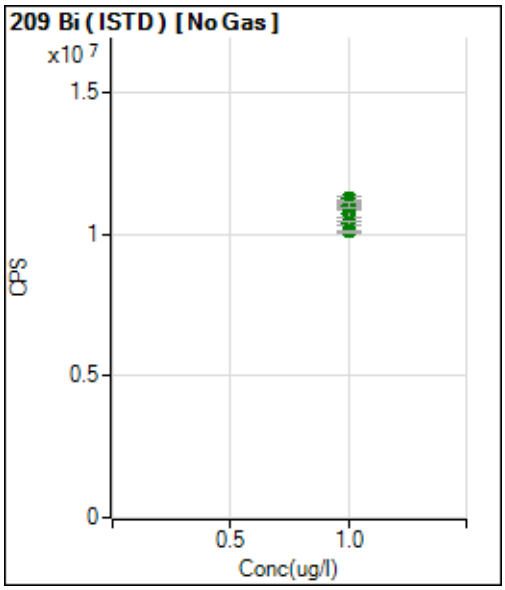


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	1.000		11418603.02		A	0.5	
2	☐	1.000		11378702.65		A	0.1	
3	☐	1.000		11450810.03		A	0.8	
4	☐	1.000		11214388.72		A	1.8	
5	☐	1.000		11276172.55		A	0.4	
6	☐	1.000		11283174.13		A	0.4	
7	☐	1.000		11096916.25		A	1.4	
8	☐	1.000		11020834.40		A	2.9	
9	☐	1.000		10855480.58		A	1.3	
10	☐	1.000		10666649.84		A	2.1	
11	☐	1.000		11286679.44		A	0.3	

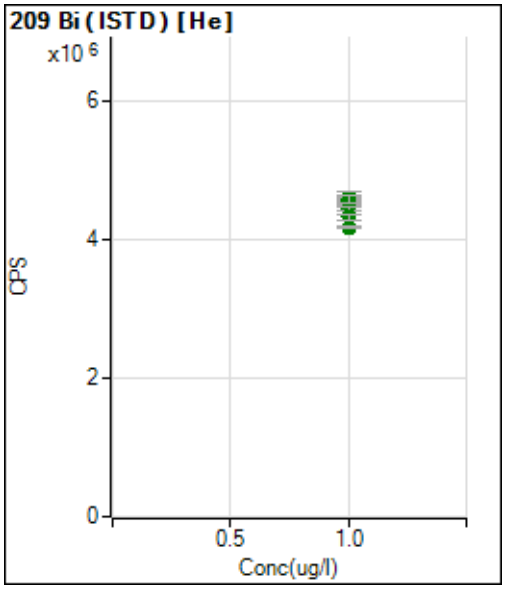


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	1.000		2434250.81		A	0.9	
2	☐	1.000		2426175.96		A	1.5	
3	☐	1.000		2390224.21		A	0.4	
4	☐	1.000		2415238.15		A	1.5	
5	☐	1.000		2401386.52		A	2.1	
6	☐	1.000		2439303.80		A	0.5	
7	☐	1.000		2367037.27		A	0.9	
8	☐	1.000		2348528.83		A	0.1	
9	☐	1.000		2326830.35		A	0.5	
10	☐	1.000		2280674.65		A	0.9	
11	☐	1.000		2440469.82		A	1.0	

Calibration for 015_QC1.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	1.000		11258437.36		A	1.7	
2	☐	1.000		11091439.16		A	1.6	
3	☐	1.000		11123400.13		A	0.6	
4	☐	1.000		11011085.45		A	0.4	
5	☐	1.000		11103920.02		A	0.6	
6	☐	1.000		11070613.98		A	0.4	
7	☐	1.000		11115499.26		A	0.7	
8	☐	1.000		10692797.19		A	2.7	
9	☐	1.000		10384595.10		A	1.0	
10	☐	1.000		10093003.11		A	0.8	
11	☐	1.000		11008830.39		A	1.7	



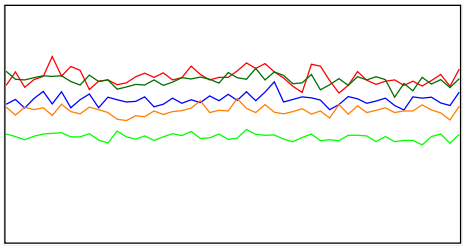
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	1.000		4596328.46		A	0.8	
2	☐	1.000		4597115.09		A	0.6	
3	☐	1.000		4609956.52		A	0.9	
4	☐	1.000		4616781.99		A	3.3	
5	☐	1.000		4572257.75		A	0.7	
6	☐	1.000		4590729.08		A	0.8	
7	☐	1.000		4560395.87		A	1.8	
8	☐	1.000		4437265.75		A	1.3	
9	☐	1.000		4326221.15		A	1.5	
10	☐	1.000		4179992.06		A	0.4	
11	☐	1.000		4581998.59		A	2.4	

Tune Report

Operator Name	elim
Acq/Data Batch	D:\Agilent\ICPMH\1\DATA\220121ADoD.b
Acq. Date-Time	2022-01-21 13:01:01
Report Comment	ICPMS207-B CAR
Instrument Name	G8403A JP17281923

[No Gas]

Sensitivity



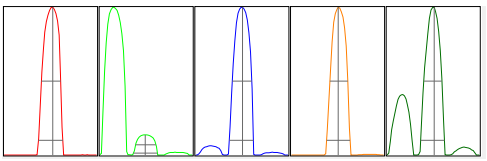
Mass	Range	Count	RSD%	Background
9	100000	69996	4.879	1.600
24	50000	22284	3.257	1.900
59	50000	30199	3.795	1.500
115	50000	27870	3.471	1.200
208	20000	13727	3.330	3.200

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

Oxide/Doubly Charged Ratio

Oxide	156 / 140 1.062 %
Doubly Charged	70 / 140 0.902 %

Resolution/Axis



Mass	Peak Height	Axis	W-50%	W-10%
9	72648.43	9.10	0.62	0.779
24	22087.80	24.00	0.65	0.765
59	30347.25	59.05	0.62	0.763
115	28110.70	115.05	0.57	0.746
208	13780.36	208.05	0.58	0.759

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	10.7 V	Deflect	14.6 V
Extract 2	-245.0 V	Cell Entrance	-30 V	Plate Bias	-35 V

Tune Report

Omega Bias	-75 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	180 V		

QP Parameters

Mass Gain	125	Axis Gain	0.9988	QP Bias	-3.0 V
Mass Offset	126	Axis Offset	0.14		

Hardware Settings

Torch

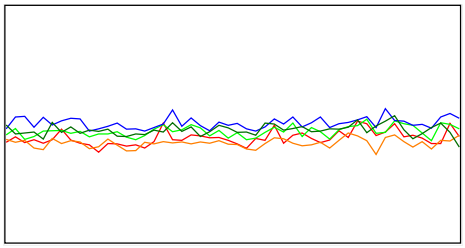
Torch H	-0.9 mm	Torch V	0.0 mm

EM

Discriminator	5.7 mV	Analog HV	2278 V	Pulse HV	1674 V

[H2]

Sensitivity



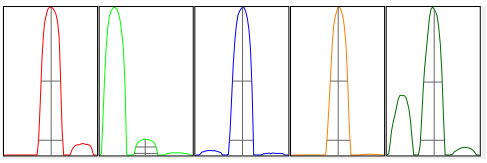
Mass	Range	Count	RSD%	Background
9	20000	8829	6.784	0.000
24	10000	4702	4.830	0.900
59	20000	10108	4.604	0.000
115	50000	21004	4.608	0.000
208	20000	9509	4.897	0.100

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

Oxide/Doubly Charged Ratio

Oxide	---
Doubly Charged	70 / 140 0.795 %

Resolution/Axis



Mass	Peak Height	Axis	W-50%	W-10%
9	8845.62	9.05	0.63	0.776
24	4751.16	24.00	0.64	0.744
59	10108.30	59.05	0.61	0.757
115	21634.35	115.05	0.55	0.736
208	9414.00	208.05	0.59	0.768

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	10.9 V	Deflect	2.8 V
Extract 2	-225.0 V	Cell Entrance	-30 V	Plate Bias	-80 V
Omega Bias	-80 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	190 V		

QP Parameters

Mass Gain	125	Axis Gain	0.9988	QP Bias	-13.0 V
Mass Offset	126	Axis Offset	0.14		

Hardware Settings

Torch

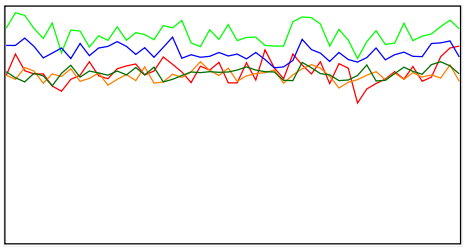
Torch H	-0.9 mm	Torch V	0.0 mm

EM

Discriminator	5.7 mV	Analog HV	2278 V	Pulse HV	1674 V

[He]

Sensitivity



Mass	Range	Count	RSD%	Background
9	1000	728	6.742	1.400
24	1000	888	4.922	0.300
59	10000	8090	3.824	0.100
115	10000	7115	3.457	0.100
208	10000	7206	3.213	0.500

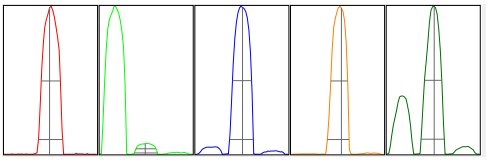
Sampling Period [sec]	0.514
Integration Time [sec]	0.1

Oxide/Doubly Charged Ratio

Oxide	---
Doubly Charged	70 / 140 0.786 %

Resolution/Axis

Tune Report



Mass	Peak Height	Axis	W-50%	W-10%
9	754.46	9.00	0.62	0.778
24	876.03	24.00	0.64	0.737
59	8009.18	59.05	0.61	0.753
115	7326.56	115.15	0.54	0.689
208	7484.75	208.05	0.55	0.739

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	11.4 V	Deflect	0.4 V
Extract 2	-240.0 V	Cell Entrance	-30 V	Plate Bias	-80 V
Omega Bias	-80 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	125	Axis Gain	0.9988	QP Bias	-13.0 V
Mass Offset	126	Axis Offset	0.14		

Hardware Settings

Torch

Torch H	-0.9 mm	Torch V	0.0 mm

EM

Discriminator	5.7 mV	Analog HV	2278 V	Pulse HV	1674 V

ICPMS208-B Analytical Data

Sample Name	Rinse
File Name	001BLKV.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\211223A_DoD.b
Acq Time	2021-12-23 10:50:45
Sample Type	BlkVrfy
Total Dilution	1.0000
Comment	ICPMS-6020B-W-D
ISTD Ref FileName	---
Operator	CAR/SRH/JPV
Method	EPA 200.8/EPA 6020

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas		ug/l	19412.13
Be	9	45	1	No Gas		ug/l	134.67
B	11	45	1	No Gas		ug/l	2972.82
Na	23	45	3	He		ug/l	23636.39
Mg	24	45	3	He		ug/l	7516.99
Al	27	45	1	No Gas		ug/l	6304.69
Si	28	45	2	H2		ug/l	2992.19
K	39	72	3	He		ug/l	48544.50
Ca	40	72	2	H2		ug/l	71987.18
Ti	47	72	1	No Gas		ug/l	216.89
V	51	72	1	No Gas		ug/l	-7424.83
V	51	72	3	He		ug/l	2700.26
Cr	52	72	1	No Gas		ug/l	47365.17
Cr	52	72	3	He		ug/l	432.23
Mn	55	72	1	No Gas		ug/l	7869.84
Mn	55	72	3	He		ug/l	221.62
Fe	56	72	2	H2		ug/l	18712.38
Fe	56	72	3	He		ug/l	6780.06
Co	59	72	1	No Gas		ug/l	522.31
Ni	60	72	1	No Gas		ug/l	695.31
Ni	60	72	3	He		ug/l	212.23
Cu	63	72	1	No Gas		ug/l	2006.28
Cu	63	72	3	He		ug/l	656.22
Cu	65	72	1	No Gas		ug/l	972.42
Zn	66	72	1	No Gas		ug/l	2018.81
Zn	66	72	3	He		ug/l	437.79
As	75	72	1	No Gas		ug/l	11803.48
As	75	72	3	He		ug/l	57.13
Se	78	72	2	H2		ug/l	21.11
Br	79	72	1	No Gas		ug/l	6485.31
Br	79	72	2	H2		ug/l	3154.10
Se	82	72	1	No Gas		ug/l	813.68
Kr	84	72	1	No Gas		ug/l	22006.50
Sr	88	72	1	No Gas		ug/l	3626.61
Sr	88	72	3	He		ug/l	500.01
Mo	95	115	1	No Gas		ug/l	86.67
Mo	95	115	3	He		ug/l	45.56
Mo	98	115	1	No Gas		ug/l	192.85

ICPMS208-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Ag	107	115	1	No Gas		ug/l	64.69
Ag	109	115	1	No Gas		ug/l	74.70
Cd	111	115	1	No Gas		ug/l	33.15
Cd	111	115	3	He		ug/l	6.67
Cd	114	115	1	No Gas		ug/l	41.47
Cd	114	115	3	He		ug/l	16.70
Sn	118	115	1	No Gas		ug/l	3180.73
Sn	118	115	3	He		ug/l	661.13
Sb	121	115	1	No Gas		ug/l	369.37
Sb	121	115	3	He		ug/l	91.34
Sb	123	115	1	No Gas		ug/l	469.72
Sb	123	115	3	He		ug/l	67.01
Te	125	115	3	He		ug/l	3.34
Ba	135	115	1	No Gas		ug/l	332.68
Ba	137	115	1	No Gas		ug/l	538.94
La	139	115	3	He		ug/l	58.89
Ce	140	115	3	He		ug/l	141.11
Hg	201	209	1	No Gas		ug/l	24.00
Hg	202	209	1	No Gas		ug/l	118.65
Hg	202	209	3	He		ug/l	41.32
Tl	203	209	3	He		ug/l	1253.23
Tl	205	209	1	No Gas		ug/l	4467.49
Tl	205	209	3	He		ug/l	3173.66
[Pb]	206	209	1	No Gas		ug/l	461.12
[Pb]	207	209	1	No Gas		ug/l	441.12
Pb	208	209	1	No Gas		ug/l	1936.74
Th	232	209	3	He		ug/l	289.45
U	238	209	1	No Gas		ug/l	209.29

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	4755534.16	
Sc	45	2	H2	2242939.52	
Sc	45	3	He	251253.30	
Ge	72	1	No Gas	1415710.71	
Ge	72	2	H2	841086.60	
Ge	72	3	He	196231.04	
In	115	1	No Gas	12711079.26	
In	115	3	He	2668353.84	
Bi	209	1	No Gas	13022901.81	
Bi	209	3	He	5140782.48	

ICPMS208-B Analytical Data

Sample Name	Rinse
File Name	002BLKV.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\211223A_DoD.b
Acq Time	2021-12-23 10:56:54
Sample Type	BlkVrfy
Total Dilution	1.0000
Comment	ICPMS-6020B-W-D
ISTD Ref FileName	---
Operator	CAR/SRH/JPV
Method	EPA 200.8/EPA 6020

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas		ug/l	18536.02
Be	9	45	1	No Gas		ug/l	73.65
B	11	45	1	No Gas		ug/l	2777.37
Na	23	45	3	He		ug/l	24506.62
Mg	24	45	3	He		ug/l	8232.60
Al	27	45	1	No Gas		ug/l	28714.12
Si	28	45	2	H2		ug/l	2918.80
K	39	72	3	He		ug/l	48597.96
Ca	40	72	2	H2		ug/l	75750.02
Ti	47	72	1	No Gas		ug/l	201.87
V	51	72	1	No Gas		ug/l	-10082.82
V	51	72	3	He		ug/l	2854.74
Cr	52	72	1	No Gas		ug/l	48907.19
Cr	52	72	3	He		ug/l	513.35
Mn	55	72	1	No Gas		ug/l	6458.60
Mn	55	72	3	He		ug/l	129.97
Fe	56	72	2	H2		ug/l	18314.89
Fe	56	72	3	He		ug/l	6735.01
Co	59	72	1	No Gas		ug/l	452.44
Ni	60	72	1	No Gas		ug/l	695.31
Ni	60	72	3	He		ug/l	183.34
Cu	63	72	1	No Gas		ug/l	2046.97
Cu	63	72	3	He		ug/l	701.54
Cu	65	72	1	No Gas		ug/l	1035.79
Zn	66	72	1	No Gas		ug/l	1755.95
Zn	66	72	3	He		ug/l	381.12
As	75	72	1	No Gas		ug/l	11979.26
As	75	72	3	He		ug/l	58.00
Se	78	72	2	H2		ug/l	21.89
Br	79	72	1	No Gas		ug/l	6385.44
Br	79	72	2	H2		ug/l	3373.72
Se	82	72	1	No Gas		ug/l	693.41
Kr	84	72	1	No Gas		ug/l	21766.60
Sr	88	72	1	No Gas		ug/l	4225.59
Sr	88	72	3	He		ug/l	515.57
Mo	95	115	1	No Gas		ug/l	90.00
Mo	95	115	3	He		ug/l	38.89
Mo	98	115	1	No Gas		ug/l	154.10

ICPMS208-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Ag	107	115	1	No Gas		ug/l	74.03
Ag	109	115	1	No Gas		ug/l	68.69
Cd	111	115	1	No Gas		ug/l	36.48
Cd	111	115	3	He		ug/l	4.67
Cd	114	115	1	No Gas		ug/l	53.98
Cd	114	115	3	He		ug/l	11.33
Sn	118	115	1	No Gas		ug/l	2894.58
Sn	118	115	3	He		ug/l	654.46
Sb	121	115	1	No Gas		ug/l	391.38
Sb	121	115	3	He		ug/l	84.01
Sb	123	115	1	No Gas		ug/l	456.72
Sb	123	115	3	He		ug/l	70.34
Te	125	115	3	He		ug/l	0.00
Ba	135	115	1	No Gas		ug/l	405.87
Ba	137	115	1	No Gas		ug/l	672.02
La	139	115	3	He		ug/l	73.33
Ce	140	115	3	He		ug/l	73.33
Hg	201	209	1	No Gas		ug/l	27.99
Hg	202	209	1	No Gas		ug/l	119.65
Hg	202	209	3	He		ug/l	32.32
Tl	203	209	3	He		ug/l	1205.21
Tl	205	209	1	No Gas		ug/l	4278.53
Tl	205	209	3	He		ug/l	2910.16
[Pb]	206	209	1	No Gas		ug/l	476.68
[Pb]	207	209	1	No Gas		ug/l	400.01
Pb	208	209	1	No Gas		ug/l	1803.40
Th	232	209	3	He		ug/l	324.14
U	238	209	1	No Gas		ug/l	260.28

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	4787158.00	
Sc	45	2	H2	2222993.62	
Sc	45	3	He	251022.20	
Ge	72	1	No Gas	1409131.14	
Ge	72	2	H2	832741.72	
Ge	72	3	He	197360.98	
In	115	1	No Gas	12878137.45	
In	115	3	He	2631518.43	
Bi	209	1	No Gas	12951910.87	
Bi	209	3	He	5134182.07	

ICPMS208-B Analytical Data

Sample Name	Cal Blk
File Name	003CALB.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\211223A_DoD.b
Acq Time	2021-12-23 11:03:04
Sample Type	CalBlk
Total Dilution	1.0000
Comment	ICPMS-6020B-W-D
ISTD Ref FileName	003CALB.d
Operator	CAR/SRH/JPV
Method	EPA 200.8/EPA 6020

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	0.000	ug/l	18673.59
Be	9	45	1	No Gas	0.000	ug/l	77.32
B	11	45	1	No Gas	0.000	ug/l	2772.71
Na	23	45	3	He	0.000	ug/l	24941.80
Mg	24	45	3	He	0.000	ug/l	8032.94
Al	27	45	1	No Gas	0.000	ug/l	6308.03
Si	28	45	2	H2	0.000	ug/l	2834.75
K	39	72	3	He	0.000	ug/l	50082.97
Ca	40	72	2	H2	0.000	ug/l	69674.05
Ti	47	72	1	No Gas	0.000	ug/l	200.20
V	51	72	1	No Gas	0.000	ug/l	-12855.49
V	51	72	3	He	0.000	ug/l	2911.42
Cr	52	72	1	No Gas	0.000	ug/l	50292.59
Cr	52	72	3	He	0.000	ug/l	520.01
Mn	55	72	1	No Gas	0.000	ug/l	7953.07
Mn	55	72	3	He	0.000	ug/l	229.96
Fe	56	72	2	H2	0.000	ug/l	17629.93
Fe	56	72	3	He	0.000	ug/l	6553.08
Co	59	72	1	No Gas	0.000	ug/l	509.00
Ni	60	72	1	No Gas	0.000	ug/l	864.98
Ni	60	72	3	He	0.000	ug/l	234.45
Cu	63	72	1	No Gas	0.000	ug/l	2158.36
Cu	63	72	3	He	0.000	ug/l	733.87
Cu	65	72	1	No Gas	0.000	ug/l	1066.47
Zn	66	72	1	No Gas	0.000	ug/l	2238.42
Zn	66	72	3	He	0.000	ug/l	445.56
As	75	72	1	No Gas	0.000	ug/l	10381.72
As	75	72	3	He	0.000	ug/l	59.33
Se	78	72	2	H2	0.000	ug/l	21.33
Br	79	72	1	No Gas	0.000	ug/l	6538.52
Br	79	72	2	H2	0.000	ug/l	3213.99
Se	82	72	1	No Gas	0.000	ug/l	902.76
Kr	84	72	1	No Gas		ug/l	22989.42
Sr	88	72	1	No Gas	0.000	ug/l	4488.50
Sr	88	72	3	He	0.000	ug/l	537.79
Mo	95	115	1	No Gas	0.000	ug/l	78.89
Mo	95	115	3	He	0.000	ug/l	33.33
Mo	98	115	1	No Gas	0.000	ug/l	178.89

ICPMS208-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Ag	107	115	1	No Gas	0.000	ug/l	64.69
Ag	109	115	1	No Gas	0.000	ug/l	74.70
Cd	111	115	1	No Gas	0.000	ug/l	44.78
Cd	111	115	3	He	0.000	ug/l	6.22
Cd	114	115	1	No Gas	0.000	ug/l	53.47
Cd	114	115	3	He	0.000	ug/l	14.49
Sn	118	115	1	No Gas	0.000	ug/l	2798.07
Sn	118	115	3	He	0.000	ug/l	714.47
Sb	121	115	1	No Gas	0.000	ug/l	384.37
Sb	121	115	3	He	0.000	ug/l	96.34
Sb	123	115	1	No Gas	0.000	ug/l	436.05
Sb	123	115	3	He	0.000	ug/l	79.68
Te	125	115	3	He	0.000	ug/l	0.00
Ba	135	115	1	No Gas	0.000	ug/l	442.47
Ba	137	115	1	No Gas	0.000	ug/l	665.37
La	139	115	3	He	0.000	ug/l	57.78
Ce	140	115	3	He	0.000	ug/l	127.78
Hg	201	209	1	No Gas	0.000	ug/l	26.99
Hg	202	209	1	No Gas	0.000	ug/l	132.97
Hg	202	209	3	He	0.000	ug/l	38.66
Tl	203	209	3	He	0.000	ug/l	1235.89
Tl	205	209	1	No Gas	0.000	ug/l	5493.40
Tl	205	209	3	He	0.000	ug/l	2879.47
[Pb]	206	209	1	No Gas	0.000	ug/l	475.57
[Pb]	207	209	1	No Gas	0.000	ug/l	428.90
Pb	208	209	1	No Gas	0.000	ug/l	1888.95
Th	232	209	3	He	0.000	ug/l	297.46
U	238	209	1	No Gas	0.000	ug/l	243.96

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	4454608.76	100.0
Sc	45	2	H2	2116650.86	100.0
Sc	45	3	He	256830.04	100.0
Ge	72	1	No Gas	1297328.76	100.0
Ge	72	2	H2	846490.65	100.0
Ge	72	3	He	203306.01	100.0
In	115	1	No Gas	11418603.02	100.0
In	115	3	He	2434250.81	100.0
Bi	209	1	No Gas	11258437.36	100.0
Bi	209	3	He	4596328.46	100.0

ICPMS208-B Analytical Data

Sample Name	0.025 ppb STD
File Name	004CALS.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\211223A_DoD.b
Acq Time	2021-12-23 11:09:54
Sample Type	CalStd
Total Dilution	1.0000
Comment	ICPMS-6020B-Cal
ISTD Ref FileName	003CALB.d
Operator	CAR/SRH/JPV
Method	EPA 200.8/EPA 6020

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	0.219	ug/l	19969.06
Be	9	45	1	No Gas	0.015	ug/l	112.65
B	11	45	1	No Gas	-0.106	ug/l	2610.61
Na	23	45	3	He	6.034	ug/l	27888.05
Mg	24	45	3	He	5.293	ug/l	9460.90
Al	27	45	1	No Gas	0.060	ug/l	7186.20
Si	28	45	2	H2	0.128	ug/l	3012.18
K	39	72	3	He	7.981	ug/l	51724.01
Ca	40	72	2	H2	7.047	ug/l	109012.72
Ti	47	72	1	No Gas	0.030	ug/l	266.94
V	51	72	1	No Gas	0.350	ug/l	-4911.66
V	51	72	3	He	0.074	ug/l	3138.13
Cr	52	72	1	No Gas	0.036	ug/l	50970.10
Cr	52	72	3	He	0.027	ug/l	625.57
Mn	55	72	1	No Gas	-0.004	ug/l	7799.94
Mn	55	72	3	He	-0.018	ug/l	171.97
Fe	56	72	2	H2	0.631	ug/l	26438.57
Fe	56	72	3	He	0.636	ug/l	8888.32
Co	59	72	1	No Gas	0.022	ug/l	1094.54
Ni	60	72	1	No Gas	-0.007	ug/l	821.73
Ni	60	72	3	He	-0.003	ug/l	224.45
Cu	63	72	1	No Gas	0.030	ug/l	2582.61
Cu	63	72	3	He	0.031	ug/l	871.19
Cu	65	72	1	No Gas	0.028	ug/l	1256.56
Zn	66	72	1	No Gas	-0.056	ug/l	1978.65
Zn	66	72	3	He	0.004	ug/l	440.01
As	75	72	1	No Gas	0.156	ug/l	11189.74
As	75	72	3	He	0.030	ug/l	81.27
Se	78	72	2	H2	0.024	ug/l	34.11
Br	79	72	1	No Gas	0.181	ug/l	8682.13
Br	79	72	2	H2	0.176	ug/l	4288.81
Se	82	72	1	No Gas	0.024	ug/l	906.90
Kr	84	72	1	No Gas		ug/l	22646.24
Sr	88	72	1	No Gas	0.013	ug/l	5110.78
Sr	88	72	3	He	0.029	ug/l	674.47
Mo	95	115	1	No Gas	0.026	ug/l	378.90
Mo	95	115	3	He	0.023	ug/l	128.89
Mo	98	115	1	No Gas	0.021	ug/l	573.97

ICPMS208-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Ag	107	115	1	No Gas	0.010	ug/l	340.81
Ag	109	115	1	No Gas	0.009	ug/l	302.79
Cd	111	115	1	No Gas	0.024	ug/l	187.34
Cd	111	115	3	He	0.022	ug/l	49.55
Cd	114	115	1	No Gas	0.024	ug/l	372.35
Cd	114	115	3	He	0.023	ug/l	125.93
Sn	118	115	1	No Gas	-0.004	ug/l	2698.25
Sn	118	115	3	He	-0.005	ug/l	685.58
Sb	121	115	1	No Gas	0.023	ug/l	1065.15
Sb	121	115	3	He	0.024	ug/l	271.36
Sb	123	115	1	No Gas	0.023	ug/l	963.80
Sb	123	115	3	He	0.022	ug/l	211.69
Te	125	115	3	He	23.006	ug/l	3.34
Ba	135	115	1	No Gas	0.009	ug/l	492.37
Ba	137	115	1	No Gas	0.027	ug/l	941.50
La	139	115	3	He	0.024	ug/l	708.91
Ce	140	115	3	He	0.021	ug/l	775.58
Hg	201	209	1	No Gas	0.000	ug/l	25.66
Hg	202	209	1	No Gas	-0.001	ug/l	125.64
Hg	202	209	3	He	0.000	ug/l	38.66
Tl	203	209	3	He	0.013	ug/l	1377.96
Tl	205	209	1	No Gas	0.007	ug/l	5789.09
Tl	205	209	3	He	0.013	ug/l	3225.02
[Pb]	206	209	1	No Gas	0.021	ug/l	907.82
[Pb]	207	209	1	No Gas	0.019	ug/l	754.47
Pb	208	209	1	No Gas	0.020	ug/l	3517.99
Th	232	209	3	He	0.014	ug/l	815.69
U	238	209	1	No Gas	0.023	ug/l	2033.75

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	4432206.22	99.5
Sc	45	2	H2	2111720.22	99.8
Sc	45	3	He	255042.05	99.3
Ge	72	1	No Gas	1293110.92	99.7
Ge	72	2	H2	837645.21	99.0
Ge	72	3	He	199247.54	98.0
In	115	1	No Gas	11378702.65	99.7
In	115	3	He	2426175.96	99.7
Bi	209	1	No Gas	11091439.16	98.5
Bi	209	3	He	4597115.09	100.0

ICPMS208-B Analytical Data

Sample Name	0.05 ppb STD
File Name	005CALS.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\211223A_DoD.b
Acq Time	2021-12-23 11:16:29
Sample Type	CalStd
Total Dilution	1.0000
Comment	ICPMS-6020B-Cal
ISTD Ref FileName	003CALB.d
Operator	CAR/SRH/JPV
Method	EPA 200.8/EPA 6020

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	0.532	ug/l	21704.14
Be	9	45	1	No Gas	0.041	ug/l	174.30
B	11	45	1	No Gas	-0.075	ug/l	2623.28
Na	23	45	3	He	12.402	ug/l	30815.96
Mg	24	45	3	He	9.350	ug/l	10466.23
Al	27	45	1	No Gas	0.100	ug/l	7714.25
Si	28	45	2	H2	0.152	ug/l	3012.85
K	39	72	3	He	12.659	ug/l	52959.45
Ca	40	72	2	H2	12.939	ug/l	139566.51
Ti	47	72	1	No Gas	0.072	ug/l	357.03
V	51	72	1	No Gas	0.342	ug/l	-5047.37
V	51	72	3	He	0.102	ug/l	3224.82
Cr	52	72	1	No Gas	0.083	ug/l	51838.22
Cr	52	72	3	He	0.031	ug/l	638.91
Mn	55	72	1	No Gas	0.020	ug/l	8538.91
Mn	55	72	3	He	0.015	ug/l	266.62
Fe	56	72	2	H2	1.254	ug/l	34578.60
Fe	56	72	3	He	1.267	ug/l	11267.33
Co	59	72	1	No Gas	0.049	ug/l	1786.57
Ni	60	72	1	No Gas	0.018	ug/l	964.79
Ni	60	72	3	He	0.017	ug/l	258.89
Cu	63	72	1	No Gas	0.056	ug/l	2940.15
Cu	63	72	3	He	0.043	ug/l	929.18
Cu	65	72	1	No Gas	0.047	ug/l	1388.63
Zn	66	72	1	No Gas	-0.094	ug/l	1799.18
Zn	66	72	3	He	0.007	ug/l	441.12
As	75	72	1	No Gas	0.244	ug/l	11607.76
As	75	72	3	He	0.048	ug/l	95.27
Se	78	72	2	H2	0.041	ug/l	42.22
Br	79	72	1	No Gas	0.163	ug/l	8439.07
Br	79	72	2	H2	0.191	ug/l	4288.81
Se	82	72	1	No Gas	-0.451	ug/l	731.28
Kr	84	72	1	No Gas		ug/l	22552.86
Sr	88	72	1	No Gas	0.021	ug/l	5500.16
Sr	88	72	3	He	0.043	ug/l	746.69
Mo	95	115	1	No Gas	0.046	ug/l	606.68
Mo	95	115	3	He	0.044	ug/l	210.00
Mo	98	115	1	No Gas	0.046	ug/l	1038.93

ICPMS208-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Ag	107	115	1	No Gas	0.020	ug/l	590.25
Ag	109	115	1	No Gas	0.020	ug/l	584.25
Cd	111	115	1	No Gas	0.049	ug/l	343.18
Cd	111	115	3	He	0.050	ug/l	101.11
Cd	114	115	1	No Gas	0.047	ug/l	693.73
Cd	114	115	3	He	0.048	ug/l	237.57
Sn	118	115	1	No Gas	0.025	ug/l	3313.83
Sn	118	115	3	He	0.027	ug/l	838.92
Sb	121	115	1	No Gas	0.045	ug/l	1758.96
Sb	121	115	3	He	0.048	ug/l	445.05
Sb	123	115	1	No Gas	0.045	ug/l	1482.23
Sb	123	115	3	He	0.048	ug/l	360.37
Te	125	115	3	He	0.000	ug/l	0.00
Ba	135	115	1	No Gas	0.026	ug/l	595.50
Ba	137	115	1	No Gas	0.045	ug/l	1134.46
La	139	115	3	He	0.048	ug/l	1354.52
Ce	140	115	3	He	0.045	ug/l	1458.97
Hg	201	209	1	No Gas	0.000	ug/l	27.66
Hg	202	209	1	No Gas	-0.001	ug/l	118.98
Hg	202	209	3	He	0.000	ug/l	38.32
Tl	203	209	3	He	0.028	ug/l	1542.71
Tl	205	209	1	No Gas	0.023	ug/l	6748.46
Tl	205	209	3	He	0.032	ug/l	3704.01
[Pb]	206	209	1	No Gas	0.044	ug/l	1377.86
[Pb]	207	209	1	No Gas	0.042	ug/l	1180.06
Pb	208	209	1	No Gas	0.043	ug/l	5401.57
Th	232	209	3	He	0.031	ug/l	1425.32
U	238	209	1	No Gas	0.045	ug/l	3838.13

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	4380172.84	98.3
Sc	45	2	H2	2091230.57	98.8
Sc	45	3	He	251983.70	98.1
Ge	72	1	No Gas	1287442.26	99.2
Ge	72	2	H2	820306.00	96.9
Ge	72	3	He	198074.19	97.4
In	115	1	No Gas	11450810.03	100.3
In	115	3	He	2390224.21	98.2
Bi	209	1	No Gas	11123400.13	98.8
Bi	209	3	He	4609956.52	100.3

ICPMS208-B Analytical Data

Sample Name	0.10 ppb STD
File Name	006CALS.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\211223A_DoD.b
Acq Time	2021-12-23 11:23:03
Sample Type	CalStd
Total Dilution	1.0000
Comment	ICPMS-6020B-Cal
ISTD Ref FileName	003CALB.d
Operator	CAR/SRH/JPV
Method	EPA 200.8/EPA 6020

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	1.216	ug/l	25760.69
Be	9	45	1	No Gas	0.097	ug/l	308.61
B	11	45	1	No Gas	-0.114	ug/l	2545.24
Na	23	45	3	He	28.015	ug/l	38724.13
Mg	24	45	3	He	25.554	ug/l	14927.92
Al	27	45	1	No Gas	0.152	ug/l	8411.28
Si	28	45	2	H2	0.421	ug/l	3452.46
K	39	72	3	He	30.378	ug/l	58424.19
Ca	40	72	2	H2	30.068	ug/l	236923.09
Ti	47	72	1	No Gas	0.144	ug/l	517.20
V	51	72	1	No Gas	0.423	ug/l	-3264.08
V	51	72	3	He	0.148	ug/l	3378.19
Cr	52	72	1	No Gas	0.103	ug/l	52389.02
Cr	52	72	3	He	0.113	ug/l	988.93
Mn	55	72	1	No Gas	0.076	ug/l	10333.13
Mn	55	72	3	He	0.077	ug/l	443.59
Fe	56	72	2	H2	2.940	ug/l	58574.68
Fe	56	72	3	He	2.917	ug/l	17514.75
Co	59	72	1	No Gas	0.112	ug/l	3450.25
Ni	60	72	1	No Gas	0.088	ug/l	1370.69
Ni	60	72	3	He	0.105	ug/l	416.68
Cu	63	72	1	No Gas	0.121	ug/l	3880.75
Cu	63	72	3	He	0.115	ug/l	1273.80
Cu	65	72	1	No Gas	0.103	ug/l	1775.49
Zn	66	72	1	No Gas	-0.027	ug/l	2102.01
Zn	66	72	3	He	0.024	ug/l	454.46
As	75	72	1	No Gas	0.324	ug/l	12066.17
As	75	72	3	He	0.112	ug/l	143.60
Se	78	72	2	H2	0.108	ug/l	78.44
Br	79	72	1	No Gas	0.206	ug/l	8961.69
Br	79	72	2	H2	0.242	ug/l	4644.90
Se	82	72	1	No Gas	0.006	ug/l	898.63
Kr	84	72	1	No Gas		ug/l	23002.69
Sr	88	72	1	No Gas	0.090	ug/l	8851.87
Sr	88	72	3	He	0.094	ug/l	1001.15
Mo	95	115	1	No Gas	0.110	ug/l	1311.18
Mo	95	115	3	He	0.109	ug/l	480.01
Mo	98	115	1	No Gas	0.104	ug/l	2079.68

ICPMS208-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Ag	107	115	1	No Gas	0.046	ug/l	1266.57
Ag	109	115	1	No Gas	0.045	ug/l	1201.20
Cd	111	115	1	No Gas	0.099	ug/l	632.86
Cd	111	115	3	He	0.107	ug/l	210.78
Cd	114	115	1	No Gas	0.105	ug/l	1456.41
Cd	114	115	3	He	0.106	ug/l	518.35
Sn	118	115	1	No Gas	0.088	ug/l	4481.83
Sn	118	115	3	He	0.088	ug/l	1164.50
Sb	121	115	1	No Gas	0.107	ug/l	3542.14
Sb	121	115	3	He	0.108	ug/l	895.45
Sb	123	115	1	No Gas	0.107	ug/l	2864.92
Sb	123	115	3	He	0.102	ug/l	680.42
Te	125	115	3	He	0.000	ug/l	0.00
Ba	135	115	1	No Gas	0.097	ug/l	998.06
Ba	137	115	1	No Gas	0.114	ug/l	1809.87
La	139	115	3	He	0.109	ug/l	3039.24
Ce	140	115	3	He	0.106	ug/l	3328.20
Hg	201	209	1	No Gas	0.002	ug/l	32.99
Hg	202	209	1	No Gas	0.000	ug/l	133.31
Hg	202	209	3	He	0.002	ug/l	45.66
Tl	203	209	3	He	0.090	ug/l	2207.07
Tl	205	209	1	No Gas	0.082	ug/l	10001.60
Tl	205	209	3	He	0.090	ug/l	5205.78
[Pb]	206	209	1	No Gas	0.100	ug/l	2524.70
[Pb]	207	209	1	No Gas	0.104	ug/l	2272.43
Pb	208	209	1	No Gas	0.103	ug/l	10299.41
Th	232	209	3	He	0.077	ug/l	3060.26
U	238	209	1	No Gas	0.104	ug/l	8431.37

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	4340012.12	97.4
Sc	45	2	H2	2127621.58	100.5
Sc	45	3	He	251535.05	97.9
Ge	72	1	No Gas	1289536.50	99.4
Ge	72	2	H2	827147.16	97.7
Ge	72	3	He	196893.28	96.8
In	115	1	No Gas	11214388.72	98.2
In	115	3	He	2415238.15	99.2
Bi	209	1	No Gas	11011085.45	97.8
Bi	209	3	He	4616781.99	100.4

ICPMS208-B Analytical Data

Sample Name	0.5 ppb STD
File Name	007CALS.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\211223A_DoD.b
Acq Time	2021-12-23 11:29:38
Sample Type	CalStd
Total Dilution	1.0000
Comment	ICPMS-6020B-Cal
ISTD Ref FileName	003CALB.d
Operator	CAR/SRH/JPV
Method	EPA 200.8/EPA 6020

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	5.934	ug/l	55905.65
Be	9	45	1	No Gas	0.471	ug/l	1222.81
B	11	45	1	No Gas	0.154	ug/l	2951.48
Na	23	45	3	He	127.099	ug/l	89718.79
Mg	24	45	3	He	129.835	ug/l	43946.84
Al	27	45	1	No Gas	0.533	ug/l	14304.65
Si	28	45	2	H2	1.915	ug/l	5477.21
K	39	72	3	He	124.105	ug/l	90079.65
Ca	40	72	2	H2	128.639	ug/l	783233.43
Ti	47	72	1	No Gas	0.480	ug/l	1244.64
V	51	72	1	No Gas	0.584	ug/l	433.33
V	51	72	3	He	0.502	ug/l	4771.91
Cr	52	72	1	No Gas	0.539	ug/l	61739.48
Cr	52	72	3	He	0.495	ug/l	2653.59
Mn	55	72	1	No Gas	0.465	ug/l	22435.92
Mn	55	72	3	He	0.455	ug/l	1548.11
Fe	56	72	2	H2	12.760	ug/l	194939.55
Fe	56	72	3	He	12.602	ug/l	55223.52
Co	59	72	1	No Gas	0.504	ug/l	13536.08
Ni	60	72	1	No Gas	0.429	ug/l	3317.15
Ni	60	72	3	He	0.480	ug/l	1108.94
Cu	63	72	1	No Gas	0.501	ug/l	9220.61
Cu	63	72	3	He	0.520	ug/l	3303.72
Cu	65	72	1	No Gas	0.503	ug/l	4507.85
Zn	66	72	1	No Gas	0.365	ug/l	3821.85
Zn	66	72	3	He	0.454	ug/l	867.81
As	75	72	1	No Gas	1.049	ug/l	15696.34
As	75	72	3	He	0.475	ug/l	428.80
Se	78	72	2	H2	0.477	ug/l	273.67
Br	79	72	1	No Gas	0.136	ug/l	8023.02
Br	79	72	2	H2	0.153	ug/l	4049.24
Se	82	72	1	No Gas	0.546	ug/l	1080.13
Kr	84	72	1	No Gas		ug/l	24888.91
Sr	88	72	1	No Gas	0.472	ug/l	27191.92
Sr	88	72	3	He	0.464	ug/l	2918.09
Mo	95	115	1	No Gas	0.454	ug/l	5192.08
Mo	95	115	3	He	0.461	ug/l	1912.36
Mo	98	115	1	No Gas	0.454	ug/l	8531.00

ICPMS208-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Ag	107	115	1	No Gas	0.189	ug/l	5027.58
Ag	109	115	1	No Gas	0.187	ug/l	4832.10
Cd	111	115	1	No Gas	0.461	ug/l	2792.33
Cd	111	115	3	He	0.477	ug/l	915.36
Cd	114	115	1	No Gas	0.458	ug/l	6181.89
Cd	114	115	3	He	0.467	ug/l	2212.32
Sn	118	115	1	No Gas	0.460	ug/l	11908.06
Sn	118	115	3	He	0.448	ug/l	3023.68
Sb	121	115	1	No Gas	0.468	ug/l	14323.37
Sb	121	115	3	He	0.468	ug/l	3526.47
Sb	123	115	1	No Gas	0.461	ug/l	10975.04
Sb	123	115	3	He	0.469	ug/l	2826.24
Te	125	115	3	He	22.828	ug/l	3.34
Ba	135	115	1	No Gas	0.440	ug/l	2994.41
Ba	137	115	1	No Gas	0.459	ug/l	5333.78
La	139	115	3	He	0.474	ug/l	12931.59
Ce	140	115	3	He	0.456	ug/l	13760.21
Hg	201	209	1	No Gas	0.010	ug/l	62.66
Hg	202	209	1	No Gas	0.009	ug/l	209.29
Hg	202	209	3	He	0.005	ug/l	57.32
Tl	203	209	3	He	0.427	ug/l	5791.59
Tl	205	209	1	No Gas	0.431	ug/l	29989.27
Tl	205	209	3	He	0.438	ug/l	14026.33
[Pb]	206	209	1	No Gas	0.446	ug/l	9701.35
[Pb]	207	209	1	No Gas	0.451	ug/l	8498.31
Pb	208	209	1	No Gas	0.450	ug/l	39011.48
Th	232	209	3	He	0.393	ug/l	14336.90
U	238	209	1	No Gas	0.453	ug/l	36146.77

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	4401654.04	98.8
Sc	45	2	H2	2086683.40	98.6
Sc	45	3	He	252747.85	98.4
Ge	72	1	No Gas	1273491.03	98.2
Ge	72	2	H2	819684.16	96.8
Ge	72	3	He	199104.49	97.9
In	115	1	No Gas	11276172.55	98.8
In	115	3	He	2401386.52	98.6
Bi	209	1	No Gas	11103920.02	98.6
Bi	209	3	He	4572257.75	99.5

ICPMS208-B Analytical Data

Sample Name	1 ppb STD
File Name	008CALS.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\211223A_DoD.b
Acq Time	2021-12-23 11:36:12
Sample Type	CalStd
Total Dilution	1.0000
Comment	ICPMS-6020B-Cal
ISTD Ref FileName	003CALB.d
Operator	CAR/SRH/JPV
Method	EPA 200.8/EPA 6020

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	13.461	ug/l	103608.00
Be	9	45	1	No Gas	1.029	ug/l	2584.71
B	11	45	1	No Gas	0.647	ug/l	3641.91
Na	23	45	3	He	281.986	ug/l	169167.91
Mg	24	45	3	He	288.779	ug/l	88084.54
Al	27	45	1	No Gas	1.090	ug/l	22760.64
Si	28	45	2	H2	4.282	ug/l	8853.53
K	39	72	3	He	281.311	ug/l	140305.23
Ca	40	72	2	H2	281.381	ug/l	1650781.60
Ti	47	72	1	No Gas	1.051	ug/l	2494.40
V	51	72	1	No Gas	1.352	ug/l	17577.99
V	51	72	3	He	1.164	ug/l	7211.81
Cr	52	72	1	No Gas	1.104	ug/l	74740.19
Cr	52	72	3	He	1.096	ug/l	5189.83
Mn	55	72	1	No Gas	1.065	ug/l	41302.55
Mn	55	72	3	He	1.065	ug/l	3284.05
Fe	56	72	2	H2	28.623	ug/l	420736.31
Fe	56	72	3	He	28.646	ug/l	115912.05
Co	59	72	1	No Gas	1.096	ug/l	28851.05
Ni	60	72	1	No Gas	1.019	ug/l	6721.55
Ni	60	72	3	He	1.079	ug/l	2179.06
Cu	63	72	1	No Gas	1.085	ug/l	17506.79
Cu	63	72	3	He	1.140	ug/l	6310.10
Cu	65	72	1	No Gas	1.097	ug/l	8602.00
Zn	66	72	1	No Gas	0.944	ug/l	6400.53
Zn	66	72	3	He	1.088	ug/l	1452.30
As	75	72	1	No Gas	1.289	ug/l	17004.90
As	75	72	3	He	1.086	ug/l	893.54
Se	78	72	2	H2	1.077	ug/l	598.13
Br	79	72	1	No Gas	0.246	ug/l	9321.21
Br	79	72	2	H2	0.276	ug/l	4854.52
Se	82	72	1	No Gas	0.948	ug/l	1225.21
Kr	84	72	1	No Gas		ug/l	24232.36
Sr	88	72	1	No Gas	1.066	ug/l	55853.63
Sr	88	72	3	He	1.072	ug/l	5972.39
Mo	95	115	1	No Gas	1.040	ug/l	11791.56
Mo	95	115	3	He	1.015	ug/l	4238.43
Mo	98	115	1	No Gas	1.006	ug/l	18692.27

ICPMS208-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Ag	107	115	1	No Gas	0.425	ug/l	11257.65
Ag	109	115	1	No Gas	0.419	ug/l	10731.03
Cd	111	115	1	No Gas	1.011	ug/l	6073.32
Cd	111	115	3	He	1.027	ug/l	1997.25
Cd	114	115	1	No Gas	1.027	ug/l	13813.03
Cd	114	115	3	He	1.036	ug/l	4972.25
Sn	118	115	1	No Gas	1.030	ug/l	23236.45
Sn	118	115	3	He	1.002	ug/l	5987.98
Sb	121	115	1	No Gas	1.025	ug/l	30928.88
Sb	121	115	3	He	1.036	ug/l	7817.29
Sb	123	115	1	No Gas	1.039	ug/l	24221.54
Sb	123	115	3	He	1.038	ug/l	6260.70
Te	125	115	3	He	22.664	ug/l	3.34
Ba	135	115	1	No Gas	1.008	ug/l	6305.63
Ba	137	115	1	No Gas	1.003	ug/l	10879.35
La	139	115	3	He	1.008	ug/l	27894.63
Ce	140	115	3	He	0.996	ug/l	30364.26
Hg	201	209	1	No Gas	0.016	ug/l	85.98
Hg	202	209	1	No Gas	0.019	ug/l	290.95
Hg	202	209	3	He	0.018	ug/l	107.65
Tl	203	209	3	He	0.982	ug/l	11773.25
Tl	205	209	1	No Gas	0.999	ug/l	62260.20
Tl	205	209	3	He	0.982	ug/l	28015.20
[Pb]	206	209	1	No Gas	1.011	ug/l	21317.12
[Pb]	207	209	1	No Gas	0.980	ug/l	17930.97
Pb	208	209	1	No Gas	0.988	ug/l	83189.23
Th	232	209	3	He	0.913	ug/l	33029.93
U	238	209	1	No Gas	1.021	ug/l	80939.86

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	4409170.52	99.0
Sc	45	2	H2	2097359.63	99.1
Sc	45	3	He	252791.27	98.4
Ge	72	1	No Gas	1274156.72	98.2
Ge	72	2	H2	828525.10	97.9
Ge	72	3	He	196636.86	96.7
In	115	1	No Gas	11283174.13	98.8
In	115	3	He	2439303.80	100.2
Bi	209	1	No Gas	11070613.98	98.3
Bi	209	3	He	4590729.08	99.9

ICPMS208-B Analytical Data

Sample Name	10 ppb STD
File Name	009CALS.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\211223A_DoD.b
Acq Time	2021-12-23 11:42:46
Sample Type	CalStd
Total Dilution	1.0000
Comment	ICPMS-6020B-Cal
ISTD Ref FileName	003CALB.d
Operator	CAR/SRH/JPV
Method	EPA 200.8/EPA 6020

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	128.084	ug/l	818770.83
Be	9	45	1	No Gas	9.791	ug/l	23655.25
B	11	45	1	No Gas	9.372	ug/l	15552.87
Na	23	45	3	He	2595.138	ug/l	1372146.63
Mg	24	45	3	He	2629.205	ug/l	747027.01
Al	27	45	1	No Gas	9.825	ug/l	153309.53
Si	28	45	2	H2	39.307	ug/l	58149.82
K	39	72	3	He	2467.351	ug/l	880068.16
Ca	40	72	2	H2	2473.219	ug/l	14226801.92
Ti	47	72	1	No Gas	9.718	ug/l	21577.38
V	51	72	1	No Gas	11.956	ug/l	256176.52
V	51	72	3	He	9.532	ug/l	39999.62
Cr	52	72	1	No Gas	9.921	ug/l	278960.08
Cr	52	72	3	He	9.915	ug/l	44212.76
Mn	55	72	1	No Gas	10.092	ug/l	327372.26
Mn	55	72	3	He	9.833	ug/l	29354.57
Fe	56	72	2	H2	254.688	ug/l	3670716.37
Fe	56	72	3	He	255.152	ug/l	1012101.39
Co	59	72	1	No Gas	9.968	ug/l	260026.73
Ni	60	72	1	No Gas	9.914	ug/l	58333.43
Ni	60	72	3	He	9.826	ug/l	18553.99
Cu	63	72	1	No Gas	10.028	ug/l	145216.06
Cu	63	72	3	He	10.123	ug/l	51952.47
Cu	65	72	1	No Gas	9.896	ug/l	69672.69
Zn	66	72	1	No Gas	9.647	ug/l	45418.35
Zn	66	72	3	He	9.741	ug/l	9866.72
As	75	72	1	No Gas	9.626	ug/l	61322.90
As	75	72	3	He	9.627	ug/l	7696.74
Se	78	72	2	H2	9.857	ug/l	5401.78
Br	79	72	1	No Gas	0.227	ug/l	9161.44
Br	79	72	2	H2	0.264	ug/l	4871.17
Se	82	72	1	No Gas	9.222	ug/l	4222.79
Kr	84	72	1	No Gas		ug/l	27101.69
Sr	88	72	1	No Gas	10.140	ug/l	497170.09
Sr	88	72	3	He	9.742	ug/l	51573.31
Mo	95	115	1	No Gas	9.724	ug/l	107767.86
Mo	95	115	3	He	9.779	ug/l	39323.95
Mo	98	115	1	No Gas	9.642	ug/l	174598.18

ICPMS208-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Ag	107	115	1	No Gas	3.929	ug/l	101806.11
Ag	109	115	1	No Gas	3.888	ug/l	97288.11
Cd	111	115	1	No Gas	9.626	ug/l	56490.57
Cd	111	115	3	He	9.752	ug/l	18351.48
Cd	114	115	1	No Gas	9.685	ug/l	127638.32
Cd	114	115	3	He	9.765	ug/l	45370.01
Sn	118	115	1	No Gas	9.943	ug/l	197079.78
Sn	118	115	3	He	9.728	ug/l	50367.29
Sb	121	115	1	No Gas	9.692	ug/l	284340.69
Sb	121	115	3	He	9.779	ug/l	70830.14
Sb	123	115	1	No Gas	9.753	ug/l	219934.12
Sb	123	115	3	He	9.801	ug/l	56728.23
Te	125	115	3	He	70.141	ug/l	10.01
Ba	135	115	1	No Gas	9.500	ug/l	54815.54
Ba	137	115	1	No Gas	9.482	ug/l	95727.26
La	139	115	3	He	9.612	ug/l	257628.82
Ce	140	115	3	He	9.477	ug/l	279325.68
Hg	201	209	1	No Gas	0.178	ug/l	696.88
Hg	202	209	1	No Gas	0.178	ug/l	1667.78
Hg	202	209	3	He	0.176	ug/l	696.55
Tl	203	209	3	He	9.468	ug/l	102094.93
Tl	205	209	1	No Gas	9.562	ug/l	551865.05
Tl	205	209	3	He	9.412	ug/l	242119.75
[Pb]	206	209	1	No Gas	9.211	ug/l	191255.49
[Pb]	207	209	1	No Gas	9.233	ug/l	166017.18
Pb	208	209	1	No Gas	9.213	ug/l	763430.00
Th	232	209	3	He	9.092	ug/l	324152.53
U	238	209	1	No Gas	9.580	ug/l	760257.16

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	4357923.90	97.8
Sc	45	2	H2	2095490.08	99.0
Sc	45	3	He	255927.09	99.6
Ge	72	1	No Gas	1282377.13	98.8
Ge	72	2	H2	843361.23	99.6
Ge	72	3	He	202599.41	99.7
In	115	1	No Gas	11096916.25	97.2
In	115	3	He	2367037.27	97.2
Bi	209	1	No Gas	11115499.26	98.7
Bi	209	3	He	4560395.87	99.2

ICPMS208-B Analytical Data

Sample Name	50 ppb STD
File Name	010CALS.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\211223A_DoD.b
Acq Time	2021-12-23 11:49:18
Sample Type	CalStd
Total Dilution	1.0000
Comment	ICPMS-6020B-Cal
ISTD Ref FileName	003CALB.d
Operator	CAR/SRH/JPV
Method	EPA 200.8/EPA 6020

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	666.786	ug/l	4171379.67
Be	9	45	1	No Gas	49.616	ug/l	119209.04
B	11	45	1	No Gas	50.221	ug/l	71304.21
Na	23	45	3	He	13191.208	ug/l	6920922.12
Mg	24	45	3	He	13170.657	ug/l	3735591.93
Al	27	45	1	No Gas	49.770	ug/l	749227.13
Si	28	45	2	H2	187.103	ug/l	263836.25
K	39	72	3	He	12931.476	ug/l	4426184.17
Ca	40	72	2	H2	12816.174	ug/l	73201694.95
Ti	47	72	1	No Gas	44.972	ug/l	97623.90
V	51	72	1	No Gas	47.653	ug/l	1043500.72
V	51	72	3	He	49.079	ug/l	195049.62
Cr	52	72	1	No Gas	50.802	ug/l	1205015.67
Cr	52	72	3	He	49.413	ug/l	219536.87
Mn	55	72	1	No Gas	49.985	ug/l	1566193.46
Mn	55	72	3	He	49.089	ug/l	146462.66
Fe	56	72	2	H2	1314.114	ug/l	18811493.12
Fe	56	72	3	He	1316.023	ug/l	5222899.75
Co	59	72	1	No Gas	50.840	ug/l	1304167.44
Ni	60	72	1	No Gas	50.417	ug/l	288744.24
Ni	60	72	3	He	49.467	ug/l	92991.73
Cu	63	72	1	No Gas	50.581	ug/l	712960.90
Cu	63	72	3	He	49.381	ug/l	252031.06
Cu	65	72	1	No Gas	50.084	ug/l	343098.46
Zn	66	72	1	No Gas	50.215	ug/l	223695.70
Zn	66	72	3	He	49.212	ug/l	48322.97
As	75	72	1	No Gas	49.492	ug/l	268765.59
As	75	72	3	He	48.679	ug/l	38901.68
Se	78	72	2	H2	49.494	ug/l	26956.14
Br	79	72	1	No Gas	0.098	ug/l	7517.07
Br	79	72	2	H2	0.080	ug/l	3699.84
Se	82	72	1	No Gas	49.112	ug/l	18357.26
Kr	84	72	1	No Gas		ug/l	40689.95
Sr	88	72	1	No Gas	49.638	ug/l	2380182.72
Sr	88	72	3	He	48.676	ug/l	257010.94
Mo	95	115	1	No Gas	44.462	ug/l	488831.08
Mo	95	115	3	He	44.041	ug/l	175622.57
Mo	98	115	1	No Gas	44.344	ug/l	796248.57

ICPMS208-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Ag	107	115	1	No Gas	19.736	ug/l	507263.25
Ag	109	115	1	No Gas	19.762	ug/l	490416.95
Cd	111	115	1	No Gas	48.894	ug/l	284650.66
Cd	111	115	3	He	49.312	ug/l	92054.70
Cd	114	115	1	No Gas	49.110	ug/l	642539.96
Cd	114	115	3	He	49.061	ug/l	226109.64
Sn	118	115	1	No Gas	45.476	ug/l	885458.44
Sn	118	115	3	He	44.245	ug/l	224844.52
Sb	121	115	1	No Gas	44.541	ug/l	1296633.88
Sb	121	115	3	He	44.647	ug/l	320528.42
Sb	123	115	1	No Gas	44.777	ug/l	1001449.02
Sb	123	115	3	He	44.452	ug/l	255003.48
Te	125	115	3	He	94.329	ug/l	13.35
Ba	135	115	1	No Gas	49.400	ug/l	281358.57
Ba	137	115	1	No Gas	48.896	ug/l	487595.19
La	139	115	3	He	49.645	ug/l	1320025.53
Ce	140	115	3	He	49.447	ug/l	1445566.85
Hg	201	209	1	No Gas	0.989	ug/l	3615.77
Hg	202	209	1	No Gas	0.993	ug/l	8389.96
Hg	202	209	3	He	0.993	ug/l	3662.11
Tl	203	209	3	He	48.133	ug/l	500225.67
Tl	205	209	1	No Gas	49.039	ug/l	2700050.07
Tl	205	209	3	He	47.927	ug/l	1188363.37
[Pb]	206	209	1	No Gas	48.682	ug/l	970450.90
[Pb]	207	209	1	No Gas	48.712	ug/l	840884.40
Pb	208	209	1	No Gas	48.907	ug/l	3890865.07
Th	232	209	3	He	48.261	ug/l	1673405.64
U	238	209	1	No Gas	49.124	ug/l	3749408.33

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	4344739.70	97.5
Sc	45	2	H2	2075774.35	98.1
Sc	45	3	He	257672.56	100.3
Ge	72	1	No Gas	1263244.30	97.4
Ge	72	2	H2	840817.31	99.3
Ge	72	3	He	203759.17	100.2
In	115	1	No Gas	11020834.40	96.5
In	115	3	He	2348528.83	96.5
Bi	209	1	No Gas	10692797.19	95.0
Bi	209	3	He	4437265.75	96.5

ICPMS208-B Analytical Data

Sample Name	100 ppb STD
File Name	011CALS.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\211223A_DoD.b
Acq Time	2021-12-23 11:55:41
Sample Type	CalStd
Total Dilution	1.0000
Comment	ICPMS-6020B-Cal
ISTD Ref FileName	003CALB.d
Operator	CAR/SRH/JPV
Method	EPA 200.8/EPA 6020

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	1261.816	ug/l	7850587.39
Be	9	45	1	No Gas	100.213	ug/l	239790.43
B	11	45	1	No Gas	99.958	ug/l	138706.42
Na	23	45	3	He	25306.408	ug/l	13361927.86
Mg	24	45	3	He	25436.368	ug/l	7265467.79
Al	27	45	1	No Gas	100.131	ug/l	1495558.73
Si	28	45	2	H2	406.515	ug/l	554067.25
K	39	72	3	He	25155.282	ug/l	8447501.12
Ca	40	72	2	H2	24075.664	ug/l	137001842.02
Ti	47	72	1	No Gas	102.542	ug/l	221735.89
V	51	72	1	No Gas	100.974	ug/l	2218250.97
V	51	72	3	He	100.505	ug/l	391022.50
Cr	52	72	1	No Gas	99.606	ug/l	2309150.07
Cr	52	72	3	He	100.301	ug/l	439090.99
Mn	55	72	1	No Gas	99.998	ug/l	3116481.02
Mn	55	72	3	He	100.472	ug/l	295498.28
Fe	56	72	2	H2	2532.604	ug/l	36115977.62
Fe	56	72	3	He	2504.291	ug/l	9799021.49
Co	59	72	1	No Gas	99.582	ug/l	2546622.37
Ni	60	72	1	No Gas	99.800	ug/l	569047.87
Ni	60	72	3	He	100.283	ug/l	185736.67
Cu	63	72	1	No Gas	99.706	ug/l	1399106.49
Cu	63	72	3	He	100.296	ug/l	504255.83
Cu	65	72	1	No Gas	99.967	ug/l	681783.27
Zn	66	72	1	No Gas	99.929	ug/l	441718.95
Zn	66	72	3	He	100.419	ug/l	96827.28
As	75	72	1	No Gas	100.286	ug/l	532567.97
As	75	72	3	He	100.697	ug/l	79326.98
Se	78	72	2	H2	100.267	ug/l	54400.59
Br	79	72	1	No Gas	0.259	ug/l	9374.47
Br	79	72	2	H2	0.220	ug/l	4558.35
Se	82	72	1	No Gas	100.522	ug/l	36541.13
Kr	84	72	1	No Gas		ug/l	56387.99
Sr	88	72	1	No Gas	100.166	ug/l	4784632.68
Sr	88	72	3	He	100.687	ug/l	523900.19
Mo	95	115	1	No Gas	102.797	ug/l	1114121.73
Mo	95	115	3	He	103.002	ug/l	406893.29
Mo	98	115	1	No Gas	102.864	ug/l	1820478.03

ICPMS208-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Ag	107	115	1	No Gas	40.139	ug/l	1017167.64
Ag	109	115	1	No Gas	40.130	ug/l	981822.50
Cd	111	115	1	No Gas	100.590	ug/l	577203.65
Cd	111	115	3	He	100.368	ug/l	185622.65
Cd	114	115	1	No Gas	100.477	ug/l	1295145.43
Cd	114	115	3	He	100.493	ug/l	458844.42
Sn	118	115	1	No Gas	102.267	ug/l	1958497.94
Sn	118	115	3	He	102.905	ug/l	517213.70
Sb	121	115	1	No Gas	102.760	ug/l	2945906.93
Sb	121	115	3	He	102.698	ug/l	730347.88
Sb	123	115	1	No Gas	102.636	ug/l	2260478.52
Sb	123	115	3	He	102.794	ug/l	584140.99
Te	125	115	3	He	71.488	ug/l	10.01
Ba	135	115	1	No Gas	100.350	ug/l	562482.96
Ba	137	115	1	No Gas	100.604	ug/l	987502.61
La	139	115	3	He	100.217	ug/l	2639908.89
Ce	140	115	3	He	100.329	ug/l	2905728.77
Hg	201	209	1	No Gas	2.008	ug/l	7100.13
Hg	202	209	1	No Gas	2.006	ug/l	16318.98
Hg	202	209	3	He	2.006	ug/l	7174.82
Tl	203	209	3	He	100.987	ug/l	1022028.04
Tl	205	209	1	No Gas	100.524	ug/l	5371549.12
Tl	205	209	3	He	101.096	ug/l	2441041.19
[Pb]	206	209	1	No Gas	100.738	ug/l	1949652.06
[Pb]	207	209	1	No Gas	100.721	ug/l	1687868.10
Pb	208	209	1	No Gas	100.625	ug/l	7772165.93
Th	232	209	3	He	100.962	ug/l	3412701.67
U	238	209	1	No Gas	100.480	ug/l	7446159.02

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	4328030.56	97.2
Sc	45	2	H2	2019099.14	95.4
Sc	45	3	He	259766.94	101.1
Ge	72	1	No Gas	1259494.95	97.1
Ge	72	2	H2	837992.08	99.0
Ge	72	3	He	201021.65	98.9
In	115	1	No Gas	10855480.58	95.1
In	115	3	He	2326830.35	95.6
Bi	209	1	No Gas	10384595.10	92.2
Bi	209	3	He	4326221.15	94.1

ICPMS208-B Analytical Data

Sample Name	1000 ppb STD
File Name	012CALS.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\211223A_DoD.b
Acq Time	2021-12-23 12:01:44
Sample Type	CalStd
Total Dilution	1.0000
Comment	ICPMS-6020B-Cal
ISTD Ref FileName	003CALB.d
Operator	CAR/SRH/JPV
Method	EPA 200.8/EPA 6020

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	2483.488	ug/l	15595178.55
Be	9	45	1	No Gas	1066.714	ug/l	2578160.30
B	11	45	1	No Gas	1070.288	ug/l	1473814.17
Na	23	45	3	He	49669.071	ug/l	25717709.34
Mg	24	45	3	He	49607.486	ug/l	13900813.31
Al	27	45	1	No Gas	1083.258	ug/l	16283005.73
Si	28	45	2	H2	1.788	ug/l	5106.27
K	39	72	3	He	49815.965	ug/l	16505897.25
Ca	40	72	2	H2	50384.295	ug/l	278772792.97
Ti	47	72	1	No Gas	6.499	ug/l	14451.35
V	51	72	1	No Gas	1127.698	ug/l	25259035.05
V	51	72	3	He	1110.139	ug/l	4245532.20
Cr	52	72	1	No Gas	1057.613	ug/l	24394302.23
Cr	52	72	3	He	1115.410	ug/l	4826989.93
Mn	55	72	1	No Gas	1082.449	ug/l	34142050.11
Mn	55	72	3	He	1100.131	ug/l	3199590.54
Fe	56	72	2	H2	6026.366	ug/l	83562372.76
Fe	56	72	3	He	6038.202	ug/l	23371425.81
Co	59	72	1	No Gas	1054.613	ug/l	27353724.30
Ni	60	72	1	No Gas	1036.650	ug/l	5986893.03
Ni	60	72	3	He	1109.317	ug/l	2030911.41
Cu	63	72	1	No Gas	1067.825	ug/l	15181342.69
Cu	63	72	3	He	1092.208	ug/l	5426962.89
Cu	65	72	1	No Gas	1045.838	ug/l	7224557.91
Zn	66	72	1	No Gas	981.796	ug/l	4383249.01
Zn	66	72	3	He	1096.001	ug/l	1041392.41
As	75	72	1	No Gas	1085.287	ug/l	5745544.40
As	75	72	3	He	1125.589	ug/l	876876.62
Se	78	72	2	H2	1108.353	ug/l	584707.14
Br	79	72	1	No Gas	0.523	ug/l	12630.47
Br	79	72	2	H2	1.441	ug/l	11881.39
Se	82	72	1	No Gas	1065.312	ug/l	384245.59
Kr	84	72	1	No Gas		ug/l	357703.14
Sr	88	72	1	No Gas	1093.427	ug/l	52940624.28
Sr	88	72	3	He	1126.086	ug/l	5793045.61
Mo	95	115	1	No Gas	0.076	ug/l	882.25
Mo	95	115	3	He	0.059	ug/l	257.78
Mo	98	115	1	No Gas	0.084	ug/l	1623.94

ICPMS208-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Ag	107	115	1	No Gas	312.412	ug/l	7779143.31
Ag	109	115	1	No Gas	315.967	ug/l	7597030.01
Cd	111	115	1	No Gas	1119.641	ug/l	6311480.07
Cd	111	115	3	He	1102.511	ug/l	1998443.93
Cd	114	115	1	No Gas	1121.950	ug/l	14207119.58
Cd	114	115	3	He	1119.933	ug/l	5011769.31
Sn	118	115	1	No Gas	0.051	ug/l	3570.07
Sn	118	115	3	He	0.025	ug/l	791.14
Sb	121	115	1	No Gas	0.094	ug/l	2999.62
Sb	121	115	3	He	0.084	ug/l	677.75
Sb	123	115	1	No Gas	0.126	ug/l	3127.67
Sb	123	115	3	He	0.086	ug/l	552.40
Te	125	115	3	He	945.558	ug/l	130.13
Ba	135	115	1	No Gas	1082.989	ug/l	5958320.13
Ba	137	115	1	No Gas	1092.968	ug/l	10531025.51
La	139	115	3	He	0.013	ug/l	396.67
Ce	140	115	3	He	0.026	ug/l	865.59
Hg	201	209	1	No Gas	0.007	ug/l	47.66
Hg	202	209	1	No Gas	0.009	ug/l	185.96
Hg	202	209	3	He	0.013	ug/l	78.98
Tl	203	209	3	He	1139.601	ug/l	11132365.77
Tl	205	209	1	No Gas	1127.141	ug/l	58489921.35
Tl	205	209	3	He	1117.510	ug/l	26046531.68
[Pb]	206	209	1	No Gas	1104.311	ug/l	20768151.08
[Pb]	207	209	1	No Gas	1113.787	ug/l	18136170.70
Pb	208	209	1	No Gas	1107.734	ug/l	83139247.79
Th	232	209	3	He	1130.281	ug/l	36910810.81
U	238	209	1	No Gas	1122.007	ug/l	80815738.84

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	4374146.77	98.2
Sc	45	2	H2	2009230.92	94.9
Sc	45	3	He	254988.50	99.3
Ge	72	1	No Gas	1278818.52	98.6
Ge	72	2	H2	815000.66	96.3
Ge	72	3	He	198920.67	97.8
In	115	1	No Gas	10666649.84	93.4
In	115	3	He	2280674.65	93.7
Bi	209	1	No Gas	10093003.11	89.6
Bi	209	3	He	4179992.06	90.9

ICPMS208-B Analytical Data

Sample Name	100 ppb Br STD
File Name	013CALS.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\211223A_DoD.b
Acq Time	2021-12-23 12:07:26
Sample Type	CalStd
Total Dilution	1.0000
Comment	ICPMS-6020B-W-D
ISTD Ref FileName	003CALB.d
Operator	CAR/SRH/JPV
Method	EPA 200.8/EPA 6020

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	3.225	ug/l	38866.26
Be	9	45	1	No Gas	0.651	ug/l	1663.09
B	11	45	1	No Gas	6.389	ug/l	11597.75
Na	23	45	3	He	3.903	ug/l	26452.12
Mg	24	45	3	He	-21.946	ug/l	1806.53
Al	27	45	1	No Gas	0.203	ug/l	9320.71
Si	28	45	2	H2	0.819	ug/l	3949.45
K	39	72	3	He	709.823	ug/l	283270.54
Ca	40	72	2	H2	4.429	ug/l	93313.21
Ti	47	72	1	No Gas	0.057	ug/l	323.66
V	51	72	1	No Gas	-0.417	ug/l	-22222.25
V	51	72	3	He	0.175	ug/l	3514.88
Cr	52	72	1	No Gas	0.354	ug/l	58075.51
Cr	52	72	3	He	0.044	ug/l	696.69
Mn	55	72	1	No Gas	0.130	ug/l	12001.10
Mn	55	72	3	He	0.046	ug/l	359.60
Fe	56	72	2	H2	0.348	ug/l	22214.08
Fe	56	72	3	He	0.423	ug/l	8040.30
Co	59	72	1	No Gas	0.116	ug/l	3530.11
Ni	60	72	1	No Gas	0.063	ug/l	1224.30
Ni	60	72	3	He	0.032	ug/l	287.78
Cu	63	72	1	No Gas	0.124	ug/l	3910.10
Cu	63	72	3	He	0.102	ug/l	1221.81
Cu	65	72	1	No Gas	0.116	ug/l	1862.87
Zn	66	72	1	No Gas	0.403	ug/l	4028.41
Zn	66	72	3	He	0.404	ug/l	818.92
As	75	72	1	No Gas	1.590	ug/l	18765.30
As	75	72	3	He	0.120	ug/l	151.13
Se	78	72	2	H2	0.176	ug/l	115.33
Br	79	72	1	No Gas	100.000	ug/l	1197487.73
Br	79	72	2	H2	100.000	ug/l	624501.76
Se	82	72	1	No Gas	5.432	ug/l	2862.50
Kr	84	72	1	No Gas		ug/l	24169.03
Sr	88	72	1	No Gas	0.013	ug/l	5070.84
Sr	88	72	3	He	0.029	ug/l	673.35
Mo	95	115	1	No Gas	0.013	ug/l	230.00
Mo	95	115	3	He	0.016	ug/l	100.00
Mo	98	115	1	No Gas	0.008	ug/l	316.67

ICPMS208-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Ag	107	115	1	No Gas	0.396	ug/l	10485.45
Ag	109	115	1	No Gas	0.391	ug/l	10023.59
Cd	111	115	1	No Gas	0.039	ug/l	274.28
Cd	111	115	3	He	0.031	ug/l	65.89
Cd	114	115	1	No Gas	0.036	ug/l	537.19
Cd	114	115	3	He	0.031	ug/l	162.62
Sn	118	115	1	No Gas	0.589	ug/l	14482.10
Sn	118	115	3	He	0.535	ug/l	3532.69
Sb	121	115	1	No Gas	0.023	ug/l	1057.48
Sb	121	115	3	He	0.020	ug/l	246.70
Sb	123	115	1	No Gas	0.026	ug/l	1025.14
Sb	123	115	3	He	0.020	ug/l	198.35
Te	125	115	3	He	0.000	ug/l	0.00
Ba	135	115	1	No Gas	0.083	ug/l	918.21
Ba	137	115	1	No Gas	0.075	ug/l	1420.59
La	139	115	3	He	0.002	ug/l	110.00
Ce	140	115	3	He	0.000	ug/l	135.56
Hg	201	209	1	No Gas	0.004	ug/l	41.66
Hg	202	209	1	No Gas	0.003	ug/l	159.64
Hg	202	209	3	He	0.006	ug/l	59.32
Tl	203	209	3	He	0.716	ug/l	8893.22
Tl	205	209	1	No Gas	0.707	ug/l	45292.67
Tl	205	209	3	He	0.731	ug/l	21529.33
[Pb]	206	209	1	No Gas	0.064	ug/l	1786.80
[Pb]	207	209	1	No Gas	0.064	ug/l	1561.21
Pb	208	209	1	No Gas	0.067	ug/l	7299.74
Th	232	209	3	He	0.087	ug/l	3394.48
U	238	209	1	No Gas	0.025	ug/l	2195.75

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	4407833.61	98.9
Sc	45	2	H2	2088114.68	98.7
Sc	45	3	He	251841.14	98.1
Ge	72	1	No Gas	1286319.75	99.2
Ge	72	2	H2	830323.47	98.1
Ge	72	3	He	198764.92	97.8
In	115	1	No Gas	11286679.44	98.8
In	115	3	He	2440469.82	100.3
Bi	209	1	No Gas	11008830.39	97.8
Bi	209	3	He	4581998.59	99.7

ICPMS208-B Analytical Data

Sample Name	Rinse
File Name	014BLKV.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\211223A_DoD.b
Acq Time	2021-12-23 12:13:44
Sample Type	BlkVrfy
Total Dilution	1.0000
Comment	ICPMS-6020B-W-D
ISTD Ref FileName	003CALB.d
Operator	CAR/SRH/JPV
Method	EPA 200.8/EPA 6020

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	1.024	ug/l	25279.03
Be	9	45	1	No Gas	0.310	ug/l	842.86
B	11	45	1	No Gas	2.934	ug/l	6901.69
Na	23	45	3	He	-4.816	ug/l	22018.34
Mg	24	45	3	He	-19.874	ug/l	2382.13
Al	27	45	1	No Gas	1.464	ug/l	28783.12
Si	28	45	2	H2	-0.138	ug/l	2645.97
K	39	72	3	He	-1.003	ug/l	48602.54
Ca	40	72	2	H2	0.027	ug/l	68765.57
Ti	47	72	1	No Gas	-0.001	ug/l	198.53
V	51	72	1	No Gas	0.379	ug/l	-4254.77
V	51	72	3	He	-0.057	ug/l	2626.92
Cr	52	72	1	No Gas	-0.060	ug/l	48964.02
Cr	52	72	3	He	0.013	ug/l	562.24
Mn	55	72	1	No Gas	0.004	ug/l	8086.23
Mn	55	72	3	He	-0.011	ug/l	193.96
Fe	56	72	2	H2	-0.040	ug/l	16793.13
Fe	56	72	3	He	0.022	ug/l	6486.31
Co	59	72	1	No Gas	0.047	ug/l	1749.98
Ni	60	72	1	No Gas	-0.001	ug/l	861.65
Ni	60	72	3	He	0.001	ug/l	230.00
Cu	63	72	1	No Gas	0.033	ug/l	2638.63
Cu	63	72	3	He	0.033	ug/l	882.85
Cu	65	72	1	No Gas	0.034	ug/l	1303.92
Zn	66	72	1	No Gas	-0.107	ug/l	1755.91
Zn	66	72	3	He	-0.124	ug/l	317.79
As	75	72	1	No Gas	0.675	ug/l	14042.92
As	75	72	3	He	0.037	ug/l	86.73
Se	78	72	2	H2	0.051	ug/l	48.33
Br	79	72	1	No Gas	0.896	ug/l	17326.04
Br	79	72	2	H2	0.803	ug/l	8169.47
Se	82	72	1	No Gas	-0.407	ug/l	753.82
Kr	84	72	1	No Gas		ug/l	24302.29
Sr	88	72	1	No Gas	-0.032	ug/l	2907.86
Sr	88	72	3	He	-0.014	ug/l	451.12
Mo	95	115	1	No Gas	0.003	ug/l	110.00
Mo	95	115	3	He	0.007	ug/l	62.22
Mo	98	115	1	No Gas	0.003	ug/l	237.92

ICPMS208-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Ag	107	115	1	No Gas	0.009	ug/l	298.79
Ag	109	115	1	No Gas	0.008	ug/l	286.79
Cd	111	115	1	No Gas	0.012	ug/l	118.80
Cd	111	115	3	He	0.014	ug/l	32.22
Cd	114	115	1	No Gas	0.015	ug/l	249.40
Cd	114	115	3	He	0.014	ug/l	80.04
Sn	118	115	1	No Gas	-0.002	ug/l	2744.83
Sn	118	115	3	He	-0.006	ug/l	673.35
Sb	121	115	1	No Gas	0.006	ug/l	574.74
Sb	121	115	3	He	0.006	ug/l	140.35
Sb	123	115	1	No Gas	0.005	ug/l	553.07
Sb	123	115	3	He	0.005	ug/l	108.01
Te	125	115	3	He	0.000	ug/l	0.00
Ba	135	115	1	No Gas	-0.002	ug/l	425.83
Ba	137	115	1	No Gas	0.003	ug/l	688.65
La	139	115	3	He	0.001	ug/l	76.67
Ce	140	115	3	He	-0.001	ug/l	102.22
Hg	201	209	1	No Gas	0.002	ug/l	34.32
Hg	202	209	1	No Gas	0.001	ug/l	142.30
Hg	202	209	3	He	0.002	ug/l	44.32
Tl	203	209	3	He	0.308	ug/l	4528.59
Tl	205	209	1	No Gas	0.207	ug/l	17107.09
Tl	205	209	3	He	0.312	ug/l	10841.43
[Pb]	206	209	1	No Gas	0.026	ug/l	995.60
[Pb]	207	209	1	No Gas	0.023	ug/l	836.70
Pb	208	209	1	No Gas	0.025	ug/l	3915.82
Th	232	209	3	He	0.015	ug/l	824.36
U	238	209	1	No Gas	0.008	ug/l	832.19

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	4467537.13	100.3
Sc	45	2	H2	2123266.20	100.3
Sc	45	3	He	252084.02	98.2
Ge	72	1	No Gas	1299027.21	100.1
Ge	72	2	H2	833343.50	98.4
Ge	72	3	He	198638.39	97.7
In	115	1	No Gas	11314123.46	99.1
In	115	3	He	2409887.22	99.0
Bi	209	1	No Gas	11042976.56	98.1
Bi	209	3	He	4580224.72	99.6

ICPMS208-B Analytical Data

Sample Name	QCS
File Name	015_QC1.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\211223A_DoD.b
Acq Time	2021-12-23 12:19:54
Sample Type	QC1
Total Dilution	1.0000
Comment	ICPMS-6020B-W-D
ISTD Ref FileName	003CALB.d
Operator	CAR/SRH/JPV
Method	EPA 200.8/EPA 6020

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	52.365	ug/l	349863.24
Be	9	45	1	No Gas	24.147	ug/l	58971.13
B	11	45	1	No Gas	51.958	ug/l	74829.01
Na	23	45	3	He	2588.426	ug/l	1391959.77
Mg	24	45	3	He	2679.652	ug/l	774095.90
Al	27	45	1	No Gas	245.552	ug/l	3730064.81
Si	28	45	2	H2	461.737	ug/l	666852.62
K	39	72	3	He	2562.658	ug/l	934234.40
Ca	40	72	2	H2	2630.725	ug/l	15638105.99
Ti	47	72	1	No Gas	42.859	ug/l	95112.28
V	51	72	1	No Gas	47.333	ug/l	1059202.04
V	51	72	3	He	48.467	ug/l	196194.54
Cr	52	72	1	No Gas	50.109	ug/l	1215631.88
Cr	52	72	3	He	49.463	ug/l	223792.71
Mn	55	72	1	No Gas	245.999	ug/l	7848110.75
Mn	55	72	3	He	247.948	ug/l	752448.36
Fe	56	72	2	H2	253.733	ug/l	3778123.17
Fe	56	72	3	He	253.846	ug/l	1031292.15
Co	59	72	1	No Gas	50.188	ug/l	1315734.42
Ni	60	72	1	No Gas	49.504	ug/l	289784.28
Ni	60	72	3	He	50.245	ug/l	96180.97
Cu	63	72	1	No Gas	50.761	ug/l	731275.32
Cu	63	72	3	He	51.222	ug/l	266210.67
Cu	65	72	1	No Gas	50.664	ug/l	354657.16
Zn	66	72	1	No Gas	51.858	ug/l	236008.92
Zn	66	72	3	He	52.683	ug/l	52654.42
As	75	72	1	No Gas	48.429	ug/l	268948.09
As	75	72	3	He	48.962	ug/l	39846.03
Se	78	72	2	H2	50.104	ug/l	28273.21
Br	79	72	1	No Gas	0.607	ug/l	13769.25
Br	79	72	2	H2	0.622	ug/l	7373.97
Se	82	72	1	No Gas	49.158	ug/l	18780.63
Kr	84	72	1	No Gas		ug/l	41207.07
Sr	88	72	1	No Gas	50.500	ug/l	2474654.35
Sr	88	72	3	He	50.126	ug/l	269507.36
Mo	95	115	1	No Gas	43.079	ug/l	485749.10
Mo	95	115	3	He	43.126	ug/l	178252.66
Mo	98	115	1	No Gas	43.563	ug/l	802244.92

ICPMS208-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Ag	107	115	1	No Gas	25.268	ug/l	666058.27
Ag	109	115	1	No Gas	25.350	ug/l	645174.26
Cd	111	115	1	No Gas	25.142	ug/l	150105.13
Cd	111	115	3	He	24.603	ug/l	47610.29
Cd	114	115	1	No Gas	25.044	ug/l	335840.39
Cd	114	115	3	He	24.500	ug/l	117047.54
Sn	118	115	1	No Gas	45.589	ug/l	909596.97
Sn	118	115	3	He	43.947	ug/l	231495.48
Sb	121	115	1	No Gas	44.350	ug/l	1322818.01
Sb	121	115	3	He	44.226	ug/l	329116.86
Sb	123	115	1	No Gas	44.040	ug/l	1009229.79
Sb	123	115	3	He	43.779	ug/l	260331.28
Te	125	115	3	He	45.584	ug/l	6.67
Ba	135	115	1	No Gas	49.148	ug/l	286795.46
Ba	137	115	1	No Gas	48.686	ug/l	497452.61
La	139	115	3	He	49.082	ug/l	1352805.66
Ce	140	115	3	He	50.080	ug/l	1517574.30
Hg	201	209	1	No Gas	0.981	ug/l	3601.10
Hg	202	209	1	No Gas	0.978	ug/l	8294.24
Hg	202	209	3	He	0.995	ug/l	3762.79
Tl	203	209	3	He	49.347	ug/l	525686.88
Tl	205	209	1	No Gas	49.800	ug/l	2753386.80
Tl	205	209	3	He	49.221	ug/l	1251013.58
[Pb]	206	209	1	No Gas	48.487	ug/l	970215.62
[Pb]	207	209	1	No Gas	48.554	ug/l	841266.30
Pb	208	209	1	No Gas	48.947	ug/l	3908740.33
Th	232	209	3	He	48.548	ug/l	1725361.79
U	238	209	1	No Gas	51.536	ug/l	3948054.01

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	4414205.14	99.1
Sc	45	2	H2	2138517.00	101.0
Sc	45	3	He	260249.55	101.3
Ge	72	1	No Gas	1291284.79	99.5
Ge	72	2	H2	871151.77	102.9
Ge	72	3	He	207515.94	102.1
In	115	1	No Gas	11292623.95	98.9
In	115	3	He	2434453.17	100.0
Bi	209	1	No Gas	10733623.41	95.3
Bi	209	3	He	4548379.79	99.0

ICPMS208-B Analytical Data

Sample Name	CCV
File Name	016_CCV.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\211223A_DoD.b
Acq Time	2021-12-23 12:25:57
Sample Type	CCV
Total Dilution	1.0000
Comment	ICPMS-6020B-W-D
ISTD Ref FileName	003CALB.d
Operator	CAR/SRH/JPV
Method	EPA 200.8/EPA 6020

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	643.347	ug/l	4120410.19
Be	9	45	1	No Gas	48.253	ug/l	118658.11
B	11	45	1	No Gas	51.244	ug/l	74414.18
Na	23	45	3	He	12895.108	ug/l	6823973.02
Mg	24	45	3	He	13146.266	ug/l	3760636.53
Al	27	45	1	No Gas	48.573	ug/l	748620.28
Si	28	45	2	H2	192.712	ug/l	282559.92
K	39	72	3	He	13034.110	ug/l	4478189.90
Ca	40	72	2	H2	13338.196	ug/l	78502224.46
Ti	47	72	1	No Gas	45.145	ug/l	99481.23
V	51	72	1	No Gas	49.559	ug/l	1101758.42
V	51	72	3	He	49.017	ug/l	195543.58
Cr	52	72	1	No Gas	50.537	ug/l	1217041.00
Cr	52	72	3	He	49.274	ug/l	219755.45
Mn	55	72	1	No Gas	49.691	ug/l	1580178.72
Mn	55	72	3	He	49.065	ug/l	146955.01
Fe	56	72	2	H2	1319.237	ug/l	19443293.24
Fe	56	72	3	He	1314.015	ug/l	5235101.43
Co	59	72	1	No Gas	50.261	ug/l	1308758.90
Ni	60	72	1	No Gas	49.862	ug/l	289823.82
Ni	60	72	3	He	49.120	ug/l	92698.73
Cu	63	72	1	No Gas	50.251	ug/l	718861.26
Cu	63	72	3	He	49.265	ug/l	252411.67
Cu	65	72	1	No Gas	49.499	ug/l	344159.03
Zn	66	72	1	No Gas	49.317	ug/l	223022.79
Zn	66	72	3	He	49.466	ug/l	48757.74
As	75	72	1	No Gas	49.378	ug/l	272127.60
As	75	72	3	He	49.120	ug/l	39404.90
Se	78	72	2	H2	49.219	ug/l	27597.58
Br	79	72	1	No Gas	0.346	ug/l	10572.88
Br	79	72	2	H2	0.301	ug/l	5240.57
Se	82	72	1	No Gas	48.765	ug/l	18504.83
Kr	84	72	1	No Gas		ug/l	40603.06
Sr	88	72	1	No Gas	49.841	ug/l	2426206.61
Sr	88	72	3	He	49.291	ug/l	261257.13
Mo	95	115	1	No Gas	43.521	ug/l	491319.71
Mo	95	115	3	He	44.220	ug/l	178007.93
Mo	98	115	1	No Gas	43.458	ug/l	801329.85

ICPMS208-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Ag	107	115	1	No Gas	19.348	ug/l	510708.72
Ag	109	115	1	No Gas	19.281	ug/l	491388.45
Cd	111	115	1	No Gas	47.865	ug/l	286086.71
Cd	111	115	3	He	49.072	ug/l	92473.32
Cd	114	115	1	No Gas	48.478	ug/l	650708.29
Cd	114	115	3	He	48.972	ug/l	227826.69
Sn	118	115	1	No Gas	45.183	ug/l	902442.86
Sn	118	115	3	He	43.874	ug/l	225098.22
Sb	121	115	1	No Gas	44.175	ug/l	1318764.02
Sb	121	115	3	He	44.711	ug/l	324013.61
Sb	123	115	1	No Gas	43.936	ug/l	1007658.17
Sb	123	115	3	He	44.389	ug/l	257054.08
Te	125	115	3	He	0.000	ug/l	0.00
Ba	135	115	1	No Gas	48.069	ug/l	280711.89
Ba	137	115	1	No Gas	47.885	ug/l	489662.51
La	139	115	3	He	49.862	ug/l	1338053.89
Ce	140	115	3	He	49.672	ug/l	1465944.52
Hg	201	209	1	No Gas	1.012	ug/l	3679.77
Hg	202	209	1	No Gas	0.982	ug/l	8250.23
Hg	202	209	3	He	1.025	ug/l	3677.11
Tl	203	209	3	He	49.013	ug/l	495850.44
Tl	205	209	1	No Gas	48.779	ug/l	2672365.50
Tl	205	209	3	He	49.153	ug/l	1186389.23
[Pb]	206	209	1	No Gas	48.366	ug/l	959135.12
[Pb]	207	209	1	No Gas	48.473	ug/l	832409.08
Pb	208	209	1	No Gas	48.161	ug/l	3811849.95
Th	232	209	3	He	48.680	ug/l	1642994.14
U	238	209	1	No Gas	48.891	ug/l	3710959.44

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	4449715.06	99.9
Sc	45	2	H2	2157657.53	101.9
Sc	45	3	He	259873.38	101.2
Ge	72	1	No Gas	1282284.37	98.8
Ge	72	2	H2	865592.57	102.3
Ge	72	3	He	204545.76	100.6
In	115	1	No Gas	11306518.15	99.0
In	115	3	He	2371172.80	97.4
Bi	209	1	No Gas	10634995.36	94.5
Bi	209	3	He	4319048.55	94.0

ICPMS208-B Analytical Data

Sample Name	CCB
File Name	017_CCB.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\211223A_DoD.b
Acq Time	2021-12-23 12:31:59
Sample Type	CCB
Total Dilution	1.0000
Comment	ICPMS-6020B-W-D
ISTD Ref FileName	003CALB.d
Operator	CAR/SRH/JPV
Method	EPA 200.8/EPA 6020

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	0.739	ug/l	23454.10
Be	9	45	1	No Gas	0.159	ug/l	470.25
B	11	45	1	No Gas	1.482	ug/l	4860.74
Na	23	45	3	He	-6.073	ug/l	21430.85
Mg	24	45	3	He	-21.422	ug/l	1959.58
Al	27	45	1	No Gas	-0.011	ug/l	6150.19
Si	28	45	2	H2	-0.062	ug/l	2799.39
K	39	72	3	He	1.864	ug/l	49721.68
Ca	40	72	2	H2	-0.707	ug/l	64899.50
Ti	47	72	1	No Gas	-0.007	ug/l	185.19
V	51	72	1	No Gas	0.158	ug/l	-9310.75
V	51	72	3	He	-0.012	ug/l	2806.95
Cr	52	72	1	No Gas	-0.073	ug/l	48723.49
Cr	52	72	3	He	-0.001	ug/l	505.57
Mn	55	72	1	No Gas	0.024	ug/l	8755.25
Mn	55	72	3	He	0.017	ug/l	275.61
Fe	56	72	2	H2	-0.063	ug/l	16549.30
Fe	56	72	3	He	-0.039	ug/l	6274.32
Co	59	72	1	No Gas	0.026	ug/l	1184.37
Ni	60	72	1	No Gas	-0.005	ug/l	835.04
Ni	60	72	3	He	-0.014	ug/l	203.33
Cu	63	72	1	No Gas	0.027	ug/l	2556.59
Cu	63	72	3	He	0.022	ug/l	827.53
Cu	65	72	1	No Gas	0.026	ug/l	1253.23
Zn	66	72	1	No Gas	-0.095	ug/l	1812.59
Zn	66	72	3	He	-0.044	ug/l	395.56
As	75	72	1	No Gas	0.725	ug/l	14309.79
As	75	72	3	He	0.025	ug/l	77.33
Se	78	72	2	H2	0.030	ug/l	37.11
Br	79	72	1	No Gas	0.152	ug/l	8379.18
Br	79	72	2	H2	0.179	ug/l	4302.13
Se	82	72	1	No Gas	-0.166	ug/l	843.02
Kr	84	72	1	No Gas		ug/l	23732.45
Sr	88	72	1	No Gas	-0.043	ug/l	2385.48
Sr	88	72	3	He	-0.029	ug/l	375.56
Mo	95	115	1	No Gas	0.018	ug/l	282.23
Mo	95	115	3	He	0.016	ug/l	96.67
Mo	98	115	1	No Gas	0.014	ug/l	442.23

ICPMS208-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Ag	107	115	1	No Gas	0.002	ug/l	126.05
Ag	109	115	1	No Gas	0.002	ug/l	125.38
Cd	111	115	1	No Gas	0.006	ug/l	80.00
Cd	111	115	3	He	0.010	ug/l	25.78
Cd	114	115	1	No Gas	0.008	ug/l	167.69
Cd	114	115	3	He	0.008	ug/l	54.44
Sn	118	115	1	No Gas	0.012	ug/l	3047.63
Sn	118	115	3	He	-0.002	ug/l	695.58
Sb	121	115	1	No Gas	0.025	ug/l	1154.50
Sb	121	115	3	He	0.021	ug/l	249.03
Sb	123	115	1	No Gas	0.022	ug/l	949.79
Sb	123	115	3	He	0.020	ug/l	198.35
Te	125	115	3	He	0.000	ug/l	0.00
Ba	135	115	1	No Gas	-0.006	ug/l	405.87
Ba	137	115	1	No Gas	0.012	ug/l	785.14
La	139	115	3	He	0.001	ug/l	76.67
Ce	140	115	3	He	0.001	ug/l	151.11
Hg	201	209	1	No Gas	0.005	ug/l	45.99
Hg	202	209	1	No Gas	0.005	ug/l	169.30
Hg	202	209	3	He	0.005	ug/l	57.66
Tl	203	209	3	He	0.319	ug/l	4601.98
Tl	205	209	1	No Gas	0.244	ug/l	19142.33
Tl	205	209	3	He	0.328	ug/l	11127.12
[Pb]	206	209	1	No Gas	0.012	ug/l	708.91
[Pb]	207	209	1	No Gas	0.015	ug/l	678.91
Pb	208	209	1	No Gas	0.015	ug/l	3047.94
Th	232	209	3	He	0.019	ug/l	977.10
U	238	209	1	No Gas	0.005	ug/l	617.56

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	4466564.85	100.3
Sc	45	2	H2	2158109.51	102.0
Sc	45	3	He	252738.18	98.4
Ge	72	1	No Gas	1300546.65	100.2
Ge	72	2	H2	837240.44	98.9
Ge	72	3	He	199334.53	98.0
In	115	1	No Gas	11431549.07	100.1
In	115	3	He	2414798.21	99.2
Bi	209	1	No Gas	11006660.77	97.8
Bi	209	3	He	4533618.03	98.6

ICPMS208-B Analytical Data

Sample Name	LRB
File Name	018MBLK.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\211223A_DoD.b
Acq Time	2021-12-23 12:38:09
Sample Type	MBLK
Total Dilution	1.0000
Comment	ICPMS-6020B-W-D
ISTD Ref FileName	003CALB.d
Operator	CAR/SRH/JPV
Method	EPA 200.8/EPA 6020

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	0.215	ug/l	19765.39
Be	9	45	1	No Gas	0.111	ug/l	346.93
B	11	45	1	No Gas	0.980	ug/l	4086.86
Na	23	45	3	He	-4.894	ug/l	21614.29
Mg	24	45	3	He	-21.209	ug/l	1979.54
Al	27	45	1	No Gas	0.115	ug/l	7949.92
Si	28	45	2	H2	0.116	ug/l	3052.21
K	39	72	3	He	2.256	ug/l	48794.22
Ca	40	72	2	H2	-1.593	ug/l	59253.76
Ti	47	72	1	No Gas	-0.001	ug/l	200.20
V	51	72	1	No Gas	0.095	ug/l	-10879.86
V	51	72	3	He	0.008	ug/l	2824.73
Cr	52	72	1	No Gas	-0.038	ug/l	49715.11
Cr	52	72	3	He	0.001	ug/l	502.23
Mn	55	72	1	No Gas	-0.001	ug/l	7983.06
Mn	55	72	3	He	-0.030	ug/l	135.31
Fe	56	72	2	H2	-0.164	ug/l	14954.32
Fe	56	72	3	He	-0.142	ug/l	5750.26
Co	59	72	1	No Gas	0.017	ug/l	971.45
Ni	60	72	1	No Gas	-0.030	ug/l	691.98
Ni	60	72	3	He	-0.034	ug/l	164.45
Cu	63	72	1	No Gas	0.003	ug/l	2209.06
Cu	63	72	3	He	0.007	ug/l	738.54
Cu	65	72	1	No Gas	0.005	ug/l	1107.82
Zn	66	72	1	No Gas	-0.142	ug/l	1602.95
Zn	66	72	3	He	-0.092	ug/l	342.23
As	75	72	1	No Gas	0.549	ug/l	13413.96
As	75	72	3	He	0.015	ug/l	68.53
Se	78	72	2	H2	0.014	ug/l	28.22
Br	79	72	1	No Gas	0.108	ug/l	7879.88
Br	79	72	2	H2	0.130	ug/l	3959.36
Se	82	72	1	No Gas	-0.891	ug/l	579.41
Kr	84	72	1	No Gas		ug/l	20147.47
Sr	88	72	1	No Gas	-0.050	ug/l	2042.77
Sr	88	72	3	He	-0.026	ug/l	382.23
Mo	95	115	1	No Gas	0.004	ug/l	126.67
Mo	95	115	3	He	0.009	ug/l	68.89
Mo	98	115	1	No Gas	0.001	ug/l	199.52

ICPMS208-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Ag	107	115	1	No Gas	0.001	ug/l	101.38
Ag	109	115	1	No Gas	0.001	ug/l	90.70
Cd	111	115	1	No Gas	0.004	ug/l	69.55
Cd	111	115	3	He	0.006	ug/l	17.45
Cd	114	115	1	No Gas	0.005	ug/l	120.25
Cd	114	115	3	He	0.005	ug/l	37.59
Sn	118	115	1	No Gas	-0.041	ug/l	1956.27
Sn	118	115	3	He	-0.050	ug/l	443.34
Sb	121	115	1	No Gas	0.005	ug/l	528.73
Sb	121	115	3	He	0.004	ug/l	125.68
Sb	123	115	1	No Gas	0.002	ug/l	484.73
Sb	123	115	3	He	0.006	ug/l	113.01
Te	125	115	3	He	0.000	ug/l	0.00
Ba	135	115	1	No Gas	0.000	ug/l	439.14
Ba	137	115	1	No Gas	-0.001	ug/l	655.39
La	139	115	3	He	0.000	ug/l	53.34
Ce	140	115	3	He	-0.003	ug/l	50.00
Hg	201	209	1	No Gas	0.002	ug/l	33.99
Hg	202	209	1	No Gas	0.001	ug/l	140.64
Hg	202	209	3	He	0.002	ug/l	44.32
Tl	203	209	3	He	0.123	ug/l	2505.25
Tl	205	209	1	No Gas	0.072	ug/l	9355.63
Tl	205	209	3	He	0.127	ug/l	5994.43
[Pb]	206	209	1	No Gas	0.008	ug/l	634.47
[Pb]	207	209	1	No Gas	0.007	ug/l	547.79
Pb	208	209	1	No Gas	0.008	ug/l	2447.88
Th	232	209	3	He	0.007	ug/l	551.57
U	238	209	1	No Gas	0.002	ug/l	429.25

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	4393062.84	98.6
Sc	45	2	H2	2150610.78	101.6
Sc	45	3	He	247949.75	96.5
Ge	72	1	No Gas	1305314.52	100.6
Ge	72	2	H2	828459.52	97.9
Ge	72	3	He	195107.84	96.0
In	115	1	No Gas	11346165.87	99.4
In	115	3	He	2402454.16	98.7
Bi	209	1	No Gas	10951168.28	97.3
Bi	209	3	He	4496073.58	97.8

ICPMS208-B Analytical Data

Sample Name	LFB
File Name	019_LFB.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\211223A_DoD.b
Acq Time	2021-12-23 12:44:20
Sample Type	LFB
Total Dilution	1.0300
Comment	ICPMS-6020B-W-D
ISTD Ref FileName	003CALB.d
Operator	CAR/SRH/JPV
Method	EPA 200.8/EPA 6020

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	2495.329	ug/l	15100861.33
Be	9	45	1	No Gas	47.965	ug/l	111800.04
B	11	45	1	No Gas	49.333	ug/l	68068.20
Na	23	45	3	He	50651.319	ug/l	24672675.74
Mg	24	45	3	He	50824.458	ug/l	13396443.92
Al	27	45	1	No Gas	48.074	ug/l	702480.16
Si	28	45	2	H2	185.903	ug/l	243167.98
K	39	72	3	He	50161.506	ug/l	15744463.52
Ca	40	72	2	H2	50209.104	ug/l	269593775.95
Ti	47	72	1	No Gas	48.342	ug/l	102706.84
V	51	72	1	No Gas	45.430	ug/l	972560.63
V	51	72	3	He	49.436	ug/l	181733.01
Cr	52	72	1	No Gas	49.295	ug/l	1147400.85
Cr	52	72	3	He	48.889	ug/l	200885.19
Mn	55	72	1	No Gas	48.699	ug/l	1494028.88
Mn	55	72	3	He	48.550	ug/l	133969.66
Fe	56	72	2	H2	5008.518	ug/l	67355633.26
Fe	56	72	3	He	4981.099	ug/l	18266030.80
Co	59	72	1	No Gas	48.964	ug/l	1229030.63
Ni	60	72	1	No Gas	48.519	ug/l	271973.90
Ni	60	72	3	He	48.873	ug/l	84983.55
Cu	63	72	1	No Gas	48.154	ug/l	664082.39
Cu	63	72	3	He	48.841	ug/l	230544.57
Cu	65	72	1	No Gas	47.365	ug/l	317504.23
Zn	66	72	1	No Gas	47.312	ug/l	206359.29
Zn	66	72	3	He	49.058	ug/l	44563.34
As	75	72	1	No Gas	48.638	ug/l	258776.32
As	75	72	3	He	49.579	ug/l	36640.91
Se	78	72	2	H2	49.432	ug/l	25309.64
Br	79	72	1	No Gas	0.557	ug/l	12776.98
Br	79	72	2	H2	0.348	ug/l	5154.05
Se	82	72	1	No Gas	48.200	ug/l	17658.96
Kr	84	72	1	No Gas		ug/l	37484.22
Sr	88	72	1	No Gas	49.045	ug/l	2300890.78
Sr	88	72	3	He	49.532	ug/l	241862.01
Mo	95	115	1	No Gas	46.098	ug/l	464777.25
Mo	95	115	3	He	44.821	ug/l	163316.90
Mo	98	115	1	No Gas	46.011	ug/l	757598.63

ICPMS208-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Ag	107	115	1	No Gas	19.973	ug/l	470923.54
Ag	109	115	1	No Gas	19.955	ug/l	454242.36
Cd	111	115	1	No Gas	49.262	ug/l	263039.32
Cd	111	115	3	He	49.287	ug/l	84073.53
Cd	114	115	1	No Gas	48.944	ug/l	587093.01
Cd	114	115	3	He	49.343	ug/l	207795.58
Sn	118	115	1	No Gas	45.049	ug/l	804045.77
Sn	118	115	3	He	44.369	ug/l	206050.80
Sb	121	115	1	No Gas	42.866	ug/l	1143574.50
Sb	121	115	3	He	43.518	ug/l	285493.43
Sb	123	115	1	No Gas	42.993	ug/l	881107.90
Sb	123	115	3	He	43.415	ug/l	227586.84
Te	125	115	3	He	181.182	ug/l	23.36
Ba	135	115	1	No Gas	49.465	ug/l	258121.52
Ba	137	115	1	No Gas	48.758	ug/l	445514.93
La	139	115	3	He	49.540	ug/l	1203587.07
Ce	140	115	3	He	49.375	ug/l	1318995.26
Hg	201	209	1	No Gas	0.983	ug/l	3238.75
Hg	202	209	1	No Gas	0.981	ug/l	7469.93
Hg	202	209	3	He	1.000	ug/l	3280.75
Tl	203	209	3	He	50.271	ug/l	464668.52
Tl	205	209	1	No Gas	49.913	ug/l	2477318.47
Tl	205	209	3	He	49.931	ug/l	1101121.29
[Pb]	206	209	1	No Gas	48.601	ug/l	873006.33
[Pb]	207	209	1	No Gas	48.905	ug/l	760634.54
Pb	208	209	1	No Gas	49.034	ug/l	3515056.99
Th	232	209	3	He	50.475	ug/l	1556563.24
U	238	209	1	No Gas	50.431	ug/l	3468003.58

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	4340709.47	97.4
Sc	45	2	H2	1981612.39	93.6
Sc	45	3	He	247102.38	96.2
Ge	72	1	No Gas	1274049.22	98.2
Ge	72	2	H2	814142.53	96.2
Ge	72	3	He	194090.74	95.5
In	115	1	No Gas	10407277.23	91.1
In	115	3	He	2210743.77	90.8
Bi	209	1	No Gas	9923695.35	88.1
Bi	209	3	He	4064828.86	88.4

ICPMS208-B Analytical Data

Sample Name	ICSA
File Name	020ICSA.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\211223A_DoD.b
Acq Time	2021-12-23 12:50:24
Sample Type	ICSA
Total Dilution	1.0000
Comment	ICPMS-6020B-W-D
ISTD Ref FileName	003CALB.d
Operator	CAR/SRH/JPV
Method	EPA 200.8/EPA 6020

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	2.670	ug/l	35759.43
Be	9	45	1	No Gas	0.093	ug/l	305.61
B	11	45	1	No Gas	0.741	ug/l	3812.02
Na	23	45	3	He	108082.730	ug/l	53968025.86
Mg	24	45	3	He	43709.922	ug/l	11818533.65
Al	27	45	1	No Gas	39378.028	ug/l	603173253.23
Si	28	45	2	H2	1.056	ug/l	4046.86
K	39	72	3	He	44565.003	ug/l	14136918.12
Ca	40	72	2	H2	126215.831	ug/l	685240629.82
Ti	47	72	1	No Gas	756.139	ug/l	1653676.85
V	51	72	1	No Gas	0.096	ug/l	-10626.03
V	51	72	3	He	-0.079	ug/l	2435.77
Cr	52	72	1	No Gas	1.046	ug/l	73467.02
Cr	52	72	3	He	0.988	ug/l	4579.62
Mn	55	72	1	No Gas	0.129	ug/l	11871.27
Mn	55	72	3	He	0.171	ug/l	691.88
Fe	56	72	2	H2	107848.228	ug/l	1466687849.52
Fe	56	72	3	He	108877.791	ug/l	403201166.97
Co	59	72	1	No Gas	0.528	ug/l	14175.45
Ni	60	72	1	No Gas	1.895	ug/l	11768.13
Ni	60	72	3	He	0.179	ug/l	532.23
Cu	63	72	1	No Gas	1.661	ug/l	25676.77
Cu	63	72	3	He	0.143	ug/l	1366.46
Cu	65	72	1	No Gas	1.115	ug/l	8737.46
Zn	66	72	1	No Gas	0.929	ug/l	6335.48
Zn	66	72	3	He	0.275	ug/l	666.69
As	75	72	1	No Gas	0.007	ug/l	10224.37
As	75	72	3	He	0.136	ug/l	156.80
Se	78	72	2	H2	0.110	ug/l	77.22
Br	79	72	1	No Gas	0.510	ug/l	12450.67
Br	79	72	2	H2	0.247	ug/l	4511.76
Se	82	72	1	No Gas	-0.629	ug/l	658.73
Kr	84	72	1	No Gas		ug/l	23829.05
Sr	88	72	1	No Gas	1.282	ug/l	66317.35
Sr	88	72	3	He	1.271	ug/l	6760.52
Mo	95	115	1	No Gas	782.094	ug/l	8369613.70
Mo	95	115	3	He	780.930	ug/l	2969536.38
Mo	98	115	1	No Gas	773.886	ug/l	13526835.98

ICPMS208-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Ag	107	115	1	No Gas	0.008	ug/l	268.78
Ag	109	115	1	No Gas	0.007	ug/l	243.43
Cd	111	115	1	No Gas	0.114	ug/l	688.10
Cd	111	115	3	He	0.310	ug/l	556.79
Cd	114	115	1	No Gas	0.124	ug/l	1636.59
Cd	114	115	3	He	0.226	ug/l	1008.76
Sn	118	115	1	No Gas	0.112	ug/l	4748.07
Sn	118	115	3	He	0.120	ug/l	1236.73
Sb	121	115	1	No Gas	0.262	ug/l	7791.94
Sb	121	115	3	He	0.221	ug/l	1601.25
Sb	123	115	1	No Gas	0.256	ug/l	5975.54
Sb	123	115	3	He	0.221	ug/l	1280.85
Te	125	115	3	He	0.000	ug/l	0.00
Ba	135	115	1	No Gas	0.064	ug/l	771.83
Ba	137	115	1	No Gas	0.064	ug/l	1247.59
La	139	115	3	He	0.012	ug/l	348.90
Ce	140	115	3	He	0.001	ug/l	134.44
Hg	201	209	1	No Gas	0.003	ug/l	31.66
Hg	202	209	1	No Gas	0.002	ug/l	129.31
Hg	202	209	3	He	0.004	ug/l	48.66
Tl	203	209	3	He	0.158	ug/l	2599.30
Tl	205	209	1	No Gas	0.109	ug/l	10148.57
Tl	205	209	3	He	0.154	ug/l	6051.15
[Pb]	206	209	1	No Gas	0.027	ug/l	902.26
[Pb]	207	209	1	No Gas	0.027	ug/l	792.25
Pb	208	209	1	No Gas	0.027	ug/l	3540.21
Th	232	209	3	He	0.032	ug/l	1288.59
U	238	209	1	No Gas	0.004	ug/l	490.58

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	4458427.74	100.1
Sc	45	2	H2	1972771.42	93.2
Sc	45	3	He	246011.37	95.8
Ge	72	1	No Gas	1274942.71	98.3
Ge	72	2	H2	799499.40	94.4
Ge	72	3	He	190377.84	93.6
In	115	1	No Gas	10724983.04	93.9
In	115	3	He	2239961.44	92.0
Bi	209	1	No Gas	9700745.84	86.2
Bi	209	3	He	4079050.75	88.7

ICPMS208-B Analytical Data

Sample Name	ICSAB
File Name	021ICSB.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\211223A_DoD.b
Acq Time	2021-12-23 12:56:33
Sample Type	ICSAB
Total Dilution	1.0000
Comment	ICPMS-6020B-W-D
ISTD Ref FileName	003CALB.d
Operator	CAR/SRH/JPV
Method	EPA 200.8/EPA 6020

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	1.287	ug/l	26835.66
Be	9	45	1	No Gas	0.061	ug/l	225.95
B	11	45	1	No Gas	0.424	ug/l	3359.06
Na	23	45	3	He	108818.128	ug/l	54090987.53
Mg	24	45	3	He	43833.147	ug/l	11798798.12
Al	27	45	1	No Gas	39642.103	ug/l	605494186.53
Si	28	45	2	H2	1.132	ug/l	4060.87
K	39	72	3	He	44629.738	ug/l	14209488.54
Ca	40	72	2	H2	126666.705	ug/l	682408397.69
Ti	47	72	1	No Gas	764.052	ug/l	1670227.12
V	51	72	1	No Gas	21.444	ug/l	466656.64
V	51	72	3	He	21.766	ug/l	82629.72
Cr	52	72	1	No Gas	22.258	ug/l	560374.43
Cr	52	72	3	He	22.393	ug/l	93538.99
Mn	55	72	1	No Gas	21.905	ug/l	696755.66
Mn	55	72	3	He	21.784	ug/l	61057.88
Fe	56	72	2	H2	108261.813	ug/l	1460643512.06
Fe	56	72	3	He	108610.163	ug/l	403661110.22
Co	59	72	1	No Gas	21.901	ug/l	566992.99
Ni	60	72	1	No Gas	22.882	ug/l	132642.27
Ni	60	72	3	He	21.533	ug/l	38075.97
Cu	63	72	1	No Gas	22.357	ug/l	319045.05
Cu	63	72	3	He	21.214	ug/l	101898.88
Cu	65	72	1	No Gas	21.608	ug/l	149898.34
Zn	66	72	1	No Gas	10.899	ug/l	50696.45
Zn	66	72	3	He	10.592	ug/l	10080.19
As	75	72	1	No Gas	11.150	ug/l	68974.32
As	75	72	3	He	11.100	ug/l	8360.43
Se	78	72	2	H2	11.172	ug/l	5754.81
Br	79	72	1	No Gas	0.526	ug/l	12630.47
Br	79	72	2	H2	0.273	ug/l	4628.25
Se	82	72	1	No Gas	10.306	ug/l	4584.78
Kr	84	72	1	No Gas		ug/l	24395.73
Sr	88	72	1	No Gas	1.329	ug/l	68593.34
Sr	88	72	3	He	1.272	ug/l	6790.53
Mo	95	115	1	No Gas	797.096	ug/l	8506102.37
Mo	95	115	3	He	780.242	ug/l	2944779.78
Mo	98	115	1	No Gas	777.969	ug/l	13559131.26

ICPMS208-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Ag	107	115	1	No Gas	5.252	ug/l	131106.88
Ag	109	115	1	No Gas	5.276	ug/l	127168.36
Cd	111	115	1	No Gas	10.429	ug/l	58969.16
Cd	111	115	3	He	10.656	ug/l	18834.78
Cd	114	115	1	No Gas	10.510	ug/l	133452.09
Cd	114	115	3	He	10.570	ug/l	46127.46
Sn	118	115	1	No Gas	0.098	ug/l	4471.86
Sn	118	115	3	He	0.076	ug/l	1018.93
Sb	121	115	1	No Gas	0.096	ug/l	3063.34
Sb	121	115	3	He	0.098	ug/l	757.12
Sb	123	115	1	No Gas	0.089	ug/l	2346.10
Sb	123	115	3	He	0.091	ug/l	564.40
Te	125	115	3	He	25.037	ug/l	3.34
Ba	135	115	1	No Gas	0.051	ug/l	695.31
Ba	137	115	1	No Gas	0.079	ug/l	1384.00
La	139	115	3	He	0.009	ug/l	268.89
Ce	140	115	3	He	0.000	ug/l	125.56
Hg	201	209	1	No Gas	0.003	ug/l	32.99
Hg	202	209	1	No Gas	0.001	ug/l	124.98
Hg	202	209	3	He	0.004	ug/l	45.32
Tl	203	209	3	He	0.073	ug/l	1756.82
Tl	205	209	1	No Gas	0.043	ug/l	6915.22
Tl	205	209	3	He	0.071	ug/l	4072.27
[Pb]	206	209	1	No Gas	0.022	ug/l	814.47
[Pb]	207	209	1	No Gas	0.021	ug/l	700.02
Pb	208	209	1	No Gas	0.022	ug/l	3244.62
Th	232	209	3	He	0.018	ug/l	806.35
U	238	209	1	No Gas	0.003	ug/l	436.25

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	4444584.59	99.8
Sc	45	2	H2	1930374.61	91.2
Sc	45	3	He	244902.85	95.4
Ge	72	1	No Gas	1274077.33	98.2
Ge	72	2	H2	793125.99	93.7
Ge	72	3	He	191078.95	94.0
In	115	1	No Gas	10689584.93	93.6
In	115	3	He	2223607.16	91.3
Bi	209	1	No Gas	9796488.92	87.0
Bi	209	3	He	3988629.45	86.8

ICPMS208-B Analytical Data

Sample Name	Rinse
File Name	022BLKV.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\211223A_DoD.b
Acq Time	2021-12-23 13:02:39
Sample Type	BlkVrfy
Total Dilution	1.0000
Comment	ICPMS-6020B-W-D
ISTD Ref FileName	003CALB.d
Operator	CAR/SRH/JPV
Method	EPA 200.8/EPA 6020

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	0.180	ug/l	19561.05
Be	9	45	1	No Gas	0.050	ug/l	196.63
B	11	45	1	No Gas	-0.123	ug/l	2564.59
Na	23	45	3	He	1.208	ug/l	24394.23
Mg	24	45	3	He	-22.879	ug/l	1507.09
Al	27	45	1	No Gas	2.222	ug/l	39803.79
Si	28	45	2	H2	-0.285	ug/l	2365.15
K	39	72	3	He	6.648	ug/l	49662.57
Ca	40	72	2	H2	1.705	ug/l	76833.31
Ti	47	72	1	No Gas	0.030	ug/l	261.93
V	51	72	1	No Gas	0.391	ug/l	-3938.91
V	51	72	3	He	-0.121	ug/l	2315.75
Cr	52	72	1	No Gas	-0.348	ug/l	41405.89
Cr	52	72	3	He	-0.020	ug/l	408.90
Mn	55	72	1	No Gas	-0.098	ug/l	4724.75
Mn	55	72	3	He	-0.047	ug/l	85.98
Fe	56	72	2	H2	5.432	ug/l	92603.74
Fe	56	72	3	He	4.997	ug/l	24976.32
Co	59	72	1	No Gas	-0.003	ug/l	429.16
Ni	60	72	1	No Gas	-0.026	ug/l	701.96
Ni	60	72	3	He	-0.036	ug/l	158.89
Cu	63	72	1	No Gas	0.074	ug/l	3165.62
Cu	63	72	3	He	0.055	ug/l	960.84
Cu	65	72	1	No Gas	0.063	ug/l	1482.01
Zn	66	72	1	No Gas	-0.191	ug/l	1346.93
Zn	66	72	3	He	-0.131	ug/l	302.23
As	75	72	1	No Gas	0.308	ug/l	11829.66
As	75	72	3	He	0.003	ug/l	58.60
Se	78	72	2	H2	0.009	ug/l	25.44
Br	79	72	1	No Gas	0.052	ug/l	7037.78
Br	79	72	2	H2	0.053	ug/l	3433.61
Se	82	72	1	No Gas	-0.096	ug/l	851.16
Kr	84	72	1	No Gas		ug/l	22706.17
Sr	88	72	1	No Gas	-0.057	ug/l	1666.79
Sr	88	72	3	He	-0.037	ug/l	326.67
Mo	95	115	1	No Gas	0.154	ug/l	1802.35
Mo	95	115	3	He	0.157	ug/l	667.80
Mo	98	115	1	No Gas	0.148	ug/l	2878.09

ICPMS208-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Ag	107	115	1	No Gas	0.001	ug/l	98.71
Ag	109	115	1	No Gas	0.001	ug/l	89.37
Cd	111	115	1	No Gas	0.001	ug/l	51.28
Cd	111	115	3	He	0.005	ug/l	14.78
Cd	114	115	1	No Gas	0.004	ug/l	103.16
Cd	114	115	3	He	0.004	ug/l	31.51
Sn	118	115	1	No Gas	-0.005	ug/l	2658.33
Sn	118	115	3	He	-0.007	ug/l	660.02
Sb	121	115	1	No Gas	0.042	ug/l	1633.60
Sb	121	115	3	He	0.046	ug/l	426.38
Sb	123	115	1	No Gas	0.038	ug/l	1287.19
Sb	123	115	3	He	0.045	ug/l	336.37
Te	125	115	3	He	0.000	ug/l	0.00
Ba	135	115	1	No Gas	0.002	ug/l	445.79
Ba	137	115	1	No Gas	-0.002	ug/l	628.77
La	139	115	3	He	0.000	ug/l	60.00
Ce	140	115	3	He	-0.002	ug/l	71.11
Hg	201	209	1	No Gas	0.001	ug/l	28.99
Hg	202	209	1	No Gas	0.001	ug/l	132.64
Hg	202	209	3	He	-0.001	ug/l	35.32
Tl	203	209	3	He	0.049	ug/l	1720.14
Tl	205	209	1	No Gas	0.016	ug/l	6139.26
Tl	205	209	3	He	0.048	ug/l	4010.89
[Pb]	206	209	1	No Gas	0.002	ug/l	497.79
[Pb]	207	209	1	No Gas	0.003	ug/l	454.45
Pb	208	209	1	No Gas	0.003	ug/l	2060.08
Th	232	209	3	He	0.003	ug/l	398.83
U	238	209	1	No Gas	0.001	ug/l	342.27

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	4395979.93	98.7
Sc	45	2	H2	2060715.26	97.4
Sc	45	3	He	244987.96	95.4
Ge	72	1	No Gas	1274409.92	98.2
Ge	72	2	H2	817934.18	96.6
Ge	72	3	He	192950.23	94.9
In	115	1	No Gas	11230288.45	98.4
In	115	3	He	2377779.05	97.7
Bi	209	1	No Gas	10735723.16	95.4
Bi	209	3	He	4484057.55	97.6

ICPMS208-B Analytical Data

Sample Name	Rinse
File Name	023BLKV.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\211223A_DoD.b
Acq Time	2021-12-23 13:08:47
Sample Type	BlkVrfy
Total Dilution	1.0000
Comment	ICPMS-6020B-W-D
ISTD Ref FileName	003CALB.d
Operator	CAR/SRH/JPV
Method	EPA 200.8/EPA 6020

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	-0.018	ug/l	17447.64
Be	9	45	1	No Gas	0.049	ug/l	186.63
B	11	45	1	No Gas	-0.195	ug/l	2348.46
Na	23	45	3	He	-5.760	ug/l	20472.88
Mg	24	45	3	He	-23.029	ug/l	1433.89
Al	27	45	1	No Gas	1.850	ug/l	32559.67
Si	28	45	2	H2	-0.240	ug/l	2364.48
K	39	72	3	He	4.618	ug/l	48187.71
Ca	40	72	2	H2	0.284	ug/l	67133.52
Ti	47	72	1	No Gas	0.019	ug/l	238.58
V	51	72	1	No Gas	0.378	ug/l	-4203.45
V	51	72	3	He	-0.134	ug/l	2226.85
Cr	52	72	1	No Gas	-0.385	ug/l	40488.47
Cr	52	72	3	He	-0.016	ug/l	421.12
Mn	55	72	1	No Gas	-0.110	ug/l	4342.04
Mn	55	72	3	He	-0.045	ug/l	90.65
Fe	56	72	2	H2	3.684	ug/l	66482.85
Fe	56	72	3	He	3.571	ug/l	19298.72
Co	59	72	1	No Gas	-0.003	ug/l	419.18
Ni	60	72	1	No Gas	-0.046	ug/l	585.52
Ni	60	72	3	He	-0.029	ug/l	167.78
Cu	63	72	1	No Gas	0.043	ug/l	2726.69
Cu	63	72	3	He	0.041	ug/l	877.18
Cu	65	72	1	No Gas	0.031	ug/l	1258.56
Zn	66	72	1	No Gas	-0.202	ug/l	1297.03
Zn	66	72	3	He	-0.140	ug/l	288.89
As	75	72	1	No Gas	0.048	ug/l	10431.61
As	75	72	3	He	0.004	ug/l	58.13
Se	78	72	2	H2	0.006	ug/l	23.33
Br	79	72	1	No Gas	0.015	ug/l	6591.79
Br	79	72	2	H2	0.067	ug/l	3426.95
Se	82	72	1	No Gas	-0.080	ug/l	855.15
Kr	84	72	1	No Gas		ug/l	22712.78
Sr	88	72	1	No Gas	-0.060	ug/l	1503.77
Sr	88	72	3	He	-0.035	ug/l	331.12
Mo	95	115	1	No Gas	0.041	ug/l	524.46
Mo	95	115	3	He	0.060	ug/l	272.23
Mo	98	115	1	No Gas	0.043	ug/l	945.74

ICPMS208-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Ag	107	115	1	No Gas	0.001	ug/l	78.03
Ag	109	115	1	No Gas	0.000	ug/l	72.70
Cd	111	115	1	No Gas	0.000	ug/l	45.62
Cd	111	115	3	He	0.003	ug/l	11.67
Cd	114	115	1	No Gas	0.002	ug/l	77.15
Cd	114	115	3	He	0.003	ug/l	27.38
Sn	118	115	1	No Gas	-0.003	ug/l	2651.68
Sn	118	115	3	He	0.001	ug/l	697.84
Sb	121	115	1	No Gas	0.026	ug/l	1131.83
Sb	121	115	3	He	0.029	ug/l	305.70
Sb	123	115	1	No Gas	0.022	ug/l	916.46
Sb	123	115	3	He	0.029	ug/l	245.36
Te	125	115	3	He	0.000	ug/l	0.00
Ba	135	115	1	No Gas	-0.006	ug/l	395.89
Ba	137	115	1	No Gas	-0.003	ug/l	615.46
La	139	115	3	He	0.000	ug/l	53.33
Ce	140	115	3	He	-0.002	ug/l	58.89
Hg	201	209	1	No Gas	0.000	ug/l	26.33
Hg	202	209	1	No Gas	-0.001	ug/l	116.31
Hg	202	209	3	He	-0.002	ug/l	28.99
Tl	203	209	3	He	0.020	ug/l	1392.63
Tl	205	209	1	No Gas	-0.002	ug/l	5063.26
Tl	205	209	3	He	0.024	ug/l	3338.43
[Pb]	206	209	1	No Gas	-0.001	ug/l	431.12
[Pb]	207	209	1	No Gas	-0.002	ug/l	364.45
Pb	208	209	1	No Gas	0.000	ug/l	1797.84
Th	232	209	3	He	0.001	ug/l	328.80
U	238	209	1	No Gas	0.001	ug/l	284.28

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	4190667.05	94.1
Sc	45	2	H2	2005649.38	94.8
Sc	45	3	He	239645.02	93.3
Ge	72	1	No Gas	1271706.57	98.0
Ge	72	2	H2	796461.09	94.1
Ge	72	3	He	189771.68	93.3
In	115	1	No Gas	11050058.80	96.8
In	115	3	He	2362913.68	97.1
Bi	209	1	No Gas	10630733.83	94.4
Bi	209	3	He	4399304.79	95.7

ICPMS208-B Analytical Data

Sample Name	CCV
File Name	024_CCV.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\211223A_DoD.b
Acq Time	2021-12-23 13:14:56
Sample Type	CCV
Total Dilution	1.0000
Comment	ICPMS-6020B-W-D
ISTD Ref FileName	003CALB.d
Operator	CAR/SRH/JPV
Method	EPA 200.8/EPA 6020

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	639.332	ug/l	3788041.92
Be	9	45	1	No Gas	47.431	ug/l	107933.32
B	11	45	1	No Gas	47.637	ug/l	64208.60
Na	23	45	3	He	12948.559	ug/l	6426963.17
Mg	24	45	3	He	13071.318	ug/l	3507055.93
Al	27	45	1	No Gas	48.523	ug/l	691977.72
Si	28	45	2	H2	190.238	ug/l	258580.65
K	39	72	3	He	12918.598	ug/l	4218941.53
Ca	40	72	2	H2	13197.508	ug/l	72564678.79
Ti	47	72	1	No Gas	41.008	ug/l	90550.78
V	51	72	1	No Gas	44.649	ug/l	993214.34
V	51	72	3	He	48.360	ug/l	183414.34
Cr	52	72	1	No Gas	45.611	ug/l	1105220.59
Cr	52	72	3	He	48.811	ug/l	206918.35
Mn	55	72	1	No Gas	46.449	ug/l	1480189.37
Mn	55	72	3	He	48.579	ug/l	138295.02
Fe	56	72	2	H2	1318.025	ug/l	18146854.34
Fe	56	72	3	He	1311.723	ug/l	4967128.67
Co	59	72	1	No Gas	46.543	ug/l	1213907.80
Ni	60	72	1	No Gas	45.793	ug/l	266699.99
Ni	60	72	3	He	48.840	ug/l	87603.15
Cu	63	72	1	No Gas	46.109	ug/l	660959.49
Cu	63	72	3	He	48.990	ug/l	238572.08
Cu	65	72	1	No Gas	45.884	ug/l	319674.15
Zn	66	72	1	No Gas	46.266	ug/l	209708.20
Zn	66	72	3	He	48.553	ug/l	45497.25
As	75	72	1	No Gas	45.862	ug/l	253937.69
As	75	72	3	He	49.070	ug/l	37415.10
Se	78	72	2	H2	49.360	ug/l	25858.74
Br	79	72	1	No Gas	0.113	ug/l	7813.31
Br	79	72	2	H2	0.151	ug/l	3985.99
Se	82	72	1	No Gas	45.523	ug/l	17364.36
Kr	84	72	1	No Gas		ug/l	37620.98
Sr	88	72	1	No Gas	47.394	ug/l	2311273.48
Sr	88	72	3	He	50.009	ug/l	251930.80
Mo	95	115	1	No Gas	43.566	ug/l	462847.97
Mo	95	115	3	He	44.240	ug/l	170269.58
Mo	98	115	1	No Gas	43.384	ug/l	752865.70

ICPMS208-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Ag	107	115	1	No Gas	19.542	ug/l	485380.98
Ag	109	115	1	No Gas	19.480	ug/l	467059.18
Cd	111	115	1	No Gas	48.422	ug/l	272237.31
Cd	111	115	3	He	48.902	ug/l	88102.78
Cd	114	115	1	No Gas	48.665	ug/l	614629.44
Cd	114	115	3	He	48.704	ug/l	216662.99
Sn	118	115	1	No Gas	44.206	ug/l	831154.54
Sn	118	115	3	He	44.073	ug/l	216212.41
Sb	121	115	1	No Gas	43.595	ug/l	1225126.51
Sb	121	115	3	He	44.655	ug/l	309460.36
Sb	123	115	1	No Gas	43.586	ug/l	941272.98
Sb	123	115	3	He	44.133	ug/l	244372.06
Te	125	115	3	He	48.709	ug/l	6.67
Ba	135	115	1	No Gas	48.046	ug/l	264216.94
Ba	137	115	1	No Gas	47.579	ug/l	458036.25
La	139	115	3	He	50.018	ug/l	1283722.49
Ce	140	115	3	He	49.382	ug/l	1393774.13
Hg	201	209	1	No Gas	0.978	ug/l	3379.42
Hg	202	209	1	No Gas	0.966	ug/l	7724.02
Hg	202	209	3	He	0.982	ug/l	3434.43
Tl	203	209	3	He	47.798	ug/l	470850.87
Tl	205	209	1	No Gas	47.816	ug/l	2493764.03
Tl	205	209	3	He	48.065	ug/l	1129705.50
[Pb]	206	209	1	No Gas	47.601	ug/l	898366.44
[Pb]	207	209	1	No Gas	47.181	ug/l	771004.41
Pb	208	209	1	No Gas	47.605	ug/l	3585303.08
Th	232	209	3	He	48.566	ug/l	1596063.83
U	238	209	1	No Gas	47.848	ug/l	3457321.09

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	4123011.90	92.6
Sc	45	2	H2	1999938.01	94.5
Sc	45	3	He	243750.51	94.9
Ge	72	1	No Gas	1284590.27	99.0
Ge	72	2	H2	808662.63	95.5
Ge	72	3	He	194415.59	95.6
In	115	1	No Gas	10649368.55	93.3
In	115	3	He	2267736.05	93.2
Bi	209	1	No Gas	10139210.65	90.1
Bi	209	3	He	4207271.18	91.5

ICPMS208-B Analytical Data

Sample Name	CCB
File Name	025_CCB.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\211223A_DoD.b
Acq Time	2021-12-23 13:20:57
Sample Type	CCB
Total Dilution	1.0000
Comment	ICPMS-6020B-W-D
ISTD Ref FileName	003CALB.d
Operator	CAR/SRH/JPV
Method	EPA 200.8/EPA 6020

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	0.417	ug/l	19940.35
Be	9	45	1	No Gas	0.082	ug/l	261.28
B	11	45	1	No Gas	-0.141	ug/l	2405.83
Na	23	45	3	He	-6.941	ug/l	19671.82
Mg	24	45	3	He	-23.440	ug/l	1310.79
Al	27	45	1	No Gas	0.322	ug/l	10502.62
Si	28	45	2	H2	-0.225	ug/l	2360.48
K	39	72	3	He	4.006	ug/l	47729.64
Ca	40	72	2	H2	-0.126	ug/l	64582.80
Ti	47	72	1	No Gas	-0.006	ug/l	185.19
V	51	72	1	No Gas	0.432	ug/l	-3099.65
V	51	72	3	He	-0.116	ug/l	2280.19
Cr	52	72	1	No Gas	-0.317	ug/l	42363.63
Cr	52	72	3	He	-0.010	ug/l	441.12
Mn	55	72	1	No Gas	-0.053	ug/l	6175.74
Mn	55	72	3	He	-0.007	ug/l	194.96
Fe	56	72	2	H2	2.936	ug/l	56102.75
Fe	56	72	3	He	2.730	ug/l	16101.68
Co	59	72	1	No Gas	0.002	ug/l	558.90
Ni	60	72	1	No Gas	-0.041	ug/l	615.46
Ni	60	72	3	He	-0.015	ug/l	192.23
Cu	63	72	1	No Gas	0.024	ug/l	2471.87
Cu	63	72	3	He	0.018	ug/l	767.20
Cu	65	72	1	No Gas	0.017	ug/l	1173.85
Zn	66	72	1	No Gas	-0.132	ug/l	1619.76
Zn	66	72	3	He	-0.100	ug/l	323.34
As	75	72	1	No Gas	0.659	ug/l	13740.75
As	75	72	3	He	0.007	ug/l	60.27
Se	78	72	2	H2	0.014	ug/l	27.33
Br	79	72	1	No Gas	0.012	ug/l	6601.77
Br	79	72	2	H2	0.055	ug/l	3340.43
Se	82	72	1	No Gas	-0.006	ug/l	888.89
Kr	84	72	1	No Gas		ug/l	22406.23
Sr	88	72	1	No Gas	-0.058	ug/l	1633.52
Sr	88	72	3	He	-0.034	ug/l	333.34
Mo	95	115	1	No Gas	0.031	ug/l	403.34
Mo	95	115	3	He	0.035	ug/l	172.22
Mo	98	115	1	No Gas	0.028	ug/l	657.80

ICPMS208-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Ag	107	115	1	No Gas	0.001	ug/l	90.04
Ag	109	115	1	No Gas	0.000	ug/l	76.70
Cd	111	115	1	No Gas	-0.001	ug/l	38.83
Cd	111	115	3	He	0.004	ug/l	14.22
Cd	114	115	1	No Gas	0.004	ug/l	97.19
Cd	114	115	3	He	0.004	ug/l	33.28
Sn	118	115	1	No Gas	0.025	ug/l	3110.87
Sn	118	115	3	He	-0.002	ug/l	681.13
Sb	121	115	1	No Gas	0.031	ug/l	1250.18
Sb	121	115	3	He	0.029	ug/l	300.70
Sb	123	115	1	No Gas	0.026	ug/l	973.13
Sb	123	115	3	He	0.028	ug/l	235.36
Te	125	115	3	He	23.404	ug/l	3.34
Ba	135	115	1	No Gas	-0.011	ug/l	355.97
Ba	137	115	1	No Gas	-0.005	ug/l	582.19
La	139	115	3	He	0.000	ug/l	57.78
Ce	140	115	3	He	0.000	ug/l	135.56
Hg	201	209	1	No Gas	0.005	ug/l	40.66
Hg	202	209	1	No Gas	0.003	ug/l	148.64
Hg	202	209	3	He	0.003	ug/l	48.32
Tl	203	209	3	He	0.206	ug/l	3237.70
Tl	205	209	1	No Gas	0.169	ug/l	13967.79
Tl	205	209	3	He	0.222	ug/l	8044.99
[Pb]	206	209	1	No Gas	0.006	ug/l	557.79
[Pb]	207	209	1	No Gas	0.007	ug/l	502.24
Pb	208	209	1	No Gas	0.007	ug/l	2241.20
Th	232	209	3	He	0.013	ug/l	730.98
U	238	209	1	No Gas	0.002	ug/l	346.60

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	4162756.78	93.4
Sc	45	2	H2	1983557.27	93.7
Sc	45	3	He	236909.31	92.2
Ge	72	1	No Gas	1281274.31	98.8
Ge	72	2	H2	792801.32	93.7
Ge	72	3	He	188717.84	92.8
In	115	1	No Gas	10744571.05	94.1
In	115	3	He	2349296.16	96.5
Bi	209	1	No Gas	10341965.00	91.9
Bi	209	3	He	4317937.86	93.9

ICPMS208-B Analytical Data

Sample Name	MB-162360
File Name	026SMPL.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\211223A_DoD.b
Acq Time	2021-12-23 13:27:06
Sample Type	Sample
Total Dilution	1.0000
Comment	ICPMS-6020-W-T
ISTD Ref FileName	003CALB.d
Operator	CAR/SRH/JPV
Method	EPA 200.8/EPA 6020

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	0.967	ug/l	21270.04
Be	9	45	1	No Gas	0.071	ug/l	215.29
B	11	45	1	No Gas	0.754	ug/l	3277.01
Na	23	45	3	He	-0.295	ug/l	21900.39
Mg	24	45	3	He	-23.659	ug/l	1201.01
Al	27	45	1	No Gas	1.835	ug/l	29433.28
Si	28	45	2	H2	11.170	ug/l	17016.55
K	39	72	3	He	3.982	ug/l	45709.99
Ca	40	72	2	H2	8.554	ug/l	103889.25
Ti	47	72	1	No Gas	0.226	ug/l	647.33
V	51	72	1	No Gas	-0.200	ug/l	-16024.93
V	51	72	3	He	0.403	ug/l	3985.01
Cr	52	72	1	No Gas	0.747	ug/l	62314.41
Cr	52	72	3	He	0.189	ug/l	1204.50
Mn	55	72	1	No Gas	0.243	ug/l	14458.52
Mn	55	72	3	He	0.022	ug/l	261.62
Fe	56	72	2	H2	3.016	ug/l	53361.63
Fe	56	72	3	He	2.904	ug/l	16031.53
Co	59	72	1	No Gas	0.033	ug/l	1257.57
Ni	60	72	1	No Gas	-0.046	ug/l	545.60
Ni	60	72	3	He	-0.032	ug/l	155.56
Cu	63	72	1	No Gas	0.146	ug/l	3926.77
Cu	63	72	3	He	0.175	ug/l	1444.12
Cu	65	72	1	No Gas	0.146	ug/l	1924.91
Zn	66	72	1	No Gas	0.070	ug/l	2351.47
Zn	66	72	3	He	0.185	ug/l	555.57
As	75	72	1	No Gas	0.772	ug/l	13356.00
As	75	72	3	He	0.056	ug/l	92.60
Se	78	72	2	H2	0.028	ug/l	32.00
Br	79	72	1	No Gas	0.559	ug/l	12184.39
Br	79	72	2	H2	0.713	ug/l	6761.52
Se	82	72	1	No Gas	-0.462	ug/l	674.34
Kr	84	72	1	No Gas		ug/l	20963.67
Sr	88	72	1	No Gas	-0.050	ug/l	1873.08
Sr	88	72	3	He	-0.019	ug/l	391.12
Mo	95	115	1	No Gas	0.033	ug/l	392.23
Mo	95	115	3	He	0.036	ug/l	171.12
Mo	98	115	1	No Gas	0.028	ug/l	603.98

ICPMS208-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Ag	107	115	1	No Gas	0.002	ug/l	113.38
Ag	109	115	1	No Gas	0.002	ug/l	118.72
Cd	111	115	1	No Gas	-0.001	ug/l	34.05
Cd	111	115	3	He	0.002	ug/l	9.34
Cd	114	115	1	No Gas	0.000	ug/l	51.13
Cd	114	115	3	He	0.001	ug/l	17.28
Sn	118	115	1	No Gas	0.112	ug/l	4391.99
Sn	118	115	3	He	0.123	ug/l	1273.45
Sb	121	115	1	No Gas	0.026	ug/l	1007.14
Sb	121	115	3	He	0.026	ug/l	269.03
Sb	123	115	1	No Gas	0.022	ug/l	823.77
Sb	123	115	3	He	0.023	ug/l	204.02
Te	125	115	3	He	0.000	ug/l	0.00
Ba	135	115	1	No Gas	0.010	ug/l	435.81
Ba	137	115	1	No Gas	0.016	ug/l	725.25
La	139	115	3	He	0.000	ug/l	66.67
Ce	140	115	3	He	-0.001	ug/l	90.00
Hg	201	209	1	No Gas	0.011	ug/l	58.99
Hg	202	209	1	No Gas	0.015	ug/l	231.96
Hg	202	209	3	He	0.016	ug/l	90.31
Tl	203	209	3	He	0.120	ug/l	2336.48
Tl	205	209	1	No Gas	0.081	ug/l	8789.69
Tl	205	209	3	He	0.117	ug/l	5438.63
[Pb]	206	209	1	No Gas	0.074	ug/l	1752.35
[Pb]	207	209	1	No Gas	0.075	ug/l	1545.66
Pb	208	209	1	No Gas	0.074	ug/l	6990.76
Th	232	209	3	He	0.046	ug/l	1819.53
U	238	209	1	No Gas	0.001	ug/l	280.95

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	3812755.66	85.6
Sc	45	2	H2	1922547.16	90.8
Sc	45	3	He	226910.00	88.4
Ge	72	1	No Gas	1193050.07	92.0
Ge	72	2	H2	739963.14	87.4
Ge	72	3	He	180692.42	88.9
In	115	1	No Gas	9944739.12	87.1
In	115	3	He	2274317.06	93.4
Bi	209	1	No Gas	9745156.92	86.6
Bi	209	3	He	4261328.14	92.7

ICPMS208-B Analytical Data

Sample Name	LCS4-162360
File Name	027SMPL.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\211223A_DoD.b
Acq Time	2021-12-23 13:33:16
Sample Type	Sample
Total Dilution	1.0000
Comment	ICPMS-6020-W-T
ISTD Ref FileName	003CALB.d
Operator	CAR/SRH/JPV
Method	EPA 200.8/EPA 6020

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	102.002	ug/l	571320.68
Be	9	45	1	No Gas	47.236	ug/l	99180.53
B	11	45	1	No Gas	97.453	ug/l	118691.93
Na	23	45	3	He	5216.500	ug/l	2510951.25
Mg	24	45	3	He	5299.026	ug/l	1376000.99
Al	27	45	1	No Gas	492.330	ug/l	6429725.25
Si	28	45	2	H2	907.614	ug/l	1181392.42
K	39	72	3	He	5249.570	ug/l	1676657.30
Ca	40	72	2	H2	5456.110	ug/l	28453938.77
Ti	47	72	1	No Gas	79.327	ug/l	165954.50
V	51	72	1	No Gas	91.615	ug/l	1945593.96
V	51	72	3	He	99.416	ug/l	359883.94
Cr	52	72	1	No Gas	92.095	ug/l	2068478.36
Cr	52	72	3	He	101.268	ug/l	412459.32
Mn	55	72	1	No Gas	461.925	ug/l	13895240.09
Mn	55	72	3	He	507.960	ug/l	1389103.02
Fe	56	72	2	H2	515.879	ug/l	6736190.74
Fe	56	72	3	He	521.380	ug/l	1902704.10
Co	59	72	1	No Gas	90.639	ug/l	2241766.01
Ni	60	72	1	No Gas	89.986	ug/l	496278.43
Ni	60	72	3	He	101.025	ug/l	174079.11
Cu	63	72	1	No Gas	90.841	ug/l	1233030.16
Cu	63	72	3	He	100.781	ug/l	471412.77
Cu	65	72	1	No Gas	90.227	ug/l	595213.38
Zn	66	72	1	No Gas	85.149	ug/l	364319.58
Zn	66	72	3	He	95.311	ug/l	85535.47
As	75	72	1	No Gas	88.092	ug/l	453640.34
As	75	72	3	He	96.332	ug/l	70609.21
Se	78	72	2	H2	98.335	ug/l	48770.94
Br	79	72	1	No Gas	0.470	ug/l	11438.51
Br	79	72	2	H2	0.720	ug/l	7041.15
Se	82	72	1	No Gas	88.386	ug/l	31171.65
Kr	84	72	1	No Gas		ug/l	50350.81
Sr	88	72	1	No Gas	96.014	ug/l	4435557.28
Sr	88	72	3	He	101.502	ug/l	491241.25
Mo	95	115	1	No Gas	87.525	ug/l	880506.74
Mo	95	115	3	He	85.097	ug/l	329855.77
Mo	98	115	1	No Gas	89.183	ug/l	1465514.39

ICPMS208-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Ag	107	115	1	No Gas	9.585	ug/l	225501.30
Ag	109	115	1	No Gas	9.589	ug/l	217811.36
Cd	111	115	1	No Gas	48.019	ug/l	255776.87
Cd	111	115	3	He	47.384	ug/l	86014.82
Cd	114	115	1	No Gas	48.122	ug/l	575816.21
Cd	114	115	3	He	47.592	ug/l	213331.36
Sn	118	115	1	No Gas	91.053	ug/l	1618741.96
Sn	118	115	3	He	88.849	ug/l	438450.35
Sb	121	115	1	No Gas	88.190	ug/l	2346917.42
Sb	121	115	3	He	86.854	ug/l	606341.33
Sb	123	115	1	No Gas	90.566	ug/l	1851612.97
Sb	123	115	3	He	87.809	ug/l	489803.93
Te	125	115	3	He	327161.823	ug/l	45057.57
Ba	135	115	1	No Gas	91.934	ug/l	478349.09
Ba	137	115	1	No Gas	92.277	ug/l	840733.28
La	139	115	3	He	104.845	ug/l	2711023.40
Ce	140	115	3	He	102.717	ug/l	2919909.19
Hg	201	209	1	No Gas	0.014	ug/l	69.32
Hg	202	209	1	No Gas	0.020	ug/l	266.95
Hg	202	209	3	He	0.020	ug/l	103.98
Tl	203	209	3	He	100.621	ug/l	994981.10
Tl	205	209	1	No Gas	100.777	ug/l	5011325.97
Tl	205	209	3	He	101.721	ug/l	2399808.55
[Pb]	206	209	1	No Gas	100.059	ug/l	1802045.34
[Pb]	207	209	1	No Gas	101.039	ug/l	1575648.22
Pb	208	209	1	No Gas	100.951	ug/l	7256338.92
Th	232	209	3	He	101.783	ug/l	3361261.51
U	238	209	1	No Gas	101.435	ug/l	6996265.51

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	3797428.31	85.2
Sc	45	2	H2	1930014.76	91.2
Sc	45	3	He	235171.45	91.6
Ge	72	1	No Gas	1218123.72	93.9
Ge	72	2	H2	766004.07	90.5
Ge	72	3	He	187039.95	92.0
In	115	1	No Gas	10077094.19	88.3
In	115	3	He	2283854.31	93.8
Bi	209	1	No Gas	9664608.90	85.8
Bi	209	3	He	4226382.78	92.0

ICPMS208-B Analytical Data

Sample Name	Rinse
File Name	028BLKV.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\211223A_DoD.b
Acq Time	2021-12-23 13:39:08
Sample Type	BlkVrfy
Total Dilution	1.0000
Comment	ICPMS-6020B-W-D
ISTD Ref FileName	003CALB.d
Operator	CAR/SRH/JPV
Method	EPA 200.8/EPA 6020

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	-0.498	ug/l	14577.48
Be	9	45	1	No Gas	0.067	ug/l	227.62
B	11	45	1	No Gas	-0.070	ug/l	2516.56
Na	23	45	3	He	-6.893	ug/l	19766.35
Mg	24	45	3	He	-21.381	ug/l	1853.12
Al	27	45	1	No Gas	1.700	ug/l	30436.44
Si	28	45	2	H2	-0.071	ug/l	2615.29
K	39	72	3	He	0.548	ug/l	46713.05
Ca	40	72	2	H2	-0.108	ug/l	64376.62
Ti	47	72	1	No Gas	0.000	ug/l	195.20
V	51	72	1	No Gas	-0.124	ug/l	-15542.46
V	51	72	3	He	-0.150	ug/l	2161.28
Cr	52	72	1	No Gas	-0.291	ug/l	42643.59
Cr	52	72	3	He	-0.023	ug/l	387.79
Mn	55	72	1	No Gas	-0.017	ug/l	7270.73
Mn	55	72	3	He	-0.005	ug/l	200.96
Fe	56	72	2	H2	2.052	ug/l	43971.34
Fe	56	72	3	He	1.855	ug/l	12908.65
Co	59	72	1	No Gas	0.011	ug/l	788.46
Ni	60	72	1	No Gas	-0.034	ug/l	652.06
Ni	60	72	3	He	-0.024	ug/l	176.67
Cu	63	72	1	No Gas	0.012	ug/l	2285.10
Cu	63	72	3	He	0.014	ug/l	748.20
Cu	65	72	1	No Gas	-0.004	ug/l	1019.78
Zn	66	72	1	No Gas	-0.162	ug/l	1473.34
Zn	66	72	3	He	-0.112	ug/l	313.34
As	75	72	1	No Gas	0.629	ug/l	13487.67
As	75	72	3	He	0.014	ug/l	65.80
Se	78	72	2	H2	0.007	ug/l	23.33
Br	79	72	1	No Gas	-0.022	ug/l	6152.45
Br	79	72	2	H2	0.035	ug/l	3204.01
Se	82	72	1	No Gas	-0.261	ug/l	793.16
Kr	84	72	1	No Gas		ug/l	22389.64
Sr	88	72	1	No Gas	-0.061	ug/l	1483.81
Sr	88	72	3	He	-0.041	ug/l	302.23
Mo	95	115	1	No Gas	0.019	ug/l	278.89
Mo	95	115	3	He	0.025	ug/l	132.22
Mo	98	115	1	No Gas	0.017	ug/l	473.35

ICPMS208-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Ag	107	115	1	No Gas	0.002	ug/l	110.71
Ag	109	115	1	No Gas	0.002	ug/l	112.04
Cd	111	115	1	No Gas	0.004	ug/l	67.26
Cd	111	115	3	He	0.006	ug/l	17.00
Cd	114	115	1	No Gas	0.006	ug/l	130.98
Cd	114	115	3	He	0.005	ug/l	36.64
Sn	118	115	1	No Gas	0.011	ug/l	2877.94
Sn	118	115	3	He	0.016	ug/l	762.31
Sb	121	115	1	No Gas	0.034	ug/l	1357.54
Sb	121	115	3	He	0.031	ug/l	309.70
Sb	123	115	1	No Gas	0.029	ug/l	1063.82
Sb	123	115	3	He	0.030	ug/l	246.36
Te	125	115	3	He	23.772	ug/l	3.34
Ba	135	115	1	No Gas	-0.019	ug/l	316.04
Ba	137	115	1	No Gas	0.007	ug/l	708.61
La	139	115	3	He	0.002	ug/l	107.78
Ce	140	115	3	He	-0.001	ug/l	93.34
Hg	201	209	1	No Gas	0.004	ug/l	40.32
Hg	202	209	1	No Gas	0.002	ug/l	145.64
Hg	202	209	3	He	0.002	ug/l	45.66
Tl	203	209	3	He	0.262	ug/l	3851.44
Tl	205	209	1	No Gas	0.228	ug/l	17768.34
Tl	205	209	3	He	0.266	ug/l	9231.57
[Pb]	206	209	1	No Gas	0.020	ug/l	850.03
[Pb]	207	209	1	No Gas	0.021	ug/l	764.47
Pb	208	209	1	No Gas	0.020	ug/l	3416.86
Th	232	209	3	He	0.017	ug/l	876.38
U	238	209	1	No Gas	0.002	ug/l	403.60

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	4192515.75	94.1
Sc	45	2	H2	2018756.71	95.4
Sc	45	3	He	237774.42	92.6
Ge	72	1	No Gas	1272455.99	98.1
Ge	72	2	H2	789028.11	93.2
Ge	72	3	He	188965.18	92.9
In	115	1	No Gas	10903107.82	95.5
In	115	3	He	2325492.83	95.5
Bi	209	1	No Gas	10724299.45	95.3
Bi	209	3	He	4371863.72	95.1

ICPMS208-B Analytical Data

Sample Name	B21121605-001C
File Name	029SMPL.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\211223A_DoD.b
Acq Time	2021-12-23 13:45:16
Sample Type	Sample
Total Dilution	1.0000
Comment	ICPMS-6020-W-T
ISTD Ref FileName	003CALB.d
Operator	CAR/SRH/JPV
Method	EPA 200.8/EPA 6020

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	0.903	ug/l	20880.01
Be	9	45	1	No Gas	0.057	ug/l	185.96
B	11	45	1	No Gas	56.696	ug/l	70203.22
Na	23	45	3	He	49217.246	ug/l	21989956.06
Mg	24	45	3	He	21713.268	ug/l	5254177.82
Al	27	45	1	No Gas	3.507	ug/l	51253.04
Si	28	45	2	H2	19503.553	ug/l	24198412.81
K	39	72	3	He	2790.389	ug/l	851191.77
Ca	40	72	2	H2	24008.788	ug/l	117006596.64
Ti	47	72	1	No Gas	2.950	ug/l	5965.55
V	51	72	1	No Gas	12.781	ug/l	245064.19
V	51	72	3	He	14.846	ug/l	52243.23
Cr	52	72	1	No Gas	2.283	ug/l	91413.37
Cr	52	72	3	He	1.995	ug/l	8016.66
Mn	55	72	1	No Gas	12.247	ug/l	352797.57
Mn	55	72	3	He	12.781	ug/l	32784.77
Fe	56	72	2	H2	42.957	ug/l	538959.68
Fe	56	72	3	He	42.496	ug/l	149793.81
Co	59	72	1	No Gas	0.111	ug/l	3021.00
Ni	60	72	1	No Gas	0.820	ug/l	5000.97
Ni	60	72	3	He	0.458	ug/l	936.71
Cu	63	72	1	No Gas	1.560	ug/l	21759.54
Cu	63	72	3	He	0.915	ug/l	4612.81
Cu	65	72	1	No Gas	1.063	ug/l	7513.62
Zn	66	72	1	No Gas	1.305	ug/l	7186.81
Zn	66	72	3	He	1.466	ug/l	1603.43
As	75	72	1	No Gas	0.383	ug/l	10968.67
As	75	72	3	He	0.152	ug/l	154.73
Se	78	72	2	H2	0.368	ug/l	188.78
Br	79	72	1	No Gas	5.448	ug/l	63452.63
Br	79	72	2	H2	5.776	ug/l	33718.85
Se	82	72	1	No Gas	0.690	ug/l	1017.04
Kr	84	72	1	No Gas		ug/l	62955.08
Sr	88	72	1	No Gas	158.056	ug/l	6854029.25
Sr	88	72	3	He	167.047	ug/l	753828.91
Mo	95	115	1	No Gas	0.250	ug/l	2464.67
Mo	95	115	3	He	0.252	ug/l	963.37
Mo	98	115	1	No Gas	0.234	ug/l	3819.70

ICPMS208-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Ag	107	115	1	No Gas	0.004	ug/l	142.73
Ag	109	115	1	No Gas	0.003	ug/l	129.39
Cd	111	115	1	No Gas	0.005	ug/l	60.96
Cd	111	115	3	He	0.005	ug/l	14.78
Cd	114	115	1	No Gas	0.004	ug/l	86.36
Cd	114	115	3	He	0.005	ug/l	33.63
Sn	118	115	1	No Gas	0.092	ug/l	3919.46
Sn	118	115	3	He	0.098	ug/l	1104.50
Sb	121	115	1	No Gas	0.037	ug/l	1265.52
Sb	121	115	3	He	0.036	ug/l	324.37
Sb	123	115	1	No Gas	0.038	ug/l	1110.16
Sb	123	115	3	He	0.039	ug/l	277.36
Te	125	115	3	He	0.000	ug/l	0.00
Ba	135	115	1	No Gas	8.174	ug/l	40891.94
Ba	137	115	1	No Gas	8.178	ug/l	71561.22
La	139	115	3	He	0.001	ug/l	88.89
Ce	140	115	3	He	0.001	ug/l	153.34
Hg	201	209	1	No Gas	0.011	ug/l	57.66
Hg	202	209	1	No Gas	0.019	ug/l	246.62
Hg	202	209	3	He	0.018	ug/l	94.31
Tl	203	209	3	He	0.083	ug/l	1886.90
Tl	205	209	1	No Gas	0.043	ug/l	6536.15
Tl	205	209	3	He	0.085	ug/l	4483.90
[Pb]	206	209	1	No Gas	0.078	ug/l	1735.68
[Pb]	207	209	1	No Gas	0.078	ug/l	1523.43
Pb	208	209	1	No Gas	0.077	ug/l	6858.50
Th	232	209	3	He	0.049	ug/l	1829.53
U	238	209	1	No Gas	0.028	ug/l	2025.76

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	3805418.22	85.4
Sc	45	2	H2	1844553.68	87.1
Sc	45	3	He	220018.68	85.7
Ge	72	1	No Gas	1143851.36	88.2
Ge	72	2	H2	717206.55	84.7
Ge	72	3	He	174415.53	85.8
In	115	1	No Gas	9607962.84	84.1
In	115	3	He	2185900.23	89.8
Bi	209	1	No Gas	9258330.76	82.2
Bi	209	3	He	4076605.96	88.7

ICPMS208-B Analytical Data

Sample Name	B21121605-002C
File Name	030SMPL.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\211223A_DoD.b
Acq Time	2021-12-23 13:51:23
Sample Type	Sample
Total Dilution	1.0000
Comment	ICPMS-6020-W-T
ISTD Ref FileName	003CALB.d
Operator	CAR/SRH/JPV
Method	EPA 200.8/EPA 6020

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	0.644	ug/l	20162.07
Be	9	45	1	No Gas	0.039	ug/l	152.97
B	11	45	1	No Gas	62.020	ug/l	79314.70
Na	23	45	3	He	49833.422	ug/l	22997883.27
Mg	24	45	3	He	22157.210	ug/l	5537807.03
Al	27	45	1	No Gas	6.348	ug/l	91579.96
Si	28	45	2	H2	19078.672	ug/l	24373049.82
K	39	72	3	He	2774.828	ug/l	875235.69
Ca	40	72	2	H2	24594.508	ug/l	122776791.63
Ti	47	72	1	No Gas	2.873	ug/l	6017.31
V	51	72	1	No Gas	12.455	ug/l	246915.62
V	51	72	3	He	14.370	ug/l	52357.02
Cr	52	72	1	No Gas	2.261	ug/l	94131.80
Cr	52	72	3	He	1.987	ug/l	8252.36
Mn	55	72	1	No Gas	21.733	ug/l	642416.00
Mn	55	72	3	He	22.627	ug/l	59843.16
Fe	56	72	2	H2	93.499	ug/l	1183791.90
Fe	56	72	3	He	92.035	ug/l	328591.87
Co	59	72	1	No Gas	0.145	ug/l	3942.72
Ni	60	72	1	No Gas	1.125	ug/l	6811.44
Ni	60	72	3	He	0.768	ug/l	1482.31
Cu	63	72	1	No Gas	1.566	ug/l	22596.46
Cu	63	72	3	He	0.908	ug/l	4741.16
Cu	65	72	1	No Gas	1.042	ug/l	7642.40
Zn	66	72	1	No Gas	7.219	ug/l	31890.01
Zn	66	72	3	He	7.951	ug/l	7239.61
As	75	72	1	No Gas	0.561	ug/l	12228.85
As	75	72	3	He	0.141	ug/l	151.87
Se	78	72	2	H2	0.448	ug/l	231.78
Br	79	72	1	No Gas	6.493	ug/l	77144.77
Br	79	72	2	H2	6.979	ug/l	41176.87
Se	82	72	1	No Gas	0.326	ug/l	931.83
Kr	84	72	1	No Gas		ug/l	67620.41
Sr	88	72	1	No Gas	163.085	ug/l	7320613.60
Sr	88	72	3	He	172.243	ug/l	803492.24
Mo	95	115	1	No Gas	0.250	ug/l	2571.36
Mo	95	115	3	He	0.253	ug/l	988.93
Mo	98	115	1	No Gas	0.242	ug/l	4117.70

ICPMS208-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Ag	107	115	1	No Gas	0.004	ug/l	148.73
Ag	109	115	1	No Gas	0.004	ug/l	148.73
Cd	111	115	1	No Gas	0.014	ug/l	113.12
Cd	111	115	3	He	0.015	ug/l	31.56
Cd	114	115	1	No Gas	0.013	ug/l	202.77
Cd	114	115	3	He	0.013	ug/l	71.87
Sn	118	115	1	No Gas	0.140	ug/l	4937.77
Sn	118	115	3	He	0.136	ug/l	1313.41
Sb	121	115	1	No Gas	0.041	ug/l	1422.55
Sb	121	115	3	He	0.043	ug/l	382.38
Sb	123	115	1	No Gas	0.044	ug/l	1283.86
Sb	123	115	3	He	0.044	ug/l	313.71
Te	125	115	3	He	0.000	ug/l	0.00
Ba	135	115	1	No Gas	8.955	ug/l	46762.11
Ba	137	115	1	No Gas	8.832	ug/l	80689.30
La	139	115	3	He	0.004	ug/l	147.78
Ce	140	115	3	He	0.005	ug/l	260.00
Hg	201	209	1	No Gas	0.013	ug/l	64.99
Hg	202	209	1	No Gas	0.019	ug/l	253.95
Hg	202	209	3	He	0.021	ug/l	106.31
Tl	203	209	3	He	0.038	ug/l	1498.02
Tl	205	209	1	No Gas	0.013	ug/l	5348.93
Tl	205	209	3	He	0.043	ug/l	3620.62
[Pb]	206	209	1	No Gas	0.103	ug/l	2261.32
[Pb]	207	209	1	No Gas	0.099	ug/l	1909.04
Pb	208	209	1	No Gas	0.102	ug/l	8924.56
Th	232	209	3	He	0.028	ug/l	1200.54
U	238	209	1	No Gas	0.027	ug/l	2104.42

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	3941585.47	88.5
Sc	45	2	H2	1899023.80	89.7
Sc	45	3	He	227263.27	88.5
Ge	72	1	No Gas	1183929.75	91.3
Ge	72	2	H2	734755.32	86.8
Ge	72	3	He	180290.83	88.7
In	115	1	No Gas	10038129.01	87.9
In	115	3	He	2235395.44	91.8
Bi	209	1	No Gas	9663543.49	85.8
Bi	209	3	He	4186432.04	91.1

ICPMS208-B Analytical Data

Sample Name	B21121605-002CDIL
File Name	031SMPL.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\211223A_DoD.b
Acq Time	2021-12-23 13:57:30
Sample Type	Sample
Total Dilution	5.0000
Comment	ICPMS-6020-W-T
ISTD Ref FileName	003CALB.d
Operator	CAR/SRH/JPV
Method	EPA 200.8/EPA 6020

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	-3.311	ug/l	14046.11
Be	9	45	1	No Gas	0.115	ug/l	130.31
B	11	45	1	No Gas	60.568	ug/l	19197.12
Na	23	45	3	He	52248.445	ug/l	5087600.83
Mg	24	45	3	He	23175.352	ug/l	1223581.46
Al	27	45	1	No Gas	10.141	ug/l	36332.82
Si	28	45	2	H2	19557.215	ug/l	5342520.68
K	39	72	3	He	2804.572	ug/l	224886.50
Ca	40	72	2	H2	24528.975	ug/l	26720338.35
Ti	47	72	1	No Gas	2.857	ug/l	1438.19
V	51	72	1	No Gas	16.566	ug/l	61020.59
V	51	72	3	He	14.545	ug/l	13403.91
Cr	52	72	1	No Gas	1.015	ug/l	53724.35
Cr	52	72	3	He	1.904	ug/l	2070.16
Mn	55	72	1	No Gas	22.536	ug/l	148632.73
Mn	55	72	3	He	23.158	ug/l	13143.57
Fe	56	72	2	H2	99.583	ug/l	287802.25
Fe	56	72	3	He	98.203	ug/l	79097.27
Co	59	72	1	No Gas	0.138	ug/l	1204.33
Ni	60	72	1	No Gas	1.032	ug/l	2026.15
Ni	60	72	3	He	0.702	ug/l	466.68
Cu	63	72	1	No Gas	1.748	ug/l	7033.18
Cu	63	72	3	He	1.001	ug/l	1643.77
Cu	65	72	1	No Gas	1.188	ug/l	2667.99
Zn	66	72	1	No Gas	7.620	ug/l	8926.28
Zn	66	72	3	He	8.168	ug/l	1907.91
As	75	72	1	No Gas	2.008	ug/l	12194.77
As	75	72	3	He	0.124	ug/l	74.27
Se	78	72	2	H2	0.441	ug/l	65.89
Br	79	72	1	No Gas	6.842	ug/l	22429.51
Br	79	72	2	H2	7.311	ug/l	11801.45
Se	82	72	1	No Gas	-0.200	ug/l	866.50
Kr	84	72	1	No Gas		ug/l	32628.67
Sr	88	72	1	No Gas	170.036	ug/l	1636168.04
Sr	88	72	3	He	171.001	ug/l	169354.44
Mo	95	115	1	No Gas	0.244	ug/l	612.24
Mo	95	115	3	He	0.309	ug/l	281.11
Mo	98	115	1	No Gas	0.230	ug/l	998.44

ICPMS208-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Ag	107	115	1	No Gas	0.016	ug/l	144.06
Ag	109	115	1	No Gas	0.012	ug/l	133.39
Cd	111	115	1	No Gas	0.035	ug/l	83.88
Cd	111	115	3	He	0.025	ug/l	15.56
Cd	114	115	1	No Gas	0.024	ug/l	115.95
Cd	114	115	3	He	0.019	ug/l	32.25
Sn	118	115	1	No Gas	-0.025	ug/l	2608.41
Sn	118	115	3	He	-0.122	ug/l	571.13
Sb	121	115	1	No Gas	0.053	ug/l	682.75
Sb	121	115	3	He	0.050	ug/l	166.35
Sb	123	115	1	No Gas	0.038	ug/l	592.07
Sb	123	115	3	He	0.053	ug/l	138.68
Te	125	115	3	He	0.000	ug/l	0.00
Ba	135	115	1	No Gas	8.527	ug/l	10143.64
Ba	137	115	1	No Gas	8.775	ug/l	18152.60
La	139	115	3	He	-0.001	ug/l	53.33
Ce	140	115	3	He	-0.004	ug/l	102.22
Hg	201	209	1	No Gas	0.027	ug/l	44.66
Hg	202	209	1	No Gas	0.023	ug/l	163.30
Hg	202	209	3	He	0.038	ug/l	64.32
Tl	203	209	3	He	0.106	ug/l	1399.97
Tl	205	209	1	No Gas	-0.010	ug/l	5044.37
Tl	205	209	3	He	0.133	ug/l	3405.81
[Pb]	206	209	1	No Gas	0.155	ug/l	1058.94
[Pb]	207	209	1	No Gas	0.153	ug/l	924.48
Pb	208	209	1	No Gas	0.161	ug/l	4308.09
Th	232	209	3	He	0.012	ug/l	364.82
U	238	209	1	No Gas	0.027	ug/l	638.55

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	4333244.25	97.3
Sc	45	2	H2	2031966.76	96.0
Sc	45	3	He	238932.25	93.0
Ge	72	1	No Gas	1266457.47	97.6
Ge	72	2	H2	800361.54	94.6
Ge	72	3	He	190926.44	93.9
In	115	1	No Gas	11047798.70	96.8
In	115	3	He	2374847.33	97.6
Bi	209	1	No Gas	10591486.32	94.1
Bi	209	3	He	4396798.30	95.7

ICPMS208-B Analytical Data

Sample Name	B21121605-002CPDS1
File Name	032SMPL.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\211223A_DoD.b
Acq Time	2021-12-23 14:03:37
Sample Type	Sample
Total Dilution	1.0300
Comment	ICPMS-6020-W-T
ISTD Ref FileName	003CALB.d
Operator	CAR/SRH/JPV
Method	EPA 200.8/EPA 6020

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	2287.533	ug/l	12134341.79
Be	9	45	1	No Gas	44.609	ug/l	91086.23
B	11	45	1	No Gas	111.727	ug/l	132056.03
Na	23	45	3	He	96678.657	ug/l	43350024.91
Mg	24	45	3	He	69616.023	ug/l	16897910.03
Al	27	45	1	No Gas	53.080	ug/l	678421.34
Si	28	45	2	H2	19130.313	ug/l	22462649.37
K	39	72	3	He	51515.149	ug/l	14989954.78
Ca	40	72	2	H2	71458.496	ug/l	347863935.02
Ti	47	72	1	No Gas	48.555	ug/l	95389.60
V	51	72	1	No Gas	55.915	ug/l	1110480.91
V	51	72	3	He	63.628	ug/l	216134.81
Cr	52	72	1	No Gas	49.214	ug/l	1058235.34
Cr	52	72	3	He	50.337	ug/l	191749.87
Mn	55	72	1	No Gas	67.562	ug/l	1912305.19
Mn	55	72	3	He	71.004	ug/l	181552.32
Fe	56	72	2	H2	5028.314	ug/l	61331318.74
Fe	56	72	3	He	5081.896	ug/l	17276160.13
Co	59	72	1	No Gas	46.000	ug/l	1066550.61
Ni	60	72	1	No Gas	46.328	ug/l	239951.40
Ni	60	72	3	He	47.278	ug/l	76213.42
Cu	63	72	1	No Gas	46.735	ug/l	595677.51
Cu	63	72	3	He	48.541	ug/l	212439.55
Cu	65	72	1	No Gas	45.602	ug/l	282550.35
Zn	66	72	1	No Gas	50.718	ug/l	204437.15
Zn	66	72	3	He	54.540	ug/l	45887.38
As	75	72	1	No Gas	45.898	ug/l	226336.74
As	75	72	3	He	48.455	ug/l	33201.77
Se	78	72	2	H2	48.609	ug/l	22568.69
Br	79	72	1	No Gas	7.363	ug/l	83778.79
Br	79	72	2	H2	7.333	ug/l	42141.03
Se	82	72	1	No Gas	46.323	ug/l	15692.91
Kr	84	72	1	No Gas		ug/l	79644.35
Sr	88	72	1	No Gas	207.907	ug/l	8995229.46
Sr	88	72	3	He	222.073	ug/l	1003702.52
Mo	95	115	1	No Gas	47.073	ug/l	420609.70
Mo	95	115	3	He	44.564	ug/l	156504.62
Mo	98	115	1	No Gas	47.138	ug/l	687394.85

ICPMS208-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Ag	107	115	1	No Gas	20.085	ug/l	420133.87
Ag	109	115	1	No Gas	20.043	ug/l	405072.98
Cd	111	115	1	No Gas	49.641	ug/l	235423.56
Cd	111	115	3	He	47.547	ug/l	78169.91
Cd	114	115	1	No Gas	49.305	ug/l	527166.33
Cd	114	115	3	He	47.407	ug/l	192429.13
Sn	118	115	1	No Gas	47.192	ug/l	749771.30
Sn	118	115	3	He	44.437	ug/l	198901.33
Sb	121	115	1	No Gas	44.179	ug/l	1050512.76
Sb	121	115	3	He	42.906	ug/l	271301.86
Sb	123	115	1	No Gas	44.167	ug/l	807544.52
Sb	123	115	3	He	42.636	ug/l	215409.03
Te	125	115	3	He	107.613	ug/l	13.35
Ba	135	115	1	No Gas	60.431	ug/l	281335.09
Ba	137	115	1	No Gas	59.903	ug/l	488253.40
La	139	115	3	He	49.079	ug/l	1149380.52
Ce	140	115	3	He	48.872	ug/l	1258384.63
Hg	201	209	1	No Gas	0.989	ug/l	2920.07
Hg	202	209	1	No Gas	1.006	ug/l	6859.06
Hg	202	209	3	He	0.973	ug/l	3109.74
Tl	203	209	3	He	49.524	ug/l	445871.85
Tl	205	209	1	No Gas	51.837	ug/l	2306330.31
Tl	205	209	3	He	49.469	ug/l	1062605.20
[Pb]	206	209	1	No Gas	49.444	ug/l	793521.46
[Pb]	207	209	1	No Gas	49.744	ug/l	691553.15
Pb	208	209	1	No Gas	50.169	ug/l	3212811.56
Th	232	209	3	He	50.435	ug/l	1514819.16
U	238	209	1	No Gas	52.191	ug/l	3212951.39

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	3863343.41	86.7
Sc	45	2	H2	1799136.82	85.0
Sc	45	3	He	227530.16	88.6
Ge	72	1	No Gas	1183788.51	91.2
Ge	72	2	H2	738363.04	87.2
Ge	72	3	He	179940.44	88.5
In	115	1	No Gas	9582493.94	83.9
In	115	3	He	2130630.74	87.5
Bi	209	1	No Gas	9128114.84	81.1
Bi	209	3	He	3958982.61	86.1

ICPMS208-B Analytical Data

Sample Name	B21121613-001AMS4
File Name	033SMPL.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\211223A_DoD.b
Acq Time	2021-12-23 14:09:39
Sample Type	Sample
Total Dilution	1.0000
Comment	ICPMS-6020-W-T
ISTD Ref FileName	003CALB.d
Operator	CAR/SRH/JPV
Method	EPA 200.8/EPA 6020

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	98.565	ug/l	601647.61
Be	9	45	1	No Gas	45.170	ug/l	103265.64
B	11	45	1	No Gas	291.517	ug/l	381407.31
Na	23	45	3	He	98786.763	ug/l	47551277.07
Mg	24	45	3	He	13911.512	ug/l	3630428.22
Al	27	45	1	No Gas	1601.577	ug/l	22757612.44
Si	28	45	2	H2	26106.133	ug/l	34204579.38
K	39	72	3	He	8399.039	ug/l	2719710.55
Ca	40	72	2	H2	10910.527	ug/l	57586123.68
Ti	47	72	1	No Gas	120.754	ug/l	262694.03
V	51	72	1	No Gas	133.047	ug/l	2945118.78
V	51	72	3	He	144.323	ug/l	534052.03
Cr	52	72	1	No Gas	96.484	ug/l	2252085.34
Cr	52	72	3	He	104.458	ug/l	435925.75
Mn	55	72	1	No Gas	466.492	ug/l	14600110.36
Mn	55	72	3	He	509.753	ug/l	1428081.63
Fe	56	72	2	H2	1355.497	ug/l	17918907.03
Fe	56	72	3	He	1320.497	ug/l	4928916.40
Co	59	72	1	No Gas	89.880	ug/l	2312707.51
Ni	60	72	1	No Gas	90.716	ug/l	520497.92
Ni	60	72	3	He	99.133	ug/l	175077.53
Cu	63	72	1	No Gas	93.469	ug/l	1319787.27
Cu	63	72	3	He	100.574	ug/l	482129.93
Cu	65	72	1	No Gas	92.160	ug/l	632447.36
Zn	66	72	1	No Gas	89.062	ug/l	396323.81
Zn	66	72	3	He	98.228	ug/l	90336.08
As	75	72	1	No Gas	88.576	ug/l	474448.79
As	75	72	3	He	99.020	ug/l	74423.80
Se	78	72	2	H2	100.141	ug/l	50354.81
Br	79	72	1	No Gas	4.778	ug/l	62436.97
Br	79	72	2	H2	5.214	ug/l	33255.57
Se	82	72	1	No Gas	89.401	ug/l	32795.12
Kr	84	72	1	No Gas		ug/l	67459.87
Sr	88	72	1	No Gas	143.487	ug/l	6894084.09
Sr	88	72	3	He	159.893	ug/l	793305.62
Mo	95	115	1	No Gas	91.064	ug/l	917830.08
Mo	95	115	3	He	91.483	ug/l	344845.29
Mo	98	115	1	No Gas	92.555	ug/l	1523338.94

ICPMS208-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Ag	107	115	1	No Gas	9.575	ug/l	225664.72
Ag	109	115	1	No Gas	9.640	ug/l	219356.69
Cd	111	115	1	No Gas	49.412	ug/l	263698.16
Cd	111	115	3	He	49.966	ug/l	88197.22
Cd	114	115	1	No Gas	49.889	ug/l	598094.71
Cd	114	115	3	He	49.759	ug/l	216959.59
Sn	118	115	1	No Gas	92.794	ug/l	1652765.96
Sn	118	115	3	He	90.904	ug/l	436460.72
Sb	121	115	1	No Gas	90.891	ug/l	2423141.35
Sb	121	115	3	He	89.199	ug/l	605995.66
Sb	123	115	1	No Gas	91.777	ug/l	1880028.20
Sb	123	115	3	He	89.225	ug/l	484371.67
Te	125	115	3	He	338237.126	ug/l	45332.18
Ba	135	115	1	No Gas	102.381	ug/l	533639.82
Ba	137	115	1	No Gas	101.503	ug/l	926569.07
La	139	115	3	He	105.241	ug/l	2647488.36
Ce	140	115	3	He	104.862	ug/l	2900672.32
Hg	201	209	1	No Gas	0.027	ug/l	111.65
Hg	202	209	1	No Gas	0.037	ug/l	390.60
Hg	202	209	3	He	0.038	ug/l	165.30
Tl	203	209	3	He	99.819	ug/l	966268.21
Tl	205	209	1	No Gas	101.621	ug/l	5039812.18
Tl	205	209	3	He	100.860	ug/l	2328709.05
[Pb]	206	209	1	No Gas	102.564	ug/l	1842267.65
[Pb]	207	209	1	No Gas	101.738	ug/l	1582293.76
Pb	208	209	1	No Gas	100.913	ug/l	7233788.33
Th	232	209	3	He	104.049	ug/l	3363082.15
U	238	209	1	No Gas	101.209	ug/l	6961351.00

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	4133400.70	92.8
Sc	45	2	H2	1948582.95	92.1
Sc	45	3	He	237086.12	92.3
Ge	72	1	No Gas	1267229.73	97.7
Ge	72	2	H2	776581.19	91.7
Ge	72	3	He	191730.03	94.3
In	115	1	No Gas	10096037.61	88.4
In	115	3	He	2221890.18	91.3
Bi	209	1	No Gas	9637873.62	85.6
Bi	209	3	He	4137588.75	90.0

ICPMS208-B Analytical Data

Sample Name	B21121613-001AMSD4
File Name	034SMPL.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\211223A_DoD.b
Acq Time	2021-12-23 14:15:31
Sample Type	Sample
Total Dilution	1.0000
Comment	ICPMS-6020-W-T
ISTD Ref FileName	003CALB.d
Operator	CAR/SRH/JPV
Method	EPA 200.8/EPA 6020

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	97.302	ug/l	602602.18
Be	9	45	1	No Gas	45.059	ug/l	104474.89
B	11	45	1	No Gas	291.666	ug/l	387024.90
Na	23	45	3	He	100840.383	ug/l	48705649.27
Mg	24	45	3	He	14228.778	ug/l	3725397.06
Al	27	45	1	No Gas	1590.846	ug/l	22927246.05
Si	28	45	2	H2	30764.156	ug/l	40644672.27
K	39	72	3	He	8850.072	ug/l	2819862.25
Ca	40	72	2	H2	11153.539	ug/l	59470265.25
Ti	47	72	1	No Gas	122.020	ug/l	266255.73
V	51	72	1	No Gas	135.688	ug/l	3012927.68
V	51	72	3	He	150.183	ug/l	547217.39
Cr	52	72	1	No Gas	97.270	ug/l	2276918.23
Cr	52	72	3	He	107.738	ug/l	442751.57
Mn	55	72	1	No Gas	476.115	ug/l	14946457.37
Mn	55	72	3	He	532.325	ug/l	1468602.28
Fe	56	72	2	H2	1364.289	ug/l	18225788.69
Fe	56	72	3	He	1347.563	ug/l	4952464.58
Co	59	72	1	No Gas	93.666	ug/l	2417492.13
Ni	60	72	1	No Gas	92.829	ug/l	534224.69
Ni	60	72	3	He	103.057	ug/l	179181.49
Cu	63	72	1	No Gas	95.440	ug/l	1351691.78
Cu	63	72	3	He	103.912	ug/l	490377.40
Cu	65	72	1	No Gas	94.331	ug/l	649297.30
Zn	66	72	1	No Gas	90.986	ug/l	406056.06
Zn	66	72	3	He	100.136	ug/l	90638.17
As	75	72	1	No Gas	90.110	ug/l	483966.58
As	75	72	3	He	102.176	ug/l	75517.52
Se	78	72	2	H2	101.875	ug/l	51763.26
Br	79	72	1	No Gas	5.605	ug/l	72359.75
Br	79	72	2	H2	6.159	ug/l	39158.51
Se	82	72	1	No Gas	91.293	ug/l	33569.08
Kr	84	72	1	No Gas		ug/l	69618.81
Sr	88	72	1	No Gas	147.592	ug/l	7112807.85
Sr	88	72	3	He	166.989	ug/l	814472.91
Mo	95	115	1	No Gas	91.490	ug/l	933970.23
Mo	95	115	3	He	94.017	ug/l	356211.74
Mo	98	115	1	No Gas	93.773	ug/l	1563547.22

ICPMS208-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Ag	107	115	1	No Gas	9.721	ug/l	232073.74
Ag	109	115	1	No Gas	9.722	ug/l	224105.74
Cd	111	115	1	No Gas	50.237	ug/l	271562.22
Cd	111	115	3	He	51.636	ug/l	91613.71
Cd	114	115	1	No Gas	50.807	ug/l	616941.74
Cd	114	115	3	He	50.962	ug/l	223226.85
Sn	118	115	1	No Gas	91.832	ug/l	1656735.87
Sn	118	115	3	He	92.886	ug/l	447931.70
Sb	121	115	1	No Gas	90.468	ug/l	2443073.08
Sb	121	115	3	He	91.038	ug/l	620964.92
Sb	123	115	1	No Gas	93.556	ug/l	1941044.49
Sb	123	115	3	He	92.429	ug/l	503740.87
Te	125	115	3	He	346734.287	ug/l	46654.12
Ba	135	115	1	No Gas	102.836	ug/l	542966.55
Ba	137	115	1	No Gas	102.122	ug/l	944202.90
La	139	115	3	He	109.229	ug/l	2759383.39
Ce	140	115	3	He	108.595	ug/l	3015254.85
Hg	201	209	1	No Gas	0.021	ug/l	93.31
Hg	202	209	1	No Gas	0.036	ug/l	381.60
Hg	202	209	3	He	0.038	ug/l	164.97
Tl	203	209	3	He	101.992	ug/l	997173.21
Tl	205	209	1	No Gas	102.719	ug/l	5112339.30
Tl	205	209	3	He	101.883	ug/l	2377456.12
[Pb]	206	209	1	No Gas	103.504	ug/l	1865702.04
[Pb]	207	209	1	No Gas	104.526	ug/l	1631400.43
Pb	208	209	1	No Gas	103.362	ug/l	7435602.23
Th	232	209	3	He	106.109	ug/l	3465072.91
U	238	209	1	No Gas	103.869	ug/l	7169519.69

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	4192234.28	94.1
Sc	45	2	H2	1965046.74	92.8
Sc	45	3	He	237975.93	92.7
Ge	72	1	No Gas	1270997.17	98.0
Ge	72	2	H2	784699.22	92.7
Ge	72	3	He	188704.83	92.8
In	115	1	No Gas	10226554.28	89.6
In	115	3	He	2232606.91	91.7
Bi	209	1	No Gas	9671630.94	85.9
Bi	209	3	He	4178881.53	90.9

ICPMS208-B Analytical Data

Sample Name	Rinse
File Name	035BLKV.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\211223A_DoD.b
Acq Time	2021-12-23 14:21:21
Sample Type	BlkVrfy
Total Dilution	1.0000
Comment	ICPMS-6020B-W-D
ISTD Ref FileName	003CALB.d
Operator	CAR/SRH/JPV
Method	EPA 200.8/EPA 6020

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	-0.213	ug/l	17322.11
Be	9	45	1	No Gas	0.057	ug/l	216.63
B	11	45	1	No Gas	1.588	ug/l	5000.84
Na	23	45	3	He	13.631	ug/l	31138.88
Mg	24	45	3	He	-18.415	ug/l	2758.12
Al	27	45	1	No Gas	1.641	ug/l	31455.17
Si	28	45	2	H2	17.474	ug/l	27808.43
K	39	72	3	He	-5.491	ug/l	47174.58
Ca	40	72	2	H2	-0.385	ug/l	67294.60
Ti	47	72	1	No Gas	0.035	ug/l	280.29
V	51	72	1	No Gas	0.338	ug/l	-5130.16
V	51	72	3	He	0.033	ug/l	2975.87
Cr	52	72	1	No Gas	-0.245	ug/l	44832.49
Cr	52	72	3	He	0.000	ug/l	508.90
Mn	55	72	1	No Gas	0.024	ug/l	8785.23
Mn	55	72	3	He	0.032	ug/l	319.27
Fe	56	72	2	H2	0.786	ug/l	28867.25
Fe	56	72	3	He	0.782	ug/l	9437.54
Co	59	72	1	No Gas	0.012	ug/l	841.70
Ni	60	72	1	No Gas	-0.012	ug/l	798.44
Ni	60	72	3	He	-0.026	ug/l	182.23
Cu	63	72	1	No Gas	0.062	ug/l	3066.22
Cu	63	72	3	He	0.047	ug/l	949.84
Cu	65	72	1	No Gas	0.042	ug/l	1371.95
Zn	66	72	1	No Gas	0.304	ug/l	3629.16
Zn	66	72	3	He	0.353	ug/l	771.14
As	75	72	1	No Gas	0.139	ug/l	11193.43
As	75	72	3	He	0.022	ug/l	75.20
Se	78	72	2	H2	0.021	ug/l	32.56
Br	79	72	1	No Gas	0.167	ug/l	8592.21
Br	79	72	2	H2	0.180	ug/l	4342.05
Se	82	72	1	No Gas	0.000	ug/l	908.36
Kr	84	72	1	No Gas		ug/l	23609.14
Sr	88	72	1	No Gas	-0.054	ug/l	1866.43
Sr	88	72	3	He	-0.036	ug/l	340.01
Mo	95	115	1	No Gas	0.025	ug/l	366.67
Mo	95	115	3	He	0.021	ug/l	118.89
Mo	98	115	1	No Gas	0.024	ug/l	637.80

ICPMS208-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Ag	107	115	1	No Gas	0.002	ug/l	106.71
Ag	109	115	1	No Gas	0.001	ug/l	89.37
Cd	111	115	1	No Gas	0.003	ug/l	66.49
Cd	111	115	3	He	0.004	ug/l	14.67
Cd	114	115	1	No Gas	0.004	ug/l	115.22
Cd	114	115	3	He	0.004	ug/l	32.01
Sn	118	115	1	No Gas	0.007	ug/l	2984.41
Sn	118	115	3	He	-0.001	ug/l	703.36
Sb	121	115	1	No Gas	0.064	ug/l	2335.43
Sb	121	115	3	He	0.058	ug/l	524.06
Sb	123	115	1	No Gas	0.061	ug/l	1866.32
Sb	123	115	3	He	0.056	ug/l	410.72
Te	125	115	3	He	0.000	ug/l	0.00
Ba	135	115	1	No Gas	0.012	ug/l	518.98
Ba	137	115	1	No Gas	0.006	ug/l	738.56
La	139	115	3	He	0.002	ug/l	101.11
Ce	140	115	3	He	0.000	ug/l	126.67
Hg	201	209	1	No Gas	0.003	ug/l	39.66
Hg	202	209	1	No Gas	0.001	ug/l	140.64
Hg	202	209	3	He	0.001	ug/l	43.66
Tl	203	209	3	He	0.278	ug/l	4161.00
Tl	205	209	1	No Gas	0.203	ug/l	16946.97
Tl	205	209	3	He	0.277	ug/l	9831.57
[Pb]	206	209	1	No Gas	0.028	ug/l	1037.83
[Pb]	207	209	1	No Gas	0.028	ug/l	921.15
Pb	208	209	1	No Gas	0.027	ug/l	4112.50
Th	232	209	3	He	0.018	ug/l	945.08
U	238	209	1	No Gas	0.002	ug/l	417.26

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	4458370.15	100.1
Sc	45	2	H2	2123814.04	100.3
Sc	45	3	He	249548.27	97.2
Ge	72	1	No Gas	1304716.60	100.6
Ge	72	2	H2	843946.80	99.7
Ge	72	3	He	198841.65	97.8
In	115	1	No Gas	11599593.58	101.6
In	115	3	He	2416445.49	99.3
Bi	209	1	No Gas	11088118.58	98.5
Bi	209	3	He	4534088.61	98.6

ICPMS208-B Analytical Data

Sample Name	MB-162405
File Name	036SMPL.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\211223A_DoD.b
Acq Time	2021-12-23 14:27:30
Sample Type	Sample
Total Dilution	1.0000
Comment	ICPMS-6020-W-T
ISTD Ref FileName	003CALB.d
Operator	CAR/SRH/JPV
Method	EPA 200.8/EPA 6020

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	0.426	ug/l	19289.92
Be	9	45	1	No Gas	0.051	ug/l	182.96
B	11	45	1	No Gas	1.670	ug/l	4608.56
Na	23	45	3	He	8.719	ug/l	26937.46
Mg	24	45	3	He	-20.900	ug/l	1952.93
Al	27	45	1	No Gas	1.703	ug/l	29197.33
Si	28	45	2	H2	38.479	ug/l	53551.63
K	39	72	3	He	-3.263	ug/l	44810.67
Ca	40	72	2	H2	13.929	ug/l	133811.72
Ti	47	72	1	No Gas	0.253	ug/l	714.07
V	51	72	1	No Gas	-0.930	ug/l	-31721.79
V	51	72	3	He	0.630	ug/l	4915.29
Cr	52	72	1	No Gas	0.701	ug/l	62397.34
Cr	52	72	3	He	0.186	ug/l	1228.95
Mn	55	72	1	No Gas	0.354	ug/l	18038.63
Mn	55	72	3	He	0.041	ug/l	322.27
Fe	56	72	2	H2	1.262	ug/l	31998.50
Fe	56	72	3	He	1.231	ug/l	10449.23
Co	59	72	1	No Gas	0.027	ug/l	1147.77
Ni	60	72	1	No Gas	-0.028	ug/l	658.71
Ni	60	72	3	He	-0.032	ug/l	158.89
Cu	63	72	1	No Gas	0.211	ug/l	4869.43
Cu	63	72	3	He	0.219	ug/l	1687.43
Cu	65	72	1	No Gas	0.180	ug/l	2181.71
Zn	66	72	1	No Gas	0.061	ug/l	2354.38
Zn	66	72	3	He	0.101	ug/l	496.68
As	75	72	1	No Gas	0.323	ug/l	11325.66
As	75	72	3	He	0.056	ug/l	95.07
Se	78	72	2	H2	0.023	ug/l	30.33
Br	79	72	1	No Gas	0.480	ug/l	11518.42
Br	79	72	2	H2	0.623	ug/l	6398.76
Se	82	72	1	No Gas	0.075	ug/l	869.70
Kr	84	72	1	No Gas		ug/l	21816.59
Sr	88	72	1	No Gas	-0.048	ug/l	1986.22
Sr	88	72	3	He	-0.015	ug/l	421.12
Mo	95	115	1	No Gas	0.011	ug/l	186.67
Mo	95	115	3	He	0.014	ug/l	86.67
Mo	98	115	1	No Gas	0.009	ug/l	316.67

ICPMS208-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Ag	107	115	1	No Gas	0.001	ug/l	93.37
Ag	109	115	1	No Gas	0.001	ug/l	88.70
Cd	111	115	1	No Gas	0.001	ug/l	44.43
Cd	111	115	3	He	0.001	ug/l	7.78
Cd	114	115	1	No Gas	0.000	ug/l	47.60
Cd	114	115	3	He	0.000	ug/l	16.16
Sn	118	115	1	No Gas	0.096	ug/l	4362.06
Sn	118	115	3	He	0.089	ug/l	1142.28
Sb	121	115	1	No Gas	0.033	ug/l	1279.19
Sb	121	115	3	He	0.039	ug/l	370.38
Sb	123	115	1	No Gas	0.031	ug/l	1059.48
Sb	123	115	3	He	0.036	ug/l	283.03
Te	125	115	3	He	23.447	ug/l	3.34
Ba	135	115	1	No Gas	0.019	ug/l	512.33
Ba	137	115	1	No Gas	0.017	ug/l	778.48
La	139	115	3	He	0.000	ug/l	51.11
Ce	140	115	3	He	-0.001	ug/l	80.00
Hg	201	209	1	No Gas	0.007	ug/l	47.32
Hg	202	209	1	No Gas	0.013	ug/l	221.29
Hg	202	209	3	He	0.016	ug/l	92.31
Tl	203	209	3	He	0.090	ug/l	2071.66
Tl	205	209	1	No Gas	0.035	ug/l	6698.48
Tl	205	209	3	He	0.083	ug/l	4723.41
[Pb]	206	209	1	No Gas	0.035	ug/l	1074.49
[Pb]	207	209	1	No Gas	0.034	ug/l	942.26
Pb	208	209	1	No Gas	0.036	ug/l	4376.98
Th	232	209	3	He	0.049	ug/l	1925.59
U	238	209	1	No Gas	0.000	ug/l	228.62

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	4016264.60	90.2
Sc	45	2	H2	1966902.57	92.9
Sc	45	3	He	234636.93	91.4
Ge	72	1	No Gas	1214052.94	93.6
Ge	72	2	H2	756294.19	89.3
Ge	72	3	He	185998.73	91.5
In	115	1	No Gas	10518125.75	92.1
In	115	3	He	2351206.50	96.6
Bi	209	1	No Gas	10064479.22	89.4
Bi	209	3	He	4328604.23	94.2

ICPMS208-B Analytical Data

Sample Name	LCS4-162405
File Name	037SMPL.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\211223A_DoD.b
Acq Time	2021-12-23 14:33:39
Sample Type	Sample
Total Dilution	1.0000
Comment	ICPMS-6020-W-T
ISTD Ref FileName	003CALB.d
Operator	CAR/SRH/JPV
Method	EPA 200.8/EPA 6020

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	103.642	ug/l	608297.91
Be	9	45	1	No Gas	48.022	ug/l	105703.37
B	11	45	1	No Gas	98.848	ug/l	126182.61
Na	23	45	3	He	5301.513	ug/l	2606935.73
Mg	24	45	3	He	5334.604	ug/l	1414360.86
Al	27	45	1	No Gas	502.500	ug/l	6881108.37
Si	28	45	2	H2	924.662	ug/l	1257292.96
K	39	72	3	He	5348.568	ug/l	1738768.69
Ca	40	72	2	H2	5531.382	ug/l	29735859.60
Ti	47	72	1	No Gas	81.604	ug/l	178244.93
V	51	72	1	No Gas	93.188	ug/l	2066581.42
V	51	72	3	He	102.299	ug/l	376958.77
Cr	52	72	1	No Gas	94.538	ug/l	2215843.71
Cr	52	72	3	He	103.874	ug/l	430817.39
Mn	55	72	1	No Gas	476.816	ug/l	14979118.29
Mn	55	72	3	He	527.125	ug/l	1468097.77
Fe	56	72	2	H2	527.818	ug/l	7112825.23
Fe	56	72	3	He	531.201	ug/l	1973813.72
Co	59	72	1	No Gas	93.603	ug/l	2417666.16
Ni	60	72	1	No Gas	92.880	ug/l	534836.01
Ni	60	72	3	He	103.226	ug/l	181183.84
Cu	63	72	1	No Gas	93.262	ug/l	1321715.19
Cu	63	72	3	He	103.596	ug/l	493583.63
Cu	65	72	1	No Gas	92.258	ug/l	635415.11
Zn	66	72	1	No Gas	87.678	ug/l	391594.93
Zn	66	72	3	He	98.164	ug/l	89705.79
As	75	72	1	No Gas	88.419	ug/l	475418.00
As	75	72	3	He	100.222	ug/l	74793.06
Se	78	72	2	H2	100.348	ug/l	51365.30
Br	79	72	1	No Gas	0.303	ug/l	9987.00
Br	79	72	2	H2	0.531	ug/l	6145.82
Se	82	72	1	No Gas	88.799	ug/l	32698.28
Kr	84	72	1	No Gas		ug/l	51789.83
Sr	88	72	1	No Gas	96.452	ug/l	4652906.39
Sr	88	72	3	He	108.838	ug/l	535942.93
Mo	95	115	1	No Gas	88.176	ug/l	923484.83
Mo	95	115	3	He	88.446	ug/l	352271.47
Mo	98	115	1	No Gas	90.434	ug/l	1547052.68

ICPMS208-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Ag	107	115	1	No Gas	9.605	ug/l	235258.16
Ag	109	115	1	No Gas	9.662	ug/l	228484.39
Cd	111	115	1	No Gas	48.298	ug/l	267818.66
Cd	111	115	3	He	49.564	ug/l	92470.79
Cd	114	115	1	No Gas	48.832	ug/l	608288.13
Cd	114	115	3	He	49.324	ug/l	227360.39
Sn	118	115	1	No Gas	92.239	ug/l	1707459.99
Sn	118	115	3	He	90.907	ug/l	461303.47
Sb	121	115	1	No Gas	89.295	ug/l	2474060.32
Sb	121	115	3	He	87.743	ug/l	629809.32
Sb	123	115	1	No Gas	91.049	ug/l	1938012.31
Sb	123	115	3	He	88.604	ug/l	508078.04
Te	125	115	3	He	335745.857	ug/l	47538.32
Ba	135	115	1	No Gas	94.392	ug/l	511256.84
Ba	137	115	1	No Gas	95.002	ug/l	901140.46
La	139	115	3	He	105.654	ug/l	2809731.42
Ce	140	115	3	He	103.974	ug/l	3039223.78
Hg	201	209	1	No Gas	0.011	ug/l	60.99
Hg	202	209	1	No Gas	0.015	ug/l	240.62
Hg	202	209	3	He	0.015	ug/l	88.98
Tl	203	209	3	He	104.545	ug/l	1038749.91
Tl	205	209	1	No Gas	101.366	ug/l	5267393.88
Tl	205	209	3	He	105.982	ug/l	2512309.32
[Pb]	206	209	1	No Gas	101.931	ug/l	1918070.79
[Pb]	207	209	1	No Gas	103.108	ug/l	1679900.56
Pb	208	209	1	No Gas	102.372	ug/l	7688302.09
Th	232	209	3	He	104.941	ug/l	3483312.58
U	238	209	1	No Gas	102.101	ug/l	7357887.76

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	3981688.55	89.4
Sc	45	2	H2	2017750.05	95.3
Sc	45	3	He	240169.38	93.5
Ge	72	1	No Gas	1272118.71	98.1
Ge	72	2	H2	790521.93	93.4
Ge	72	3	He	190537.60	93.7
In	115	1	No Gas	10495420.12	91.9
In	115	3	He	2348728.73	96.5
Bi	209	1	No Gas	10101930.59	89.7
Bi	209	3	He	4247592.10	92.4

ICPMS208-B Analytical Data

Sample Name	CCV
File Name	038_CCV.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\211223A_DoD.b
Acq Time	2021-12-23 14:39:30
Sample Type	CCV
Total Dilution	1.0000
Comment	ICPMS-6020B-W-D
ISTD Ref FileName	003CALB.d
Operator	CAR/SRH/JPV
Method	EPA 200.8/EPA 6020

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	625.642	ug/l	3933014.45
Be	9	45	1	No Gas	46.093	ug/l	111221.86
B	11	45	1	No Gas	47.343	ug/l	67650.05
Na	23	45	3	He	12810.386	ug/l	6628151.64
Mg	24	45	3	He	12892.843	ug/l	3606000.51
Al	27	45	1	No Gas	47.397	ug/l	716895.15
Si	28	45	2	H2	192.694	ug/l	280413.70
K	39	72	3	He	12840.108	ug/l	4306859.87
Ca	40	72	2	H2	13366.316	ug/l	77361991.77
Ti	47	72	1	No Gas	42.927	ug/l	94233.74
V	51	72	1	No Gas	46.852	ug/l	1036797.08
V	51	72	3	He	48.813	ug/l	190108.96
Cr	52	72	1	No Gas	47.911	ug/l	1151780.82
Cr	52	72	3	He	48.619	ug/l	211680.34
Mn	55	72	1	No Gas	48.163	ug/l	1525943.79
Mn	55	72	3	He	49.184	ug/l	143799.19
Fe	56	72	2	H2	1332.552	ug/l	19320758.41
Fe	56	72	3	He	1310.847	ug/l	5097882.23
Co	59	72	1	No Gas	48.784	ug/l	1265124.76
Ni	60	72	1	No Gas	48.408	ug/l	280290.65
Ni	60	72	3	He	49.453	ug/l	91099.81
Cu	63	72	1	No Gas	48.473	ug/l	690764.49
Cu	63	72	3	He	49.221	ug/l	246175.04
Cu	65	72	1	No Gas	48.102	ug/l	333134.72
Zn	66	72	1	No Gas	47.576	ug/l	214347.00
Zn	66	72	3	He	49.141	ug/l	47286.32
As	75	72	1	No Gas	47.630	ug/l	261792.40
As	75	72	3	He	48.783	ug/l	38202.07
Se	78	72	2	H2	48.653	ug/l	26840.16
Br	79	72	1	No Gas	0.117	ug/l	7816.61
Br	79	72	2	H2	0.094	ug/l	3839.58
Se	82	72	1	No Gas	47.102	ug/l	17829.58
Kr	84	72	1	No Gas		ug/l	39519.12
Sr	88	72	1	No Gas	49.428	ug/l	2395507.12
Sr	88	72	3	He	49.804	ug/l	257673.00
Mo	95	115	1	No Gas	43.624	ug/l	484834.38
Mo	95	115	3	He	43.522	ug/l	174478.98
Mo	98	115	1	No Gas	43.781	ug/l	794745.58

ICPMS208-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Ag	107	115	1	No Gas	19.472	ug/l	505829.19
Ag	109	115	1	No Gas	19.413	ug/l	486951.44
Cd	111	115	1	No Gas	48.228	ug/l	283800.04
Cd	111	115	3	He	47.992	ug/l	90072.44
Cd	114	115	1	No Gas	48.586	ug/l	642584.17
Cd	114	115	3	He	48.010	ug/l	222474.39
Sn	118	115	1	No Gas	44.499	ug/l	875907.33
Sn	118	115	3	He	43.432	ug/l	221937.45
Sb	121	115	1	No Gas	43.630	ug/l	1283899.39
Sb	121	115	3	He	43.697	ug/l	315425.33
Sb	123	115	1	No Gas	43.399	ug/l	981425.95
Sb	123	115	3	He	43.609	ug/l	251542.62
Te	125	115	3	He	71.030	ug/l	10.01
Ba	135	115	1	No Gas	48.227	ug/l	277654.03
Ba	137	115	1	No Gas	47.889	ug/l	482849.03
La	139	115	3	He	49.196	ug/l	1315070.13
Ce	140	115	3	He	49.294	ug/l	1449045.20
Hg	201	209	1	No Gas	0.985	ug/l	3476.10
Hg	202	209	1	No Gas	0.956	ug/l	7789.39
Hg	202	209	3	He	0.970	ug/l	3519.76
Tl	203	209	3	He	48.112	ug/l	491656.64
Tl	205	209	1	No Gas	48.428	ug/l	2573020.10
Tl	205	209	3	He	48.110	ug/l	1173019.14
[Pb]	206	209	1	No Gas	47.540	ug/l	913748.03
[Pb]	207	209	1	No Gas	47.791	ug/l	795466.95
Pb	208	209	1	No Gas	48.080	ug/l	3688270.11
Th	232	209	3	He	49.325	ug/l	1681611.52
U	238	209	1	No Gas	48.839	ug/l	3593492.43

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	4365523.65	98.0
Sc	45	2	H2	2141838.33	101.2
Sc	45	3	He	254082.64	98.9
Ge	72	1	No Gas	1276915.54	98.4
Ge	72	2	H2	851637.57	100.6
Ge	72	3	He	199668.66	98.2
In	115	1	No Gas	11148357.69	97.6
In	115	3	He	2361471.36	97.0
Bi	209	1	No Gas	10321824.02	91.7
Bi	209	3	He	4363264.32	94.9

ICPMS208-B Analytical Data

Sample Name	CCB
File Name	039_CCB.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\211223A_DoD.b
Acq Time	2021-12-23 14:45:32
Sample Type	CCB
Total Dilution	1.0000
Comment	ICPMS-6020B-W-D
ISTD Ref FileName	003CALB.d
Operator	CAR/SRH/JPV
Method	EPA 200.8/EPA 6020

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	-0.063	ug/l	17372.19
Be	9	45	1	No Gas	0.059	ug/l	211.63
B	11	45	1	No Gas	0.334	ug/l	3081.56
Na	23	45	3	He	-3.327	ug/l	21810.32
Mg	24	45	3	He	-21.023	ug/l	1976.22
Al	27	45	1	No Gas	0.055	ug/l	6802.70
Si	28	45	2	H2	3.770	ug/l	7875.94
K	39	72	3	He	-1.682	ug/l	46419.94
Ca	40	72	2	H2	-1.494	ug/l	58394.37
Ti	47	72	1	No Gas	-0.001	ug/l	191.86
V	51	72	1	No Gas	0.345	ug/l	-4814.24
V	51	72	3	He	-0.013	ug/l	2682.48
Cr	52	72	1	No Gas	-0.203	ug/l	44108.25
Cr	52	72	3	He	-0.005	ug/l	468.90
Mn	55	72	1	No Gas	0.014	ug/l	8132.78
Mn	55	72	3	He	0.040	ug/l	325.61
Fe	56	72	2	H2	0.519	ug/l	24002.12
Fe	56	72	3	He	0.462	ug/l	7856.69
Co	59	72	1	No Gas	0.008	ug/l	698.63
Ni	60	72	1	No Gas	-0.043	ug/l	595.50
Ni	60	72	3	He	-0.024	ug/l	177.78
Cu	63	72	1	No Gas	0.043	ug/l	2693.33
Cu	63	72	3	He	0.029	ug/l	824.19
Cu	65	72	1	No Gas	0.035	ug/l	1269.23
Zn	66	72	1	No Gas	-0.125	ug/l	1619.60
Zn	66	72	3	He	-0.068	ug/l	356.67
As	75	72	1	No Gas	0.648	ug/l	13420.62
As	75	72	3	He	0.010	ug/l	63.00
Se	78	72	2	H2	0.013	ug/l	27.00
Br	79	72	1	No Gas	0.010	ug/l	6455.32
Br	79	72	2	H2	0.052	ug/l	3390.35
Se	82	72	1	No Gas	0.060	ug/l	893.70
Kr	84	72	1	No Gas		ug/l	23249.34
Sr	88	72	1	No Gas	-0.061	ug/l	1437.22
Sr	88	72	3	He	-0.040	ug/l	305.56
Mo	95	115	1	No Gas	0.020	ug/l	294.45
Mo	95	115	3	He	0.019	ug/l	108.89
Mo	98	115	1	No Gas	0.014	ug/l	414.46

ICPMS208-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Ag	107	115	1	No Gas	0.001	ug/l	83.37
Ag	109	115	1	No Gas	0.000	ug/l	69.36
Cd	111	115	1	No Gas	0.001	ug/l	50.37
Cd	111	115	3	He	0.004	ug/l	13.11
Cd	114	115	1	No Gas	0.004	ug/l	96.51
Cd	114	115	3	He	0.003	ug/l	27.29
Sn	118	115	1	No Gas	0.027	ug/l	3200.71
Sn	118	115	3	He	-0.004	ug/l	676.69
Sb	121	115	1	No Gas	0.038	ug/l	1464.22
Sb	121	115	3	He	0.037	ug/l	366.71
Sb	123	115	1	No Gas	0.033	ug/l	1155.17
Sb	123	115	3	He	0.037	ug/l	294.70
Te	125	115	3	He	23.375	ug/l	3.34
Ba	135	115	1	No Gas	-0.014	ug/l	345.98
Ba	137	115	1	No Gas	0.002	ug/l	655.39
La	139	115	3	He	0.001	ug/l	85.56
Ce	140	115	3	He	0.000	ug/l	127.78
Hg	201	209	1	No Gas	0.005	ug/l	41.99
Hg	202	209	1	No Gas	0.002	ug/l	139.97
Hg	202	209	3	He	0.003	ug/l	46.99
Tl	203	209	3	He	0.202	ug/l	3305.08
Tl	205	209	1	No Gas	0.146	ug/l	12915.49
Tl	205	209	3	He	0.206	ug/l	7934.89
[Pb]	206	209	1	No Gas	0.013	ug/l	701.14
[Pb]	207	209	1	No Gas	0.014	ug/l	630.02
Pb	208	209	1	No Gas	0.014	ug/l	2850.14
Th	232	209	3	He	0.018	ug/l	933.08
U	238	209	1	No Gas	0.001	ug/l	330.94

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	4242387.05	95.2
Sc	45	2	H2	2030871.05	95.9
Sc	45	3	He	241404.30	94.0
Ge	72	1	No Gas	1256321.14	96.8
Ge	72	2	H2	809151.27	95.6
Ge	72	3	He	190700.30	93.8
In	115	1	No Gas	10916993.94	95.6
In	115	3	He	2383152.01	97.9
Bi	209	1	No Gas	10497337.54	93.2
Bi	209	3	He	4469982.19	97.3

ICPMS208-B Analytical Data

Sample Name	Rinse
File Name	040BLKV.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\211223A_DoD.b
Acq Time	2021-12-23 14:51:41
Sample Type	BlkVrfy
Total Dilution	1.0000
Comment	ICPMS-6020B-W-D
ISTD Ref FileName	003CALB.d
Operator	CAR/SRH/JPV
Method	EPA 200.8/EPA 6020

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	-0.553	ug/l	14512.08
Be	9	45	1	No Gas	0.040	ug/l	167.97
B	11	45	1	No Gas	-0.022	ug/l	2627.29
Na	23	45	3	He	-6.125	ug/l	20399.41
Mg	24	45	3	He	-19.773	ug/l	2302.29
Al	27	45	1	No Gas	1.511	ug/l	28219.81
Si	28	45	2	H2	3.019	ug/l	6971.11
K	39	72	3	He	-2.247	ug/l	46580.42
Ca	40	72	2	H2	-1.674	ug/l	57110.01
Ti	47	72	1	No Gas	0.027	ug/l	251.92
V	51	72	1	No Gas	0.344	ug/l	-4880.27
V	51	72	3	He	-0.034	ug/l	2624.69
Cr	52	72	1	No Gas	-0.241	ug/l	43347.63
Cr	52	72	3	He	-0.010	ug/l	448.90
Mn	55	72	1	No Gas	-0.022	ug/l	7027.77
Mn	55	72	3	He	-0.012	ug/l	183.96
Fe	56	72	2	H2	0.318	ug/l	21113.03
Fe	56	72	3	He	0.392	ug/l	7651.37
Co	59	72	1	No Gas	0.005	ug/l	625.44
Ni	60	72	1	No Gas	-0.043	ug/l	595.50
Ni	60	72	3	He	-0.032	ug/l	164.45
Cu	63	72	1	No Gas	0.025	ug/l	2447.19
Cu	63	72	3	He	0.021	ug/l	794.20
Cu	65	72	1	No Gas	0.008	ug/l	1091.82
Zn	66	72	1	No Gas	-0.212	ug/l	1240.20
Zn	66	72	3	He	-0.162	ug/l	272.23
As	75	72	1	No Gas	0.258	ug/l	11436.26
As	75	72	3	He	0.005	ug/l	59.47
Se	78	72	2	H2	-0.003	ug/l	18.44
Br	79	72	1	No Gas	-0.038	ug/l	5902.86
Br	79	72	2	H2	0.033	ug/l	3257.25
Se	82	72	1	No Gas	-0.407	ug/l	731.94
Kr	84	72	1	No Gas		ug/l	22432.89
Sr	88	72	1	No Gas	-0.065	ug/l	1260.89
Sr	88	72	3	He	-0.046	ug/l	280.01
Mo	95	115	1	No Gas	0.004	ug/l	117.78
Mo	95	115	3	He	0.010	ug/l	72.22
Mo	98	115	1	No Gas	0.002	ug/l	207.78

ICPMS208-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Ag	107	115	1	No Gas	0.001	ug/l	79.37
Ag	109	115	1	No Gas	0.000	ug/l	73.36
Cd	111	115	1	No Gas	-0.001	ug/l	36.94
Cd	111	115	3	He	0.003	ug/l	11.11
Cd	114	115	1	No Gas	0.001	ug/l	70.82
Cd	114	115	3	He	0.001	ug/l	21.06
Sn	118	115	1	No Gas	-0.006	ug/l	2605.10
Sn	118	115	3	He	-0.004	ug/l	676.69
Sb	121	115	1	No Gas	0.015	ug/l	798.44
Sb	121	115	3	He	0.017	ug/l	216.69
Sb	123	115	1	No Gas	0.010	ug/l	656.42
Sb	123	115	3	He	0.017	ug/l	179.02
Te	125	115	3	He	46.553	ug/l	6.67
Ba	135	115	1	No Gas	-0.019	ug/l	322.70
Ba	137	115	1	No Gas	0.003	ug/l	675.35
La	139	115	3	He	0.000	ug/l	56.67
Ce	140	115	3	He	-0.001	ug/l	82.22
Hg	201	209	1	No Gas	0.001	ug/l	27.33
Hg	202	209	1	No Gas	-0.001	ug/l	120.64
Hg	202	209	3	He	0.001	ug/l	40.66
Tl	203	209	3	He	0.056	ug/l	1776.17
Tl	205	209	1	No Gas	0.019	ug/l	6222.69
Tl	205	209	3	He	0.055	ug/l	4148.98
[Pb]	206	209	1	No Gas	0.006	ug/l	562.24
[Pb]	207	209	1	No Gas	0.003	ug/l	455.57
Pb	208	209	1	No Gas	0.005	ug/l	2206.75
Th	232	209	3	He	0.006	ug/l	498.88
U	238	209	1	No Gas	0.000	ug/l	224.62

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	4271224.90	95.9
Sc	45	2	H2	2067522.30	97.7
Sc	45	3	He	240868.94	93.8
Ge	72	1	No Gas	1258598.90	97.0
Ge	72	2	H2	804748.27	95.1
Ge	72	3	He	192021.76	94.4
In	115	1	No Gas	11100635.69	97.2
In	115	3	He	2381235.20	97.8
Bi	209	1	No Gas	10642398.51	94.5
Bi	209	3	He	4439517.77	96.6

ICPMS208-B Analytical Data

Sample Name	B21121613-002H
File Name	041SMPL.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\211223A_DoD.b
Acq Time	2021-12-23 14:57:50
Sample Type	Sample
Total Dilution	1.0000
Comment	ICPMS-6020-W-T
ISTD Ref FileName	003CALB.d
Operator	CAR/SRH/JPV
Method	EPA 200.8/EPA 6020

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	0.344	ug/l	18244.23
Be	9	45	1	No Gas	0.039	ug/l	151.64
B	11	45	1	No Gas	64.718	ug/l	81611.09
Na	23	45	3	He	50239.224	ug/l	22962328.82
Mg	24	45	3	He	12795.544	ug/l	3170240.46
Al	27	45	1	No Gas	4.013	ug/l	59202.92
Si	28	45	2	H2	5917.814	ug/l	7681846.48
K	39	72	3	He	6846.137	ug/l	2077410.99
Ca	40	72	2	H2	13274.674	ug/l	66338231.73
Ti	47	72	1	No Gas	1.084	ug/l	2334.21
V	51	72	1	No Gas	-0.282	ug/l	-17205.73
V	51	72	3	He	0.538	ug/l	4408.46
Cr	52	72	1	No Gas	1.310	ug/l	72312.86
Cr	52	72	3	He	0.976	ug/l	4255.08
Mn	55	72	1	No Gas	45.821	ug/l	1318091.86
Mn	55	72	3	He	45.974	ug/l	120404.84
Fe	56	72	2	H2	107.333	ug/l	1357923.47
Fe	56	72	3	He	103.341	ug/l	365287.87
Co	59	72	1	No Gas	0.134	ug/l	3613.28
Ni	60	72	1	No Gas	0.982	ug/l	5916.13
Ni	60	72	3	He	0.835	ug/l	1580.10
Cu	63	72	1	No Gas	0.925	ug/l	13853.43
Cu	63	72	3	He	0.300	ug/l	1986.74
Cu	65	72	1	No Gas	0.366	ug/l	3245.67
Zn	66	72	1	No Gas	2.189	ug/l	10855.79
Zn	66	72	3	He	2.443	ug/l	2478.00
As	75	72	1	No Gas	0.197	ug/l	10232.51
As	75	72	3	He	0.207	ug/l	197.00
Se	78	72	2	H2	0.042	ug/l	38.44
Br	79	72	1	No Gas	2.544	ug/l	33145.40
Br	79	72	2	H2	2.763	ug/l	17998.82
Se	82	72	1	No Gas	-0.068	ug/l	783.02
Kr	84	72	1	No Gas		ug/l	42317.95
Sr	88	72	1	No Gas	79.273	ug/l	3484756.18
Sr	88	72	3	He	81.741	ug/l	378489.02
Mo	95	115	1	No Gas	18.161	ug/l	180387.39
Mo	95	115	3	He	18.609	ug/l	70001.36
Mo	98	115	1	No Gas	18.091	ug/l	293513.17

ICPMS208-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Ag	107	115	1	No Gas	0.001	ug/l	85.37
Ag	109	115	1	No Gas	0.001	ug/l	90.03
Cd	111	115	1	No Gas	0.000	ug/l	38.03
Cd	111	115	3	He	0.009	ug/l	22.11
Cd	114	115	1	No Gas	-0.037	ug/l	-390.23
Cd	114	115	3	He	-0.048	ug/l	-194.85
Sn	118	115	1	No Gas	16.493	ug/l	291459.01
Sn	118	115	3	He	16.446	ug/l	79225.64
Sb	121	115	1	No Gas	0.036	ug/l	1285.86
Sb	121	115	3	He	0.037	ug/l	340.04
Sb	123	115	1	No Gas	0.036	ug/l	1112.49
Sb	123	115	3	He	0.042	ug/l	299.70
Te	125	115	3	He	24.154	ug/l	3.34
Ba	135	115	1	No Gas	2.640	ug/l	13932.68
Ba	137	115	1	No Gas	2.599	ug/l	23959.81
La	139	115	3	He	0.002	ug/l	92.22
Ce	140	115	3	He	0.006	ug/l	287.78
Hg	201	209	1	No Gas	0.010	ug/l	54.99
Hg	202	209	1	No Gas	0.044	ug/l	432.26
Hg	202	209	3	He	0.040	ug/l	167.30
Tl	203	209	3	He	0.040	ug/l	1483.35
Tl	205	209	1	No Gas	0.003	ug/l	4749.79
Tl	205	209	3	He	0.037	ug/l	3395.14
[Pb]	206	209	1	No Gas	0.043	ug/l	1160.06
[Pb]	207	209	1	No Gas	0.043	ug/l	1015.60
Pb	208	209	1	No Gas	0.043	ug/l	4572.55
Th	232	209	3	He	0.042	ug/l	1618.09
U	238	209	1	No Gas	0.003	ug/l	387.59

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	3896505.63	87.5
Sc	45	2	H2	1930086.99	91.2
Sc	45	3	He	225097.08	87.6
Ge	72	1	No Gas	1159434.74	89.4
Ge	72	2	H2	735484.16	86.9
Ge	72	3	He	178840.44	88.0
In	115	1	No Gas	9958225.20	87.2
In	115	3	He	2216252.86	91.0
Bi	209	1	No Gas	9427101.89	83.7
Bi	209	3	He	4083909.66	88.9

ICPMS208-B Analytical Data

Sample Name	B21121613-002HDIL
File Name	042SMPL.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\211223A_DoD.b
Acq Time	2021-12-23 15:03:56
Sample Type	Sample
Total Dilution	5.0000
Comment	ICPMS-6020-W-T
ISTD Ref FileName	003CALB.d
Operator	CAR/SRH/JPV
Method	EPA 200.8/EPA 6020

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	-3.588	ug/l	13206.36
Be	9	45	1	No Gas	0.091	ug/l	114.31
B	11	45	1	No Gas	64.847	ug/l	19624.51
Na	23	45	3	He	51308.564	ug/l	4978186.03
Mg	24	45	3	He	13111.967	ug/l	692940.96
Al	27	45	1	No Gas	6.612	ug/l	24895.09
Si	28	45	2	H2	5965.902	ug/l	1657716.47
K	39	72	3	He	6613.772	ug/l	461970.49
Ca	40	72	2	H2	13225.872	ug/l	14288684.12
Ti	47	72	1	No Gas	1.572	ug/l	871.06
V	51	72	1	No Gas	0.448	ug/l	-10560.93
V	51	72	3	He	0.307	ug/l	2931.43
Cr	52	72	1	No Gas	0.050	ug/l	49104.35
Cr	52	72	3	He	0.961	ug/l	1274.51
Mn	55	72	1	No Gas	45.448	ug/l	290517.49
Mn	55	72	3	He	46.963	ug/l	26179.28
Fe	56	72	2	H2	106.122	ug/l	302533.19
Fe	56	72	3	He	104.117	ug/l	82690.62
Co	59	72	1	No Gas	0.127	ug/l	1144.45
Ni	60	72	1	No Gas	0.758	ug/l	1703.40
Ni	60	72	3	He	0.801	ug/l	496.68
Cu	63	72	1	No Gas	1.030	ug/l	4986.86
Cu	63	72	3	He	0.410	ug/l	1070.16
Cu	65	72	1	No Gas	0.450	ug/l	1650.76
Zn	66	72	1	No Gas	1.858	ug/l	3811.70
Zn	66	72	3	He	1.971	ug/l	770.03
As	75	72	1	No Gas	2.310	ug/l	12494.78
As	75	72	3	He	0.216	ug/l	87.20
Se	78	72	2	H2	0.037	ug/l	23.78
Br	79	72	1	No Gas	2.716	ug/l	12693.74
Br	79	72	2	H2	2.873	ug/l	6415.41
Se	82	72	1	No Gas	-1.054	ug/l	800.88
Kr	84	72	1	No Gas		ug/l	27311.64
Sr	88	72	1	No Gas	79.627	ug/l	764806.16
Sr	88	72	3	He	81.008	ug/l	79720.61
Mo	95	115	1	No Gas	17.937	ug/l	39196.79
Mo	95	115	3	He	17.730	ug/l	14211.55
Mo	98	115	1	No Gas	17.633	ug/l	62993.58

ICPMS208-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Ag	107	115	1	No Gas	0.000	ug/l	64.03
Ag	109	115	1	No Gas	-0.001	ug/l	68.03
Cd	111	115	1	No Gas	0.012	ug/l	56.23
Cd	111	115	3	He	0.026	ug/l	15.89
Cd	114	115	1	No Gas	-0.025	ug/l	-13.17
Cd	114	115	3	He	-0.037	ug/l	-20.45
Sn	118	115	1	No Gas	15.948	ug/l	64074.38
Sn	118	115	3	He	15.873	ug/l	16823.40
Sb	121	115	1	No Gas	0.049	ug/l	648.08
Sb	121	115	3	He	0.055	ug/l	172.35
Sb	123	115	1	No Gas	0.033	ug/l	564.40
Sb	123	115	3	He	0.060	ug/l	146.35
Te	125	115	3	He	0.000	ug/l	0.00
Ba	135	115	1	No Gas	2.740	ug/l	3513.48
Ba	137	115	1	No Gas	2.552	ug/l	5673.27
La	139	115	3	He	-0.003	ug/l	41.11
Ce	140	115	3	He	-0.007	ug/l	83.33
Hg	201	209	1	No Gas	0.007	ug/l	30.32
Hg	202	209	1	No Gas	0.043	ug/l	193.30
Hg	202	209	3	He	0.051	ug/l	72.65
Tl	203	209	3	He	-0.003	ug/l	1161.86
Tl	205	209	1	No Gas	-0.086	ug/l	4166.25
Tl	205	209	3	He	0.003	ug/l	2738.72
[Pb]	206	209	1	No Gas	0.070	ug/l	715.58
[Pb]	207	209	1	No Gas	0.058	ug/l	593.35
Pb	208	209	1	No Gas	0.065	ug/l	2765.70
Th	232	209	3	He	0.016	ug/l	390.83
U	238	209	1	No Gas	-0.001	ug/l	209.96

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	4177047.68	93.8
Sc	45	2	H2	2061769.87	97.4
Sc	45	3	He	238006.42	92.7
Ge	72	1	No Gas	1260517.18	97.2
Ge	72	2	H2	792316.17	93.6
Ge	72	3	He	189091.22	93.0
In	115	1	No Gas	10929103.06	95.7
In	115	3	He	2355574.97	96.8
Bi	209	1	No Gas	10475104.64	93.0
Bi	209	3	He	4345139.90	94.5

ICPMS208-B Analytical Data

Sample Name	B21121613-002HPDS1
File Name	043SMPL.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\211223A_DoD.b
Acq Time	2021-12-23 15:10:03
Sample Type	Sample
Total Dilution	1.0300
Comment	ICPMS-6020-W-T
ISTD Ref FileName	003CALB.d
Operator	CAR/SRH/JPV
Method	EPA 200.8/EPA 6020

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	2361.480	ug/l	12681947.99
Be	9	45	1	No Gas	44.961	ug/l	93002.30
B	11	45	1	No Gas	114.560	ug/l	137085.43
Na	23	45	3	He	98724.796	ug/l	44419228.23
Mg	24	45	3	He	62504.407	ug/l	15224264.26
Al	27	45	1	No Gas	50.875	ug/l	659361.28
Si	28	45	2	H2	6062.484	ug/l	7195441.43
K	39	72	3	He	56220.415	ug/l	16527910.31
Ca	40	72	2	H2	62279.146	ug/l	305838374.27
Ti	47	72	1	No Gas	45.644	ug/l	93538.79
V	51	72	1	No Gas	40.859	ug/l	842370.35
V	51	72	3	He	49.810	ug/l	171545.12
Cr	52	72	1	No Gas	46.768	ug/l	1052165.68
Cr	52	72	3	He	50.229	ug/l	193348.99
Mn	55	72	1	No Gas	85.994	ug/l	2538209.69
Mn	55	72	3	He	94.340	ug/l	243690.68
Fe	56	72	2	H2	5096.426	ug/l	62699797.59
Fe	56	72	3	He	5024.603	ug/l	17260699.88
Co	59	72	1	No Gas	44.828	ug/l	1085449.44
Ni	60	72	1	No Gas	44.651	ug/l	241459.95
Ni	60	72	3	He	48.467	ug/l	78946.90
Cu	63	72	1	No Gas	45.362	ug/l	603685.79
Cu	63	72	3	He	48.839	ug/l	215986.58
Cu	65	72	1	No Gas	44.212	ug/l	285969.28
Zn	66	72	1	No Gas	44.250	ug/l	186343.23
Zn	66	72	3	He	49.829	ug/l	42399.11
As	75	72	1	No Gas	44.079	ug/l	227220.79
As	75	72	3	He	48.435	ug/l	33537.45
Se	78	72	2	H2	48.391	ug/l	22667.74
Br	79	72	1	No Gas	3.071	ug/l	40085.82
Br	79	72	2	H2	3.008	ug/l	19114.81
Se	82	72	1	No Gas	43.831	ug/l	15571.56
Kr	84	72	1	No Gas		ug/l	57951.15
Sr	88	72	1	No Gas	120.063	ug/l	5427042.67
Sr	88	72	3	He	131.564	ug/l	601050.02
Mo	95	115	1	No Gas	64.462	ug/l	610080.17
Mo	95	115	3	He	64.684	ug/l	228630.60
Mo	98	115	1	No Gas	64.442	ug/l	996119.75

ICPMS208-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Ag	107	115	1	No Gas	19.279	ug/l	426607.50
Ag	109	115	1	No Gas	19.223	ug/l	410705.18
Cd	111	115	1	No Gas	47.885	ug/l	239964.71
Cd	111	115	3	He	47.805	ug/l	79103.28
Cd	114	115	1	No Gas	47.891	ug/l	539210.54
Cd	114	115	3	He	47.793	ug/l	195250.84
Sn	118	115	1	No Gas	63.143	ug/l	1057123.99
Sn	118	115	3	He	61.798	ug/l	278146.18
Sb	121	115	1	No Gas	42.852	ug/l	1073287.17
Sb	121	115	3	He	43.052	ug/l	273971.69
Sb	123	115	1	No Gas	42.563	ug/l	819101.62
Sb	123	115	3	He	43.043	ug/l	218879.08
Te	125	115	3	He	106.388	ug/l	13.35
Ba	135	115	1	No Gas	51.187	ug/l	250796.93
Ba	137	115	1	No Gas	51.086	ug/l	438346.71
La	139	115	3	He	49.364	ug/l	1163464.75
Ce	140	115	3	He	48.848	ug/l	1265869.42
Hg	201	209	1	No Gas	0.968	ug/l	2873.07
Hg	202	209	1	No Gas	1.021	ug/l	6996.10
Hg	202	209	3	He	0.988	ug/l	3176.74
Tl	203	209	3	He	49.367	ug/l	447107.44
Tl	205	209	1	No Gas	50.835	ug/l	2273267.34
Tl	205	209	3	He	49.575	ug/l	1071211.31
[Pb]	206	209	1	No Gas	48.477	ug/l	784651.22
[Pb]	207	209	1	No Gas	48.764	ug/l	683437.42
Pb	208	209	1	No Gas	48.827	ug/l	3154131.13
Th	232	209	3	He	50.337	ug/l	1520813.49
U	238	209	1	No Gas	51.205	ug/l	3173112.67

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	3852973.79	86.5
Sc	45	2	H2	1818051.34	85.9
Sc	45	3	He	228306.54	88.9
Ge	72	1	No Gas	1227945.88	94.7
Ge	72	2	H2	744834.11	88.0
Ge	72	3	He	181834.40	89.4
In	115	1	No Gas	9767242.23	85.5
In	115	3	He	2144218.94	88.1
Bi	209	1	No Gas	8943370.71	79.4
Bi	209	3	He	3982459.48	86.6

ICPMS208-B Analytical Data

Sample Name	B21121613-002HMS4
File Name	044SMPL.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\211223A_DoD.b
Acq Time	2021-12-23 15:16:04
Sample Type	Sample
Total Dilution	1.0000
Comment	ICPMS-6020-W-T
ISTD Ref FileName	003CALB.d
Operator	CAR/SRH/JPV
Method	EPA 200.8/EPA 6020

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	101.831	ug/l	614652.95
Be	9	45	1	No Gas	47.022	ug/l	106398.57
B	11	45	1	No Gas	162.263	ug/l	211250.44
Na	23	45	3	He	53791.158	ug/l	26213152.11
Mg	24	45	3	He	17691.189	ug/l	4670543.04
Al	27	45	1	No Gas	483.456	ug/l	6804056.15
Si	28	45	2	H2	6731.452	ug/l	9034508.01
K	39	72	3	He	11773.049	ug/l	3760866.26
Ca	40	72	2	H2	17813.085	ug/l	96538296.56
Ti	47	72	1	No Gas	83.180	ug/l	183459.42
V	51	72	1	No Gas	91.290	ug/l	2044099.07
V	51	72	3	He	102.440	ug/l	376612.27
Cr	52	72	1	No Gas	94.621	ug/l	2239295.81
Cr	52	72	3	He	103.964	ug/l	430147.42
Mn	55	72	1	No Gas	503.291	ug/l	15963935.15
Mn	55	72	3	He	555.735	ug/l	1543967.55
Fe	56	72	2	H2	621.385	ug/l	8448991.92
Fe	56	72	3	He	634.096	ug/l	2349603.79
Co	59	72	1	No Gas	92.125	ug/l	2402129.35
Ni	60	72	1	No Gas	92.541	ug/l	538105.18
Ni	60	72	3	He	101.427	ug/l	177599.83
Cu	63	72	1	No Gas	92.197	ug/l	1319478.11
Cu	63	72	3	He	100.578	ug/l	478030.29
Cu	65	72	1	No Gas	91.156	ug/l	634018.67
Zn	66	72	1	No Gas	89.388	ug/l	403133.19
Zn	66	72	3	He	98.746	ug/l	90015.57
As	75	72	1	No Gas	88.906	ug/l	482612.20
As	75	72	3	He	99.905	ug/l	74369.44
Se	78	72	2	H2	99.124	ug/l	51213.20
Br	79	72	1	No Gas	2.264	ug/l	33392.33
Br	79	72	2	H2	2.597	ug/l	18541.84
Se	82	72	1	No Gas	90.058	ug/l	33474.71
Kr	84	72	1	No Gas		ug/l	75109.32
Sr	88	72	1	No Gas	167.627	ug/l	8162110.78
Sr	88	72	3	He	189.010	ug/l	928261.76
Mo	95	115	1	No Gas	109.621	ug/l	1124099.42
Mo	95	115	3	He	111.817	ug/l	429867.53
Mo	98	115	1	No Gas	112.594	ug/l	1885608.84

ICPMS208-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Ag	107	115	1	No Gas	9.607	ug/l	230387.11
Ag	109	115	1	No Gas	9.580	ug/l	221808.11
Cd	111	115	1	No Gas	48.849	ug/l	265235.45
Cd	111	115	3	He	50.223	ug/l	90430.11
Cd	114	115	1	No Gas	49.122	ug/l	599181.71
Cd	114	115	3	He	49.480	ug/l	219987.78
Sn	118	115	1	No Gas	109.258	ug/l	1979652.14
Sn	118	115	3	He	109.038	ug/l	533428.92
Sb	121	115	1	No Gas	90.714	ug/l	2460864.98
Sb	121	115	3	He	89.917	ug/l	622488.74
Sb	123	115	1	No Gas	93.196	ug/l	1942355.27
Sb	123	115	3	He	90.579	ug/l	500936.56
Te	125	115	3	He	338934.986	ug/l	46256.00
Ba	135	115	1	No Gas	96.864	ug/l	513728.70
Ba	137	115	1	No Gas	96.721	ug/l	898288.99
La	139	115	3	He	105.115	ug/l	2694201.07
Ce	140	115	3	He	104.498	ug/l	2944899.02
Hg	201	209	1	No Gas	0.016	ug/l	73.99
Hg	202	209	1	No Gas	0.055	ug/l	524.24
Hg	202	209	3	He	0.048	ug/l	194.29
Tl	203	209	3	He	104.230	ug/l	989130.86
Tl	205	209	1	No Gas	102.202	ug/l	5082347.08
Tl	205	209	3	He	106.304	ug/l	2406913.50
[Pb]	206	209	1	No Gas	102.615	ug/l	1848436.55
[Pb]	207	209	1	No Gas	103.965	ug/l	1621531.54
Pb	208	209	1	No Gas	101.979	ug/l	7330803.97
Th	232	209	3	He	106.227	ug/l	3368601.95
U	238	209	1	No Gas	103.110	ug/l	7110921.00

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	4092043.88	91.9
Sc	45	2	H2	1996130.45	94.3
Sc	45	3	He	239971.37	93.4
Ge	72	1	No Gas	1284496.47	99.0
Ge	72	2	H2	797929.36	94.3
Ge	72	3	He	190008.94	93.5
In	115	1	No Gas	10273498.09	90.0
In	115	3	He	2264973.17	93.0
Bi	209	1	No Gas	9665238.71	85.8
Bi	209	3	He	4058196.16	88.3

ICPMS208-B Analytical Data

Sample Name	B21121613-002HMSD4
File Name	045SMPL.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\211223A_DoD.b
Acq Time	2021-12-23 15:21:55
Sample Type	Sample
Total Dilution	1.0000
Comment	ICPMS-6020-W-T
ISTD Ref FileName	003CALB.d
Operator	CAR/SRH/JPV
Method	EPA 200.8/EPA 6020

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	101.024	ug/l	611944.97
Be	9	45	1	No Gas	46.995	ug/l	106686.28
B	11	45	1	No Gas	164.425	ug/l	214753.93
Na	23	45	3	He	53755.035	ug/l	26463287.94
Mg	24	45	3	He	17716.868	ug/l	4725386.85
Al	27	45	1	No Gas	493.712	ug/l	6971869.13
Si	28	45	2	H2	6858.498	ug/l	9030482.15
K	39	72	3	He	11909.400	ug/l	3817209.91
Ca	40	72	2	H2	18130.511	ug/l	97458684.42
Ti	47	72	1	No Gas	83.175	ug/l	183939.02
V	51	72	1	No Gas	92.295	ug/l	2072423.50
V	51	72	3	He	103.647	ug/l	382381.09
Cr	52	72	1	No Gas	94.581	ug/l	2244588.77
Cr	52	72	3	He	104.316	ug/l	433129.52
Mn	55	72	1	No Gas	508.165	ug/l	16161458.12
Mn	55	72	3	He	564.003	ug/l	1572573.88
Fe	56	72	2	H2	628.549	ug/l	8475027.75
Fe	56	72	3	He	629.975	ug/l	2342725.12
Co	59	72	1	No Gas	91.584	ug/l	2394908.32
Ni	60	72	1	No Gas	93.080	ug/l	542704.07
Ni	60	72	3	He	102.747	ug/l	180511.40
Cu	63	72	1	No Gas	94.100	ug/l	1350335.60
Cu	63	72	3	He	102.448	ug/l	488716.71
Cu	65	72	1	No Gas	92.857	ug/l	647550.15
Zn	66	72	1	No Gas	90.580	ug/l	409562.00
Zn	66	72	3	He	99.525	ug/l	91077.51
As	75	72	1	No Gas	90.636	ug/l	493180.09
As	75	72	3	He	100.396	ug/l	75094.77
Se	78	72	2	H2	100.837	ug/l	51657.91
Br	79	72	1	No Gas	3.450	ug/l	47637.29
Br	79	72	2	H2	3.782	ug/l	25395.24
Se	82	72	1	No Gas	91.297	ug/l	34013.60
Kr	84	72	1	No Gas		ug/l	76901.24
Sr	88	72	1	No Gas	170.393	ug/l	8318552.69
Sr	88	72	3	He	188.209	ug/l	929264.90
Mo	95	115	1	No Gas	111.094	ug/l	1141239.29
Mo	95	115	3	He	107.903	ug/l	421141.31
Mo	98	115	1	No Gas	113.841	ug/l	1910040.55

ICPMS208-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Ag	107	115	1	No Gas	9.728	ug/l	233693.25
Ag	109	115	1	No Gas	9.720	ug/l	225455.56
Cd	111	115	1	No Gas	49.735	ug/l	270542.45
Cd	111	115	3	He	49.276	ug/l	90098.79
Cd	114	115	1	No Gas	50.013	ug/l	611192.74
Cd	114	115	3	He	49.787	ug/l	225045.04
Sn	118	115	1	No Gas	109.139	ug/l	1981515.17
Sn	118	115	3	He	110.463	ug/l	549871.61
Sb	121	115	1	No Gas	91.130	ug/l	2476905.44
Sb	121	115	3	He	90.128	ug/l	634936.24
Sb	123	115	1	No Gas	92.576	ug/l	1933320.45
Sb	123	115	3	He	90.140	ug/l	507300.59
Te	125	115	3	He	332089.499	ug/l	46135.65
Ba	135	115	1	No Gas	98.502	ug/l	523465.26
Ba	137	115	1	No Gas	97.904	ug/l	911118.81
La	139	115	3	He	105.917	ug/l	2762187.15
Ce	140	115	3	He	103.504	ug/l	2967459.37
Hg	201	209	1	No Gas	0.011	ug/l	60.32
Hg	202	209	1	No Gas	0.054	ug/l	516.58
Hg	202	209	3	He	0.049	ug/l	204.29
Tl	203	209	3	He	103.562	ug/l	1007981.12
Tl	205	209	1	No Gas	104.276	ug/l	5155230.62
Tl	205	209	3	He	104.362	ug/l	2423804.40
[Pb]	206	209	1	No Gas	103.598	ug/l	1854953.60
[Pb]	207	209	1	No Gas	104.404	ug/l	1618684.09
Pb	208	209	1	No Gas	103.045	ug/l	7363791.59
Th	232	209	3	He	106.789	ug/l	3471836.57
U	238	209	1	No Gas	102.795	ug/l	7048613.46

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	4105874.29	92.2
Sc	45	2	H2	1958116.41	92.5
Sc	45	3	He	242430.57	94.4
Ge	72	1	No Gas	1287857.15	99.3
Ge	72	2	H2	791160.47	93.5
Ge	72	3	He	190804.67	93.9
In	115	1	No Gas	10294275.63	90.2
In	115	3	He	2304664.79	94.7
Bi	209	1	No Gas	9609668.62	85.4
Bi	209	3	He	4160656.76	90.5

ICPMS208-B Analytical Data

Sample Name	Rinse
File Name	046BLKV.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\211223A_DoD.b
Acq Time	2021-12-23 15:27:46
Sample Type	BlkVrfy
Total Dilution	1.0000
Comment	ICPMS-6020B-W-D
ISTD Ref FileName	003CALB.d
Operator	CAR/SRH/JPV
Method	EPA 200.8/EPA 6020

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	-0.192	ug/l	17563.14
Be	9	45	1	No Gas	0.062	ug/l	232.62
B	11	45	1	No Gas	0.652	ug/l	3710.61
Na	23	45	3	He	3.907	ug/l	26204.07
Mg	24	45	3	He	-21.064	ug/l	2029.46
Al	27	45	1	No Gas	1.518	ug/l	29750.55
Si	28	45	2	H2	2.083	ug/l	5816.14
K	39	72	3	He	-5.546	ug/l	47238.05
Ca	40	72	2	H2	-0.729	ug/l	64921.40
Ti	47	72	1	No Gas	0.015	ug/l	236.91
V	51	72	1	No Gas	0.026	ug/l	-12426.55
V	51	72	3	He	-0.039	ug/l	2703.60
Cr	52	72	1	No Gas	-0.230	ug/l	45386.38
Cr	52	72	3	He	-0.003	ug/l	496.68
Mn	55	72	1	No Gas	0.042	ug/l	9391.05
Mn	55	72	3	He	0.031	ug/l	315.27
Fe	56	72	2	H2	0.290	ug/l	21605.93
Fe	56	72	3	He	0.318	ug/l	7654.72
Co	59	72	1	No Gas	0.016	ug/l	948.15
Ni	60	72	1	No Gas	-0.014	ug/l	788.46
Ni	60	72	3	He	-0.031	ug/l	172.23
Cu	63	72	1	No Gas	0.050	ug/l	2908.80
Cu	63	72	3	He	0.028	ug/l	859.85
Cu	65	72	1	No Gas	0.038	ug/l	1345.94
Zn	66	72	1	No Gas	-0.214	ug/l	1283.51
Zn	66	72	3	He	-0.114	ug/l	327.78
As	75	72	1	No Gas	0.830	ug/l	14985.82
As	75	72	3	He	0.017	ug/l	71.73
Se	78	72	2	H2	0.016	ug/l	29.67
Br	79	72	1	No Gas	0.075	ug/l	7523.70
Br	79	72	2	H2	0.099	ug/l	3809.63
Se	82	72	1	No Gas	-0.517	ug/l	719.80
Kr	84	72	1	No Gas		ug/l	23885.82
Sr	88	72	1	No Gas	-0.060	ug/l	1557.00
Sr	88	72	3	He	-0.036	ug/l	341.12
Mo	95	115	1	No Gas	0.013	ug/l	225.56
Mo	95	115	3	He	0.015	ug/l	94.44
Mo	98	115	1	No Gas	0.010	ug/l	368.89

ICPMS208-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Ag	107	115	1	No Gas	0.001	ug/l	86.70
Ag	109	115	1	No Gas	0.000	ug/l	78.70
Cd	111	115	1	No Gas	-0.001	ug/l	39.38
Cd	111	115	3	He	0.004	ug/l	13.89
Cd	114	115	1	No Gas	0.001	ug/l	72.31
Cd	114	115	3	He	0.004	ug/l	32.20
Sn	118	115	1	No Gas	0.073	ug/l	4245.58
Sn	118	115	3	He	0.053	ug/l	984.49
Sb	121	115	1	No Gas	0.052	ug/l	1942.33
Sb	121	115	3	He	0.054	ug/l	497.39
Sb	123	115	1	No Gas	0.051	ug/l	1617.26
Sb	123	115	3	He	0.050	ug/l	376.38
Te	125	115	3	He	113.994	ug/l	16.68
Ba	135	115	1	No Gas	-0.008	ug/l	392.56
Ba	137	115	1	No Gas	0.001	ug/l	672.02
La	139	115	3	He	0.002	ug/l	115.56
Ce	140	115	3	He	0.000	ug/l	132.22
Hg	201	209	1	No Gas	0.000	ug/l	26.99
Hg	202	209	1	No Gas	0.000	ug/l	127.64
Hg	202	209	3	He	0.001	ug/l	40.99
Tl	203	209	3	He	0.231	ug/l	3682.00
Tl	205	209	1	No Gas	0.184	ug/l	15436.17
Tl	205	209	3	He	0.231	ug/l	8717.70
[Pb]	206	209	1	No Gas	0.018	ug/l	821.14
[Pb]	207	209	1	No Gas	0.015	ug/l	678.91
Pb	208	209	1	No Gas	0.017	ug/l	3174.61
Th	232	209	3	He	0.019	ug/l	968.43
U	238	209	1	No Gas	0.002	ug/l	388.93

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	4484725.93	100.7
Sc	45	2	H2	2121492.51	100.2
Sc	45	3	He	249412.77	97.1
Ge	72	1	No Gas	1311060.44	101.1
Ge	72	2	H2	839014.18	99.1
Ge	72	3	He	199270.20	98.0
In	115	1	No Gas	11375349.65	99.6
In	115	3	He	2420367.53	99.4
Bi	209	1	No Gas	10828487.66	96.2
Bi	209	3	He	4549636.90	99.0

ICPMS208-B Analytical Data

Sample Name	MB-162444
File Name	047SMPL.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\211223A_DoD.b
Acq Time	2021-12-23 15:33:56
Sample Type	Sample
Total Dilution	1.0000
Comment	ICPMS-6020-W-T
ISTD Ref FileName	003CALB.d
Operator	CAR/SRH/JPV
Method	EPA 200.8/EPA 6020

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	0.403	ug/l	18892.60
Be	9	45	1	No Gas	0.055	ug/l	187.96
B	11	45	1	No Gas	0.984	ug/l	3689.94
Na	23	45	3	He	3.792	ug/l	24507.79
Mg	24	45	3	He	-23.102	ug/l	1380.66
Al	27	45	1	No Gas	1.747	ug/l	29392.10
Si	28	45	2	H2	15.773	ug/l	24103.09
K	39	72	3	He	-0.348	ug/l	45196.26
Ca	40	72	2	H2	7.568	ug/l	101820.98
Ti	47	72	1	No Gas	0.249	ug/l	699.06
V	51	72	1	No Gas	-0.724	ug/l	-27268.04
V	51	72	3	He	0.498	ug/l	4394.02
Cr	52	72	1	No Gas	0.809	ug/l	64158.71
Cr	52	72	3	He	0.191	ug/l	1234.50
Mn	55	72	1	No Gas	0.369	ug/l	18328.46
Mn	55	72	3	He	0.043	ug/l	322.60
Fe	56	72	2	H2	0.749	ug/l	25566.32
Fe	56	72	3	He	0.861	ug/l	9005.19
Co	59	72	1	No Gas	0.032	ug/l	1250.91
Ni	60	72	1	No Gas	-0.023	ug/l	678.67
Ni	60	72	3	He	-0.015	ug/l	186.67
Cu	63	72	1	No Gas	0.152	ug/l	4030.85
Cu	63	72	3	He	0.168	ug/l	1437.12
Cu	65	72	1	No Gas	0.155	ug/l	1999.61
Zn	66	72	1	No Gas	0.775	ug/l	5329.40
Zn	66	72	3	He	0.793	ug/l	1098.94
As	75	72	1	No Gas	0.300	ug/l	11118.84
As	75	72	3	He	0.063	ug/l	99.40
Se	78	72	2	H2	0.016	ug/l	27.11
Br	79	72	1	No Gas	0.456	ug/l	11138.89
Br	79	72	2	H2	0.529	ug/l	5909.51
Se	82	72	1	No Gas	-0.230	ug/l	757.81
Kr	84	72	1	No Gas		ug/l	20447.34
Sr	88	72	1	No Gas	-0.052	ug/l	1773.27
Sr	88	72	3	He	-0.026	ug/l	361.12
Mo	95	115	1	No Gas	0.009	ug/l	167.78
Mo	95	115	3	He	0.008	ug/l	64.44
Mo	98	115	1	No Gas	0.006	ug/l	262.23

ICPMS208-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Ag	107	115	1	No Gas	0.000	ug/l	69.36
Ag	109	115	1	No Gas	0.000	ug/l	72.03
Cd	111	115	1	No Gas	-0.001	ug/l	34.30
Cd	111	115	3	He	0.001	ug/l	8.56
Cd	114	115	1	No Gas	-0.003	ug/l	13.02
Cd	114	115	3	He	0.001	ug/l	17.53
Sn	118	115	1	No Gas	0.183	ug/l	5837.75
Sn	118	115	3	He	0.134	ug/l	1346.74
Sb	121	115	1	No Gas	0.030	ug/l	1157.16
Sb	121	115	3	He	0.035	ug/l	339.37
Sb	123	115	1	No Gas	0.028	ug/l	976.13
Sb	123	115	3	He	0.034	ug/l	267.03
Te	125	115	3	He	47.891	ug/l	6.67
Ba	135	115	1	No Gas	0.019	ug/l	502.35
Ba	137	115	1	No Gas	0.017	ug/l	761.85
La	139	115	3	He	0.001	ug/l	68.89
Ce	140	115	3	He	-0.002	ug/l	68.89
Hg	201	209	1	No Gas	0.007	ug/l	45.99
Hg	202	209	1	No Gas	0.011	ug/l	203.29
Hg	202	209	3	He	0.012	ug/l	77.32
Tl	203	209	3	He	0.073	ug/l	1870.22
Tl	205	209	1	No Gas	0.030	ug/l	6373.88
Tl	205	209	3	He	0.072	ug/l	4365.80
[Pb]	206	209	1	No Gas	0.030	ug/l	973.37
[Pb]	207	209	1	No Gas	0.030	ug/l	853.37
Pb	208	209	1	No Gas	0.031	ug/l	3950.26
Th	232	209	3	He	0.047	ug/l	1822.20
U	238	209	1	No Gas	0.000	ug/l	208.96

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	3960974.98	88.9
Sc	45	2	H2	2018859.41	95.4
Sc	45	3	He	233848.05	91.1
Ge	72	1	No Gas	1202616.16	92.7
Ge	72	2	H2	761601.51	90.0
Ge	72	3	He	183891.47	90.5
In	115	1	No Gas	10308184.99	90.3
In	115	3	He	2309503.61	94.9
Bi	209	1	No Gas	9900933.78	87.9
Bi	209	3	He	4254240.31	92.6

ICPMS208-B Analytical Data

Sample Name	LCS4-162444
File Name	048SMPL.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\211223A_DoD.b
Acq Time	2021-12-23 15:40:05
Sample Type	Sample
Total Dilution	1.0000
Comment	ICPMS-6020-W-T
ISTD Ref FileName	003CALB.d
Operator	CAR/SRH/JPV
Method	EPA 200.8/EPA 6020

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	98.855	ug/l	587684.65
Be	9	45	1	No Gas	45.791	ug/l	101959.21
B	11	45	1	No Gas	94.534	ug/l	122169.43
Na	23	45	3	He	5095.204	ug/l	2552967.25
Mg	24	45	3	He	5221.550	ug/l	1411066.31
Al	27	45	1	No Gas	485.183	ug/l	6720780.04
Si	28	45	2	H2	911.749	ug/l	1207257.02
K	39	72	3	He	5206.141	ug/l	1718612.75
Ca	40	72	2	H2	5360.585	ug/l	28948030.76
Ti	47	72	1	No Gas	79.761	ug/l	172837.73
V	51	72	1	No Gas	91.526	ug/l	2013242.06
V	51	72	3	He	99.430	ug/l	371988.00
Cr	52	72	1	No Gas	91.920	ug/l	2138548.74
Cr	52	72	3	He	101.133	ug/l	425727.76
Mn	55	72	1	No Gas	462.617	ug/l	14416187.48
Mn	55	72	3	He	508.850	ug/l	1438386.09
Fe	56	72	2	H2	510.965	ug/l	6912907.87
Fe	56	72	3	He	521.704	ug/l	1968428.15
Co	59	72	1	No Gas	91.338	ug/l	2340083.57
Ni	60	72	1	No Gas	90.130	ug/l	514909.39
Ni	60	72	3	He	99.861	ug/l	177925.56
Cu	63	72	1	No Gas	90.780	ug/l	1276410.47
Cu	63	72	3	He	100.944	ug/l	488037.42
Cu	65	72	1	No Gas	90.320	ug/l	617175.65
Zn	66	72	1	No Gas	84.872	ug/l	376165.02
Zn	66	72	3	He	94.495	ug/l	87637.80
As	75	72	1	No Gas	86.582	ug/l	462019.84
As	75	72	3	He	95.210	ug/l	72103.27
Se	78	72	2	H2	96.293	ug/l	49472.44
Br	79	72	1	No Gas	0.413	ug/l	11188.82
Br	79	72	2	H2	0.571	ug/l	6405.38
Se	82	72	1	No Gas	87.455	ug/l	31963.56
Kr	84	72	1	No Gas		ug/l	51462.75
Sr	88	72	1	No Gas	95.617	ug/l	4575719.98
Sr	88	72	3	He	101.128	ug/l	505498.78
Mo	95	115	1	No Gas	87.928	ug/l	900475.94
Mo	95	115	3	He	86.589	ug/l	337739.78
Mo	98	115	1	No Gas	89.563	ug/l	1498380.87

ICPMS208-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Ag	107	115	1	No Gas	9.589	ug/l	229591.39
Ag	109	115	1	No Gas	9.609	ug/l	222193.63
Cd	111	115	1	No Gas	47.524	ug/l	257674.04
Cd	111	115	3	He	47.383	ug/l	86540.10
Cd	114	115	1	No Gas	47.497	ug/l	578479.85
Cd	114	115	3	He	47.375	ug/l	213626.27
Sn	118	115	1	No Gas	91.049	ug/l	1647534.78
Sn	118	115	3	He	88.808	ug/l	440827.60
Sb	121	115	1	No Gas	88.290	ug/l	2391155.49
Sb	121	115	3	He	86.411	ug/l	606732.62
Sb	123	115	1	No Gas	90.712	ug/l	1887694.26
Sb	123	115	3	He	87.920	ug/l	493229.37
Te	125	115	3	He	335723.166	ug/l	46493.65
Ba	135	115	1	No Gas	91.472	ug/l	484397.31
Ba	137	115	1	No Gas	90.329	ug/l	837629.38
La	139	115	3	He	104.242	ug/l	2710801.62
Ce	140	115	3	He	102.614	ug/l	2933788.84
Hg	201	209	1	No Gas	0.008	ug/l	51.32
Hg	202	209	1	No Gas	0.014	ug/l	222.29
Hg	202	209	3	He	0.013	ug/l	82.65
Tl	203	209	3	He	99.429	ug/l	1008169.02
Tl	205	209	1	No Gas	100.037	ug/l	5024807.94
Tl	205	209	3	He	101.310	ug/l	2450804.95
[Pb]	206	209	1	No Gas	99.805	ug/l	1815607.11
[Pb]	207	209	1	No Gas	100.596	ug/l	1584312.23
Pb	208	209	1	No Gas	99.819	ug/l	7246133.87
Th	232	209	3	He	99.699	ug/l	3376733.07
U	238	209	1	No Gas	98.962	ug/l	6893841.25

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	4027011.57	90.4
Sc	45	2	H2	1964190.71	92.8
Sc	45	3	He	244747.86	95.3
Ge	72	1	No Gas	1261774.08	97.3
Ge	72	2	H2	793489.45	93.7
Ge	72	3	He	193300.73	95.1
In	115	1	No Gas	10262511.75	89.9
In	115	3	He	2297454.18	94.4
Bi	209	1	No Gas	9762070.52	86.7
Bi	209	3	He	4333494.09	94.3

ICPMS208-B Analytical Data

Sample Name	Rinse
File Name	049BLKV.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\211223A_DoD.b
Acq Time	2021-12-23 15:45:57
Sample Type	BlkVrfy
Total Dilution	1.0000
Comment	ICPMS-6020B-W-D
ISTD Ref FileName	003CALB.d
Operator	CAR/SRH/JPV
Method	EPA 200.8/EPA 6020

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	-0.795	ug/l	13139.60
Be	9	45	1	No Gas	0.047	ug/l	186.30
B	11	45	1	No Gas	0.123	ug/l	2846.08
Na	23	45	3	He	-4.629	ug/l	21553.26
Mg	24	45	3	He	-21.955	ug/l	1759.95
Al	27	45	1	No Gas	1.524	ug/l	28645.08
Si	28	45	2	H2	1.084	ug/l	4305.03
K	39	72	3	He	-7.214	ug/l	45508.22
Ca	40	72	2	H2	-1.300	ug/l	59887.15
Ti	47	72	1	No Gas	0.014	ug/l	225.23
V	51	72	1	No Gas	-0.100	ug/l	-14599.15
V	51	72	3	He	-0.059	ug/l	2559.13
Cr	52	72	1	No Gas	-0.264	ug/l	42800.59
Cr	52	72	3	He	-0.016	ug/l	430.01
Mn	55	72	1	No Gas	0.024	ug/l	8462.35
Mn	55	72	3	He	0.027	ug/l	295.28
Fe	56	72	2	H2	0.154	ug/l	19109.98
Fe	56	72	3	He	0.186	ug/l	6960.34
Co	59	72	1	No Gas	0.013	ug/l	818.40
Ni	60	72	1	No Gas	-0.050	ug/l	555.58
Ni	60	72	3	He	-0.034	ug/l	163.34
Cu	63	72	1	No Gas	0.035	ug/l	2585.28
Cu	63	72	3	He	0.024	ug/l	817.53
Cu	65	72	1	No Gas	0.019	ug/l	1163.18
Zn	66	72	1	No Gas	-0.192	ug/l	1323.52
Zn	66	72	3	He	-0.144	ug/l	292.23
As	75	72	1	No Gas	0.552	ug/l	12963.71
As	75	72	3	He	0.019	ug/l	71.13
Se	78	72	2	H2	0.008	ug/l	24.89
Br	79	72	1	No Gas	-0.032	ug/l	5966.10
Br	79	72	2	H2	-0.001	ug/l	3087.56
Se	82	72	1	No Gas	-0.310	ug/l	765.02
Kr	84	72	1	No Gas		ug/l	21883.21
Sr	88	72	1	No Gas	-0.063	ug/l	1354.06
Sr	88	72	3	He	-0.047	ug/l	278.89
Mo	95	115	1	No Gas	0.009	ug/l	178.89
Mo	95	115	3	He	0.009	ug/l	71.11
Mo	98	115	1	No Gas	0.009	ug/l	332.23

ICPMS208-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Ag	107	115	1	No Gas	0.001	ug/l	78.03
Ag	109	115	1	No Gas	0.001	ug/l	86.70
Cd	111	115	1	No Gas	0.000	ug/l	45.30
Cd	111	115	3	He	0.003	ug/l	11.22
Cd	114	115	1	No Gas	0.003	ug/l	85.54
Cd	114	115	3	He	0.003	ug/l	27.20
Sn	118	115	1	No Gas	0.028	ug/l	3260.59
Sn	118	115	3	He	0.008	ug/l	745.58
Sb	121	115	1	No Gas	0.038	ug/l	1495.57
Sb	121	115	3	He	0.033	ug/l	338.37
Sb	123	115	1	No Gas	0.034	ug/l	1176.17
Sb	123	115	3	He	0.036	ug/l	289.03
Te	125	115	3	He	45.304	ug/l	6.67
Ba	135	115	1	No Gas	-0.010	ug/l	372.60
Ba	137	115	1	No Gas	0.003	ug/l	675.35
La	139	115	3	He	0.002	ug/l	103.33
Ce	140	115	3	He	0.000	ug/l	131.11
Hg	201	209	1	No Gas	0.001	ug/l	27.33
Hg	202	209	1	No Gas	0.000	ug/l	122.31
Hg	202	209	3	He	-0.001	ug/l	33.99
Tl	203	209	3	He	0.183	ug/l	3129.63
Tl	205	209	1	No Gas	0.143	ug/l	12893.27
Tl	205	209	3	He	0.184	ug/l	7415.05
[Pb]	206	209	1	No Gas	0.013	ug/l	697.80
[Pb]	207	209	1	No Gas	0.014	ug/l	635.57
Pb	208	209	1	No Gas	0.014	ug/l	2895.70
Th	232	209	3	He	0.016	ug/l	863.71
U	238	209	1	No Gas	0.002	ug/l	342.60

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	4307688.02	96.7
Sc	45	2	H2	2080739.21	98.3
Sc	45	3	He	245679.54	95.7
Ge	72	1	No Gas	1258249.92	97.0
Ge	72	2	H2	814714.74	96.2
Ge	72	3	He	194185.96	95.5
In	115	1	No Gas	11063347.05	96.9
In	115	3	He	2400140.51	98.6
Bi	209	1	No Gas	10558903.27	93.8
Bi	209	3	He	4485222.05	97.6

ICPMS208-B Analytical Data

Sample Name	B21121841-003H
File Name	050SMPL.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\211223A_DoD.b
Acq Time	2021-12-23 15:52:05
Sample Type	Sample
Total Dilution	1.0000
Comment	ICPMS-6020-W-T
ISTD Ref FileName	003CALB.d
Operator	CAR/SRH/JPV
Method	EPA 200.8/EPA 6020

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	1.473	ug/l	24838.81
Be	9	45	1	No Gas	0.039	ug/l	154.30
B	11	45	1	No Gas	97.371	ug/l	123054.60
Na	23	45	3	He	77163.805	ug/l	36008385.30
Mg	24	45	3	He	24095.312	ug/l	6090826.21
Al	27	45	1	No Gas	68.334	ug/l	930790.63
Si	28	45	2	H2	19439.735	ug/l	24713356.61
K	39	72	3	He	2942.749	ug/l	934980.67
Ca	40	72	2	H2	24991.432	ug/l	125483620.03
Ti	47	72	1	No Gas	7.509	ug/l	15414.46
V	51	72	1	No Gas	36.267	ug/l	740536.95
V	51	72	3	He	38.325	ug/l	136717.53
Cr	52	72	1	No Gas	4.816	ug/l	148493.75
Cr	52	72	3	He	4.861	ug/l	19723.32
Mn	55	72	1	No Gas	3.828	ug/l	119011.67
Mn	55	72	3	He	3.751	ug/l	10194.53
Fe	56	72	2	H2	120.518	ug/l	1530359.17
Fe	56	72	3	He	116.179	ug/l	417499.86
Co	59	72	1	No Gas	0.208	ug/l	5456.88
Ni	60	72	1	No Gas	1.786	ug/l	10336.55
Ni	60	72	3	He	1.516	ug/l	2751.39
Cu	63	72	1	No Gas	2.643	ug/l	36754.65
Cu	63	72	3	He	1.697	ug/l	8376.73
Cu	65	72	1	No Gas	1.768	ug/l	12280.08
Zn	66	72	1	No Gas	55.188	ug/l	229991.84
Zn	66	72	3	He	60.730	ug/l	53214.34
As	75	72	1	No Gas	6.231	ug/l	39954.50
As	75	72	3	He	6.894	ug/l	4970.35
Se	78	72	2	H2	0.814	ug/l	408.00
Br	79	72	1	No Gas	7.005	ug/l	82681.56
Br	79	72	2	H2	7.658	ug/l	45167.58
Se	82	72	1	No Gas	1.134	ug/l	1198.66
Kr	84	72	1	No Gas		ug/l	50124.01
Sr	88	72	1	No Gas	102.159	ug/l	4582636.93
Sr	88	72	3	He	107.153	ug/l	505173.76
Mo	95	115	1	No Gas	7.553	ug/l	74405.61
Mo	95	115	3	He	7.483	ug/l	28500.56
Mo	98	115	1	No Gas	7.497	ug/l	120657.01

ICPMS208-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Ag	107	115	1	No Gas	0.079	ug/l	1865.54
Ag	109	115	1	No Gas	0.077	ug/l	1770.16
Cd	111	115	1	No Gas	0.007	ug/l	74.31
Cd	111	115	3	He	0.013	ug/l	29.33
Cd	114	115	1	No Gas	0.003	ug/l	85.47
Cd	114	115	3	He	0.010	ug/l	59.13
Sn	118	115	1	No Gas	1.089	ug/l	21316.12
Sn	118	115	3	He	0.996	ug/l	5476.65
Sb	121	115	1	No Gas	1.176	ug/l	30952.60
Sb	121	115	3	He	1.164	ug/l	8059.78
Sb	123	115	1	No Gas	1.164	ug/l	23656.84
Sb	123	115	3	He	1.178	ug/l	6519.17
Te	125	115	3	He	24.885	ug/l	3.34
Ba	135	115	1	No Gas	3.599	ug/l	18688.84
Ba	137	115	1	No Gas	3.347	ug/l	30389.51
La	139	115	3	He	0.035	ug/l	948.93
Ce	140	115	3	He	0.081	ug/l	2379.11
Hg	201	209	1	No Gas	0.367	ug/l	1186.15
Hg	202	209	1	No Gas	6.883	ug/l	50101.96
Hg	202	209	3	He	5.342	ug/l	17899.40
Tl	203	209	3	He	0.090	ug/l	1948.26
Tl	205	209	1	No Gas	0.023	ug/l	5647.96
Tl	205	209	3	He	0.057	ug/l	3834.77
[Pb]	206	209	1	No Gas	0.323	ug/l	6016.96
[Pb]	207	209	1	No Gas	0.314	ug/l	5091.00
Pb	208	209	1	No Gas	0.314	ug/l	23358.08
Th	232	209	3	He	0.052	ug/l	1918.92
U	238	209	1	No Gas	0.360	ug/l	24168.40

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	3939378.58	88.4
Sc	45	2	H2	1891607.24	89.4
Sc	45	3	He	229870.50	89.5
Ge	72	1	No Gas	1182718.46	91.2
Ge	72	2	H2	739044.95	87.3
Ge	72	3	He	182142.10	89.6
In	115	1	No Gas	9858244.94	86.3
In	115	3	He	2241557.14	92.1
Bi	209	1	No Gas	9338730.80	82.9
Bi	209	3	He	4066949.89	88.5

ICPMS208-B Analytical Data

Sample Name	B21121841-004H
File Name	051SMPL.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\211223A_DoD.b
Acq Time	2021-12-23 15:58:12
Sample Type	Sample
Total Dilution	1.0000
Comment	ICPMS-6020-W-T
ISTD Ref FileName	003CALB.d
Operator	CAR/SRH/JPV
Method	EPA 200.8/EPA 6020

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	-0.491	ug/l	14099.51
Be	9	45	1	No Gas	0.029	ug/l	135.31
B	11	45	1	No Gas	40.965	ug/l	54584.68
Na	23	45	3	He	40129.085	ug/l	19025868.47
Mg	24	45	3	He	18488.438	ug/l	4747272.14
Al	27	45	1	No Gas	2.116	ug/l	35118.92
Si	28	45	2	H2	17138.428	ug/l	22902341.57
K	39	72	3	He	1361.585	ug/l	459983.07
Ca	40	72	2	H2	18919.649	ug/l	97449781.35
Ti	47	72	1	No Gas	2.704	ug/l	5818.69
V	51	72	1	No Gas	0.814	ug/l	5300.71
V	51	72	3	He	1.269	ug/l	7100.65
Cr	52	72	1	No Gas	0.576	ug/l	59681.89
Cr	52	72	3	He	0.317	ug/l	1732.33
Mn	55	72	1	No Gas	355.124	ug/l	10650532.44
Mn	55	72	3	He	374.710	ug/l	1005138.37
Fe	56	72	2	H2	150.873	ug/l	1961526.73
Fe	56	72	3	He	143.790	ug/l	519032.31
Co	59	72	1	No Gas	0.222	ug/l	5936.11
Ni	60	72	1	No Gas	0.759	ug/l	4977.65
Ni	60	72	3	He	0.594	ug/l	1213.39
Cu	63	72	1	No Gas	0.918	ug/l	14418.22
Cu	63	72	3	He	0.329	ug/l	2171.06
Cu	65	72	1	No Gas	0.470	ug/l	4083.55
Zn	66	72	1	No Gas	30.951	ug/l	133326.42
Zn	66	72	3	He	35.103	ug/l	31145.39
As	75	72	1	No Gas	0.711	ug/l	13292.31
As	75	72	3	He	0.208	ug/l	203.20
Se	78	72	2	H2	0.021	ug/l	29.22
Br	79	72	1	No Gas	3.750	ug/l	48270.99
Br	79	72	2	H2	4.081	ug/l	26041.86
Se	82	72	1	No Gas	-0.133	ug/l	797.82
Kr	84	72	1	No Gas		ug/l	63977.71
Sr	88	72	1	No Gas	146.708	ug/l	6753183.34
Sr	88	72	3	He	155.040	ug/l	735898.02
Mo	95	115	1	No Gas	6.203	ug/l	63347.16
Mo	95	115	3	He	6.213	ug/l	24137.06
Mo	98	115	1	No Gas	6.192	ug/l	103316.45

ICPMS208-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Ag	107	115	1	No Gas	0.002	ug/l	111.38
Ag	109	115	1	No Gas	0.001	ug/l	93.37
Cd	111	115	1	No Gas	-0.001	ug/l	34.07
Cd	111	115	3	He	0.006	ug/l	16.11
Cd	114	115	1	No Gas	0.000	ug/l	48.47
Cd	114	115	3	He	0.003	ug/l	28.81
Sn	118	115	1	No Gas	0.167	ug/l	5517.37
Sn	118	115	3	He	0.133	ug/l	1327.86
Sb	121	115	1	No Gas	0.033	ug/l	1225.51
Sb	121	115	3	He	0.034	ug/l	325.04
Sb	123	115	1	No Gas	0.034	ug/l	1101.82
Sb	123	115	3	He	0.039	ug/l	290.70
Te	125	115	3	He	24.480	ug/l	3.34
Ba	135	115	1	No Gas	2.344	ug/l	12750.55
Ba	137	115	1	No Gas	2.370	ug/l	22473.58
La	139	115	3	He	0.000	ug/l	56.67
Ce	140	115	3	He	0.002	ug/l	167.78
Hg	201	209	1	No Gas	0.014	ug/l	67.65
Hg	202	209	1	No Gas	0.130	ug/l	1087.50
Hg	202	209	3	He	0.112	ug/l	427.25
Tl	203	209	3	He	0.015	ug/l	1290.58
Tl	205	209	1	No Gas	-0.006	ug/l	4389.69
Tl	205	209	3	He	0.018	ug/l	3092.27
[Pb]	206	209	1	No Gas	0.019	ug/l	747.81
[Pb]	207	209	1	No Gas	0.021	ug/l	687.80
Pb	208	209	1	No Gas	0.020	ug/l	3089.06
Th	232	209	3	He	0.024	ug/l	1070.48
U	238	209	1	No Gas	0.006	ug/l	612.56

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	4043324.03	90.8
Sc	45	2	H2	1987262.07	93.9
Sc	45	3	He	233414.02	90.9
Ge	72	1	No Gas	1214107.06	93.6
Ge	72	2	H2	758112.40	89.6
Ge	72	3	He	183449.52	90.2
In	115	1	No Gas	10217660.24	89.5
In	115	3	He	2285524.58	93.9
Bi	209	1	No Gas	9653371.97	85.7
Bi	209	3	He	4255620.88	92.6

ICPMS208-B Analytical Data

Sample Name	B21121841-001H
File Name	052SMPL.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\211223A_DoD.b
Acq Time	2021-12-23 16:04:19
Sample Type	Sample
Total Dilution	1.0000
Comment	ICPMS-6020-W-T
ISTD Ref FileName	003CALB.d
Operator	CAR/SRH/JPV
Method	EPA 200.8/EPA 6020

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	0.468	ug/l	19607.77
Be	9	45	1	No Gas	0.025	ug/l	124.64
B	11	45	1	No Gas	51.768	ug/l	68143.91
Na	23	45	3	He	38115.561	ug/l	17929673.76
Mg	24	45	3	He	11842.276	ug/l	3019168.87
Al	27	45	1	No Gas	223.087	ug/l	3097935.72
Si	28	45	2	H2	20047.765	ug/l	26677384.84
K	39	72	3	He	2451.820	ug/l	787168.89
Ca	40	72	2	H2	13684.321	ug/l	70313355.88
Ti	47	72	1	No Gas	13.840	ug/l	29121.20
V	51	72	1	No Gas	14.776	ug/l	303807.49
V	51	72	3	He	17.652	ug/l	64430.97
Cr	52	72	1	No Gas	12.476	ug/l	321189.57
Cr	52	72	3	He	13.085	ug/l	52353.60
Mn	55	72	1	No Gas	8.965	ug/l	277145.17
Mn	55	72	3	He	9.178	ug/l	24666.95
Fe	56	72	2	H2	775.809	ug/l	9990660.51
Fe	56	72	3	He	784.324	ug/l	2787191.16
Co	59	72	1	No Gas	0.332	ug/l	8702.03
Ni	60	72	1	No Gas	4.578	ug/l	26031.50
Ni	60	72	3	He	4.947	ug/l	8509.18
Cu	63	72	1	No Gas	21.837	ug/l	298096.01
Cu	63	72	3	He	23.657	ug/l	108362.16
Cu	65	72	1	No Gas	21.294	ug/l	141308.52
Zn	66	72	1	No Gas	546.232	ug/l	2326863.63
Zn	66	72	3	He	631.372	ug/l	549921.39
As	75	72	1	No Gas	-0.411	ug/l	7683.45
As	75	72	3	He	0.313	ug/l	276.60
Se	78	72	2	H2	0.203	ug/l	118.56
Br	79	72	1	No Gas	5.158	ug/l	64344.88
Br	79	72	2	H2	5.766	ug/l	35496.63
Se	82	72	1	No Gas	-0.099	ug/l	812.88
Kr	84	72	1	No Gas		ug/l	40726.49
Sr	88	72	1	No Gas	81.316	ug/l	3759249.83
Sr	88	72	3	He	85.664	ug/l	404285.61
Mo	95	115	1	No Gas	1.067	ug/l	10982.04
Mo	95	115	3	He	1.126	ug/l	4331.79
Mo	98	115	1	No Gas	1.098	ug/l	18494.40

ICPMS208-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Ag	107	115	1	No Gas	0.496	ug/l	11903.77
Ag	109	115	1	No Gas	0.497	ug/l	11532.65
Cd	111	115	1	No Gas	0.021	ug/l	151.79
Cd	111	115	3	He	0.015	ug/l	33.33
Cd	114	115	1	No Gas	-0.003	ug/l	17.66
Cd	114	115	3	He	0.011	ug/l	61.42
Sn	118	115	1	No Gas	2.205	ug/l	42295.93
Sn	118	115	3	He	2.160	ug/l	11141.14
Sb	121	115	1	No Gas	3.485	ug/l	94611.60
Sb	121	115	3	He	3.569	ug/l	24624.23
Sb	123	115	1	No Gas	3.479	ug/l	72675.14
Sb	123	115	3	He	3.547	ug/l	19560.52
Te	125	115	3	He	0.000	ug/l	0.00
Ba	135	115	1	No Gas	26.928	ug/l	142704.20
Ba	137	115	1	No Gas	26.826	ug/l	248872.29
La	139	115	3	He	0.102	ug/l	2649.16
Ce	140	115	3	He	0.229	ug/l	6517.13
Hg	201	209	1	No Gas	0.011	ug/l	59.66
Hg	202	209	1	No Gas	0.039	ug/l	408.93
Hg	202	209	3	He	0.037	ug/l	167.64
Tl	203	209	3	He	0.003	ug/l	1178.53
Tl	205	209	1	No Gas	-0.014	ug/l	4059.56
Tl	205	209	3	He	0.005	ug/l	2794.75
[Pb]	206	209	1	No Gas	2.538	ug/l	46334.58
[Pb]	207	209	1	No Gas	2.428	ug/l	38421.88
Pb	208	209	1	No Gas	2.466	ug/l	179703.64
Th	232	209	3	He	0.037	ug/l	1500.69
U	238	209	1	No Gas	0.025	ug/l	1943.09

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	4032685.67	90.5
Sc	45	2	H2	1979914.99	93.5
Sc	45	3	He	231573.37	90.2
Ge	72	1	No Gas	1218672.80	93.9
Ge	72	2	H2	755999.84	89.3
Ge	72	3	He	182289.30	89.7
In	115	1	No Gas	10243690.31	89.7
In	115	3	He	2249707.00	92.4
Bi	209	1	No Gas	9711547.28	86.3
Bi	209	3	He	4285506.83	93.2

ICPMS208-B Analytical Data

Sample Name	CCV
File Name	053_CCV.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\211223A_DoD.b
Acq Time	2021-12-23 16:10:24
Sample Type	CCV
Total Dilution	1.0000
Comment	ICPMS-6020B-W-D
ISTD Ref FileName	003CALB.d
Operator	CAR/SRH/JPV
Method	EPA 200.8/EPA 6020

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	635.686	ug/l	4024761.86
Be	9	45	1	No Gas	46.351	ug/l	112638.66
B	11	45	1	No Gas	46.725	ug/l	67283.83
Na	23	45	3	He	12884.303	ug/l	6644277.96
Mg	24	45	3	He	12997.637	ug/l	3623467.53
Al	27	45	1	No Gas	47.602	ug/l	725107.61
Si	28	45	2	H2	216.571	ug/l	305047.05
K	39	72	3	He	12830.704	ug/l	4353276.25
Ca	40	72	2	H2	13068.947	ug/l	75186434.62
Ti	47	72	1	No Gas	43.710	ug/l	96169.57
V	51	72	1	No Gas	47.857	ug/l	1061814.87
V	51	72	3	He	48.590	ug/l	191428.57
Cr	52	72	1	No Gas	48.530	ug/l	1168821.07
Cr	52	72	3	He	48.688	ug/l	214415.82
Mn	55	72	1	No Gas	49.076	ug/l	1558547.45
Mn	55	72	3	He	48.387	ug/l	143100.72
Fe	56	72	2	H2	1306.804	ug/l	18838790.63
Fe	56	72	3	He	1294.560	ug/l	5092544.45
Co	59	72	1	No Gas	48.663	ug/l	1264955.40
Ni	60	72	1	No Gas	48.473	ug/l	281321.70
Ni	60	72	3	He	48.703	ug/l	90749.98
Cu	63	72	1	No Gas	48.580	ug/l	693922.79
Cu	63	72	3	He	48.717	ug/l	246460.10
Cu	65	72	1	No Gas	48.328	ug/l	335525.41
Zn	66	72	1	No Gas	47.326	ug/l	213758.53
Zn	66	72	3	He	48.495	ug/l	47207.09
As	75	72	1	No Gas	46.938	ug/l	258835.98
As	75	72	3	He	48.003	ug/l	38023.74
Se	78	72	2	H2	48.401	ug/l	26551.54
Br	79	72	1	No Gas	0.266	ug/l	9604.20
Br	79	72	2	H2	0.281	ug/l	4994.32
Se	82	72	1	No Gas	47.233	ug/l	17927.61
Kr	84	72	1	No Gas		ug/l	36086.87
Sr	88	72	1	No Gas	49.325	ug/l	2397185.74
Sr	88	72	3	He	48.200	ug/l	252249.52
Mo	95	115	1	No Gas	43.741	ug/l	482196.29
Mo	95	115	3	He	43.268	ug/l	173498.32
Mo	98	115	1	No Gas	43.570	ug/l	784474.14

ICPMS208-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Ag	107	115	1	No Gas	19.341	ug/l	498525.64
Ag	109	115	1	No Gas	19.301	ug/l	480413.33
Cd	111	115	1	No Gas	47.390	ug/l	276648.81
Cd	111	115	3	He	47.857	ug/l	89834.40
Cd	114	115	1	No Gas	47.665	ug/l	624976.82
Cd	114	115	3	He	47.824	ug/l	221637.87
Sn	118	115	1	No Gas	44.567	ug/l	869453.03
Sn	118	115	3	He	43.265	ug/l	221118.71
Sb	121	115	1	No Gas	43.649	ug/l	1272746.90
Sb	121	115	3	He	43.603	ug/l	314782.82
Sb	123	115	1	No Gas	43.555	ug/l	975652.92
Sb	123	115	3	He	43.120	ug/l	248748.99
Te	125	115	3	He	23.672	ug/l	3.34
Ba	135	115	1	No Gas	48.530	ug/l	276805.23
Ba	137	115	1	No Gas	48.419	ug/l	483529.99
La	139	115	3	He	48.721	ug/l	1302696.50
Ce	140	115	3	He	49.212	ug/l	1446633.73
Hg	201	209	1	No Gas	0.956	ug/l	3459.76
Hg	202	209	1	No Gas	0.945	ug/l	7904.43
Hg	202	209	3	He	0.965	ug/l	3518.76
Tl	203	209	3	He	48.084	ug/l	493811.52
Tl	205	209	1	No Gas	48.864	ug/l	2664171.04
Tl	205	209	3	He	47.911	ug/l	1173968.20
[Pb]	206	209	1	No Gas	47.400	ug/l	935185.84
[Pb]	207	209	1	No Gas	47.531	ug/l	812141.22
Pb	208	209	1	No Gas	47.663	ug/l	3753402.30
Th	232	209	3	He	48.466	ug/l	1660657.28
U	238	209	1	No Gas	48.849	ug/l	3689316.60

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	4394495.81	98.7
Sc	45	2	H2	2075589.42	98.1
Sc	45	3	He	253269.99	98.6
Ge	72	1	No Gas	1280255.07	98.7
Ge	72	2	H2	846786.94	100.0
Ge	72	3	He	201965.46	99.3
In	115	1	No Gas	11042453.39	96.7
In	115	3	He	2361775.40	97.0
Bi	209	1	No Gas	10581377.03	94.0
Bi	209	3	He	4384543.08	95.4

ICPMS208-B Analytical Data

Sample Name	CCB
File Name	054_CCB.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\211223A_DoD.b
Acq Time	2021-12-23 16:16:26
Sample Type	CCB
Total Dilution	1.0000
Comment	ICPMS-6020B-W-D
ISTD Ref FileName	003CALB.d
Operator	CAR/SRH/JPV
Method	EPA 200.8/EPA 6020

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	-0.596	ug/l	14354.52
Be	9	45	1	No Gas	0.038	ug/l	164.30
B	11	45	1	No Gas	-0.086	ug/l	2561.25
Na	23	45	3	He	-1.111	ug/l	23133.35
Mg	24	45	3	He	-21.855	ug/l	1773.26
Al	27	45	1	No Gas	0.010	ug/l	6240.22
Si	28	45	2	H2	17.251	ug/l	27177.67
K	39	72	3	He	-4.580	ug/l	46097.89
Ca	40	72	2	H2	-1.686	ug/l	57474.99
Ti	47	72	1	No Gas	-0.008	ug/l	176.84
V	51	72	1	No Gas	-0.044	ug/l	-13408.77
V	51	72	3	He	0.044	ug/l	2926.98
Cr	52	72	1	No Gas	-0.192	ug/l	44475.30
Cr	52	72	3	He	-0.014	ug/l	435.56
Mn	55	72	1	No Gas	0.012	ug/l	8082.87
Mn	55	72	3	He	0.029	ug/l	299.94
Fe	56	72	2	H2	0.086	ug/l	18074.38
Fe	56	72	3	He	0.103	ug/l	6611.49
Co	59	72	1	No Gas	0.001	ug/l	525.64
Ni	60	72	1	No Gas	-0.019	ug/l	731.90
Ni	60	72	3	He	-0.023	ug/l	182.23
Cu	63	72	1	No Gas	0.023	ug/l	2415.18
Cu	63	72	3	He	0.020	ug/l	794.20
Cu	65	72	1	No Gas	0.020	ug/l	1170.52
Zn	66	72	1	No Gas	-0.127	ug/l	1616.16
Zn	66	72	3	He	-0.089	ug/l	341.12
As	75	72	1	No Gas	-0.064	ug/l	9732.77
As	75	72	3	He	0.002	ug/l	57.80
Se	78	72	2	H2	0.007	ug/l	24.11
Br	79	72	1	No Gas	0.055	ug/l	6994.51
Br	79	72	2	H2	0.105	ug/l	3719.77
Se	82	72	1	No Gas	-0.702	ug/l	625.01
Kr	84	72	1	No Gas		ug/l	19851.02
Sr	88	72	1	No Gas	-0.066	ug/l	1217.64
Sr	88	72	3	He	-0.044	ug/l	291.12
Mo	95	115	1	No Gas	0.010	ug/l	191.11
Mo	95	115	3	He	0.014	ug/l	87.78
Mo	98	115	1	No Gas	0.010	ug/l	348.89

ICPMS208-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Ag	107	115	1	No Gas	0.000	ug/l	72.70
Ag	109	115	1	No Gas	-0.001	ug/l	58.69
Cd	111	115	1	No Gas	0.000	ug/l	42.11
Cd	111	115	3	He	0.003	ug/l	11.56
Cd	114	115	1	No Gas	0.001	ug/l	71.18
Cd	114	115	3	He	0.002	ug/l	24.93
Sn	118	115	1	No Gas	0.039	ug/l	3510.16
Sn	118	115	3	He	0.009	ug/l	743.36
Sb	121	115	1	No Gas	0.031	ug/l	1281.86
Sb	121	115	3	He	0.030	ug/l	312.70
Sb	123	115	1	No Gas	0.026	ug/l	1025.14
Sb	123	115	3	He	0.027	ug/l	232.03
Te	125	115	3	He	0.000	ug/l	0.00
Ba	135	115	1	No Gas	-0.010	ug/l	372.60
Ba	137	115	1	No Gas	-0.001	ug/l	635.42
La	139	115	3	He	0.001	ug/l	80.00
Ce	140	115	3	He	0.000	ug/l	131.11
Hg	201	209	1	No Gas	0.001	ug/l	29.99
Hg	202	209	1	No Gas	0.000	ug/l	124.64
Hg	202	209	3	He	0.001	ug/l	43.32
Tl	203	209	3	He	0.083	ug/l	2095.68
Tl	205	209	1	No Gas	0.054	ug/l	8151.54
Tl	205	209	3	He	0.086	ug/l	4988.27
[Pb]	206	209	1	No Gas	0.006	ug/l	565.57
[Pb]	207	209	1	No Gas	0.007	ug/l	524.46
Pb	208	209	1	No Gas	0.007	ug/l	2342.32
Th	232	209	3	He	0.013	ug/l	759.66
U	238	209	1	No Gas	0.000	ug/l	249.95

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	4301706.80	96.6
Sc	45	2	H2	2099646.93	99.2
Sc	45	3	He	243873.18	95.0
Ge	72	1	No Gas	1259603.69	97.1
Ge	72	2	H2	810812.40	95.8
Ge	72	3	He	193076.71	95.0
In	115	1	No Gas	11161152.33	97.7
In	115	3	He	2375699.41	97.6
Bi	209	1	No Gas	10699990.34	95.0
Bi	209	3	He	4520568.49	98.4

ICPMS208-B Analytical Data

Sample Name	B21121841-001HDIL
File Name	055SMPL.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\211223A_DoD.b
Acq Time	2021-12-23 16:22:35
Sample Type	Sample
Total Dilution	5.0000
Comment	ICPMS-6020-W-T
ISTD Ref FileName	003CALB.d
Operator	CAR/SRH/JPV
Method	EPA 200.8/EPA 6020

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	-3.174	ug/l	13668.29
Be	9	45	1	No Gas	0.119	ug/l	127.31
B	11	45	1	No Gas	50.274	ug/l	15760.48
Na	23	45	3	He	39242.480	ug/l	3767524.39
Mg	24	45	3	He	12086.287	ug/l	631744.20
Al	27	45	1	No Gas	224.891	ug/l	649807.29
Si	28	45	2	H2	20387.219	ug/l	5680967.21
K	39	72	3	He	2472.500	ug/l	200232.02
Ca	40	72	2	H2	14004.216	ug/l	15159781.12
Ti	47	72	1	No Gas	14.002	ug/l	6174.18
V	51	72	1	No Gas	16.970	ug/l	61901.87
V	51	72	3	He	17.815	ug/l	15524.87
Cr	52	72	1	No Gas	11.772	ug/l	101090.51
Cr	52	72	3	He	13.169	ug/l	11225.43
Mn	55	72	1	No Gas	9.323	ug/l	64933.73
Mn	55	72	3	He	9.252	ug/l	5285.90
Fe	56	72	2	H2	798.412	ug/l	2172467.60
Fe	56	72	3	He	765.128	ug/l	564358.28
Co	59	72	1	No Gas	0.332	ug/l	2165.87
Ni	60	72	1	No Gas	4.493	ug/l	5889.55
Ni	60	72	3	He	4.775	ug/l	1864.58
Cu	63	72	1	No Gas	23.064	ug/l	65977.34
Cu	63	72	3	He	24.656	ug/l	23776.47
Cu	65	72	1	No Gas	22.575	ug/l	31422.20
Zn	66	72	1	No Gas	595.087	ug/l	519757.98
Zn	66	72	3	He	649.567	ug/l	116751.46
As	75	72	1	No Gas	-0.251	ug/l	9712.99
As	75	72	3	He	0.351	ug/l	106.33
Se	78	72	2	H2	0.210	ug/l	41.55
Br	79	72	1	No Gas	4.701	ug/l	17116.20
Br	79	72	2	H2	4.873	ug/l	8808.59
Se	82	72	1	No Gas	-4.265	ug/l	566.87
Kr	84	72	1	No Gas		ug/l	23655.88
Sr	88	72	1	No Gas	82.873	ug/l	786292.64
Sr	88	72	3	He	84.044	ug/l	82019.01
Mo	95	115	1	No Gas	1.098	ug/l	2441.34
Mo	95	115	3	He	1.095	ug/l	901.14
Mo	98	115	1	No Gas	1.095	ug/l	4023.44

ICPMS208-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Ag	107	115	1	No Gas	0.498	ug/l	2568.61
Ag	109	115	1	No Gas	0.479	ug/l	2402.50
Cd	111	115	1	No Gas	0.018	ug/l	62.45
Cd	111	115	3	He	0.028	ug/l	16.33
Cd	114	115	1	No Gas	0.000	ug/l	51.19
Cd	114	115	3	He	0.022	ug/l	34.26
Sn	118	115	1	No Gas	1.991	ug/l	10216.81
Sn	118	115	3	He	1.885	ug/l	2586.92
Sb	121	115	1	No Gas	3.421	ug/l	19859.60
Sb	121	115	3	He	3.533	ug/l	5140.79
Sb	123	115	1	No Gas	3.425	ug/l	15406.62
Sb	123	115	3	He	3.480	ug/l	4050.00
Te	125	115	3	He	0.000	ug/l	0.00
Ba	135	115	1	No Gas	26.198	ug/l	29586.12
Ba	137	115	1	No Gas	25.905	ug/l	51145.34
La	139	115	3	He	0.103	ug/l	600.02
Ce	140	115	3	He	0.205	ug/l	1317.85
Hg	201	209	1	No Gas	-0.003	ug/l	23.00
Hg	202	209	1	No Gas	0.023	ug/l	159.64
Hg	202	209	3	He	0.032	ug/l	59.99
Tl	203	209	3	He	-0.066	ug/l	1048.46
Tl	205	209	1	No Gas	-0.126	ug/l	3715.01
Tl	205	209	3	He	-0.044	ug/l	2539.27
[Pb]	206	209	1	No Gas	2.517	ug/l	10189.49
[Pb]	207	209	1	No Gas	2.396	ug/l	8432.71
Pb	208	209	1	No Gas	2.437	ug/l	39412.93
Th	232	209	3	He	0.066	ug/l	739.65
U	238	209	1	No Gas	0.020	ug/l	514.91

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	4165552.18	93.5
Sc	45	2	H2	2072206.46	97.9
Sc	45	3	He	235174.52	91.6
Ge	72	1	No Gas	1245305.91	96.0
Ge	72	2	H2	793810.82	93.8
Ge	72	3	He	187556.78	92.3
In	115	1	No Gas	10790711.72	94.5
In	115	3	He	2337622.40	96.0
Bi	209	1	No Gas	10395015.33	92.3
Bi	209	3	He	4401032.43	95.8

ICPMS208-B Analytical Data

Sample Name	B21121841-001HPDS1
File Name	056SMPL.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\211223A_DoD.b
Acq Time	2021-12-23 16:28:43
Sample Type	Sample
Total Dilution	1.0300
Comment	ICPMS-6020-W-T
ISTD Ref FileName	003CALB.d
Operator	CAR/SRH/JPV
Method	EPA 200.8/EPA 6020

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	2266.295	ug/l	12157236.78
Be	9	45	1	No Gas	43.855	ug/l	90628.06
B	11	45	1	No Gas	99.137	ug/l	118857.20
Na	23	45	3	He	85140.170	ug/l	37913934.16
Mg	24	45	3	He	60558.285	ug/l	14598547.87
Al	27	45	1	No Gas	266.766	ug/l	3431511.82
Si	28	45	2	H2	20371.965	ug/l	23672495.45
K	39	72	3	He	51626.739	ug/l	15002799.50
Ca	40	72	2	H2	62479.959	ug/l	300669015.09
Ti	47	72	1	No Gas	57.577	ug/l	116750.46
V	51	72	1	No Gas	55.648	ug/l	1140417.00
V	51	72	3	He	66.593	ug/l	225788.79
Cr	52	72	1	No Gas	56.100	ug/l	1239751.93
Cr	52	72	3	He	61.905	ug/l	235411.52
Mn	55	72	1	No Gas	52.248	ug/l	1529005.08
Mn	55	72	3	He	57.753	ug/l	147518.19
Fe	56	72	2	H2	5677.845	ug/l	68463417.67
Fe	56	72	3	He	5716.804	ug/l	19408632.74
Co	59	72	1	No Gas	44.437	ug/l	1064890.38
Ni	60	72	1	No Gas	47.823	ug/l	255838.84
Ni	60	72	3	He	52.562	ug/l	84599.14
Cu	63	72	1	No Gas	64.724	ug/l	851668.85
Cu	63	72	3	He	71.411	ug/l	311823.91
Cu	65	72	1	No Gas	64.307	ug/l	411261.27
Zn	66	72	1	No Gas	560.100	ug/l	2310782.47
Zn	66	72	3	He	663.590	ug/l	553198.70
As	75	72	1	No Gas	43.969	ug/l	224354.67
As	75	72	3	He	48.994	ug/l	33527.03
Se	78	72	2	H2	48.882	ug/l	22442.07
Br	79	72	1	No Gas	5.703	ug/l	68430.10
Br	79	72	2	H2	5.812	ug/l	33596.04
Se	82	72	1	No Gas	44.291	ug/l	15566.99
Kr	84	72	1	No Gas		ug/l	55446.03
Sr	88	72	1	No Gas	124.516	ug/l	5571343.97
Sr	88	72	3	He	135.445	ug/l	611551.88
Mo	95	115	1	No Gas	47.879	ug/l	434411.10
Mo	95	115	3	He	45.153	ug/l	160141.35
Mo	98	115	1	No Gas	47.669	ug/l	706441.59

ICPMS208-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Ag	107	115	1	No Gas	20.628	ug/l	437614.56
Ag	109	115	1	No Gas	20.552	ug/l	420961.70
Cd	111	115	1	No Gas	49.273	ug/l	236741.52
Cd	111	115	3	He	47.373	ug/l	78656.47
Cd	114	115	1	No Gas	48.753	ug/l	526240.31
Cd	114	115	3	He	47.178	ug/l	193389.57
Sn	118	115	1	No Gas	48.185	ug/l	773829.96
Sn	118	115	3	He	46.350	ug/l	209506.51
Sb	121	115	1	No Gas	46.975	ug/l	1127841.26
Sb	121	115	3	He	46.349	ug/l	295941.30
Sb	123	115	1	No Gas	46.984	ug/l	866654.02
Sb	123	115	3	He	46.159	ug/l	235521.57
Te	125	115	3	He	105.501	ug/l	13.35
Ba	135	115	1	No Gas	77.846	ug/l	365406.44
Ba	137	115	1	No Gas	77.483	ug/l	636917.72
La	139	115	3	He	48.863	ug/l	1155622.79
Ce	140	115	3	He	48.585	ug/l	1263365.10
Hg	201	209	1	No Gas	0.964	ug/l	2857.74
Hg	202	209	1	No Gas	1.000	ug/l	6851.39
Hg	202	209	3	He	0.989	ug/l	3157.75
Tl	203	209	3	He	49.656	ug/l	446763.44
Tl	205	209	1	No Gas	50.181	ug/l	2242271.05
Tl	205	209	3	He	49.629	ug/l	1065274.20
[Pb]	206	209	1	No Gas	51.026	ug/l	824941.07
[Pb]	207	209	1	No Gas	51.236	ug/l	717283.67
Pb	208	209	1	No Gas	51.509	ug/l	3323698.50
Th	232	209	3	He	52.053	ug/l	1562334.56
U	238	209	1	No Gas	50.718	ug/l	3139874.01

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	3849679.31	86.4
Sc	45	2	H2	1779752.50	84.1
Sc	45	3	He	225955.77	88.0
Ge	72	1	No Gas	1215595.87	93.7
Ge	72	2	H2	730009.98	86.2
Ge	72	3	He	179708.94	88.4
In	115	1	No Gas	9360590.73	82.0
In	115	3	He	2151659.43	88.4
Bi	209	1	No Gas	8937313.04	79.4
Bi	209	3	He	3956051.80	86.1

ICPMS208-B Analytical Data

Sample Name	B21121841-001HMS4
File Name	057SMPL.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\211223A_DoD.b
Acq Time	2021-12-23 16:34:43
Sample Type	Sample
Total Dilution	1.0000
Comment	ICPMS-6020-W-T
ISTD Ref FileName	003CALB.d
Operator	CAR/SRH/JPV
Method	EPA 200.8/EPA 6020

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	99.243	ug/l	602065.19
Be	9	45	1	No Gas	45.411	ug/l	103199.00
B	11	45	1	No Gas	145.085	ug/l	189980.02
Na	23	45	3	He	42066.375	ug/l	20748686.77
Mg	24	45	3	He	16594.058	ug/l	4433257.92
Al	27	45	1	No Gas	677.133	ug/l	9567916.60
Si	28	45	2	H2	13555.968	ug/l	18309810.67
K	39	72	3	He	7756.567	ug/l	2531844.41
Ca	40	72	2	H2	18494.537	ug/l	100093962.10
Ti	47	72	1	No Gas	91.551	ug/l	200235.15
V	51	72	1	No Gas	107.361	ug/l	2386486.15
V	51	72	3	He	117.225	ug/l	437235.82
Cr	52	72	1	No Gas	101.218	ug/l	2372302.70
Cr	52	72	3	He	111.862	ug/l	469980.88
Mn	55	72	1	No Gas	462.075	ug/l	14536239.87
Mn	55	72	3	He	521.653	ug/l	1471501.54
Fe	56	72	2	H2	1157.313	ug/l	15699792.26
Fe	56	72	3	He	1164.502	ug/l	4376176.02
Co	59	72	1	No Gas	90.941	ug/l	2351951.89
Ni	60	72	1	No Gas	93.940	ug/l	541690.60
Ni	60	72	3	He	104.560	ug/l	185860.77
Cu	63	72	1	No Gas	104.907	ug/l	1488532.12
Cu	63	72	3	He	113.978	ug/l	549929.59
Cu	65	72	1	No Gas	102.689	ug/l	708172.92
Zn	66	72	1	No Gas	596.192	ug/l	2653936.39
Zn	66	72	3	He	709.859	ug/l	654202.09
As	75	72	1	No Gas	88.123	ug/l	474531.68
As	75	72	3	He	98.938	ug/l	74780.07
Se	78	72	2	H2	98.409	ug/l	50770.13
Br	79	72	1	No Gas	4.479	ug/l	59256.82
Br	79	72	2	H2	4.849	ug/l	31931.89
Se	82	72	1	No Gas	88.612	ug/l	32680.08
Kr	84	72	1	No Gas		ug/l	72303.62
Sr	88	72	1	No Gas	171.568	ug/l	8284684.59
Sr	88	72	3	He	187.024	ug/l	932836.87
Mo	95	115	1	No Gas	90.287	ug/l	924908.12
Mo	95	115	3	He	92.079	ug/l	347372.22
Mo	98	115	1	No Gas	91.728	ug/l	1534673.94

ICPMS208-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Ag	107	115	1	No Gas	9.801	ug/l	234791.13
Ag	109	115	1	No Gas	9.795	ug/l	226567.45
Cd	111	115	1	No Gas	48.394	ug/l	262482.03
Cd	111	115	3	He	49.552	ug/l	87530.39
Cd	114	115	1	No Gas	48.475	ug/l	590625.89
Cd	114	115	3	He	49.021	ug/l	213817.82
Sn	118	115	1	No Gas	93.006	ug/l	1683777.45
Sn	118	115	3	He	93.304	ug/l	447993.70
Sb	121	115	1	No Gas	92.245	ug/l	2499769.46
Sb	121	115	3	He	92.840	ug/l	630749.13
Sb	123	115	1	No Gas	93.442	ug/l	1945345.98
Sb	123	115	3	He	93.691	ug/l	508569.69
Te	125	115	3	He	345472.894	ug/l	46299.30
Ba	135	115	1	No Gas	120.120	ug/l	636340.17
Ba	137	115	1	No Gas	119.916	ug/l	1112322.12
La	139	115	3	He	106.800	ug/l	2687215.57
Ce	140	115	3	He	105.234	ug/l	2911584.50
Hg	201	209	1	No Gas	0.013	ug/l	65.66
Hg	202	209	1	No Gas	0.043	ug/l	431.92
Hg	202	209	3	He	0.036	ug/l	158.30
Tl	203	209	3	He	101.963	ug/l	999441.11
Tl	205	209	1	No Gas	100.478	ug/l	4957883.99
Tl	205	209	3	He	102.808	ug/l	2405963.60
[Pb]	206	209	1	No Gas	104.241	ug/l	1862691.45
[Pb]	207	209	1	No Gas	103.890	ug/l	1607463.26
Pb	208	209	1	No Gas	103.026	ug/l	7347347.95
Th	232	209	3	He	104.142	ug/l	3410263.15
U	238	209	1	No Gas	102.384	ug/l	7006066.39

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	4109405.41	92.3
Sc	45	2	H2	2017441.85	95.3
Sc	45	3	He	242817.98	94.5
Ge	72	1	No Gas	1273985.28	98.2
Ge	72	2	H2	796688.78	94.1
Ge	72	3	He	192886.21	94.9
In	115	1	No Gas	10263051.09	89.9
In	115	3	He	2222837.26	91.3
Bi	209	1	No Gas	9589325.58	85.2
Bi	209	3	He	4191923.28	91.2

ICPMS208-B Analytical Data

Sample Name	B21121841-001HMSD4
File Name	058SMPL.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\211223A_DoD.b
Acq Time	2021-12-23 16:40:32
Sample Type	Sample
Total Dilution	1.0000
Comment	ICPMS-6020-W-T
ISTD Ref FileName	003CALB.d
Operator	CAR/SRH/JPV
Method	EPA 200.8/EPA 6020

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	98.357	ug/l	605336.91
Be	9	45	1	No Gas	45.688	ug/l	105302.34
B	11	45	1	No Gas	145.721	ug/l	193515.27
Na	23	45	3	He	42199.629	ug/l	20562319.97
Mg	24	45	3	He	16572.032	ug/l	4374350.99
Al	27	45	1	No Gas	667.714	ug/l	9569831.66
Si	28	45	2	H2	17013.800	ug/l	22591780.52
K	39	72	3	He	7626.441	ug/l	2492571.19
Ca	40	72	2	H2	18561.885	ug/l	99303465.80
Ti	47	72	1	No Gas	91.017	ug/l	201964.42
V	51	72	1	No Gas	104.048	ug/l	2346050.88
V	51	72	3	He	115.765	ug/l	432074.77
Cr	52	72	1	No Gas	99.543	ug/l	2367839.59
Cr	52	72	3	He	108.714	ug/l	457087.25
Mn	55	72	1	No Gas	460.697	ug/l	14703462.72
Mn	55	72	3	He	506.093	ug/l	1428548.12
Fe	56	72	2	H2	1142.130	ug/l	15317210.84
Fe	56	72	3	He	1121.268	ug/l	4218055.30
Co	59	72	1	No Gas	90.590	ug/l	2377116.76
Ni	60	72	1	No Gas	92.969	ug/l	543957.89
Ni	60	72	3	He	103.496	ug/l	184119.91
Cu	63	72	1	No Gas	105.108	ug/l	1513500.05
Cu	63	72	3	He	113.285	ug/l	547199.16
Cu	65	72	1	No Gas	102.692	ug/l	718554.61
Zn	66	72	1	No Gas	600.775	ug/l	2713284.23
Zn	66	72	3	He	718.237	ug/l	662927.03
As	75	72	1	No Gas	88.302	ug/l	482419.87
As	75	72	3	He	99.190	ug/l	75111.28
Se	78	72	2	H2	99.327	ug/l	50656.82
Br	79	72	1	No Gas	4.679	ug/l	62507.61
Br	79	72	2	H2	5.173	ug/l	33485.64
Se	82	72	1	No Gas	88.240	ug/l	33018.72
Kr	84	72	1	No Gas		ug/l	75186.01
Sr	88	72	1	No Gas	172.428	ug/l	8447486.29
Sr	88	72	3	He	189.791	ug/l	948430.51
Mo	95	115	1	No Gas	90.479	ug/l	929021.82
Mo	95	115	3	He	92.802	ug/l	350778.37
Mo	98	115	1	No Gas	93.294	ug/l	1564487.08

ICPMS208-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Ag	107	115	1	No Gas	9.867	ug/l	236911.85
Ag	109	115	1	No Gas	9.753	ug/l	226097.73
Cd	111	115	1	No Gas	48.440	ug/l	263344.96
Cd	111	115	3	He	50.022	ug/l	88579.61
Cd	114	115	1	No Gas	48.903	ug/l	597260.13
Cd	114	115	3	He	49.447	ug/l	216372.15
Sn	118	115	1	No Gas	92.839	ug/l	1684627.27
Sn	118	115	3	He	93.010	ug/l	448077.13
Sb	121	115	1	No Gas	93.067	ug/l	2528006.74
Sb	121	115	3	He	92.209	ug/l	628449.15
Sb	123	115	1	No Gas	93.650	ug/l	1954343.11
Sb	123	115	3	He	92.917	ug/l	505811.69
Te	125	115	3	He	334251.322	ug/l	44913.44
Ba	135	115	1	No Gas	119.986	ug/l	637163.19
Ba	137	115	1	No Gas	120.066	ug/l	1116465.28
La	139	115	3	He	104.956	ug/l	2649143.68
Ce	140	115	3	He	103.898	ug/l	2882424.54
Hg	201	209	1	No Gas	0.013	ug/l	65.66
Hg	202	209	1	No Gas	0.039	ug/l	407.92
Hg	202	209	3	He	0.034	ug/l	150.97
Tl	203	209	3	He	98.437	ug/l	950080.46
Tl	205	209	1	No Gas	97.472	ug/l	4873834.34
Tl	205	209	3	He	100.557	ug/l	2315802.37
[Pb]	206	209	1	No Gas	101.124	ug/l	1831223.96
[Pb]	207	209	1	No Gas	101.688	ug/l	1594516.63
Pb	208	209	1	No Gas	101.498	ug/l	7335489.91
Th	232	209	3	He	103.563	ug/l	3338177.65
U	238	209	1	No Gas	101.542	ug/l	7041370.16

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	4167919.01	93.6
Sc	45	2	H2	1975003.92	93.3
Sc	45	3	He	239914.07	93.4
Ge	72	1	No Gas	1292467.29	99.6
Ge	72	2	H2	787625.29	93.0
Ge	72	3	He	193201.53	95.0
In	115	1	No Gas	10286750.38	90.1
In	115	3	He	2229856.68	91.6
Bi	209	1	No Gas	9718180.58	86.3
Bi	209	3	He	4125649.75	89.8

ICPMS208-B Analytical Data

Sample Name	Rinse
File Name	059BLKV.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\211223A_DoD.b
Acq Time	2021-12-23 16:46:23
Sample Type	BlkVrfy
Total Dilution	1.0000
Comment	ICPMS-6020B-W-D
ISTD Ref FileName	003CALB.d
Operator	CAR/SRH/JPV
Method	EPA 200.8/EPA 6020

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	-0.406	ug/l	15665.66
Be	9	45	1	No Gas	0.058	ug/l	213.96
B	11	45	1	No Gas	0.458	ug/l	3325.71
Na	23	45	3	He	1.675	ug/l	24975.19
Mg	24	45	3	He	-20.117	ug/l	2282.32
Al	27	45	1	No Gas	1.556	ug/l	29352.03
Si	28	45	2	H2	40.978	ug/l	61481.84
K	39	72	3	He	-9.766	ug/l	45464.88
Ca	40	72	2	H2	-0.474	ug/l	65519.08
Ti	47	72	1	No Gas	0.013	ug/l	226.90
V	51	72	1	No Gas	-0.067	ug/l	-14100.84
V	51	72	3	He	0.038	ug/l	2972.54
Cr	52	72	1	No Gas	-0.257	ug/l	43771.34
Cr	52	72	3	He	-0.015	ug/l	442.23
Mn	55	72	1	No Gas	0.032	ug/l	8888.42
Mn	55	72	3	He	0.037	ug/l	329.27
Fe	56	72	2	H2	0.151	ug/l	19383.92
Fe	56	72	3	He	0.187	ug/l	7085.52
Co	59	72	1	No Gas	0.012	ug/l	815.08
Ni	60	72	1	No Gas	-0.021	ug/l	735.23
Ni	60	72	3	He	-0.029	ug/l	175.56
Cu	63	72	1	No Gas	0.039	ug/l	2690.67
Cu	63	72	3	He	0.008	ug/l	751.20
Cu	65	72	1	No Gas	0.022	ug/l	1204.54
Zn	66	72	1	No Gas	-0.173	ug/l	1436.29
Zn	66	72	3	He	-0.137	ug/l	303.34
As	75	72	1	No Gas	-0.012	ug/l	10173.85
As	75	72	3	He	0.014	ug/l	68.13
Se	78	72	2	H2	0.014	ug/l	28.33
Br	79	72	1	No Gas	0.161	ug/l	8379.13
Br	79	72	2	H2	0.206	ug/l	4425.26
Se	82	72	1	No Gas	-0.801	ug/l	601.27
Kr	84	72	1	No Gas		ug/l	19944.25
Sr	88	72	1	No Gas	-0.056	ug/l	1740.00
Sr	88	72	3	He	-0.035	ug/l	342.23
Mo	95	115	1	No Gas	0.013	ug/l	224.45
Mo	95	115	3	He	0.015	ug/l	94.44
Mo	98	115	1	No Gas	0.012	ug/l	388.90

ICPMS208-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Ag	107	115	1	No Gas	0.001	ug/l	89.37
Ag	109	115	1	No Gas	0.001	ug/l	91.37
Cd	111	115	1	No Gas	0.002	ug/l	53.30
Cd	111	115	3	He	0.004	ug/l	14.11
Cd	114	115	1	No Gas	0.005	ug/l	120.55
Cd	114	115	3	He	0.003	ug/l	26.56
Sn	118	115	1	No Gas	0.024	ug/l	3230.64
Sn	118	115	3	He	0.008	ug/l	748.91
Sb	121	115	1	No Gas	0.069	ug/l	2424.79
Sb	121	115	3	He	0.068	ug/l	595.07
Sb	123	115	1	No Gas	0.064	ug/l	1882.98
Sb	123	115	3	He	0.067	ug/l	473.39
Te	125	115	3	He	46.007	ug/l	6.67
Ba	135	115	1	No Gas	-0.005	ug/l	405.87
Ba	137	115	1	No Gas	-0.003	ug/l	622.12
La	139	115	3	He	0.002	ug/l	117.78
Ce	140	115	3	He	0.000	ug/l	137.78
Hg	201	209	1	No Gas	0.001	ug/l	27.66
Hg	202	209	1	No Gas	-0.002	ug/l	109.98
Hg	202	209	3	He	-0.001	ug/l	33.66
Tl	203	209	3	He	0.651	ug/l	8057.01
Tl	205	209	1	No Gas	0.526	ug/l	34190.72
Tl	205	209	3	He	0.647	ug/l	19049.25
[Pb]	206	209	1	No Gas	0.010	ug/l	662.25
[Pb]	207	209	1	No Gas	0.010	ug/l	588.91
Pb	208	209	1	No Gas	0.012	ug/l	2761.25
Th	232	209	3	He	0.018	ug/l	915.74
U	238	209	1	No Gas	0.003	ug/l	462.58

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	4341022.96	97.5
Sc	45	2	H2	2128285.85	100.5
Sc	45	3	He	248443.93	96.7
Ge	72	1	No Gas	1282339.61	98.8
Ge	72	2	H2	828425.16	97.9
Ge	72	3	He	197569.02	97.2
In	115	1	No Gas	11240160.25	98.4
In	115	3	He	2410702.16	99.0
Bi	209	1	No Gas	10735520.79	95.4
Bi	209	3	He	4499081.45	97.9

ICPMS208-B Analytical Data

Sample Name	CCV
File Name	060_CCV.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\211223A_DoD.b
Acq Time	2021-12-23 16:52:31
Sample Type	CCV
Total Dilution	1.0000
Comment	ICPMS-6020B-W-D
ISTD Ref FileName	003CALB.d
Operator	CAR/SRH/JPV
Method	EPA 200.8/EPA 6020

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	635.145	ug/l	3907201.21
Be	9	45	1	No Gas	46.133	ug/l	108940.53
B	11	45	1	No Gas	46.630	ug/l	65253.97
Na	23	45	3	He	12936.134	ug/l	6567857.61
Mg	24	45	3	He	13032.120	ug/l	3576749.64
Al	27	45	1	No Gas	47.565	ug/l	704012.38
Si	28	45	2	H2	212.200	ug/l	294803.04
K	39	72	3	He	12950.935	ug/l	4288390.35
Ca	40	72	2	H2	13048.876	ug/l	73628564.30
Ti	47	72	1	No Gas	43.410	ug/l	93021.81
V	51	72	1	No Gas	47.504	ug/l	1026309.25
V	51	72	3	He	48.455	ug/l	186333.26
Cr	52	72	1	No Gas	48.191	ug/l	1130829.59
Cr	52	72	3	He	48.968	ug/l	210474.89
Mn	55	72	1	No Gas	48.606	ug/l	1503554.57
Mn	55	72	3	He	48.735	ug/l	140670.72
Fe	56	72	2	H2	1307.827	ug/l	18488786.89
Fe	56	72	3	He	1301.274	ug/l	4996199.05
Co	59	72	1	No Gas	48.440	ug/l	1226459.25
Ni	60	72	1	No Gas	47.844	ug/l	270447.65
Ni	60	72	3	He	48.680	ug/l	88531.12
Cu	63	72	1	No Gas	48.468	ug/l	674420.07
Cu	63	72	3	He	49.260	ug/l	243217.20
Cu	65	72	1	No Gas	48.348	ug/l	326940.27
Zn	66	72	1	No Gas	48.014	ug/l	211234.05
Zn	66	72	3	He	49.190	ug/l	46726.73
As	75	72	1	No Gas	47.251	ug/l	253749.98
As	75	72	3	He	48.648	ug/l	37609.61
Se	78	72	2	H2	48.969	ug/l	26337.93
Br	79	72	1	No Gas	0.235	ug/l	8991.65
Br	79	72	2	H2	0.194	ug/l	4362.02
Se	82	72	1	No Gas	47.934	ug/l	17703.49
Kr	84	72	1	No Gas		ug/l	36066.72
Sr	88	72	1	No Gas	49.665	ug/l	2351067.77
Sr	88	72	3	He	49.222	ug/l	251426.99
Mo	95	115	1	No Gas	44.323	ug/l	472988.32
Mo	95	115	3	He	42.833	ug/l	169681.31
Mo	98	115	1	No Gas	44.274	ug/l	771660.21

ICPMS208-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Ag	107	115	1	No Gas	19.627	ug/l	489778.77
Ag	109	115	1	No Gas	19.682	ug/l	474237.11
Cd	111	115	1	No Gas	48.596	ug/l	274756.74
Cd	111	115	3	He	47.731	ug/l	88521.28
Cd	114	115	1	No Gas	48.703	ug/l	619034.32
Cd	114	115	3	He	47.572	ug/l	217815.27
Sn	118	115	1	No Gas	44.721	ug/l	846570.50
Sn	118	115	3	He	43.230	ug/l	218262.85
Sb	121	115	1	No Gas	43.478	ug/l	1229743.69
Sb	121	115	3	He	43.222	ug/l	308260.64
Sb	123	115	1	No Gas	43.378	ug/l	942589.87
Sb	123	115	3	He	43.116	ug/l	245726.11
Te	125	115	3	He	141.994	ug/l	20.02
Ba	135	115	1	No Gas	47.984	ug/l	265415.99
Ba	137	115	1	No Gas	47.462	ug/l	459781.72
La	139	115	3	He	48.568	ug/l	1282912.40
Ce	140	115	3	He	49.005	ug/l	1423360.93
Hg	201	209	1	No Gas	0.971	ug/l	3305.08
Hg	202	209	1	No Gas	0.961	ug/l	7561.29
Hg	202	209	3	He	0.978	ug/l	3472.43
Tl	203	209	3	He	47.057	ug/l	470885.42
Tl	205	209	1	No Gas	48.052	ug/l	2465852.78
Tl	205	209	3	He	46.960	ug/l	1121127.73
[Pb]	206	209	1	No Gas	47.188	ug/l	876099.92
[Pb]	207	209	1	No Gas	47.787	ug/l	768184.64
Pb	208	209	1	No Gas	47.731	ug/l	3536609.83
Th	232	209	3	He	48.113	ug/l	1606020.11
U	238	209	1	No Gas	48.160	ug/l	3423018.16

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	4269919.85	95.9
Sc	45	2	H2	2047464.11	96.7
Sc	45	3	He	249332.18	97.1
Ge	72	1	No Gas	1246652.89	96.1
Ge	72	2	H2	830283.56	98.1
Ge	72	3	He	197126.23	97.0
In	115	1	No Gas	10716583.95	93.9
In	115	3	He	2333225.01	95.8
Bi	209	1	No Gas	9962134.01	88.5
Bi	209	3	He	4271701.40	92.9

ICPMS208-B Analytical Data

Sample Name	CCB
File Name	061_CCB.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\211223A_DoD.b
Acq Time	2021-12-23 16:58:33
Sample Type	CCB
Total Dilution	1.0000
Comment	ICPMS-6020B-W-D
ISTD Ref FileName	003CALB.d
Operator	CAR/SRH/JPV
Method	EPA 200.8/EPA 6020

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	0.003	ug/l	17766.81
Be	9	45	1	No Gas	0.059	ug/l	210.63
B	11	45	1	No Gas	0.064	ug/l	2722.01
Na	23	45	3	He	-3.266	ug/l	21988.31
Mg	24	45	3	He	-22.728	ug/l	1533.71
Al	27	45	1	No Gas	0.003	ug/l	6037.96
Si	28	45	2	H2	14.361	ug/l	23122.64
K	39	72	3	He	-2.543	ug/l	46522.38
Ca	40	72	2	H2	-1.431	ug/l	58677.79
Ti	47	72	1	No Gas	0.015	ug/l	225.23
V	51	72	1	No Gas	-0.302	ug/l	-19044.91
V	51	72	3	He	0.012	ug/l	2794.73
Cr	52	72	1	No Gas	-0.153	ug/l	44995.95
Cr	52	72	3	He	-0.004	ug/l	473.34
Mn	55	72	1	No Gas	0.024	ug/l	8412.43
Mn	55	72	3	He	0.030	ug/l	300.94
Fe	56	72	2	H2	0.073	ug/l	17832.05
Fe	56	72	3	He	0.119	ug/l	6638.20
Co	59	72	1	No Gas	0.008	ug/l	701.96
Ni	60	72	1	No Gas	-0.024	ug/l	695.31
Ni	60	72	3	He	-0.020	ug/l	186.67
Cu	63	72	1	No Gas	0.022	ug/l	2378.49
Cu	63	72	3	He	0.005	ug/l	717.21
Cu	65	72	1	No Gas	0.009	ug/l	1084.48
Zn	66	72	1	No Gas	-0.139	ug/l	1546.39
Zn	66	72	3	He	-0.105	ug/l	324.45
As	75	72	1	No Gas	0.192	ug/l	10995.91
As	75	72	3	He	0.006	ug/l	60.93
Se	78	72	2	H2	0.014	ug/l	27.66
Br	79	72	1	No Gas	0.112	ug/l	7593.60
Br	79	72	2	H2	0.130	ug/l	3856.21
Se	82	72	1	No Gas	-0.396	ug/l	729.28
Kr	84	72	1	No Gas		ug/l	19058.14
Sr	88	72	1	No Gas	-0.066	ug/l	1187.70
Sr	88	72	3	He	-0.049	ug/l	264.45
Mo	95	115	1	No Gas	0.013	ug/l	218.89
Mo	95	115	3	He	0.013	ug/l	83.33
Mo	98	115	1	No Gas	0.012	ug/l	377.78

ICPMS208-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Ag	107	115	1	No Gas	0.000	ug/l	67.36
Ag	109	115	1	No Gas	0.000	ug/l	72.03
Cd	111	115	1	No Gas	0.002	ug/l	54.37
Cd	111	115	3	He	0.003	ug/l	11.56
Cd	114	115	1	No Gas	0.003	ug/l	86.90
Cd	114	115	3	He	0.002	ug/l	24.28
Sn	118	115	1	No Gas	0.010	ug/l	2867.95
Sn	118	115	3	He	0.010	ug/l	751.14
Sb	121	115	1	No Gas	0.042	ug/l	1578.58
Sb	121	115	3	He	0.040	ug/l	387.04
Sb	123	115	1	No Gas	0.039	ug/l	1276.52
Sb	123	115	3	He	0.043	ug/l	327.71
Te	125	115	3	He	0.000	ug/l	0.00
Ba	135	115	1	No Gas	-0.006	ug/l	389.23
Ba	137	115	1	No Gas	0.009	ug/l	718.60
La	139	115	3	He	0.001	ug/l	85.56
Ce	140	115	3	He	0.001	ug/l	151.12
Hg	201	209	1	No Gas	0.001	ug/l	27.33
Hg	202	209	1	No Gas	0.000	ug/l	122.65
Hg	202	209	3	He	-0.001	ug/l	31.99
Tl	203	209	3	He	0.386	ug/l	5219.78
Tl	205	209	1	No Gas	0.280	ug/l	20130.94
Tl	205	209	3	He	0.389	ug/l	12462.84
[Pb]	206	209	1	No Gas	0.006	ug/l	561.13
[Pb]	207	209	1	No Gas	0.009	ug/l	543.35
Pb	208	209	1	No Gas	0.008	ug/l	2354.54
Th	232	209	3	He	0.017	ug/l	875.72
U	238	209	1	No Gas	0.001	ug/l	275.28

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	4235209.53	95.1
Sc	45	2	H2	2101002.88	99.3
Sc	45	3	He	242980.68	94.6
Ge	72	1	No Gas	1249379.82	96.3
Ge	72	2	H2	807891.76	95.4
Ge	72	3	He	192147.63	94.5
In	115	1	No Gas	10886955.91	95.3
In	115	3	He	2392542.51	98.3
Bi	209	1	No Gas	10444901.02	92.8
Bi	209	3	He	4458043.23	97.0

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**

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**

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-200.2MS
Lot Number:	S2-MEB702960
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: 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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U

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.*

CORPORATE HEADQUARTERS
21800 Clark Graham
Baie D'Urfé (Montréal), Quebec,
H9X 4B6 Canada
Phone: +1 (800) 361-6820
Fax: +1 (800) 253-5549

USA
3rd Party Distribution Center
348 Route 11, Champlain,
N.Y. 12919-4816

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

FRANCE
12 Ave. de Québec, Bat. IRIS
SILIC 642, 91965
Villebon sur Yvette, France
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:	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**

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:	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 (±) = $U_{CRM/RM} = k\,(u^2_{char} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{1/2}$

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 <	0.000448	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

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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 #: 14327
Opened: _____
Cerium PlasmaCal Standard
Expires: 2/28/2023
Rec'd: 9/29/2021
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).*
- 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.*

CORPORATE HEADQUARTERS
21800 Clark Graham
Baie D'Urfé (Montréal), Quebec,
H9X 4B6 Canada
Phone: +1 (800) 361-6820
Fax: +1 (800) 253-5549

USA
3rd Party Distribution Center
348 Route 11, Champlain,
N.Y. 12919-4816

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

FRANCE
12 Ave. de Québec, Bat. IRIS
SILIC 642, 91965
Villebon sur Yvette, France
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:	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.*

CORPORATE HEADQUARTERS
21800 Clark Graham
Baie D'Urfé (Montréal), Quebec,
H9X 4B6 Canada
Phone: +1 (800) 361-6820
Fax: +1 (800) 253-5549

USA
3rd Party Distribution Center
348 Route 11, Champlain,
N.Y. 12919-4816

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

FRANCE
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**

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Certificate of Analysis

1.0 DESCRIPTION:

_Plasma_CAL 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).*
- 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.*

CORPORATE HEADQUARTERS
21800 Clark Graham
Baie D'Urfé (Montréal), Quebec,
H9X 4B6 Canada
Phone: +1 (800) 361-6820
Fax: +1 (800) 253-5549

USA
3rd Party Distribution Center
348 Route 11, Champlain,
N.Y. 12919-4816

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

FRANCE
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:	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

SCP SCIENCE

Providing Innovative Solutions to Analytical Chemists /
Solutions innovatrices pour chimistes analystes

ACCREDITED
Reference Material Producer
CERT# 2885.02

ilac-MRA ACCREDITED
Testing Laboratory CERT#2885.01

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.*
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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*:

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.*

CORPORATE HEADQUARTERS
21800 Clark Graham
Baie D'Urfé (Montréal), Quebec,
H9X 4B6 Canada
Phone: +1 (800) 361-6820
Fax: +1 (800) 253-5549

USA
3rd Party Distribution Center
348 Route 11, Champlain,
N.Y. 12919-4816
Phone: +1 (800) 361-6820
Fax: +1 (800) 253-5549

FRANCE
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:	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

Michael 2 Booth

Certifying Officer:

Paul Gaines
CEO, Senior Technical Director

Paul R Gaines

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

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-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

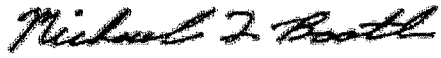
- Sealed TCT Bag Open Date: _____

- 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™
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

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

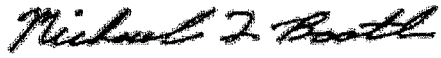
- Sealed TCT Bag Open Date: _____

- 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

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**

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:	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

Michael J Booth

Certifying Officer:

Paul Gaines
Chairman / Senior Technical Director

Paul R Gaines

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

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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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

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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300 Technology Drive
Christiansburg, VA 24073 USA
inorganicventures.com

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F: 540-585-3012
info@inorganicventures.com

1.0 ACCREDITATION / REGISTRATION

INORGANIC VENTURES is accredited to ISO 17034, "General Requirements for the Competence of Reference Material Producers" and ISO/IEC 17025, "General Requirements for the Competence of Testing and Calibration Laboratories". Inorganic Ventures is also an ISO 9001 registered manufacturer (QSR Certificate Number QSR-1034).

ACCREDITED Testing Laboratory Certificate 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

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

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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

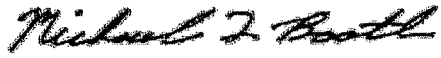
- Sealed TCT Bag Open Date: _____

- 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**

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:	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

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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

Michael J Booth

Certifying Officer:

Paul Gaines
Chairman / Senior Technical Director

Paul R Gaines

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

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

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-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
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	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
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
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

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.*

CORPORATE HEADQUARTERS
21800 Clark Graham
Baie D'Urfé (Montréal), Quebec,
H9X 4B6 Canada
Phone: +1 (800) 361-6820
Fax: +1 (800) 253-5549

USA
3rd Party Distribution Center
348 Route 11, Champlain,
N.Y. 12919-4816

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

FRANCE
12 Ave. de Québec, Bat. IRIS
SILIC 642, 91965
Villebon sur Yvette, France
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

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

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:	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 (±) = $U_{CRM/RM} = k\,(u^2_{char} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{1/2}$

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 <	0.000448	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**

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

CERTIFICATE OF ANALYSIS

tel: 800.669.2799 - 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:	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

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

Michael J Booth

Certifying Officer:

Paul Gaines
Chairman / Senior Technical Director

Paul R Gaines

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**

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:	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

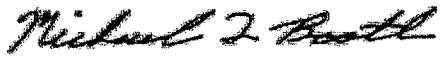
- Sealed outer Bag Open Date: _____

- 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**

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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.*

CORPORATE HEADQUARTERS
21800 Clark Graham
Baie D'Urfé (Montréal), Quebec,
H9X 4B6 Canada
Phone: +1 (800) 361-6820
Fax: +1 (800) 253-5549

USA
3rd Party Distribution Center
348 Route 11, Champlain,
N.Y. 12919-4816

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

FRANCE
12 Ave. de Québec, Bat. IRIS
SILIC 642, 91965
Villebon sur Yvette, France
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:	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**

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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).*
- 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.*

CORPORATE HEADQUARTERS
21800 Clark Graham
Baie D'Urfé (Montréal), Quebec,
H9X 4B6 Canada
Phone: +1 (800) 361-6820
Fax: +1 (800) 253-5549

USA
3rd Party Distribution Center
348 Route 11, Champlain,
N.Y. 12919-4816

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

FRANCE
12 Ave. de Québec, Bat. IRIS
SILIC 642, 91965
Villebon sur Yvette, France
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:	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,
	2 000 µg/mL ea: Carbon,
	1 000 µg/mL ea: Aluminum, Sulfur, Magnesium,
	20 µg/mL ea: Molybdenum,

Sodium,

Phosphorus,
Potassium,

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 (±) = $U_{CRM/RM} = k\ (u^2_{char} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{1/2}$

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**

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

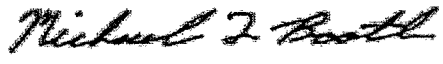
- Sealed TCT Bag Open Date: _____

- 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
Date Prepared 10/6/2021
Date Expires: 1/5/2022
Department ME
Vendor: Inorganic Ventures
Lot Number:
Balance ID:

Type: Tertiary
BY: Jason P. Van Clea

Status: Expired

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**

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:	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

Michael J Booth

Certifying Officer:

Paul Gaines
Chairman / Senior Technical Director

Paul R Gaines

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

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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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

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

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

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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

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**

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:	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

Michael J Booth

Certifying Officer:

Paul Gaines
Chairman / Senior Technical Director

Paul R Gaines

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.*

CORPORATE HEADQUARTERS
21800 Clark Graham
Baie D'Urfé (Montréal), Quebec,
H9X 4B6 Canada
Phone: +1 (800) 361-6820
Fax: +1 (800) 253-5549

USA
3rd Party Distribution Center
348 Route 11, Champlain,
N.Y. 12919-4816

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

FRANCE
12 Ave. de Québec, Bat. IRIS
SILIC 642, 91965
Villebon sur Yvette, France
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

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**

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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.*

CORPORATE HEADQUARTERS
21800 Clark Graham
Baie D'Urfé (Montréal), Quebec,
H9X 4B6 Canada
Phone: +1 (800) 361-6820
Fax: +1 (800) 253-5549

USA
3rd Party Distribution Center
348 Route 11, Champlain,
N.Y. 12919-4816

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

FRANCE
12 Ave. de Québec, Bat. IRIS
SILIC 642, 91965
Villebon sur Yvette, France
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

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**

INORGANIC VENTURES
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:	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 (±) = $U_{CRM/RM} = k\,(u^2_{char} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{1/2}$

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		0.000158	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.

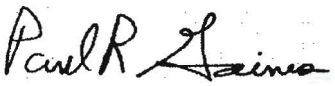
12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

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.

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

3.0 REFERENCE VALUES:

Density: **1.020 g/ml @ 22.6 °C**

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

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.*

CORPORATE HEADQUARTERS
21800 Clark Graham
Baie D'Urfé (Montréal), Quebec,
H9X 4B6 Canada
Phone: +1 (800) 361-6820
Fax: +1 (800) 253-5549

USA
3rd Party Distribution Center
348 Route 11, Champlain,
N.Y. 12919-4816

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

FRANCE
12 Ave. de Québec, Bat. Iberis
SILIC 642, 91965 Courtaboeuf

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

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.

12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

Certificate Approved By:

Michael Booth
Manager, Quality Control

Michael J Booth

Certifying Officer:

Paul Gaines
CEO, Senior Technical Director

Paul R Gaines