



Date Submitted: 19-Sep-16
Invoice No.: A16-09558
Invoice Date: 17-Oct-16
Your Reference: CACHE CREEK

Geological Survey of Canada
475-601 BOOTH ST
OTTAWA ON K1A0E8
Canada

ATTN: Alex Zagorevski

CERTIFICATE OF ANALYSIS

24 Rock samples were submitted for analysis.

The following analytical package(s) were requested:

Code 4LITHORES (11+) Major Elements Fusion ICP(WRA)/Trace Elements Fusion ICP/MS(WRA4B2)

REPORT **A16-09558**

This report may be reproduced without our consent. If only selected portions of the report are reproduced, permission must be obtained. If no instructions were given at time of sample submittal regarding excess material, it will be discarded within 90 days of this report. Our liability is limited solely to the analytical cost of these analyses. Test results are representative only of material submitted for analysis.

Notes:

We recommend using option 4B1 for accurate levels of the base metals Cu, Pb, Zn, Ni and Ag. Option 4B-INAA for As, Sb, high W >100ppm, Cr >1000ppm and Sn >50ppm by Code 5D. Values for these elements provided by Fusion ICP/MS, are order of magnitude only and are provided for general information. Mineralized samples should have the Quant option selected or request assays for values which exceed the range of option 4B1. Total includes all elements in % oxide to the left of total. Zr is now being reported from FUS-ICP instead of FUS-MS.

CERTIFIED BY:

A handwritten signature in black ink, appearing to read "Emmanuel Esemé". The signature is stylized with loops and is positioned above a horizontal line.

Emmanuel Esemé, Ph.D.
Quality Control

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Results

Activation Laboratories Ltd.

Report: A16-09558

Analyte Symbol	SiO2	Al2O3	Fe2O3(T)	MnO	MgO	CaO	Na2O	K2O	TiO2	P2O5	LOI	Total	Sc	Be	V	Cr	Co	Ni	Cu	Zn	Ga	Ge	As
Unit Symbol	%	%	%	%	%	%	%	%	%	%	%	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Lower Limit	0.01	0.01	0.01	0.001	0.01	0.01	0.01	0.01	0.001	0.01		0.01	1	1	5	20	1	20	10	30	1	0.5	5
Method Code	FUS-ICP	FUS-ICP	FUS-ICP	FUS-ICP	FUS-ICP	FUS-ICP	FUS-ICP	FUS-ICP	FUS-ICP	FUS-ICP	FUS-ICP	FUS-ICP	FUS-ICP	FUS-ICP	FUS-ICP	FUS-MS	FUS-MS	FUS-MS	FUS-MS	FUS-MS	FUS-MS	FUS-MS	FUS-MS
16SM 160	40.46	0.48	8.45	0.121	44.06	0.77	0.01	< 0.01	0.004	< 0.01	5.53	99.88	9	< 1	34	2540	121	2320	< 10	40	< 1	0.9	< 5
16SM 162	40.26	0.79	7.71	0.112	42.21	0.86	0.01	0.01	0.006	< 0.01	7.64	99.60	9	< 1	36	3320	115	2250	< 10	50	< 1	1.0	< 5
16SM 181	39.80	0.62	8.45	0.121	42.34	0.89	0.03	< 0.01	0.004	< 0.01	7.62	99.87	9	< 1	36	3090	119	2270	< 10	40	< 1	0.9	< 5
16SM 184	40.28	0.58	8.68	0.122	43.59	0.78	0.02	< 0.01	0.003	< 0.01	5.75	99.80	10	< 1	39	2780	122	2320	10	40	< 1	1.0	< 5
16SM 187	38.55	0.46	8.62	0.115	43.51	0.54	0.01	< 0.01	0.002	< 0.01	8.28	100.1	8	< 1	31	2350	118	2230	< 10	40	< 1	0.8	< 5
16SM 188	41.17	0.63	9.19	0.129	44.06	0.74	0.01	< 0.01	0.003	< 0.01	4.20	100.1	9	< 1	37	2310	118	2260	< 10	40	< 1	1.0	< 5
16SM 190	41.35	0.67	8.83	0.124	44.24	0.73	< 0.01	< 0.01	0.004	< 0.01	4.16	100.1	9	< 1	39	2810	122	2300	< 10	40	< 1	1.0	< 5
16SM 192	42.78	0.75	8.57	0.125	44.08	0.91	0.02	< 0.01	0.003	< 0.01	2.63	99.85	11	< 1	45	2710	121	2260	< 10	40	< 1	1.0	< 5
16SM 193	40.11	0.74	8.12	0.116	42.13	0.66	0.02	< 0.01	0.005	< 0.01	7.77	99.68	9	< 1	36	2560	112	2130	< 10	40	< 1	0.8	< 5
16ZE 1275	40.20	0.43	9.07	0.124	44.48	0.54	< 0.01	< 0.01	0.002	< 0.01	4.43	99.28	9	< 1	34	2460	125	2390	< 10	50	< 1	0.9	< 5
16ZE 1276	41.31	0.55	10.01	0.147	40.63	1.68	0.03	< 0.01	0.019	< 0.01	4.70	99.04	13	< 1	44	2680	127	2060	120	50	< 1	1.0	< 5
16SM 161	51.40	16.20	7.71	0.128	7.54	9.81	3.95	0.40	0.564	0.05	2.63	100.4	36	< 1	185	90	35	90	120	50	12	1.1	< 5
16SM 163	52.47	14.20	8.26	0.127	6.92	7.93	3.93	0.50	0.831	0.10	3.62	98.89	32	< 1	234	150	25	60	60	50	14	1.1	< 5
16SM 167	44.68	7.52	11.39	0.225	19.27	9.28	0.28	0.02	0.897	0.08	6.19	99.83	39	< 1	229	1350	61	460	40	110	8	1.2	< 5
16SM 172	47.82	16.38	14.72	0.255	3.57	6.24	4.15	0.65	1.655	0.14	4.07	99.65	33	< 1	277	630	60	280	70	210	17	1.7	10
16SM 178	53.32	14.43	11.65	0.192	4.14	8.35	4.68	0.10	1.263	0.13	1.76	100.0	32	< 1	333	< 20	29	40	60	70	15	1.1	< 5
16SM 185	68.86	10.26	5.89	0.379	2.72	3.91	5.36	0.27	0.604	0.09	0.82	99.16	18	< 1	105	60	19	50	60	70	14	1.3	< 5
16SM 186	48.80	16.20	8.85	0.149	7.48	9.41	3.07	1.28	0.917	0.06	3.09	99.31	35	< 1	227	280	35	120	60	60	15	1.2	< 5
DCSAY 1	61.31	15.17	7.58	0.068	1.92	3.47	5.78	0.14	1.000	0.35	1.99	98.78	22	1	59	< 20	12	20	< 10	< 30	16	1.5	< 5
DCSAY 2	51.88	16.56	8.41	0.166	4.74	5.86	3.26	0.82	0.794	0.17	6.49	99.15	24	< 1	207	20	20	30	50	70	16	1.0	< 5
DC0 312	42.55	1.86	8.57	0.126	39.60	1.91	0.04	< 0.01	0.017	< 0.01	3.83	98.51	13	< 1	63	2910	110	2030	20	40	2	1.0	< 5
DC0 319	42.37	1.41	9.02	0.127	42.72	1.64	0.05	0.02	0.010	< 0.01	2.32	99.67	11	< 1	52	2750	120	2260	30	40	1	0.9	< 5
DC0 336	40.78	1.28	8.09	0.118	39.93	1.39	0.01	< 0.01	0.009	< 0.01	8.04	99.64	11	< 1	51	2350	110	2100	20	40	1	0.9	< 5
DC0 345	41.51	1.15	8.43	0.122	42.24	1.27	0.04	< 0.01	0.009	< 0.01	4.64	99.42	9	< 1	41	2990	120	2230	< 10	40	1	0.9	< 5

Analyte Symbol	Rb	Sr	Y	Zr	Nb	Mo	Ag	In	Sn	Sb	Cs	Ba	La	Ce	Pr	Nd	Sm	Eu	Gd	Tb	Dy	Ho	Er
Unit Symbol	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Lower Limit	1	2	0.5	1	0.2	2	0.5	0.1	1	0.2	0.1	2	0.05	0.05	0.01	0.05	0.01	0.005	0.01	0.01	0.01	0.01	0.01
Method Code	FUS-MS	FUS-ICP	FUS-MS	FUS-ICP	FUS-MS	FUS-MS	FUS-MS	FUS-MS	FUS-MS	FUS-MS	FUS-MS	FUS-ICP	FUS-MS	FUS-MS	FUS-MS	FUS-MS	FUS-MS	FUS-MS	FUS-MS	FUS-MS	FUS-MS	FUS-MS	FUS-MS
16SM 160	< 1	2	< 0.5	2	< 0.2	< 2	< 0.5	< 0.1	< 1	< 0.2	< 0.1	9	< 0.05	0.07	0.02	0.06	0.03	< 0.005	0.02	< 0.01	0.02	< 0.01	< 0.01
16SM 162	< 1	2	< 0.5	2	< 0.2	< 2	< 0.5	< 0.1	< 1	< 0.2	< 0.1	7	0.77	1.10	0.06	0.20	0.04	< 0.005	0.02	< 0.01	0.02	< 0.01	0.02
16SM 181	< 1	< 2	< 0.5	< 1	< 0.2	< 2	< 0.5	< 0.1	< 1	< 0.2	< 0.1	4	< 0.05	< 0.05	0.01	0.06	0.02	< 0.005	< 0.01	< 0.01	< 0.01	< 0.01	0.01
16SM 184	< 1	< 2	< 0.5	1	< 0.2	< 2	< 0.5	< 0.1	< 1	< 0.2	< 0.1	6	< 0.05	< 0.05	< 0.01	< 0.05	< 0.01	< 0.005	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
16SM 187	< 1	< 2	< 0.5	1	< 0.2	< 2	< 0.5	< 0.1	< 1	< 0.2	< 0.1	5	< 0.05	0.09	0.02	< 0.05	0.05	< 0.005	0.01	< 0.01	< 0.01	< 0.01	< 0.01
16SM 188	< 1	< 2	< 0.5	1	< 0.2	< 2	< 0.5	< 0.1	< 1	< 0.2	< 0.1	4	< 0.05	< 0.05	< 0.01	< 0.05	< 0.01	< 0.005	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
16SM 190	< 1	< 2	< 0.5	3	< 0.2	< 2	< 0.5	< 0.1	< 1	0.3	< 0.1	9	< 0.05	< 0.05	0.01	< 0.05	< 0.01	< 0.005	< 0.01	< 0.01	0.01	< 0.01	0.01
16SM 192	< 1	< 2	< 0.5	2	< 0.2	< 2	< 0.5	< 0.1	< 1	< 0.2	< 0.1	3	< 0.05	< 0.05	< 0.01	< 0.05	0.01	< 0.005	0.01	< 0.01	< 0.01	< 0.01	0.01
16SM 193	< 1	< 2	< 0.5	1	< 0.2	< 2	< 0.5	< 0.1	< 1	< 0.2	< 0.1	3	< 0.05	< 0.05	< 0.01	< 0.05	0.01	< 0.005	< 0.01	< 0.01	0.01	< 0.01	0.01
16ZE 1275	< 1	< 2	< 0.5	< 1	< 0.2	< 2	< 0.5	< 0.1	< 1	< 0.2	< 0.1	2	< 0.05	0.07	< 0.01	< 0.05	0.01	< 0.005	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
16ZE 1276	< 1	< 2	< 0.5	2	< 0.2	< 2	< 0.5	< 0.1	< 1	< 0.2	< 0.1	3	< 0.05	< 0.05	< 0.01	0.07	0.05	< 0.005	0.06	< 0.01	0.09	0.02	0.05
16SM 161	7	223	12.6	43	< 0.2	< 2	< 0.5	< 0.1	< 1	< 0.2	< 0.1	40	1.45	4.51	0.77	4.04	1.42	0.554	1.83	0.31	2.04	0.43	1.26
16SM 163	7	218	20.8	65	1.0	< 2	< 0.5	< 0.1	< 1	< 0.2	0.1	51	2.89	7.95	1.19	6.57	2.25	0.803	2.86	0.50	3.35	0.71	2.04
16SM 167	< 1	18	22.7	53	0.9	< 2	< 0.5	< 0.1	< 1	< 0.2	0.2	9	2.34	6.48	1.02	5.47	1.94	0.694	2.85	0.53	3.57	0.78	2.35
16SM 172	13	90	26.3	88	2.5	< 2	< 0.5	< 0.1	< 1	1.4	0.4	124	5.32	11.6	1.94	10.2	3.39	1.28	4.50	0.76	4.83	0.96	2.69
16SM 178	< 1	171	26.7	78	0.9	< 2	< 0.5	< 0.1	< 1	0.3	< 0.1	27	3.08	9.10	1.50	8.03	2.82	1.00	3.70	0.68	4.47	0.94	2.75
16SM 185	2	35	30.0	97	1.9	< 2	< 0.5	< 0.1	< 1	< 0.2	< 0.1	69	7.65	24.8	2.76	12.9	3.56	1.03	4.34	0.72	4.73	1.02	3.00
16SM 186	14	365	24.2	57	0.8	< 2	< 0.5	< 0.1	< 1	< 0.2	0.1	30	2.16	6.86	1.14	6.51	2.43	1.02	3.32	0.61	4.06	0.87	2.48
DCSAY 1	2	303	41.3	134	5.4	< 2	< 0.5	< 0.1	< 1	0.2	< 0.1	47	18.0	40.8	5.41	24.6	6.46	1.80	6.72	1.07	6.77	1.39	4.06
DCSAY 2	19	325	20.9	66	2.6	< 2	< 0.5	< 0.1	< 1	0.2	0.5	167	7.70	18.1	2.48	11.6	3.03	0.927	3.28	0.52	3.48	0.70	2.09
DC0 312	< 1	< 2	0.7	1	< 0.2	< 2	< 0.5	< 0.1	< 1	< 0.2	< 0.1	4	< 0.05	< 0.05	< 0.01	< 0.05	0.01	0.007	0.02	< 0.01	0.09	0.02	0.08
DC0 319	< 1	< 2	< 0.5	2	< 0.2	< 2	< 0.5	< 0.1	< 1	< 0.2	< 0.1	2	< 0.05	< 0.05	< 0.01	< 0.05	0.02	0.006	0.03	< 0.01	0.07	0.02	0.07
DC0 336	< 1	< 2	< 0.5	3	< 0.2	< 2	< 0.5	< 0.1	< 1	< 0.2	< 0.1	< 2	< 0.05	< 0.05	< 0.01	< 0.05	0.02	< 0.005	< 0.01	< 0.01	0.03	0.01	0.04
DC0 345	< 1	< 2	< 0.5	1	< 0.2	< 2	< 0.5	< 0.1	< 1	< 0.2	< 0.1	2	< 0.05	< 0.05	< 0.01	< 0.05	< 0.01	< 0.005	< 0.01	< 0.01	0.04	< 0.01	0.04

Analyte Symbol	Tm	Yb	Lu	Hf	Ta	W	Tl	Pb	Bi	Th	U
Unit Symbol	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Lower Limit	0.005	0.01	0.002	0.1	0.01	0.5	0.05	5	0.1	0.05	0.01
Method Code	FUS-MS	FUS-MS	FUS-MS	FUS-MS	FUS-MS	FUS-MS	FUS-MS	FUS-MS	FUS-MS	FUS-MS	FUS-MS
16SM 160	< 0.005	0.02	0.003	< 0.1	< 0.01	< 0.5	< 0.05	< 5	< 0.1	< 0.05	< 0.01
16SM 162	< 0.005	0.02	0.004	< 0.1	< 0.01	< 0.5	< 0.05	< 5	< 0.1	< 0.05	0.01
16SM 181	< 0.005	0.02	0.003	< 0.1	< 0.01	< 0.5	< 0.05	< 5	< 0.1	< 0.05	< 0.01
16SM 184	< 0.005	0.01	0.003	< 0.1	< 0.01	< 0.5	< 0.05	< 5	< 0.1	< 0.05	< 0.01
16SM 187	< 0.005	0.02	0.003	< 0.1	< 0.01	< 0.5	< 0.05	< 5	< 0.1	< 0.05	< 0.01
16SM 188	< 0.005	0.02	0.004	< 0.1	< 0.01	< 0.5	< 0.05	< 5	< 0.1	< 0.05	< 0.01
16SM 190	< 0.005	0.02	0.004	< 0.1	< 0.01	< 0.5	< 0.05	< 5	< 0.1	< 0.05	0.03
16SM 192	< 0.005	0.02	0.005	< 0.1	< 0.01	< 0.5	< 0.05	< 5	< 0.1	< 0.05	< 0.01
16SM 193	< 0.005	0.02	0.004	< 0.1	< 0.01	< 0.5	< 0.05	< 5	< 0.1	< 0.05	< 0.01
16ZE 1275	< 0.005	0.02	0.004	< 0.1	< 0.01	1.5	< 0.05	< 5	< 0.1	< 0.05	< 0.01
16ZE 1276	< 0.005	0.08	0.010	< 0.1	< 0.01	< 0.5	< 0.05	< 5	< 0.1	< 0.05	< 0.01
16SM 161	0.187	1.16	0.185	1.1	0.01	< 0.5	< 0.05	< 5	< 0.1	0.12	0.07
16SM 163	0.311	2.02	0.329	1.8	0.08	< 0.5	< 0.05	< 5	< 0.1	0.25	0.15
16SM 167	0.330	2.14	0.339	1.4	0.07	< 0.5	< 0.05	< 5	< 0.1	0.15	0.18
16SM 172	0.363	2.34	0.375	2.4	0.19	< 0.5	< 0.05	< 5	< 0.1	0.28	0.32
16SM 178	0.404	2.65	0.427	2.2	0.08	< 0.5	< 0.05	< 5	< 0.1	0.23	0.16
16SM 185	0.431	2.98	0.467	2.4	0.19	< 0.5	< 0.05	12	< 0.1	1.81	0.60
16SM 186	0.346	2.33	0.373	1.7	0.06	< 0.5	< 0.05	< 5	< 0.1	0.08	0.04
DCSAY 1	0.611	3.89	0.606	3.4	0.38	< 0.5	< 0.05	< 5	< 0.1	2.59	1.05
DCSAY 2	0.296	2.07	0.337	1.9	0.15	< 0.5	< 0.05	< 5	< 0.1	0.93	0.42
DC0 312	0.014	0.09	0.017	< 0.1	< 0.01	5.9	< 0.05	< 5	< 0.1	< 0.05	< 0.01
DC0 319	0.010	0.08	0.013	< 0.1	< 0.01	< 0.5	< 0.05	< 5	< 0.1	< 0.05	< 0.01
DC0 336	0.007	0.06	0.011	< 0.1	< 0.01	< 0.5	< 0.05	< 5	< 0.1	< 0.05	< 0.01
DC0 345	< 0.005	0.05	0.009	< 0.1	< 0.01	< 0.5	< 0.05	< 5	< 0.1	< 0.05	< 0.01

Analyte Symbol	SiO2	Al2O3	Fe2O3(T)	MnO	MgO	CaO	Na2O	K2O	TiO2	P2O5	LOI	Total	Sc	Be	V	Cr	Co	Ni	Cu	Zn	Ga	Ge	As
Unit Symbol	%	%	%	%	%	%	%	%	%	%	%	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Lower Limit	0.01	0.01	0.01	0.001	0.01	0.01	0.01	0.01	0.001	0.01		0.01	1	1	5	20	1	20	10	30	1	0.5	5
Method Code	FUS-ICP	FUS-ICP	FUS-ICP	FUS-ICP	FUS-ICP	FUS-ICP	FUS-ICP	FUS-ICP	FUS-ICP	FUS-ICP	FUS-ICP	FUS-ICP	FUS-ICP	FUS-ICP	FUS-ICP	FUS-MS	FUS-MS	FUS-MS	FUS-MS	FUS-MS	FUS-MS	FUS-MS	FUS-MS
NIST 694 Meas	11.24	1.94	0.75	0.010	0.34	42.95	0.89	0.56	0.120	30.25					1606								
NIST 694 Cert	11.2	1.80	0.790	0.0116	0.330	43.6	0.860	0.510	0.110	30.2					1740								
DNC-1 Meas	46.91	18.42	9.76	0.150	9.94	11.41	1.94	0.22	0.480	0.06			31		153	280		250	90	70			
DNC-1 Cert	47.15	18.34	9.97	0.150	10.13	11.49	1.890	0.234	0.480	0.070			31		148	270		247	100	70			
GBW 07113 Meas	71.62	13.08	3.19	0.140	0.14	0.59	2.50	5.40	0.280	0.04			5	4	6								
GBW 07113 Cert	72.8	13.0	3.21	0.140	0.160	0.590	2.57	5.43	0.300	0.0500			5.00	4.00	5.00								
LKSD-3 Meas																90	28	50	40	160			26
LKSD-3 Cert																87.0	30.0	47.0	35.0	152			27.0
TDB-1 Meas																260		100	340	160			
TDB-1 Cert																251		92	323	155			
W-2a Meas	53.12	15.29	10.63	0.170	6.23	11.08	2.23	0.63	1.090	0.13			36	< 1	274	90	42	80	110	80	17	1.6	< 5
W-2a Cert	52.4	15.4	10.7	0.163	6.37	10.9	2.14	0.626	1.06	0.130			36.0	1.30	262	92.0	43.0	70.0	110	80.0	17.0	1.00	1.20
DTS-2b Meas																> 10000	132	3620					
DTS-2b Cert																15500	120	3780					
SY-4 Meas	49.55	20.32	6.22	0.110	0.50	8.10	6.81	1.65	0.290	0.12			1	3	8								
SY-4 Cert	49.9	20.69	6.21	0.108	0.54	8.05	7.10	1.66	0.287	0.131			1.1	2.6	8.0								
CTA-AC-1 Meas																							
CTA-AC-1 Cert																							
BIR-1a Meas	48.43	15.55	11.15	0.170	9.70	13.48	1.83	0.02	0.970	0.01			43	< 1	312	370	47	170	130		15		< 5
BIR-1a Cert	47.96	15.50	11.30	0.175	9.700	13.30	1.82	0.030	0.96	0.021			44	0.58	310	370	52	170	125		16		0.44
NCS DC86312 Meas																							
NCS DC86312 Cert																							
NCS DC70009 (GBW07241) Meas																		< 20	990	110	17	10.9	66
NCS DC70009 (GBW07241) Cert																		2.8	960	100	16.5	11.2	69.9
OREAS 100a (Fusion) Meas																	18		180				
OREAS 100a (Fusion) Cert																	18.1		169				
OREAS 101a (Fusion) Meas																	49		430				
OREAS 101a (Fusion) Cert																	48.8		434				
OREAS 101b (Fusion) Meas																	45		420				
OREAS 101b (Fusion) Cert																	47		416				
JR-1 Meas																		< 20		< 30	16	1.8	17
JR-1 Cert																		1.67		30.6	16.1	1.88	16.3
16SM 172 Orig	47.80	16.63	14.84	0.257	3.56	6.28	4.12	0.64	1.656	0.13	4.07	99.99	33	< 1	279	620	59	280	70	210	17	1.7	10
16SM 172 Dup	47.84	16.13	14.60	0.253	3.57	6.20	4.19	0.65	1.655	0.14	4.07	99.30	33	< 1	275	630	60	280	70	210	17	1.6	10
DC0 345 Orig	41.36	1.15	8.38	0.121	42.12	1.27	0.04	0.01	0.009	< 0.01	4.64	99.10	9	< 1	40	2960	122	2280	< 10	40	1	0.9	< 5
DC0 345 Dup	41.65	1.16	8.48	0.122	42.36	1.27	0.04	< 0.01	0.009	< 0.01	4.64	99.74	10	< 1	41	3020	117	2190	< 10	40	1	1.0	< 5
Method Blank																< 20	< 1	< 20	< 10	< 30	< 1	< 0.5	< 5

Analyte Symbol	Rb	Sr	Y	Zr	Nb	Mo	Ag	In	Sn	Sb	Cs	Ba	La	Ce	Pr	Nd	Sm	Eu	Gd	Tb	Dy	Ho	Er
Unit Symbol	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Lower Limit	1	2	0.5	1	0.2	2	0.5	0.1	1	0.2	0.1	2	0.05	0.05	0.01	0.05	0.01	0.005	0.01	0.01	0.01	0.01	0.01
Method Code	FUS-MS	FUS-ICP	FUS-MS	FUS-ICP	FUS-MS	FUS-MS	FUS-MS	FUS-MS	FUS-MS	FUS-MS	FUS-MS	FUS-ICP	FUS-MS	FUS-MS	FUS-MS	FUS-MS	FUS-MS	FUS-MS	FUS-MS	FUS-MS	FUS-MS	FUS-MS	FUS-MS
NIST 694 Meas																							
NIST 694 Cert																							
DNC-1 Meas		143		34								106	3.60					0.540					
DNC-1 Cert		144.0		38								118	3.6					0.59					
GBW 07113 Meas		40		377								500											
GBW 07113 Cert		43.0		403								506											
LKSD-3 Meas	71		28.1			< 2	2.8				2.2		50.4	96.6		46.1	8.40	1.50				5.30	
LKSD-3 Cert	78.0		30.0			2.00	2.70				2.30		52.0	90.0		44.0	8.00	1.50				4.90	
TDB-1 Meas	22		35.3										15.8	37.8		23.1		2.00					
TDB-1 Cert	23		36										17	41		23		2.1					
W-2a Meas	21	196	21.1	86	7.8	< 2					0.9	176	10.1	22.1		12.2	3.20	1.00		0.58	3.80	0.73	
W-2a Cert	21.0	190	24.0	94.0	7.90	0.600					0.990	182	10.0	23.0		13.0	3.30	1.00		0.630	3.60	0.760	
DTS-2b Meas																							
DTS-2b Cert																							
SY-4 Meas		1202		550								340											
SY-4 Cert		1191		517								340											
CTA-AC-1 Meas			292										> 2000			1190	171	46.8	128	13.6			
CTA-AC-1 Cert			272										2176			1087	162	46.7	124	13.9			
BIR-1a Meas		110	14.7	16								8				2.60	1.20	0.560	2.00				
BIR-1a Cert		110	16	18								6				2.5	1.1	0.55	2.0				
NCS DC86312 Meas			1010										> 2000	190		1670			245	33.2	195	36.2	105
NCS DC86312 Cert			976										2360	190		1600			225.0	34.6	183	36	96.2
NCS DC70009 (GBW07241) Meas	491		138				1.7		> 1000	3.0	40.5		25.4	63.7	8.50	35.0	13.3		16.3	3.40	22.5	4.60	
NCS DC70009 (GBW07241) Cert	500		128				1.8		1701	3.1	41		23.7	60.3	7.9	32.9	12.5		14.8	3.3	20.7	4.5	
OREAS 100a (Fusion) Meas			133			23							273	487	49.6	158	25.3	3.80	21.7	3.54	24.5	5.10	16.1
OREAS 100a (Fusion) Cert			142			24.1							260	463	47.1	152	23.6	3.71	23.6	3.80	23.2	4.81	14.9
OREAS 101a (Fusion) Meas			173			20							873	1420	136	408	51.7	8.28			33.3	6.57	20.3
OREAS 101a (Fusion) Cert			183			21.9							816	1396	134	403	48.8	8.06			33.3	6.46	19.5
OREAS 101b (Fusion) Meas			183			20							785	1370	123	376	49.0	7.91		5.17	31.7	6.23	18.7
OREAS 101b (Fusion) Cert			178			20.9							789	1331	127	378	48	7.77		5.37	32.1	6.34	18.7
JR-1 Meas	255				15.6	3		< 0.1	3		19.1		20.9	50.1		24.2	6.08	0.310		0.99			
JR-1 Cert	257				15.2	3.25		0.028	2.86		20.8		19.7	47.2		23.3	6.03	0.30		1.01			
16SM 172 Orig	13	91	26.3	88	2.6	< 2	< 0.5	< 0.1	< 1	1.2	0.3	123	5.18	11.2	1.91	10.0	3.32	1.26	4.32	0.76	4.75	0.95	2.65
16SM 172 Dup	13	89	26.4	88	2.5	< 2	< 0.5	< 0.1	< 1	1.5	0.4	124	5.47	12.0	1.97	10.3	3.46	1.31	4.68	0.77	4.91	0.97	2.73
DC0 345 Orig	< 1	< 2	< 0.5	1	< 0.2	< 2	< 0.5	< 0.1	< 1	< 0.2	< 0.1	2	< 0.05	< 0.05	< 0.01	< 0.05	< 0.01	< 0.005	0.01	< 0.01	0.03	< 0.01	0.04
DC0 345 Dup	< 1	< 2	< 0.5	1	< 0.2	< 2	< 0.5	< 0.1	< 1	< 0.2	< 0.1	2	0.10	0.12	< 0.01	< 0.05	< 0.01	< 0.005	< 0.01	< 0.01	0.05	0.01	0.04
Method Blank	< 1		< 0.5		< 0.2	< 2	< 0.5	< 0.1	< 1	< 0.2	< 0.1		< 0.05	< 0.05	< 0.01	< 0.05	< 0.01	< 0.005	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01

Analyte Symbol	Tm	Yb	Lu	Hf	Ta	W	Tl	Pb	Bi	Th	U
Unit Symbol	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Lower Limit	0.005	0.01	0.002	0.1	0.01	0.5	0.05	5	0.1	0.05	0.01
Method Code	FUS-MS	FUS-MS	FUS-MS	FUS-MS	FUS-MS	FUS-MS	FUS-MS	FUS-MS	FUS-MS	FUS-MS	FUS-MS
NIST 694 Meas											
NIST 694 Cert											
DNC-1 Meas								6			
DNC-1 Cert								6.3			
GBW 07113 Meas											
GBW 07113 Cert											
LKSD-3 Meas		2.90			0.70					10.5	4.50
LKSD-3 Cert		2.70			0.700					11.4	4.60
TDB-1 Meas		3.20									
TDB-1 Cert		3.4									
W-2a Meas		2.00	0.300			< 0.5	0.06		< 0.1		
W-2a Cert		2.10	0.330			0.300	0.200		0.0300		
DTS-2b Meas											
DTS-2b Cert											
SY-4 Meas											
SY-4 Cert											
CTA-AC-1 Meas		10.8	1.15		2.55					22.6	
CTA-AC-1 Cert		11.4	1.08		2.65					21.8	
BIR-1a Meas		1.80	0.270	0.6							
BIR-1a Cert		1.7	0.3	0.60							
NCS DC86312 Meas	14.2	89.9	12.8							24.7	
NCS DC86312 Cert	15.1	87.79	11.96							23.6	
NCS DC70009 (GBW07241) Meas			2.49			2050				29.0	
NCS DC70009 (GBW07241) Cert			2.4			2200				28.3	
OREAS 100a (Fusion) Meas	2.39	15.8	2.29							51.4	134
OREAS 100a (Fusion) Cert	2.31	14.9	2.26							51.6	135
OREAS 101a (Fusion) Meas	2.90	18.8	2.62							34.7	409
OREAS 101a (Fusion) Cert	2.90	17.5	2.66							36.6	422
OREAS 101b (Fusion) Meas	2.72	18.0	2.65							36.5	387
OREAS 101b (Fusion) Cert	2.66	17.6	2.58							37.1	396
JR-1 Meas	0.690	4.85	0.740	4.1	1.76	1.8	1.42	20	0.6	26.1	8.60
JR-1 Cert	0.67	4.55	0.71	4.51	1.86	1.59	1.56	19.3	0.56	26.7	8.88
16SM 172 Orig	0.367	2.34	0.366	2.4	0.19	< 0.5	< 0.05	< 5	< 0.1	0.28	0.32
16SM 172 Dup	0.358	2.35	0.385	2.4	0.20	< 0.5	< 0.05	< 5	< 0.1	0.27	0.33
DC0 345 Orig	< 0.005	0.04	0.010	< 0.1	< 0.01	< 0.5	< 0.05	< 5	< 0.1	< 0.05	< 0.01
DC0 345 Dup	< 0.005	0.05	0.009	< 0.1	< 0.01	< 0.5	< 0.05	< 5	< 0.1	< 0.05	< 0.01
Method Blank	< 0.005	< 0.01	< 0.002	< 0.1	< 0.01	< 0.5	< 0.05	< 5	< 0.1	< 0.05	< 0.01