

GEOLOGY DATA REPOSITORY ITEM 2006090**SUPPLEMENTARY DATA TABLES**

$^{40}\text{Ar}/^{39}\text{Ar}$ step-heating results obtained on matrix muscovite separates from the Mount Charlotte (sample MC1) and Kanowna Belle (sample GD1) mines are listed in Table DR1. Laser probe analytical results for pyrite grains containing muscovite inclusions from Mount Charlotte (sample MC1) and Kanowna Belle (samples GD1 and K1) are listed in Table DR2.

All data have been corrected for mass spectrometer backgrounds, radioactive decay and mass discrimination. Note that molar values for ^{40}Ar , ^{39}Ar , ^{38}Ar , ^{37}Ar and ^{36}Ar have not been corrected for isotopic interferences. Correction factors for the interference corrections are given in the footnotes to Table DR1 and Table DR2. Conversion factors for calculating Ca/K and K/Cl values are based on analyses of Hb3gr hornblende (Roddick, 1983) and are also listed in the footnotes of each table.

ADDITIONAL REFERENCE

Roddick, J.C., 1983, High precision intercalibration of ^{40}Ar - ^{39}Ar standards: *Geochimica et Cosmochimica Acta*: v.47, 887-898.

TABLE DR1. ⁴⁰Ar/³⁹Ar STEP-HEATING ANALYTICAL RESULTS FOR MATRIX MUSCOVITE FROM MOUNT CHARLOTTE (MC1) AND KANOWNA BELLE (GD1)

Temp (°C)	Cum.% ³⁹ Ar	⁴⁰ Ar (x10 ⁻¹³ mol)	±	³⁹ Ar (x10 ⁻¹⁵ mol)	±	³⁹ Ar (x10 ⁻¹⁵ mol)	±	³⁷ Ar (x10 ⁻¹⁵ mol)	±	³⁶ Ar (x10 ⁻¹⁵ mol)	±	⁴⁰ Ar (%)	Ca/K	±	K/Cl	±	⁴⁰ Ar/ ³⁹ Ar	±	Age (Ma)	±
MC1 ^a muscovite																				
Mass = 0.58 mg																				
J-value = 0.01698 ± 0.000027																				
500	0.28	0.3415	0.0007	0.0225	0.0001	0.6027	0.0174	0.9542	0.3382	0.2204	0.0058	80.95	0.7420	0.2630	16.9	1.0	122.84	0.95	2032.6	9.4
600	0.96	0.8906	0.0017	0.0559	0.0004	5.2475	0.0291	1.6470	0.2566	0.1483	0.0078	95.15	0.5156	0.0804	4.3	0.2	151.60	1.09	2297.6	9.4
700	3.34	3.8573	0.0068	0.1947	0.0008	1.2901	0.0425	9.8428	2.4106	0.1214	0.0245	99.08	0.8848	0.2167	75.7	5.1	196.31	0.93	2645.1	6.6
750	6.58	5.0478	0.0089	0.2649	0.0009	1.1457	0.0239	8.9202	0.4858	0.1026	0.0118	99.40	0.5893	0.0322	132	8	189.42	0.73	2595.7	5.3
780	9.93	5.1544	0.0094	0.2734	0.0007	1.2484	0.0267	14.544	1.7180	0.0776	0.0182	99.56	0.9311	0.1100	122	7	187.75	0.63	2583.5	4.6
810	14.02	6.2565	0.0110	0.3343	0.0016	1.1081	0.0665	18.171	2.5830	0.0627	0.0375	99.71	0.9516	0.1354	195	22	186.70	1.02	2575.8	7.5
840	19.67	8.5563	0.0154	0.4620	0.0014	1.2617	0.0369	15.042	2.2838	0.0138	0.0924	99.95	0.5699	0.0865	267	21	185.14	0.89	2564.3	6.5
860	26.09	9.7059	0.0170	0.5252	0.0013	1.3588	0.0675	11.045	2.8483	0.0185	0.0290	99.94	0.3681	0.0949	296	32	184.73	0.60	2561.3	4.4
900	38.40	18.324	0.0330	1.0061	0.0022	2.8342	0.0662	40.152	6.3547	0.1801	0.0669	99.71	0.6986	0.1106	257	17	181.65	0.55	2538.3	4.1
950	56.95	27.957	0.0511	1.5162	0.0094	4.2523	0.2543	72.289	5.9811	0.4995	0.1404	99.48	0.8346	0.0693	264	33	183.49	1.22	2552.1	9.1
1000	71.59	22.166	0.0386	1.1969	0.0016	2.9773	0.1468	24.403	15.076	0.0968	0.0657	99.86	0.3568	0.2205	322	36	184.97	0.44	2563.1	3.2
1050	81.73	15.463	0.0272	0.8292	0.0029	2.2664	0.0869	32.819	7.6150	0.3110	0.0764	99.41	0.6928	0.1608	279	25	185.42	0.78	2566.4	5.7
1100	92.59	16.539	0.0286	0.8877	0.0024	2.5035	0.1077	28.570	4.5056	0.1813	0.1084	99.67	0.5633	0.0889	258	25	185.75	0.69	2568.9	5.1
1150	97.58	7.7757	0.0137	0.4080	0.0020	1.2907	0.0544	11.552	1.5934	0.1066	0.0503	99.59	0.4956	0.0684	212	19	189.83	1.04	2598.7	7.5
1450	100.0	4.3789	0.0075	0.1975	0.0008	1.4677	0.0246	8.5562	1.8137	1.5298	0.0214	89.68	0.7584	0.1608	84.2	4.9	198.89	0.97	2663.2	6.8
Total																	185.17	0.79	2564.5	5.9
GD1 ^b muscovite																				
Mass = 0.97 mg																				
J-value = 0.018756 ± 0.000047																				
500	0.69	10.828	0.0282	0.2295	0.0011	6.3014	0.1277	2.7984	0.3054	28.357	0.2843	22.61	0.2134	0.0233	133	27	106.71	3.89	1982.8	43.9
525	1.09	1.1590	0.0034	0.1335	0.0010	0.3300	0.0052	0.0456	0.0659	0.4118	0.0361	89.47	0.0060	0.0086	606	68	77.67	1.03	1621.6	14.2
550	1.62	1.4972	0.0046	0.1777	0.0011	0.3019	0.0041	1.1706	0.1075	0.4654	0.0070	90.79	0.1153	0.0106	7107	3304	76.51	0.54	1605.5	7.6
575	2.41	2.2960	0.0063	0.2620	0.0012	0.4715	0.0083	0.7476	0.0809	0.4317	0.0229	94.41	0.0499	0.0054	1548	234	82.74	0.52	1690.1	6.8
600	3.23	2.4856	0.0069	0.2720	0.0005	0.4845	0.0082	1.6150	0.0785	0.4118	0.0151	95.08	0.1039	0.0051	1508	200	86.90	0.35	1744.5	4.5
625	4.14	2.9600	0.0083	0.3033	0.0010	0.6123	0.0218	1.3496	0.0818	0.6221	0.0190	93.76	0.0779	0.0047	996	189	91.50	0.44	1802.6	5.5
650	5.19	3.6291	0.0089	0.3500	0.0007	0.8334	0.0094	3.4757	0.1492	0.7474	0.0290	93.90	0.1738	0.0075	535	36	97.35	0.40	1874.1	4.8
675	7.07	7.1379	0.0204	0.6273	0.0014	1.4659	0.0144	3.8110	0.8048	1.4759	0.0144	93.87	0.1063	0.0225	603	38	106.82	0.41	1984.1	4.6
700	9.75	10.777	0.0274	0.8937	0.0020	1.9309	0.1080	4.3421	1.9587	2.1347	0.0176	94.13	0.0850	0.0384	833	215	113.51	0.40	2057.9	4.4
725	12.30	10.542	0.0277	0.8496	0.0045	1.4562	0.0476	4.1344	0.0913	1.7340	0.0750	95.12	0.0852	0.0019	4044	2430	118.04	0.75	2106.2	7.9
750	15.65	14.129	0.0361	1.1161	0.0063	1.9289	0.1155	6.6787	0.4184	1.8021	0.0241	96.21	0.1047	0.0066	2069	1119	121.80	0.76	2145.4	7.9
775	19.62	17.637	0.0482	1.3222	0.0092	2.0697	0.0243	0.8446	0.2732	1.9625	0.0282	96.69	0.0112	0.0036	7342	2923	128.97	0.97	2217.8	9.6
820	24.27	22.189	0.0586	1.5490	0.0117	3.0871	0.0259	0.7253	0.3678	1.9350	0.0256	97.41	0.0794	0.0042	759	50	139.54	1.12	2319.5	10.5
850	30.81	31.989	0.0788	2.1788	0.0073	4.7557	0.0952	17.092	0.5037	1.1698	0.0433	98.90	0.1373	0.0041	470	35	145.22	0.61	2371.9	5.5
875	38.23	37.739	0.0987	2.4729	0.0061	4.1238	0.0438	7.7975	1.3420	2.7589	0.0582	97.82	0.0552	0.0095	1769	178	149.29	0.55	2408.4	4.9
900	46.95	45.356	0.1269	2.9059	0.0020	5.0430	0.0502	12.658	0.7267	2.5125	0.1464	98.35	0.0762	0.0044	1172	93	153.51	0.47	2445.6	4.1
925	56.97	53.545	0.1521	3.3387	0.0169	6.0992	0.0969	9.4437	2.1912	4.2625	0.4453	97.63	0.0495	0.0115	1126	138	156.58	1.00	2472.3	8.6
950	72.15	82.044	0.2032	5.0583	0.0161	9.8687	0.5047	27.240	2.4379	5.1080	0.1293	98.15	0.0942	0.0084	755	148	159.20	0.65	2494.6	5.5
975	81.85	52.097	0.1312	3.2311	0.0239	4.3451	0.6271	10.838	7.2899	3.5865	0.0568	97.95	0.0587	0.0395	129239	129239	157.94	1.24	2483.8	10.6
1000	87.71	30.180	0.0733	1.9536	0.0067	3.5930	0.0497	14.345	1.2506	2.4378	0.1627	97.60	0.1285	0.0112	1072	105	150.79	0.68	2421.8	6.0
1050	91.34	16.057	0.0420	1.2108	0.0049	2.1442	0.0305	5.5141	0.7911	1.5705	0.0252	97.09	0.0797	0.0114	1354	142	128.76	0.63	2215.7	6.2
1100	93.24	7.7427	0.0204	0.6338	0.0038	1.2176	0.0390	3.8051	0.5089	0.8375	0.0166	96.78	0.1051	0.0141	906	137	118.25	0.79	2108.4	8.3
1150	94.91	6.3031	0.0159	0.5556	0.0025	1.1209	0.0396	1.7221	0.2202	0.5594	0.0120	97.36	0.0542	0.0069	671	88	110.44	0.58	2024.4	6.4
1450	100.0	24.096	0.0613	1.6952	0.0069	3.5853	0.0625	7.9985	0.2513	2.0947	0.0943	97.41	0.0826	0.0026	614	49	138.47	0.69	2309.5	6.5
Total																	142.21	0.78	2344.3	7.2

1. Errors are one sigma uncertainties and exclude uncertainties in the J-value.
 2. Data are corrected for mass spectrometer backgrounds, discrimination and radioactive decay.
 3. Corrections: (³⁹Ar/³⁷Ar)_{cor} = 2.70 (±0.03) × 10⁻⁴; (³⁹Ar/³⁷Ar)_{cor} = 6.80 (±0.04) × 10⁻⁴; (⁴⁰Ar/³⁹Ar)_{cor} = 0.0301 ± 0.0005^a; 0.0286 ± 0.0006^b; ³⁶Cl/³⁵Cl = 316 (Roddick, 1983).
 4. Conversion factors for calculating Ca/K and K/Cl ratios: α = 1.76 ± 0.03; β = 4.0 ± 0.2.
 5. J-value is based on an age of 98.8 ± 0.5 Ma for GA-1550 biotite (Renne et al., 1998).

TABLE DR2. ⁴⁰Ar/³⁹Ar LASER PROBE ANALYTICAL RESULTS FOR PYRITE GRAINS FROM MOUNT CHARLOTTE (MC1) AND KANOWNA BELLE (GD1, K1)

Sample No	Step No	Cum. % ³⁹ Ar (x10 ⁻¹⁴ mol)	⁴⁰ Ar ± (x10 ⁻¹⁶ mol)	³⁹ Ar ± (x10 ⁻¹⁶ mol)	³⁸ Ar ± (x10 ⁻¹⁷ mol)	³⁷ Ar ± (x10 ⁻¹⁶ mol)	³⁶ Ar ± (x10 ⁻¹⁷ mol)	⁴⁰ Ar* (%)	Ca/K	K/Cl	⁴⁰ Ar/ ³⁹ Ar	Age (Ma)									
Mount Charlotte pyrite MC1⁴																					
J-value = 0.018631 ± 0.000034																					
MC1/1	1	3.71	0.1574	0.0006	0.0875	0.0026	0.0805	0.0273	0.1703	0.0537	0.1966	0.0183	63.17	3.410	1.081	106	89	113.74	7.11	2052.2	76.6
	2	100.0	5.2444	0.0097	2.2709	0.0063	1.2641	0.0436	0.2289	0.0378	4.6518	0.0477	73.78	0.176	0.029	822	334	170.40	0.89	2578.1	7.2
MC1/2	1	72.44	3.9147	0.0079	2.2671	0.0135	0.5788	0.0186	6.8369	0.1344	0.2342	0.0119	98.36	5.288	0.109	348	31	170.19	1.09	2576.4	8.7
	2	100.0	1.5203	0.0034	0.8610	0.0068	0.1640	0.0125	0.1270	0.0485	0.0396	0.0388	99.22	0.258	0.099	681	199	175.22	1.96	2616.5	15.5
MC1/3	1	43.66	1.3925	0.0031	0.7793	0.0015	0.2304	0.0256	0.0918	0.0380	0.4380	0.0205	90.69	0.206	0.085	597	298	162.08	0.93	2509.8	7.8
	2	100.0	2.3008	0.0042	1.0055	0.0007	0.5599	0.0330	0.0248	0.0147	1.9756	0.0306	74.62	0.043	0.026	620	322	170.74	1.00	2580.8	8.0
MC1/4	1	72.41	3.4270	0.0062	1.9653	0.0092	0.4232	0.0152	17.822	0.1114	0.4579	0.0153	96.46	15.968	0.125	738	115	169.26	0.89	2568.9	7.0
	2	100.0	1.4342	0.0038	0.7441	0.0017	0.2137	0.0405	0.0272	0.0145	0.5214	0.0233	89.25	0.064	0.034	1237	2098	172.02	1.13	2591.1	9.2
MC1/5	1	34.50	3.6625	0.0069	2.2002	0.0059	0.4387	0.0555	3.8744	0.1107	0.2064	0.0082	98.41	3.085	0.089	670	285	164.01	0.55	2525.9	4.6
	2	100.0	7.2034	0.0131	4.1728	0.0207	0.6053	0.0139	6.307	0.0354	0.1367	0.0108	99.43	0.265	0.015	2531	573	171.66	0.91	2588.2	7.3
MC1/6	1	73.06	5.3254	0.0098	2.7695	0.0061	0.9318	0.0243	4.7469	0.0977	2.1582	0.0216	88.08	3.003	0.062	589	83	169.57	0.56	2571.4	4.5
	2	100.0	5.5336	0.0097	1.0204	0.0038	2.6605	0.0159	6.8189	0.0514	12.725	0.0750	32.05	1.062	0.088	282	44	173.88	2.46	2605.9	19.5
MC1/7	1	37.32	1.1711	0.0025	0.6773	0.0052	0.0927	0.0370	8.1486	0.2450	0.1726	0.0079	96.20	21.229	0.660	26869	26869	167.72	1.41	2556.4	11.5
	2	100.0	2.1811	0.0041	1.1282	0.0101	0.2802	0.0275	0.0009	0.0009	0.7617	0.0215	89.67	0.001	0.001	45128	45128	173.34	1.68	2601.6	13.4
MC1/8	1	6.62	0.4766	0.0009	0.3291	0.0077	0.1527	0.0170	3.1886	0.1173	0.1849	0.0093	89.07	17.070	0.746	165	37	129.86	3.20	2218.0	31.4
	2	60.14	5.2498	0.0094	2.6441	0.0080	0.7885	0.0387	1.0512	0.0329	2.2399	0.0344	87.39	0.696	0.022	2281	2291	173.57	0.74	2603.4	5.9
MC1/9	1	9.21	0.2203	0.0006	0.1143	0.0042	0.0927	0.0116	1.4374	0.0730	0.0835	0.0088	89.23	22.198	1.396	71	10	173.68	1.36	2579.0	11.0
	2	66.09	1.2360	0.0026	0.6997	0.0042	0.1232	0.0361	0.2757	0.0946	0.0708	0.0217	98.31	0.690	0.237	1172	1786	173.70	1.45	2604.4	11.5
	3	100.0	0.7187	0.0019	0.4170	0.0046	0.0052	0.0366	0.0114	0.0222	0.0201	99.08	0.154	0.048	2851	3143	170.76	2.40	2581.0	19.3	
MC1/10	1	7.13	0.3987	0.0011	0.2175	0.0017	12.1341	1.1606	3.7182	0.0958	0.2814	0.0135	80.19	30.270	0.817	0	1	148.72	1.28	2394.5	20.3
	2	71.66	3.5079	0.0070	1.9481	0.0137	0.3775	0.0172	3.5192	0.0737	0.5589	0.0158	95.31	3.165	0.070	2328	1231	171.83	1.29	2589.5	10.3
	3	100.0	1.5220	0.0034	0.8549	0.0116	0.1386	0.0117	0.3676	0.0578	0.1618	0.0191	96.86	0.753	0.119	10992	43334	172.50	2.46	2594.9	19.6
MC1/11	1	11.93	0.4810	0.0012	0.2717	0.0035	0.1411	0.0195	2.3820	0.0921	0.2231	0.0154	86.69	15.437	0.630	161	48	154.42	2.65	2444.6	23.0
	2	19.69	0.3368	0.0008	0.1760	0.0042	0.0514	0.0171	0.5862	0.0971	0.0565	0.0069	95.17	5.844	0.978	360	317	182.60	4.55	2673.7	34.7
	3	21.93	0.1127	0.0004	0.0507	0.0055	0.0232	0.0149	0.1206	0.0790	0.0601	0.0021	84.32	4.164	2.767	355	929	187.48	20.49	2710.6	153.3
	4	46.49	0.9773	0.0021	0.5575	0.0074	0.1051	0.0223	2.3212	0.1557	0.0636	0.0178	98.26	7.307	0.500	858	750	172.73	2.50	2596.7	19.9
	5	100.0	2.2685	0.0042	1.2112	0.0098	0.2670	0.0174	0.5641	0.0718	0.4456	0.0155	94.20	0.815	0.104	1408	729	176.48	1.52	2626.4	11.9
MC1/12	1	47.56	5.1136	0.0092	2.9612	0.0091	0.5901	0.0474	4.0943	0.1644	0.3941	0.0142	97.77	2.422	0.098	769	241	169.00	0.62	2566.8	5.1
	2	59.38	1.2769	0.0033	0.7353	0.0087	0.1034	0.0217	6.0708	0.0884	0.0749	0.0260	98.29	1.597	0.211	29394	29394	170.79	2.33	2581.2	58.7
	3	100.0	4.4068	0.0094	2.5269	0.0075	0.3288	0.0180	0.1749	0.0632	0.0728	0.0104	99.50	0.121	0.044	26043	26043	173.53	0.64	2603.1	27.1
MC1//Cr1	1	61.12	3.6625	0.0071	0.3990	0.0018	0.2627	0.0305	3.1787	0.8132	8.2384	0.0685	33.61	14.019	3.587	15.4	0.9	310.18	5.58	3452.6	5.6
MC1//Cr2	2	100.0	0.8801	0.0023	0.2564	0.0039	0.5427	0.0388	5.7800	3.9520	1.2946	0.0413	57.07	40.069	27.40	37.2	5.8	198.97	5.81	2794.6	41.5
Kanowna Belle pyrite GD1⁴																					
J-value = 0.018756 ± 0.000047																					
GD1/1	1	48.93	2.0029	0.0036	0.9836	0.0068	0.3613	0.0136	0.1567	0.0208	0.1519	0.0122	97.75	0.279	0.0370	186	16	199.08	1.48	2793.0	10.5
	2	100.0	1.4889	0.0031	1.0266	0.0130	0.2234	0.0290	0.3431	0.0797	0.1101	0.0287	97.82	0.585	0.1361	537	210	141.89	2.00	2330.5	18.4
GD1/2	1	60.53	10.9952	0.0193	5.2954	0.0254	1.5317	0.0511	0.4886	0.0613	1.3300	0.0290	96.42	0.161	0.0203	336	33	200.21	1.04	2801.1	7.4
	2	100.0	10.0938	0.0188	3.4532	0.0105	4.1596	0.0830	0.7275	0.1342	18.7378	0.1190	45.14	0.369	0.0680	644	261	131.97	1.22	2236.5	11.9
GD1/3	1	100.0	4.4810	0.0090	2.4167	0.0223	0.6479	0.0502	0.1747	0.0243	0.8776	0.0172	94.20	0.127	0.0177	521	144	174.68	1.67	2609.9	13.2
GD1/4	1	16.39	2.4255	0.0051	1.1448	0.0089	0.6262	0.0273	0.3583	0.0523	0.2562	0.0112	96.86	0.548	0.0801	105	9	205.27	1.68	2836.7	11.7
	2	100.0	9.9389	0.0179	5.8404	0.0270	0.9174	0.0465	0.8604	0.0254	0.2148	0.0223	99.35	0.258	0.0077	1478	446	169.09	0.85	2565.3	6.9
GD1/5	1	43.18	3.0801	0.0061	1.1353	0.0125	0.9608	0.0431	0.0315	0.0237	2.9870	0.0420	71.33	0.049	0.0366	175	31	193.53	2.45	2753.0	17.9
	2	100.0	4.0062	0.0082	1.4942	0.0079	1.3848	0.0356	0.1744	0.0512	5.7697	0.0742	57.43	0.204	0.0599	512	170	154.00	1.77	2438.8	15.3
GD1/6	1	49.98	3.9241	0.0074	1.9470	0.0147	0.0903	0.0207	0.2821	0.0669	1.2721	0.0252	90.41	0.254	0.0602	7787	39111	182.24	1.48	2668.7	11.3
	2	100.0	1.3448	0.0062	1.9486	0.0106	0.6328	0.0341	0.3044	0.0780	1.7558	0.0498	83.49	0.273	0.0701	1236	696	134.76	1.10	2263.5	10.5
GD1/7	1	45.15	1.7144	0.0033	0.6413	0.0072	0.3733	0.0320	0.0621	0.0108	0.5651	0.0163	90.62	0.169	0.0296	136	24	251.73	2.98	3134.3	17.6
	2	100.0	2.7174	0.0069	0.7791	0.0057	1.3474	0.0201	0.2215	0.0250	6.4010	0.0673	30.39	0.498	0.0564	636	310	106.03	2.81	1965.2	31.8
GD1/8	1	82.90	5.0767	0.0100	2.4506	0.0118	1.2881	0.0483	0.4756	0.0728	0.2929	0.0136	98.29	0.340	0.0520	105	8	203.65	1.08	2825.4	7.5
	2	100.0	1.0429	0.0028	0.5057	0.0014	0.4868	0.0271	0.3442	0.0913	1.7459	0.0375	50.54	1.192	0.3162	209	61	104.29	2.28	1945.4	26.0
GD1/9	1	68.36	9.1899	0.0160	4.7393	0.0238	8.4505	0.1087	0.4404	0.0282	1.6651	0.0410	94.64	0.163	0.0104	25.1					