Quality Analysis ... *Innovative Technologies*

Report No.: **A22-00155**
Report Date: **16-Feb-22**
Date Submitted: **07-Jan-22**
Your Reference:

U.S. CRITICAL MATERIALS
4190 SOUTH HIGHLANDS DRIVE, SUITE 230, S
SALT LAKE CITY UTAH
United States

CERTIFICATE OF ANALYSIS

21 Rock samples were submitted for analysis.

The following analytical package(s) were requested:		Testing Date:
8-REE Assay Package	QOP WRA/ QOP WRA 4B2 (Major/Trace Elements Fusion ICPOES/ICPMS)	2022-01-21 10:52:51

REPORT **A22-00155**

Notes:

Total includes all elements in % oxide to the left of total.

Footnote: Zr/Nb/Ta/Hf results are semi-quantitative for samples with P2O5 >0.3%.

SCC Accredited LAB LAB Accrédité CCN TM

LabID: 266

CERTIFIED BY:

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Quality Control Coordinator

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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	1	5
Method Code	FUS-ICP	FUS-ICP	FUS-ICP	FUS-ICP	FUS-ICP	FUS-ICP	FUS-ICP	FUS-ICP	FUS-ICP	FUS-ICP	GRAV	FUS-ICP	FUS-ICP	FUS-ICP	FUS-ICP	FUS-MS	FUS-MS	FUS-MS	FUS-MS	FUS-MS	FUS-MS	FUS-MS	FUS-MS
21002	4.26	0.43	3.25	0.200	5.93	44.09	0.02	0.01	0.080	5.41	34.67	98.36	10	< 1	30	< 20	7	30	10	30	6	1	8
21005	14.38	0.30	1.35	0.200	0.45	22.45	0.02	0.13	0.030	0.29	26.55	66.15	44	5	36	< 20	< 1	40	40	< 30	218	8	63
21009	3.26	0.09	1.25	0.270	0.36	33.07	0.01	0.09	0.010	0.19	34.48	73.07	41	4	7	< 20	7	40	10	< 30	170	6	51
21010	5.07	0.55	3.98	0.580	4.65	40.71	0.01	0.12	0.090	4.09	34.95	94.79	18	< 1	21	< 20	10	50	70	40	33	< 1	11
21011	5.36	0.41	5.00	0.590	3.72	31.66	0.10	0.08	0.050	1.36	31.84	80.17	39	2	67	< 20	3	30	10	70	128	5	40
21012	1.89	0.34	5.54	0.360	10.47	37.37	0.02	0.02	0.100	6.62	35.08	97.80	19	< 1	43	20	8	50	< 10	40	9	< 1	8
21016	5.14	1.09	5.83	0.520	6.17	25.75	0.14	0.16	0.120	2.69	27.56	75.17	33	1	82	< 20	7	30	< 10	50	82	3	26
21017	9.57	3.23	8.77	0.540	6.44	30.25	0.09	0.31	0.370	4.65	26.22	90.43	56	< 1	158	50	14	40	< 10	50	20	1	9
21021	4.25	0.77	4.29	0.346	3.13	22.36	0.27	0.06	0.124	1.74	23.33	60.66	49	2	121	20	6	< 20	< 10	< 30	27	< 1	< 5
21022	5.32	1.10	7.04	0.630	7.71	32.68	0.35	0.10	0.200	5.13	31.02	91.28	22	< 1	46	20	15	50	20	50	13	< 1	5
21024	45.80	14.69	7.34	0.140	4.49	10.59	5.45	1.68	0.460	0.13	9.43	100.2	31	3	167	70	32	60	40	70	14	1	< 5
21026	7.58	0.13	6.94	0.350	1.83	24.99	< 0.01	0.05	0.020	2.74	23.44	68.09	40	2	34	< 20	53	80	50	110	91	3	40
21027	1.84	0.25	4.38	0.360	8.41	41.12	0.02	0.02	0.140	4.77	37.58	98.89	14	< 1	50	< 20	5	40	< 10	50	5	< 1	8
21028	2.72	0.35	3.55	0.440	5.48	44.79	0.01	0.01	0.120	5.41	36.23	99.13	12	< 1	49	< 20	3	40	20	40	4	< 1	9
21030	4.97	1.09	5.90	0.505	9.35	35.79	0.04	0.24	0.140	5.57	33.39	96.97	19	< 1	50	< 20	11	40	< 10	80	16	< 1	8
21031	3.27	0.48	5.65	0.560	7.64	38.54	0.03	0.04	0.050	5.06	35.42	96.75	25	< 1	42	< 20	11	40	< 10	50	10	< 1	8
21032	4.97	1.14	5.93	0.490	9.01	31.52	0.17	0.06	0.080	3.24	32.65	89.25	39	< 1	67	30	9	40	< 10	40	34	2	13
21035	7.10	1.36	6.51	0.530	5.46	26.33	0.59	0.07	0.270	2.72	25.66	76.62	36	< 1	77	30	13	40	320	60	36	2	12
21037	17.01	3.91	7.30	0.500	4.68	29.87	1.31	0.49	0.290	3.23	22.60	91.18	77	< 1	192	60	14	50	20	60	18	1	8
21040	4.86	0.79	5.03	0.550	6.61	30.57	0.10	0.04	0.050	3.80	28.98	81.39	27	< 1	44	20	9	50	10	< 30	42	2	15
21041	2.17	0.21	1.17	0.190	0.41	28.53	0.02	0.13	0.020	0.19	31.46	64.49	42	7	33	< 20	< 1	30	10	< 30	246	8	74

Analyte Symbol	Rb	Sr	Y	Zr	Nb	Mo	Ag	In	Sn	Sb	Cs	Ba	Bi	La	Ce	Pr	Nd	Sm	Eu	Gd	Tb	Dy	Ho
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	2	2	2	4	1	2	0.5	0.2	1	0.5	0.5	3	0.4	0.1	0.1	0.05	0.1	0.1	0.05	0.1	0.1	0.1	0.1
Method Code	FUS-MS	FUS-ICP	FUS-ICP	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
21002	< 2	2379	27	137	331	< 2	< 0.5	< 0.2	< 1	< 0.5	< 0.5	1387	< 0.4	423	834	92.1	331	41.6	9.60	20.4	2.1	8.5	1.1
21005	< 2	44370	83	8	252	20	< 0.5	< 0.2	3	< 0.5	< 0.5	54840	< 0.4	56600	68800	5340	13500	814	135	237	16.5	40.3	4.2
21009	< 2	40340	90	5	210	3	< 0.5	< 0.2	40	< 0.5	< 0.5	33600	< 0.4	42800	54300	4240	11100	712	121	216	15.8	40.6	4.3
21010	2	3940	67	62	1070	< 2	< 0.5	< 0.2	1	< 0.5	< 0.5	1331	< 0.4	8500	10500	828	2270	151	28.6	53.9	4.9	18.8	2.7
21011	< 2	22790	90	6	616	31	< 0.5	0.2	2	< 0.5	< 0.5	41450	< 0.4	30600	38700	3060	8180	533	90.9	163	12.7	35.8	4.1
21012	< 2	4004	124	225	430	< 2	< 0.5	< 0.2	< 1	< 0.5	< 0.5	2027	< 0.4	1160	1990	209	726	98.5	24.8	55.3	6.6	30.1	4.7
21016	2	12870	70	9	619	16	< 0.5	< 0.2	1	< 0.5	< 0.5	93210	< 0.4	19500	23900	1870	5010	313	54.3	100	8.0	24.3	3.0
21017	4	8179	96	17	1970	33	< 0.5	< 0.2	2	< 0.5	< 0.5	58100	< 0.4	3590	5030	445	1340	127	29.7	62.1	6.5	26.7	4.0
21021	< 2	15620	88	9	1050	4	< 0.5	< 0.2	1	< 0.5	< 0.5	158400	< 0.4	25600	33000	2610	6990	444	77.3	131	10.1	33.4	4.2
21022	2	3378	104	78	1110	7	< 0.5	< 0.2	1	< 0.5	< 0.5	36500	< 0.4	2370	3380	314	965	105	24.5	54.8	6.2	27.9	4.2
21024	33	1058	21	67	121	< 2	< 0.5	< 0.2	1	< 0.5	1.8	4006	< 0.4	124	207	20.5	67.3	9.7	2.42	5.8	0.8	4.4	0.8
21026	< 2	2491	68	5	114	105	< 0.5	< 0.2	2	1.6	< 0.5	139500	< 0.4	21700	27700	2220	5910	379	63.9	119	9.6	27.3	3.3
21027	< 2	2680	53	132	158	< 2	< 0.5	< 0.2	< 1	< 0.5	< 0.5	584	< 0.4	601	1000	102	345	44.3	10.7	24.5	2.8	12.6	2.0
21028	< 2	1526	59	172	188	< 2	< 0.5	< 0.2	< 1	< 0.5	< 0.5	209	< 0.4	361	707	77.7	281	40.0	9.40	23.5	2.8	13.2	2.2
21030	7	4398	82	101	432	< 2	< 0.5	< 0.2	1	< 0.5	< 0.5	4521	< 0.4	3030	4060	359	1070	106	24.6	50.0	5.5	22.6	3.3
21031	< 2	4448	115	58	133	2	< 0.5	< 0.2	2	< 0.5	< 0.5	6444	< 0.4	1750	2560	247	799	99.7	24.3	55.6	6.5	29.7	4.6
21032	2	4769	61	99	152	< 2	< 0.5	< 0.2	1	< 0.5	< 0.5	42870	< 0.4	7660	9740	771	2100	146	28.5	55.1	5.2	18.3	2.6
21035	4	4356	80	16	779	173	1.0	< 0.2	2	< 0.5	< 0.5	112800	< 0.4	7880	10100	821	2280	174	34.4	69.4	6.7	23.5	3.4
21037	11	3524	80	28	2090	28	< 0.5	< 0.2	3	< 0.5	< 0.5	47070	< 0.4	3110	4250	372	1090	103	23.3	51.0	5.4	22.3	3.3
21040	< 2	6073	77	24	652	21	< 0.5	< 0.2	1	< 0.5	< 0.5	82570	1.9	10100	12800	1000	2770	203	40.9	78.7	7.3	25.3	3.4
21041	< 2	41730	95	9	54	6	< 0.5	< 0.2	1	< 0.5	< 0.5	54840	< 0.4	60200	73700	5690	14500	886	146	267	20.4	45.4	4.8

Analyte Symbol	Er	Tm	Yb	Lu	Hf	Ta	W	Tl	Pb	Th	U
Unit Symbol	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Lower Limit	0.1	0.05	0.1	0.04	0.2	0.1	1	0.1	5	0.1	0.1
Method Code	FUS-MS	FUS-MS	FUS-MS	FUS-MS	FUS-MS	FUS-MS	FUS-MS	FUS-MS	FUS-MS	FUS-MS	FUS-MS
21002	2.1	0.22	1.1	0.17	1.7	6.5	6	0.2	< 5	96.7	52.7
21005	7.0	0.68	4.1	0.60	0.7	1.0	5	0.2	132	421	0.4
21009	7.1	0.66	3.5	0.49	0.4	0.5	3	0.1	106	356	0.1
21010	5.3	0.64	3.7	0.52	0.8	2.6	3	< 0.1	7	106	7.8
21011	7.3	0.78	4.5	0.68	0.5	1.2	21	< 0.1	87	336	4.3
21012	9.9	1.28	7.3	1.05	2.4	3.9	4	< 0.1	< 5	27.5	32.7
21016	6.0	0.61	3.5	0.45	0.5	2.2	4	< 0.1	59	166	8.7
21017	7.8	0.97	5.8	0.83	0.8	4.7	16	< 0.1	35	55.8	13.5
21021	7.5	0.94	5.6	0.81	0.6	3.7	12	< 0.1	68	260	8.4
21022	8.6	1.09	6.4	0.91	1.4	3.3	4	0.1	12	35.8	6.7
21024	2.2	0.31	2.0	0.29	1.7	0.5	2	0.3	< 5	7.0	0.9
21026	6.3	0.68	4.5	0.67	0.6	0.9	2	0.1	19	197	1.8
21027	4.4	0.55	3.3	0.49	1.6	2.2	5	< 0.1	11	47.8	8.6
21028	5.1	0.64	3.9	0.59	2.3	2.0	6	0.1	7	44.2	7.5
21030	6.9	0.77	4.4	0.61	1.3	3.4	4	0.1	16	29.3	15.2
21031	10.0	1.17	6.8	0.90	1.1	1.8	3	< 0.1	8	22.0	12.2
21032	5.3	0.63	3.8	0.56	1.4	0.7	4	< 0.1	6	126	7.8
21035	6.9	0.79	4.8	0.70	0.7	3.5	4	< 0.1	15	106	14.8
21037	7.2	0.85	4.9	0.68	1.0	4.3	4	0.1	14	33.8	2.3
21040	6.8	0.71	4.0	0.54	0.8	1.8	3	< 0.1	22	100	8.1
21041	8.7	0.90	4.7	0.60	0.6	0.4	5	< 0.1	198	480	0.4