Quality Analysis ... *Innovative Technologies*

Report No.: **A22-18295**
Report Date: **31-Jan-23**
Date Submitted: **07-Dec-22**
Your Reference: **SHEEP CREEK**

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

CERTIFICATE OF ANALYSIS

26 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)	2022-12-21 10:41:34

REPORT **A22-18295**

Notes:

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

SCC Accredited LAB Accrédité CCN TM

LabID: 266

CERTIFIED BY:

Mark Vandergeest
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	0.005	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
701	8.18	0.44	2.74	0.498	1.89	38.82	0.10	0.09	0.051	0.44	34.43	87.67	42	1	26	< 20	2	< 20	10	< 30	84	3	19
702	2.31	0.25	3.19	0.506	2.19	39.72	0.04	0.09	0.029	0.31	37.15	85.83	39	1	10	< 20	6	< 20	20	< 30	71	3	17
703	6.49	0.30	3.22	0.638	3.78	39.83	0.02	0.04	0.026	0.65	37.02	92.02	36	< 1	10	< 20	4	< 20	10	< 30	17	< 1	< 5
704	9.63	0.14	5.25	0.519	3.56	34.31	0.03	0.03	0.030	0.54	32.72	86.76	43	1	31	< 20	71	30	140	< 30	65	3	19
705	2.18	< 0.01	3.99	0.571	3.64	40.46	0.05	< 0.01	0.008	1.04	38.82	90.65	40	< 1	112	< 20	2	< 20	10	< 30	42	2	10
705A	18.99	8.84	54.09	0.376	1.45	1.24	0.19	0.11	3.130	3.01	1.01	92.43	153	17	245	360	18	100	90	1120	98	6	70
706	6.13	0.20	3.01	0.467	2.50	39.01	0.04	0.06	0.016	0.81	36.28	88.52	43	2	10	< 20	4	< 20	< 10	< 30	89	3	19
707	5.89	0.37	4.27	0.430	1.71	37.34	0.08	0.05	0.019	0.81	33.58	84.55	41	2	21	< 20	67	60	80	< 30	106	3	27
708	13.32	0.77	3.47	0.466	3.26	34.84	0.06	0.23	0.092	1.88	30.75	89.15	42	< 1	35	< 20	6	< 20	< 10	< 30	68	3	15
709	26.46	0.19	1.06	0.289	0.32	27.15	0.01	0.06	0.007	0.11	26.00	81.64	39	3	7	< 20	2	< 20	< 10	< 30	161	4	38
710	24.21	0.53	1.57	0.250	0.67	21.38	0.03	0.09	0.041	1.01	21.08	70.85	38	3	22	< 20	5	< 20	< 10	< 30	157	4	35
711	11.40	2.14	5.65	0.406	2.82	35.85	0.86	0.53	0.196	0.40	30.80	91.06	71	1	129	30	37	40	30	< 30	58	1	14
712	22.65	0.31	1.56	0.322	0.77	28.15	0.02	0.08	0.030	0.18	27.17	81.25	36	2	14	< 20	3	< 20	< 10	< 30	139	4	34
712A	69.24	13.53	3.64	0.061	1.42	3.25	3.49	2.50	0.325	0.14	1.20	98.79	8	1	60	70	8	20	20	30	16	1	< 5
713	13.40	0.82	4.15	0.475	1.29	35.02	0.03	0.11	0.125	0.65	30.13	86.20	42	3	43	< 20	45	60	60	< 30	111	3	26
714	8.36	0.38	2.91	0.483	2.39	32.85	0.04	0.07	0.042	1.43	29.84	78.80	39	2	25	< 20	18	< 20	20	< 30	116	3	29
715	5.49	1.13	2.63	0.334	1.93	31.09	0.37	0.25	0.078	0.58	29.79	73.68	40	3	39	< 20	8	20	10	< 30	127	3	29
716	10.38	2.24	5.03	0.340	4.36	27.22	0.64	0.63	0.210	0.91	25.39	77.37	61	1	115	30	13	30	10	40	79	4	17
717	11.63	2.41	5.14	0.390	4.64	26.18	0.90	0.41	0.193	1.26	24.96	78.11	54	1	112	30	13	30	20	40	62	3	13
718	19.84	3.51	5.86	0.320	4.36	22.75	1.94	0.50	0.350	0.85	19.88	82.54	47	< 1	127	70	22	50	50	50	36	2	7
719	27.37	7.39	7.41	0.293	5.79	19.20	2.52	1.56	0.442	1.60	17.41	90.99	57	1	175	70	23	50	10	60	29	2	5
720	5.80	0.42	2.03	0.304	1.49	30.29	0.08	0.11	0.035	0.41	30.34	71.30	38	4	26	< 20	5	< 20	20	< 30	161	4	36
720A	3.27	12.39	48.52	0.350	0.68	1.27	0.10	0.05	10.13	8.70	1.20	86.73	191	14	561	500	21	240	130	1050	191	9	69
721	11.37	2.26	4.99	0.380	3.99	31.08	0.39	0.42	0.200	1.50	26.86	83.44	52	1	90	30	10	30	< 10	40	52	3	12
722	6.51	2.76	9.49	0.710	12.13	27.74	0.06	0.07	0.099	0.73	34.17	94.46	56	< 1	124	< 20	22	90	100	< 30	50	3	10
723	9.20	3.23	8.49	0.692	10.07	30.13	0.12	0.15	0.111	1.39	32.80	96.39	76	< 1	139	< 20	9	30	20	< 30	47	2	9

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
701	< 2	17710	78	16	128	2	< 0.5	< 0.2	1	< 0.5	< 0.5	27080	< 0.4	18900	23800	1890	4960	321	55.5	109	8.6	24.0	3.1
702	2	18880	65	7	337	22	< 0.5	< 0.2	< 1	< 0.5	< 0.5	32470	< 0.4	15700	20400	1640	4300	278	48.4	94.7	7.4	19.8	2.5
703	< 2	7061	45	< 4	81	23	< 0.5	< 0.2	< 1	< 0.5	< 0.5	27490	< 0.4	3650	4800	404	1090	81.9	15.9	34.3	3.2	11.6	1.6
704	< 2	16380	71	5	2180	79	< 0.5	< 0.2	1	0.6	< 0.5	27710	< 0.4	13400	17900	1510	4140	287	55.1	101	8.0	22.7	2.9
705	< 2	14960	67	105	65	27	< 0.5	< 0.2	< 1	< 0.5	< 0.5	15950	< 0.4	9100	12000	978	2640	182	33.2	69.7	5.9	18.6	2.6
705A	4	2000	453	311	891	79	3.7	2.2	25	1.6	< 0.5	1711	4.7	12100	15900	2520	10500	1540	335	676	57.6	184	21.0
706	< 2	20040	59	< 4	86	4	< 0.5	< 0.2	< 1	< 0.5	< 0.5	18510	< 0.4	20000	25100	1970	5090	327	55.2	110	8.3	20.6	2.5
707	< 2	19160	63	5	67	24	< 0.5	< 0.2	< 1	< 0.5	< 0.5	30100	< 0.4	25900	30600	2380	6210	416	70.2	137	10.3	24.9	2.8
708	6	12350	69	9	123	10	< 0.5	< 0.2	1	< 0.5	< 0.5	29410	< 0.4	14700	19400	1550	4120	273	47.1	96.4	7.5	21.8	2.8
709	< 2	19310	81	5	584	4	< 0.5	< 0.2	< 1	1.5	< 0.5	26350	< 0.4	36900	47600	3950	10500	645	108	207	14.8	35.0	3.8
710	< 2	19010	66	6	404	9	< 0.5	< 0.2	1	1.3	< 0.5	74460	< 0.4	37200	47100	3870	10200	610	101	193	13.7	30.6	3.1
711	12	12690	59	9	126	206	< 0.5	< 0.2	3	< 0.5	< 0.5	20340	< 0.4	12200	15700	1230	3420	229	40.2	82.1	6.7	19.3	2.4
712	< 2	22030	70	6	398	2	< 0.5	< 0.2	< 1	1.2	< 0.5	36360	< 0.4	31200	40000	3300	8740	498	82.4	158	11.7	27.0	3.1
712A	67	500	11	107	7	< 2	< 0.5	< 0.2	1	< 0.5	1.1	1197	< 0.4	106	150	13.4	41.1	4.7	1.05	3.1	0.4	2.2	0.4
713	2	13270	69	9	1610	10	< 0.5	< 0.2	1	< 0.5	< 0.5	22100	< 0.4	25400	31800	2460	6420	433	73.7	145	11.0	25.5	2.9
714	< 2	10820	84	10	75	12	< 0.5	< 0.2	< 1	0.7	< 0.5	72390	< 0.4	27200	34600	2580	6700	438	73.0	147	11.6	28.4	3.4
715	4	29500	92	15	67	12	< 0.5	< 0.2	< 1	< 0.5	< 0.5	79010	< 0.4	32100	39900	3200	8230	469	78.5	158	12.5	31.6	3.8
716	12	20780	70	13	291	15	< 0.5	< 0.2	2	< 0.5	< 0.5	87240	< 0.4	18100	22200	1750	4460	282	48.6	101	7.8	21.8	2.9
717	8	13960	70	25	306	27	< 0.5	< 0.2	2	< 0.5	< 0.5	94760	< 0.4	13100	16400	1290	3390	223	39.1	81.5	6.7	19.8	2.7
718	17	6025	100	145	368	86	< 0.5	< 0.2	2	< 0.5	0.7	82460	< 0.4	7010	8830	701	1840	123	22.3	47.1	3.8	12.2	1.6
719	28	5451	50	40	3390	70	< 0.5	< 0.2	3	< 0.5	0.7	47720	< 0.4	4920	6310	517	1380	99.0	19.0	40.4	3.6	13.1	1.9
720	< 2	31720	73	5	109	16	< 0.5	< 0.2	< 1	< 0.5	< 0.5	75490	< 0.4	39300	48100	3840	10100	554	90.7	179	13.1	29.1	3.2
720A	< 2	5070	546	1704	3420	107	5.7	3.3	105	1.2	< 0.5	4530	21.4	23400	39100	3620	10700	1310	269	563	57.1	207	25.5
721	8	7910	62	23	333	25	< 0.5	< 0.2	1	< 0.5	< 0.5	74560	< 0.4	11100	13800	1110	2900	189	33.6	66.8	5.6	17.0	2.3
722	2	4140	98	12	121	< 2	< 0.5	< 0.2	1	< 0.5	< 0.5	3035	< 0.4	9440	11800	929	2450	160	30.3	63.1	5.9	23.1	3.8
723	3	3529	173	10	97	< 2	< 0.5	< 0.2	1	< 0.5	< 0.5	784	< 0.4	9170	11700	941	2550	186	38.4	80.3	8.1	35.8	6.2

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
701	6.6	0.76	4.4	0.73	0.5	< 0.1	< 1	< 0.1	59	136	0.5
702	5.3	0.62	3.9	0.61	0.3	0.4	< 1	< 0.1	59	156	1.6
703	3.8	0.46	2.6	0.40	< 0.2	< 0.1	< 1	< 0.1	22	59.0	0.8
704	6.0	0.66	3.7	0.58	0.3	3.1	2	< 0.1	40	138	1.3
705	5.8	0.69	4.1	0.66	0.3	< 0.1	1	< 0.1	39	127	0.3
705A	37.7	3.47	16.1	2.01	6.9	13.9	3	0.2	158	532	18.1
706	4.8	0.50	3.0	0.46	0.3	< 0.1	3	< 0.1	59	157	0.2
707	5.0	0.52	3.1	0.44	0.3	< 0.1	< 1	< 0.1	79	285	0.4
708	5.0	0.57	3.5	0.52	0.4	< 0.1	< 1	< 0.1	41	157	0.4
709	6.9	0.74	4.4	0.65	0.4	1.0	< 1	< 0.1	109	237	0.2
710	4.4	0.50	2.6	0.43	0.4	0.8	< 1	< 0.1	112	314	0.3
711	4.7	0.56	3.3	0.47	0.7	< 0.1	4	< 0.1	51	106	0.6
712	5.9	0.64	3.6	0.56	0.3	0.7	< 1	< 0.1	76	187	0.3
712A	1.1	0.16	1.0	0.18	2.5	0.3	2	0.3	16	8.9	1.4
713	5.2	0.59	3.5	0.50	0.6	3.0	11	< 0.1	74	293	0.8
714	6.3	0.74	4.2	0.60	0.4	< 0.1	< 1	< 0.1	78	225	1.7
715	7.5	0.89	5.3	0.79	0.6	< 0.1	3	< 0.1	115	290	0.9
716	5.5	0.69	4.2	0.65	0.7	0.7	3	< 0.1	57	124	1.3
717	6.0	0.70	4.0	0.61	0.8	0.8	3	< 0.1	48	195	1.6
718	3.3	0.44	2.6	0.43	1.0	1.3	1	0.3	30	64.9	1.0
719	4.3	0.51	3.0	0.48	1.1	11.9	1	< 0.1	19	58.5	1.1
720	6.0	0.65	3.8	0.54	0.4	< 0.1	3	< 0.1	109	260	0.5
720A	40.8	4.16	18.8	2.44	30.6	57.8	6	< 0.1	497	807	14.8
721	4.9	0.56	3.2	0.52	0.7	0.8	2	< 0.1	47	94.6	4.8
722	9.3	1.23	7.6	1.14	0.6	0.1	5	< 0.1	6	70.7	13.8
723	16.2	2.08	12.3	1.73	0.6	< 0.1	3	< 0.1	6	98.2	18.8