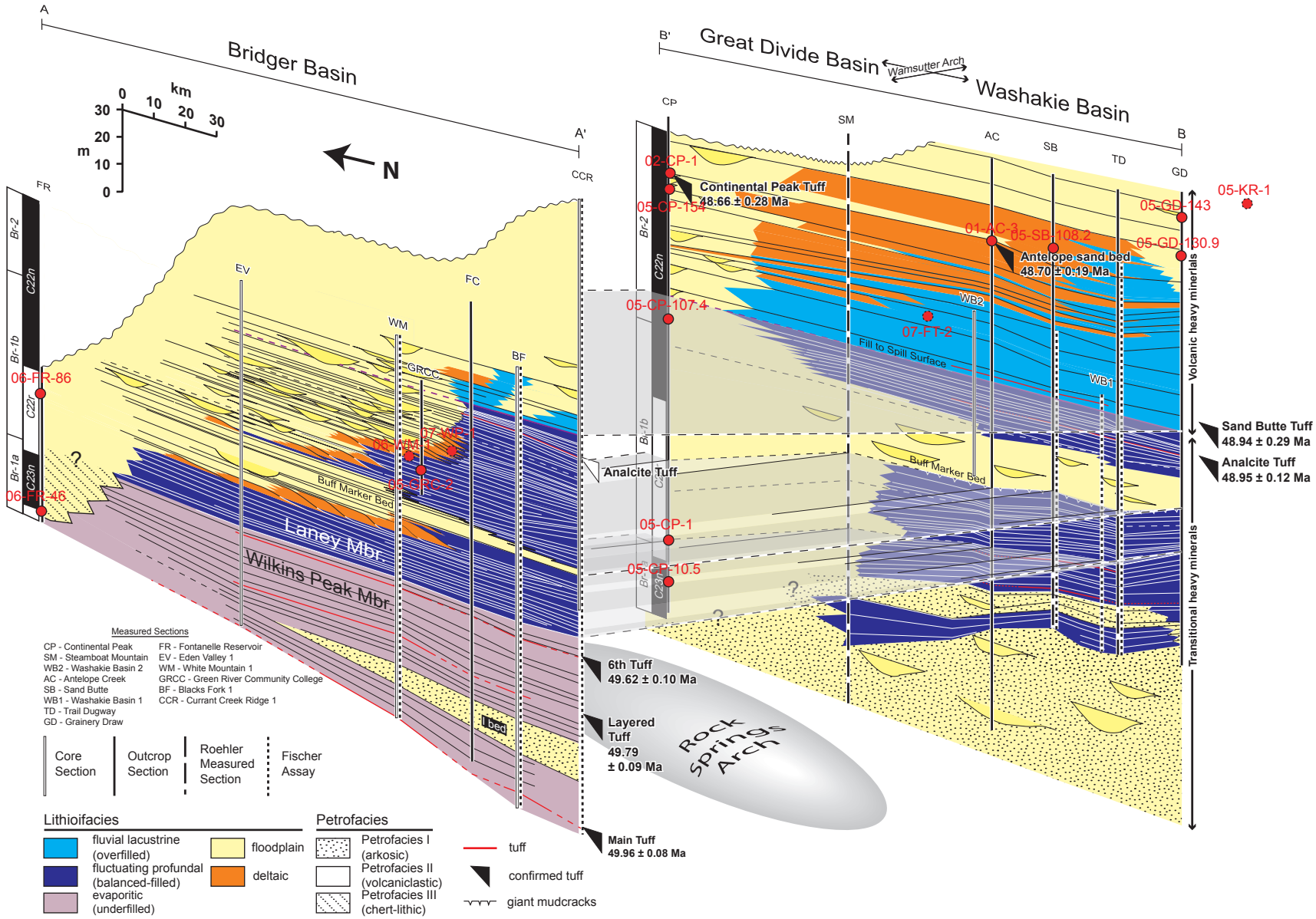

Figure DR1: High resolution cross-section of the Laney Member of the GRF and its lateral equivalents in the gGRB. All $^{40}Ar/^{39}Ar$ ages are from Smith et al. (2003) and Smith et al. (2008) NALM stages are inferred based on magnetostratigraphy of Clyde et al. (2001), tuff ages of Smith et al. (2008), and the correlated position of the Analcite Tuff. Heavy minerals are from Denson and Pipiringos (1969) and Roehler (1970). Steamboat Mountain section is from Roehler (1989). Lithofacies and Petrofacies are defined by Chetel and Carroll (in press). The stratigraphic positions of all samples analyzed in this study are marked. The positions of samples within measured sections is exact, the positions of samples not within measured sections is approximate.

TABLE DR1. ABBREVIATIONS

Framework Grains	
Q_m	monocrystalline quartz
Q_p	polycrystalline quartz
cht	chert
P	plagioclase
P_a	plag altered by cerucite
K_s	sanadine
K_m	microcline
K_o	orthoclase
K_p	perthite
L_a	Lithic altered
L_s	Lithic sedimentary
L_{cr}	Lithic calcite replaced
L_{ooid}	ooids
L_m	Lithic metamorphic
L_{vo}	Lithic volcanic other
L_{vv}	Lithic volcanic vitric
L_{vm}	Lithic volcanic microlitic
L_{vl}	Lithic volcanic lathwork
L_{vf}	Lithic volcanic felsic
Accessory Minerals	
bt	biotite
mu	muscovite
cl	chlorite
px	pyroxene
ol	olivine
hbl	hornblende
op	opaque
Void space/void filling	
por	porosity
mtx + cem	matrix + cement

TABLE DR1. - RAW POINT COUNT DATA

Sample	Framework																						Accessory Minerals						Void space/filling	
	fmwk	total	Q_m	Q_p	cht	P	P_a	K_s	K_m	K_o	K_p	L_a	L_s	L_{cr}	L_{ooid}	L_m	L_{vo}	L_{vv}	L_{vm}	L_{vl}	L_{vf}	bt	mu	cl	px	ol	hbl	op	por	mtx + cem
Greater Green River Basin (n = 41)																														
05CP1	412	552	66	10	0	68	38	1	52	6	3	0	19	0	0	9	2	22	42	38	38	1	1	0	1	6	5	1	24	101
05CP96.6	301	513	48	3	1	92	4	13	5	2	0	0	1	0	0	5	3	14	65	23	22	4	0	0	8	11	9	5	16	159
05CP99.1	290	508	26	6	0	113	5	1	3	0	0	0	1	0	0	2	0	19	64	22	28	0	0	4	0	6	6	0	6	196
05CP102.4	281	526	17	8	1	75	8	1	3	6	0	0	0	0	0	2	1	12	88	23	36	9	1	7	0	3	3	4	36	182
05CP107.4	388	527	42	7	0	116	4	10	2	5	0	0	2	0	0	5	1	16	65	18	45	4	0	14	5	2	9	4	67	84
05CP110.5	330	512	49	6	0	134	2	10	1	5	0	0	0	0	0	1	0	9	58	8	47	4	0	5	3	2	4	3	87	74
05CP135	350	514	15	3	0	93	4	7	4	1	0	0	4	0	0	4	4	33	68	36	74	6	0	0	2	10	4	2	113	27
05CP138.5	392	636	108	13	0	69	81	4	16	4	10	0	10	0	0	58	0	2	3	5	9	5	0	0	0	2	1	0	1	235
05CP154	176	502	13	1	0	80	0	17	0	6	0	0	3	0	0	2	2	7	19	5	21	1	0	0	85	4	69	0	154	13
05CP170	366	538	39	3	0	125	0	15	2	9	0	0	3	0	0	2	4	18	29	19	98	8	0	19	0	7	9	2	52	75
05KR1	305	536	36	5	0	105	12	5	0	3	0	0	0	0	0	12	2	8	39	22	56	3	0	9	0	0	0	0	82	137
05GD130.9	238	508	44	3	1	98	1	2	6	6	0	0	3	0	0	0	1	7	16	6	44	1	0	6	0	1	0	1	8	253
05GD133.7	318	527	39	5	2	146	11	13	6	7	6	0	1	0	0	0	1	10	38	13	20	0	0	10	0	0	0	1	103	95
05GD143	235	510	47	2	1	53	6	3	2	8	0	0	4	0	0	1	0	9	55	22	22	2	1	0	0	0	0	0	13	259
06WM1	310	512	18	4	0	233	1	3	1	1	0	11	4	0	0	0	0	4	8	14	8	2	0	0	10	0	12	1	44	133
06FR46	423	558	82	9	180	49	0	0	1	2	4	0	32	43	11	0	0	6	0	4	0	0	0	0	0	0	0	0	62	73
06FR66.5	370	536	76	10	124	97	0	0	0	0	0	0	22	37	0	0	0	2	1	1	0	0	0	0	0	0	0	0	72	94
06FR70	366	535	38	8	182	65	1	0	0	0	2	0	33	25	8	0	0	3	0	1	0	0	0	0	0	0	0	1	57	111
06FR86	305	516	35	4	0	160	1	8	2	5	0	0	5	9	0	1	2	3	7	17	46	5	0	0	0	0	2	3	42	159
07WM112.3	290	556	14	8	0	153	1	8	0	3	0	0	2	9	1	1	0	10	58	15	7	4	0	0	2	1	10	1	98	150
07WM131.3	320	560	14	2	0	199	8	7	1	0	0	0	0	0	0	4	0	9	50	15	11	7	0	1	3	1	7	2	89	130
07WM139.5	269	523	18	1	0	158	1	3	0	0	0	2	2	3	0	8	0	0	48	18	7	9	0	0	6	0	9	3	24	203
07WM156.5	193	508	7	4	0	134	5	8	1	0	0	0	0	0	0	0	0	0	17	12	5	3	0	0	14	0	15	2	129	152
07WM171.35	364	521	3	0	0	260	15	1	0	0	1	0	5	0	0	1	0	2	19	17	40	5	0	0	3	0	7	1	81	60
07WM178	258	521	21	1	0	156	0	5	0	0	0	2	3	7	0	1	0	4	41	7	5	11	0	0	10	1	8	2	59	172
07WM328.5	287	509	2	0	0	235	0	8	0	0	1	0	1	0	2	0	0	2	15	20	1	4	1	0	4	4	6	10	132	61
07EV137.5	274	513	15	3	0	137	1	1	0	1	0	2	1	0	0	4	0	0	35	62	12	6	0	0	1	0	2	4	21	205
07EV179.5	370	526	17	0	1	148	1	1	2	0	0	33	7	6	0	14	0	2	28	82	28	5	3	0	2	0	2	2	0	178
07EV202.75	215	415	23	11	0	7	2	4	0	3	0	2	5	7	0	12	0	10	49	28	52	2	0	0	0	0	2	4	4	188
07EV239.5	243	516	16	2	0	139	1	0	0	0	0	4	4	3	0	4	0	1	46	17	6	4	0	0	2	1	3	2	96	165
07EV292.5	214	512	11	7	0	152	0	4	0	0	0	1	2	1	0	2	0	0	22	5	7	7	1	0	1	0	3	5	62	219
07EV306	254	532	23	3	0	155	4	0	1	0	0	9	29	5	0	10	0	2	36	72	5	4	0	0	1	0	2	0	35	136
07CCR64.5	249	530	12	5	0	122	0	13	0	0	1	9	5	6	0	3	0	3	56	6	8	11	0	0	5	0	4	0	45	216

TABLE DR1 (cont.). - RAW POINT COUNT DATA

Sample																														
							Framework																Accessory Minerals						Void space/filling	
	fmwk	total	Q_m	Q_p	cht	P	P_a	K_s	K_m	K_o	K_p	L_a	L_s	L_{cr}	L_{ooid}	L_m	L_{vo}	L_{vv}	L_{vm}	L_{vl}	L_{vf}	bt	mu	cl	px	ol	hbl	op	por	mtx + cem
07CCR81.8	281	539	28	2	0	174	9	1	0	0	0	3	14	22	0	1	0	1	16	9	1	3	1	0	0	0	4	0	55	195
07CCR97.9	306	521	5	1	0	197	2	13	0	0	1	2	2	5	0	6	0	1	58	9	4	5	0	0	1	0	7	0	44	158
07CCR116.5	300	518	9	6	0	185	0	6	1	0	0	3	2	1	1	7	0	0	57	11	11	6	0	0	1	0	6	2	53	150
07CCR126.5	272	528	3	2	0	198	5	3	1	0	2	5	3	4	1	2	0	3	20	8	12	7	2	0	0	0	3	1	24	219
07CCR140.8	325	531	8	4	0	239	8	6	0	2	0	4	0	10	0	1	0	0	21	10	12	8	0	0	0	0	9	3	40	146
07CCR161.1	281	522	22	3	0	183	0	9	1	1	0	0	2	4	0	6	0	0	35	4	11	12	0	0	5	0	3	4	74	143
07CCR254.6	319	528	5	1	0	184	6	8	1	0	0	8	2	5	0	4	0	2	65	25	3	3	2	0	5	0	1	6	16	176
07CCR258.1	297	525	19	0	0	122	3	3	0	0	0	3	5	3	0	5	0	0	80	45	9	12	0	0	0	0	1	2	40	173
07CCR268.25	333	517	27	3	0	174	0	3	0	0	0	8	8	6	0	1	0	1	72	26	4	2	0	0	4	1	2	6	50	119
Piceance Creek Basin (n = 3)																														
06SS1	369	524	54	3	0	230	0	3	0	3	0	14	7	0	0	0	0	10	8	21	16	0	0	10	0	0	0	0	36	109
06RB2003	301	548	23	2	1	139	0	2	1	2	0	0	26	26	13	0	0	3	13	13	37	7	2	0	0	0	0	2	45	191
06RB2005	305	540	53	7	4	103	1	6	0	2	0	0	18	10	27	0	0	11	19	9	35	0	0	2	0	0	4	1	28	200
Wind River Basin (n = 7)																														
06BRR1.5	298	517	113	82	0	52	0	2	34	0	0	0	11	0	0	0	0	4	0	0	0	0	14	3	0	0	0	1	48	153
06BRR11	310	520	217	6	0	59	0	1	4	0	20	0	1	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	2	208
06BRR35	66	1009	24	1	0	28	1	1	4	0	6	0	0	0	0	0	0	1	0	0	0	0	0	3	0	0	0	0	2	939
06BR2.5	277	561	154	3	0	53	12	0	6	0	45	3	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	4	279
06BR13.5	175	509	81	7	0	56	1	0	19	5	5	0	0	0	0	1	0	0	0	0	0	0	2	0	0	0	0	0	10	322
06BR30.9	342	560	169	2	0	109	8	0	1	0	51	1	1	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	23	193
06BR40.8	266	535	198	0	0	26	0	0	7	0	35	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	266

TABLE DR2.- COMPLETE $^{40}Ar/^{39}Ar$ RESULTS

Sample: 05-CP-1 Lab #: UW53C-1 J: 0.010625 ± 0.0000287 D/amu: 1.0069 ±0.0003 Heating: 60s

K-feldspar single crystal total fusion experiments

N	Power (W)	^{40}Ar (moles)	^{40}Ar (10^{-9} A)	± σ_{40} (10^{-12} A)	^{39}Ar (10^{-10} A)	± σ_{39} (10^{-13} A)	^{38}Ar (10^{-12} A)	± σ_{38} (10^{-14} A)	^{37}Ar (10^{-9} A)	± σ_{37} (10^{-12} A)	^{36}Ar (10^{-13} A)	± σ_{36} (10^{-14} A)	% $^{40}Ar^*$	$^{40}Ar^*/^{39}Ar_K$	± σ	Age (Ma)	± 2σ (Ma)	K/Ca
BC7184	35	1.002E-12	5.302921	0.004770	0.053526	0.000118	0.000630	0.000029	0.000032	0.000024	0.000089	0.000038	99.55	99.2498	0.3127	1299.02	± 5.84	230.129
BC7186	35	4.805E-13	10.731107	0.003259	0.112874	0.000090	0.001347	0.000028	0.000085	0.000018	0.000204	0.000063	99.52	95.2043	0.1844	1260.88	± 3.51	191.687
BC7187	35	7.451E-13	3.943509	0.001568	0.034400	0.000090	0.000429	0.000030	0.000075	0.000010	0.000099	0.000035	99.33	114.5870	0.4242	1436.72	± 7.33	63.663
BC7189	35	4.880E-13	10.899163	0.007741	0.153266	0.000306	0.001814	0.000040	0.000364	0.000016	0.000258	0.000062	99.39	71.1150	0.1924	1015.35	± 4.20	58.155
BC7190	35	2.139E-12	11.321415	0.008773	0.160237	0.000130	0.001960	0.000021	0.000056	0.000020	0.000194	0.000065	99.52	70.7677	0.1429	1011.56	± 3.13	401.196
BC7192	35	5.094E-13	11.377412	0.010085	0.277478	0.000337	0.003353	0.000054	0.000396	0.000020	0.000444	0.000063	98.95	40.8163	0.0912	649.90	± 2.44	97.086
BC7193	35	9.738E-14	6.976348	0.004198	2.690512	0.001971	0.032843	0.000056	0.013390	0.000077	0.000204	0.000008	99.53	2.5899	0.0032	48.97	± 0.12	27.427
BC7195	35	1.957E-12	10.356663	0.010428	0.137832	0.000122	0.001652	0.000032	0.000120	0.000023	0.000153	0.000061	99.59	75.3098	0.1646	1060.58	± 3.51	159.275
BC7196	35	6.000E-13	3.176131	0.001280	0.027261	0.000030	0.000370	0.000013	0.000031	0.000018	0.000104	0.000031	99.12	116.1980	0.3586	1450.59	± 6.15	126.621
BC7198	35	1.096E-13	7.848744	0.003921	1.723076	0.000732	0.021059	0.000078	0.000821	0.000023	0.000637	0.000018	97.98	4.4791	0.0052	83.88	± 0.19	294.067
BC7199	35	1.812E-12	9.587107	0.003370	0.091617	0.000200	0.001120	0.000032	0.000054	0.000021	0.000169	0.000061	99.51	104.7998	0.3040	1350.07	± 5.51	240.397
BC7201	35	2.307E-13	5.156959	0.009757	0.548815	0.000800	0.006639	0.000021	0.000685	0.000015	0.000209	0.000016	98.99	9.3506	0.0244	170.88	± 0.85	110.023
BC7202	35	5.580E-13	2.953849	0.001781	0.030470	0.000122	0.000389	0.000025	0.000012	0.000005	0.000073	0.000028	99.36	96.9260	0.4779	1277.21	± 9.03	402.326
BC7204	35	5.037E-13	2.666422	0.001382	0.036365	0.000167	0.000433	0.000011	0.000036	0.000013	0.000092	0.000033	99.08	73.0901	0.4270	1036.79	± 9.22	141.372
BC7205	35	7.289E-13	3.857856	0.003665	0.037290	0.000069	0.000485	0.000026	0.000058	0.000034	0.000100	0.000035	99.30	103.3758	0.3486	1337.11	± 6.37	88.152

Sample: 05-CP-1 Lab #: UW53C-2 J: 0.0106680 ± 0.0000181 D/amu: 1.0069 ±0.0003 Heating: 60s

K-feldspar single crystal total fusion experiments

BC7207	35	5.726E-14	4.108827	0.005422	1.233708	0.000756	0.015863	0.000111	0.009682	0.000031	0.001111	0.000034	92.86	3.0986	0.0104	58.67	± 0.39	17.326
BC7210	35	7.724E-14	5.536334	0.004622	1.623962	0.001235	0.019971	0.000100	0.003508	0.000030	0.000203	0.000012	99.41	3.3995	0.0056	64.27	± 0.21	62.963
BC7211	35	1.454E-13	10.405473	0.005028	2.192517	0.001409	0.027010	0.000099	0.010564	0.000092	0.000478	0.000014	98.94	4.7175	0.0051	88.58	± 0.19	28.161
BC7213	35	1.249E-13	8.942059	0.008687	1.203696	0.000747	0.014892	0.000059	0.003955	0.000044	0.000778	0.000019	97.76	7.2948	0.0108	135.20	± 0.39	41.256
BC7214	35	1.199E-12	6.347906	0.002893	0.098244	0.000160	0.001207	0.000011	0.000061	0.000014	0.000041	0.000005	99.84	64.9234	0.1124	949.43	± 2.56	220.318
BC7216	35	1.591E-13	11.381851	0.014166	1.060933	0.001450	0.013594	0.000032	0.005815	0.000072	0.003094	0.000035	92.41	9.9622	0.0219	182.21	± 0.76	24.735
BC7217	35	7.426E-13	3.930334	0.001540	0.065531	0.000223	0.000843	0.000017	0.000049	0.000008	0.000067	0.000008	99.56	60.0872	0.2095	893.58	± 4.92	183.634
BC7219	35	1.094E-14	0.800990	0.001149	0.037949	0.000157	0.000895	0.000030	0.000673	0.000018	0.002304	0.000025	18.69	3.8822	0.2264	73.21	± 8.37	7.838
BC7220	35	9.203E-14	6.593211	0.004398	1.216972	0.000747	0.014687	0.000086	0.001410	0.000031	0.000249	0.000014	99.31	5.3996	0.0071	101.04	± 0.26	118.256
BC7222	35	5.150E-13	2.726197	0.000956	0.068854	0.000216	0.000829	0.000028	0.000070	0.000015	0.000013	0.000007	99.93	39.8032	0.1298	638.47	± 3.51	138.136
BC7223	35	7.536E-14	5.402346	0.002533	0.738074	0.000387	0.009119	0.000033	0.000603	0.000028	0.000240	0.000014	99.17	7.2806	0.0115	134.95	± 0.41	174.905
BC7225	35	1.897E-12	10.037685	0.005771	0.082163	0.000211	0.001021	0.000022	0.000029	0.000017	0.000072	0.000012	99.80	122.7130	0.3271	1509.76	± 5.45	395.213
BC7226	35	6.174E-14	4.429508	0.003778	1.318972	0.000817	0.016098	0.000038	0.001325	0.000035	0.000281	0.000017	98.44	3.3130	0.0057	62.66	± 0.21	134.963
BC7228	35	2.668E-14	1.926154	0.003103	0.716327	0.000780	0.008776	0.000080	0.000731	0.000010	0.000095	0.000018	99.14	2.6553	0.0102	50.39	± 0.38	133.203
BC7769	35	8.417E-14	6.029871	0.002481	2.308626	0.001278	0.028379	0.000133	0.001770	0.000010	0.000157	0.000013	99.52	2.6083	0.0037	49.51	± 0.14	139.289
BC7770	35	8.495E-13	4.496136	0.001685	0.063277	0.000208	0.000762	0.000022	0.000039	0.000010	0.000078	0.000043	99.53	71.1591	0.3087	1018.97	± 6.75	177.414
BC7772	35	6.060E-13	3.207439	0.002223	0.067731	0.000165	0.000801	0.000024	0.000031	0.000019	0.000072	0.000033	99.40	47.3582	0.1862	737.75	± 4.76	236.327
BC7773	35	1.779E-12	9.413143	0.006609	0.086817	0.000168	0.001035	0.000021	0.000112	0.000009	0.000120	0.000055	99.65	108.7285	0.2918	1389.26	± 5.20	82.357
BC7775	35	3.817E-14	2.744297	0.001260	1.024058	0.001089	0.012489	0.000051	0.004249	0.000042	0.000235	0.000015	97.99	2.6259	0.0062	49.84	± 0.23	25.496
BC7776	35	8.760E-13	4.636242	0.002148	0.042261	0.000075	0.000494	0.000024	0.000020	0.000017	0.000080	0.000039	99.53	109.8636	0.3383	1399.35	± 6.00	232.809
BC7778	35	3.266E-14	2.350643	0.000950	0.898072	0.001269	0.010863	0.000059	0.002401	0.000029	0.000098	0.000019	99.30	2.5964	0.0080	49.29	± 0.30	39.717

TABLE DR2. (cont.)- COMPLETE $^{40}Ar/^{39}Ar$ RESULTS

BC7779	35	5.525E-13	2.924327	0.001451	0.025910	0.000115	0.000308	0.000019	0.000005	0.000020	0.000063	0.000017	99.41	112.8693	0.5381	1425.79 ± 9.40	685.388
BC7781	35	2.433E-14	1.756676	0.001514	0.534771	0.000699	0.006766	0.000022	0.000930	0.000026	0.001239	0.000026	80.18	2.6227	0.0158	49.78 ± 0.59	61.996
BC7782	35	1.335E-12	7.064903	0.004270	0.065138	0.000066	0.000849	0.000022	0.001011	0.000030	0.000117	0.000013	99.54	108.6446	0.1448	1388.52 ± 2.58	6.788
BC7784	35	4.458E-13	9.957141	0.004270	0.257102	0.000215	0.003215	0.000041	0.000079	0.000013	0.000371	0.000017	98.97	38.5549	0.0431	621.53 ± 1.18	350.473
BC7785	35	1.088E-14	0.796144	0.001116	0.292869	0.000632	0.003561	0.000038	0.000255	0.000013	0.000094	0.000008	98.20	2.6230	0.0180	49.79 ± 0.68	124.323
BC7787	35	2.520E-14	1.818466	0.001421	0.644770	0.000433	0.007931	0.000043	0.000475	0.000026	0.000168	0.000018	98.04	2.7551	0.0102	52.26 ± 0.38	147.146
BC7788	35	7.026E-13	3.718763	0.003293	0.037496	0.000055	0.000464	0.000018	0.000031	0.000016	0.000034	0.000011	99.76	99.5550	0.1937	1305.61 ± 3.62	130.891

Sample: 05-GD-143 Lab #: UW53C-3 J: 0.010639 ± 0.0000170 D/amu: 1.0069 ±0.0003 Heating: 60s

K-feldspar single crystal total fusion experiments

N	Power (W)	^{40}Ar (moles)	^{40}Ar (10^{-9} A)	± s_{40} (10^{-12} A)	^{39}Ar (10^{-10} A)	± s_{39} (10^{-13} A)	^{38}Ar (10^{-12} A)	± s_{38} (10^{-14} A)	^{37}Ar (10^{-9} A)	± s_{37} (10^{-12} A)	^{36}Ar (10^{-13} A)	± s_{36} (10^{-14} A)	$\%^{40}Ar^*$	$^{40}Ar^*/^{39}Ar_K$	± s	Age (Ma)	± 2s (Ma)	K/Ca
BC7229	35	4.178E-14	3.004659	0.002706	0.056627	0.000206	0.000860	0.000015	0.013690	0.000065	0.000515	0.000015	95.53	50.7847	0.2153	779.32 ± 5.37		0.557
BC7231	35	1.760E-12	9.312660	0.005369	0.104932	0.000181	0.001304	0.000023	0.000316	0.000022	0.000034	0.000014	99.91	89.2324	0.1690	1204.21 ± 3.33		44.828
BC7232	35	8.132E-13	4.304152	0.001671	0.054278	0.000106	0.000659	0.000026	0.000041	0.000022	0.000078	0.000036	99.51	79.3973	0.2504	1104.67 ± 5.21		182.093
BC7234	35	8.513E-13	4.505386	0.001634	0.080047	0.000184	0.000969	0.000015	0.000043	0.000019	0.000056	0.000011	99.68	56.4538	0.1388	848.61 ± 3.33		252.329
BC7235	35	2.047E-12	10.832775	0.006598	0.173188	0.000211	0.002119	0.000040	0.000260	0.000011	0.000072	0.000012	99.82	62.8383	0.0900	923.59 ± 2.07		89.958
BC7237	35	1.661E-12	8.792043	0.003849	0.075223	0.000157	0.000943	0.000022	0.000085	0.000021	0.000011	0.000015	99.98	117.6099	0.2598	1463.98 ± 4.43		122.755
BC7238	35	4.195E-13	9.368958	0.009982	0.090395	0.000146	0.001068	0.000021	0.000656	0.000023	0.000198	0.000057	99.47	103.7332	0.2755	1341.62 ± 5.03		18.773
BC7240	35	6.550E-13	3.466823	0.003394	0.058122	0.000150	0.000712	0.000015	0.000112	0.000011	0.000078	0.000048	99.40	59.6573	0.2912	886.62 ± 6.84		71.409
BC7241	35	5.757E-14	4.130329	0.003605	1.031068	0.000512	0.012795	0.000091	0.002520	0.000035	0.000449	0.000017	97.43	3.9109	0.0077	73.54 ± 0.28		55.612
BC7243	35	1.710E-12	9.047844	0.003804	0.084951	0.000166	0.001043	0.000029	0.000168	0.000016	0.000129	0.000053	99.61	106.7697	0.2809	1369.11 ± 5.05		68.151
BC7244	35	8.539E-14	6.118621	0.002301	0.023983	0.000039	0.000343	0.000022	0.000280	0.000010	0.000237	0.000042	99.29	254.9623	0.7429	2366.44 ± 7.68		11.942
BC7246	35	5.639E-13	2.985157	0.000961	0.046265	0.000102	0.000575	0.000020	0.000091	0.000021	0.000044	0.000004	99.63	64.6762	0.1471	944.61 ± 3.35		69.757
BC7247	35	1.123E-12	5.941992	0.004959	0.071232	0.000114	0.000906	0.000030	0.000029	0.000015	0.000086	0.000042	99.61	83.6146	0.2300	1148.03 ± 4.67		343.765
BC7249	35	1.044E-12	5.526855	0.003457	0.045636	0.000160	0.000624	0.000008	0.000326	0.000025	0.000117	0.000014	99.42	121.1683	0.4414	1494.07 ± 7.40		18.855
BC7250	35	1.505E-12	7.964124	0.003637	0.067110	0.000166	0.000924	0.000018	0.000800	0.000037	0.000146	0.000063	99.49	118.8287	0.4055	1474.35 ± 6.88		11.263

Sample: 05-GD-143 Lab #: UW53C-4 J: 0.0108070 ±0.0000195 D/amu: 1.0069 ±0.0003 Heating: 60s

K-feldspar single crystal total fusion experiments

BC7252	35	2.522E-14	1.820040	0.001659	0.576330	0.000332	0.007114	0.000052	0.004199	0.000050	0.000231	0.000021	97.66	3.0725	0.0144	58.93 ± 0.54		18.512
BC7253	35	7.129E-14	5.111232	0.002493	0.622608	0.000824	0.007621	0.000023	0.002466	0.000019	0.000432	0.000019	98.03	8.0709	0.0170	150.87 ± 0.61		34.209
BC7255	35	1.248E-13	8.933928	0.005539	1.326187	0.000901	0.016528	0.000089	0.006212	0.000039	0.000258	0.000018	99.44	6.7285	0.0084	126.63 ± 0.31		28.748
BC7256	35	5.351E-14	3.841383	0.003352	0.837694	0.000714	0.010285	0.000028	0.004443	0.000032	0.000156	0.000009	99.46	4.5682	0.0087	86.94 ± 0.32		25.443
BC7258	35	1.045E-14	0.765161	0.000644	0.283592	0.000373	0.003571	0.000040	0.001550	0.000029	0.000139	0.000017	98.02	2.5969	0.0256	49.93 ± 0.97		24.793
BC7259	35	9.157E-14	6.560046	0.005911	1.202465	0.000806	0.014823	0.000048	0.005825	0.000029	0.000338	0.000025	98.90	5.4156	0.0098	102.61 ± 0.36		27.694
BC7261	35	2.534E-13	5.662765	0.003539	0.433498	0.000427	0.005493	0.000043	0.003373	0.000041	0.000379	0.000018	98.24	12.9044	0.0203	235.53 ± 0.69		17.189
BC7262	35	2.858E-13	6.384525	0.004186	0.732418	0.000820	0.008863	0.000066	0.001116	0.000054	0.000054	0.000011	99.89	8.7565	0.0127	163.12 ± 0.45		87.948
BC7264	35	3.272E-14	2.356387	0.002497	0.900208	0.000541	0.010884	0.000082	0.002871	0.000026	0.000137	0.000009	99.33	2.5961	0.0119	49.92 ± 0.45		42.074
BC7265	35	2.660E-14	1.918912	0.001540	0.456575	0.000102	0.005587	0.000055	0.004316	0.000024	0.000178	0.000022	98.59	4.1301	0.0261	78.78 ± 0.97		14.167
BC7267	35	3.993E-14	2.871432	0.001961	0.859370	0.000629	0.010413	0.000063	0.002067	0.000030	0.000111	0.000015	99.47	3.3226	0.0068	63.64 ± 0.26		55.836
BC7268	35	1.638E-13	11.717877	0.008971	0.887807	0.000514	0.010876	0.000063	0.002278	0.000069	0.000144	0.000009	99.79	13.2350	0.0140	241.18 ± 0.48		52.272
BC7270	35	5.190E-14	3.727930	0.003022	0.453932	0.000441	0.005710	0.000066	0.001029	0.000020	0.000161	0.000007	99.30	8.1654	0.0151	152.56 ± 0.54		61.435

TABLE DR2. (cont.)- COMPLETE $^{40}Ar/^{39}Ar$ RESULTS

BC7271	35	1.554E-13	11.118369	0.009330	2.059341	0.001665	0.025252	0.000112	0.040415	0.000110	0.000366	0.000004	99.31	5.3871	0.0069	102.09 ± 0.25	6.795
BC7275	35	1.317E-14	0.958808	0.000640	0.363729	0.000247	0.004480	0.000042	0.002156	0.000036	0.000109	0.000019	98.65	2.5680	0.0240	49.39 ± 0.91	22.919
BC7791	35	4.581E-14	3.289985	0.001724	1.285714	0.000911	0.016048	0.000067	0.002183	0.000034	0.000116	0.000013	99.54	2.5497	0.0092	49.04 ± 0.35	62.213
BC7793	35	3.944E-14	2.834440	0.003798	1.104109	0.001321	0.013574	0.000034	0.003152	0.000030	0.000100	0.000006	99.72	2.5610	0.0084	49.25 ± 0.32	36.839
BC7794	35	1.067E-14	0.779308	0.001287	0.296743	0.000674	0.003572	0.000037	0.000862	0.000026	0.000085	0.000015	99.53	2.5732	0.0305	49.48 ± 1.16	36.474
BC7796	35	2.242E-16	0.033271	0.000185	0.000286	0.000022	0.000024	0.000014	0.000044	0.000014	0.000065	0.000015	89.01	60.5767	25.6928	908.52 ± 605	1.108
BC7797	35	4.790E-14	3.438606	0.002902	1.344380	0.000498	0.016391	0.000108	0.005111	0.000042	0.000111	0.000010	99.57	2.5504	0.0045	49.05 ± 0.17	27.665
BC7799	35	3.215E-14	2.314181	0.001566	0.899532	0.000593	0.010956	0.000040	0.003491	0.000061	0.000086	0.000008	99.73	2.5629	0.0073	49.29 ± 0.28	27.088
BC7800	35	1.478E-14	1.073259	0.001164	0.412513	0.000333	0.005041	0.000059	0.001279	0.000019	0.000072	0.000011	99.77	2.5702	0.0163	49.43 ± 0.62	34.147
BC7802	35	2.006E-14	1.450532	0.000494	0.446630	0.000507	0.005600	0.000037	0.001257	0.000022	0.001082	0.000015	79.70	2.5738	0.0175	49.50 ± 0.67	37.416
BC7803	35	2.779E-14	2.002727	0.002281	0.662348	0.000645	0.008164	0.000041	0.007419	0.000031	0.001024	0.000021	86.28	2.6028	0.0141	50.04 ± 0.54	9.345

Sample: 05-KR-1 Lab #: UW53D-3 J: 0.010682 ± 0.0000310 D/amu: 1.0069 ±0.0003 Heating: 60s

K-feldspar single crystal total fusion experiments

N	Power (W)	^{40}Ar (moles)	^{40}Ar (10^{-9} A)	± s_{40} (10^{-12} A)	^{39}Ar (10^{-10} A)	± s_{39} (10^{-13} A)	^{38}Ar (10^{-12} A)	± s_{38} (10^{-14} A)	^{37}Ar (10^{-9} A)	± s_{37} (10^{-12} A)	^{36}Ar (10^{-13} A)	± s_{36} (10^{-14} A)	$\%^{40}Ar^*$	$^{40}Ar^*/^{39}Ar_K$	± s	Age (Ma)	± 2s (Ma)	K/Ca
BC7657	35	4.186E-14	3.008216	0.002057	1.113140	0.000658	0.013534	0.000040	0.003001	0.000041	0.000654	0.000018	94.41	2.5522	0.0069	48.52 ± 0.26		40.829
BC7659	35	1.099E-13	7.871496	0.005029	1.746713	0.001623	0.021692	0.000122	0.002460	0.000048	0.000448	0.000008	98.62	4.4621	0.0062	84.00 ± 0.23		78.338
BC7660	35	5.504E-13	2.913488	0.002364	0.023524	0.000062	0.000310	0.000008	0.000051	0.000019	0.000067	0.000030	99.39	123.8879	0.7196	1520.87 ± 11.9		52.910
BC7662	35	2.909E-14	2.096605	0.001973	0.806321	0.000769	0.009656	0.000073	0.002832	0.000047	0.000104	0.000012	99.54	2.5824	0.0131	49.09 ± 0.49		31.259
BC7663	35	3.882E-14	2.791772	0.003072	1.074083	0.001494	0.013142	0.000048	0.002186	0.000042	0.000117	0.000011	99.51	2.5864	0.0126	49.17 ± 0.47		54.057
BC7665	35	4.791E-14	3.441045	0.002113	1.329170	0.000632	0.016123	0.000077	0.002449	0.000020	0.000207	0.000012	98.85	2.5621	0.0113	48.71 ± 0.43		59.468
BC7668	35	3.874E-14	2.786494	0.002373	1.067058	0.000625	0.013132	0.000053	0.002019	0.000018	0.000166	0.000006	99.05	2.5862	0.0119	49.16 ± 0.45		58.035
BC7669	35	3.999E-14	2.875721	0.002053	1.099714	0.000721	0.013523	0.000078	0.002012	0.000035	0.000184	0.000015	98.90	2.5864	0.0124	49.17 ± 0.46		59.997
BC7671	35	4.848E-14	3.481701	0.001467	1.297386	0.000821	0.015869	0.000072	0.002137	0.000032	0.000227	0.000015	98.73	2.6531	0.0121	50.42 ± 0.45		66.458
BC7672	35	1.347E-12	7.126361	0.004381	0.094811	0.000167	0.001174	0.000028	0.000008	0.000021	0.000118	0.000060	99.55	75.3123	0.3857	1064.90 ± 8.24		1573.691
BC7674	35	7.650E-14	5.483378	0.006058	0.314767	0.000348	0.003894	0.000027	0.000530	0.000016	0.000159	0.000011	99.56	17.4048	0.0786	307.63 ± 2.55		65.907
BC7675	35	1.831E-14	1.326815	0.001681	0.500581	0.000524	0.006179	0.000025	0.001105	0.000037	0.000113	0.000013	99.19	2.6091	0.0164	49.59 ± 0.61		49.682
BC7677	35	1.831E-14	1.326620	0.001677	0.370618	0.000521	0.004595	0.000049	0.000644	0.000009	0.000159	0.000011	98.21	3.4894	0.0217	66.02 ± 0.81		64.455
BC7718	35	1.693E-14	1.227319	0.001122	0.471995	0.000376	0.005771	0.000041	0.001788	0.000019	0.000079	0.000006	99.41	2.5641	0.0177	48.75 ± 0.66		28.582

Sample: 05-KR-1 Lab #: UW53D-4 J: 0.010651 ± 0.0000277 D/amu: 1.0069 ±0.0003 Heating: 60s

K-feldspar single crystal total fusion experiments

BC7678	35	4.296E-14	3.087453	0.001837	0.319814	0.000292	0.003933	0.000041	0.000899	0.000015	0.000178	0.000017	99.06	9.5680	0.0231	175.07 ± 0.81		39.461
BC7681	35	2.973E-14	2.142043	0.001251	0.648990	0.000367	0.008072	0.000041	0.001058	0.000017	0.000368	0.000010	95.94	3.1596	0.0082	59.71 ± 0.31		67.852
BC7684	35	5.317E-14	3.817084	0.003330	1.467455	0.001128	0.017675	0.000072	0.004994	0.000058	0.000242	0.000015	98.71	2.5713	0.0053	48.74 ± 0.20		31.874
BC7686	35	5.280E-14	3.790694	0.004315	0.958760	0.001003	0.011608	0.000057	0.000546	0.000024	0.000587	0.000020	96.13	3.8058	0.0099	71.69 ± 0.37		194.074
BC7687	35	3.760E-14	2.705020	0.002061	1.047233	0.001328	0.012903	0.000047	0.001769	0.000029	0.000353	0.000013	97.07	2.5056	0.0069	47.51 ± 0.26		64.444
BC7689	35	6.403E-13	3.388997	0.002002	0.032342	0.000101	0.000420	0.000009	0.000085	0.000053	0.000074	0.000028	99.42	104.8238	0.4198	1352.61 ± 7.62		41.804
BC7690	35	3.300E-14	2.376375	0.002266	0.920780	0.000789	0.011326	0.000065	0.003359	0.000031	0.000122	0.000020	99.49	2.5636	0.0089	48.60 ± 0.33		29.785
BC7692	35	4.842E-13	10.814836	0.004286	0.097878	0.000161	0.001218	0.000028	0.000086	0.000013	0.000068	0.000012	99.89	111.0527	0.1951	1408.30 ± 3.43		133.500
BC7693	35	4.770E-14	3.425473	0.002266	0.608802	0.000673	0.007526	0.000067	0.001399	0.000036	0.000270	0.000015	98.41	5.5438	0.0141	103.50 ± 0.51		47.712
BC7695	35	4.108E-13	9.176055	0.004701	0.134615	0.000252	0.001643	0.000037	0.000226	0.000019	0.000133	0.000008	99.66	68.3404	0.1360	986.66 ± 3.02		65.653

TABLE DR2. (cont.)- COMPLETE $^{40}Ar/^{39}Ar$ RESULTS

BC7698	35	4.318E-13	9.643252	0.008891	0.105747	0.000188	0.001305	0.000028	0.000327	0.000014	0.000094	0.000010	99.78	91.5425	0.1887	1227.82 ± 3.67	35.318
BC7699	35	2.643E-14	1.906339	0.002608	0.735009	0.001230	0.009069	0.000062	0.001272	0.000023	0.000168	0.000013	98.45	2.5449	0.0098	48.25 ± 0.37	63.004
BC7701	35	1.614E-12	8.543665	0.004160	0.108539	0.000188	0.001352	0.000028	0.000397	0.000012	0.000047	0.000021	99.86	79.1006	0.1553	1102.51 ± 3.24	29.488
BC7702	35	5.371E-14	3.855065	0.003226	0.996311	0.001000	0.012450	0.000061	0.000529	0.000017	0.000471	0.000010	96.94	3.7569	0.0069	70.78 ± 0.25	206.123
BC7719	35	1.070E-12	5.664809	0.003467	0.071132	0.000162	0.000898	0.000025	0.000079	0.000013	0.000078	0.000040	99.63	79.8333	0.2498	1110.14 ± 5.19	98.484
BC7721	35	1.638E-13	11.716030	0.008643	1.593413	0.001650	0.019886	0.000077	0.001775	0.000027	0.000220	0.000010	99.61	7.3598	0.0100	136.15 ± 0.36	96.732

Sample: 05-CP-154 Lab #: UW53D-5 J: 0.010632 ± 0.0000287 D/amu: 1.0069 ±0.0003 Heating: 60s

K-feldspar single crystal total fusion experiments

N	Power (W)	^{40}Ar (moles)	^{40}Ar (10^{-9} A)	± s_{40} (10^{-12} A)	^{39}Ar (10^{-10} A)	± s_{39} (10^{-13} A)	^{38}Ar (10^{-12} A)	± s_{38} (10^{-14} A)	^{37}Ar (10^{-9} A)	± s_{37} (10^{-12} A)	^{36}Ar (10^{-13} A)	± s_{36} (10^{-14} A)	$\%^{40}Ar^*$	$^{40}Ar^*/^{39}Ar_K$	± s	Age (Ma)	± 2s (Ma)	K/Ca
BC7704	35	3.257E-14	2.354357	0.001540	0.823430	0.000790	0.010115	0.000049	0.004905	0.000027	0.000450	0.000009	95.76	2.7232	0.0227	51.49 ± 0.84		18.091
BC7705	35	2.671E-14	1.935407	0.002309	0.744664	0.000684	0.009145	0.000062	0.001390	0.000034	0.000182	0.000014	98.81	2.5476	0.0254	48.21 ± 0.95		57.938
BC7707	35	3.138E-14	2.259794	0.000767	0.847706	0.000868	0.010235	0.000059	0.000894	0.000019	0.000164	0.000019	98.70	2.6269	0.0091	49.70 ± 0.34		103.869
BC7708	35	1.176E-14	0.857895	0.000932	0.327501	0.000464	0.004111	0.000033	0.003744	0.000020	0.000092	0.000011	99.18	2.5597	0.0180	48.44 ± 0.67		9.442
BC7710	35	3.025E-14	2.178711	0.001413	0.745556	0.000612	0.009193	0.000073	0.001410	0.000018	0.001004	0.000015	87.41	2.5499	0.0087	48.26 ± 0.33		57.542
BC7711	35	8.560E-15	0.629195	0.001312	0.237956	0.000631	0.002815	0.000018	0.001511	0.000031	0.000100	0.000006	98.04	2.5360	0.0215	48.00 ± 0.80		17.122
BC7713	35	1.758E-14	1.274514	0.000633	0.486622	0.000355	0.005955	0.000033	0.000972	0.000026	0.000114	0.000012	98.95	2.5704	0.0113	48.64 ± 0.42		55.114
BC7714	35	2.390E-14	1.725606	0.002190	0.343244	0.000982	0.004226	0.000048	0.002217	0.000037	0.000176	0.000015	98.21	4.9166	0.0231	91.92 ± 0.84		16.792
BC7722	35	1.295E-14	0.943551	0.000985	0.359182	0.000282	0.004445	0.000047	0.000550	0.000023	0.000094	0.000014	99.06	2.5684	0.0140	48.60 ± 0.52		71.325
BC7724	35	1.240E-14	0.904109	0.000419	0.305631	0.000191	0.003785	0.000036	0.000829	0.000022	0.000497	0.000014	86.00	2.5096	0.0165	47.51 ± 0.62		39.838
BC7725	35	1.646E-14	1.194281	0.000777	0.442685	0.000457	0.005530	0.000062	0.003042	0.000016	0.000175	0.000007	97.38	2.6042	0.0090	49.27 ± 0.33		15.605
BC7727	35	1.869E-14	1.352769	0.000904	0.524294	0.000576	0.006495	0.000052	0.000883	0.000032	0.000116	0.000016	98.77	2.5317	0.0143	47.92 ± 0.53		64.612
BC7728	35	1.859E-14	1.345631	0.001257	0.392165	0.000427	0.004809	0.000041	0.000269	0.000017	0.000135	0.000011	98.36	3.3529	0.0171	63.19 ± 0.63		165.378
BC7730	35	1.607E-14	1.166542	0.000990	0.251795	0.000139	0.003119	0.000065	0.000239	0.000016	0.000118	0.000014	98.57	4.5243	0.0305	84.76 ± 1.12		123.113
BC7731	35	3.715E-14	2.672173	0.001768	0.486803	0.000758	0.006017	0.000029	0.000683	0.000022	0.000139	0.000025	99.15	5.4402	0.0220	101.44 ± 0.80		78.434
BC7733	35	1.395E-14	1.014707	0.001065	0.390181	0.000755	0.004807	0.000033	0.000723	0.000029	0.000076	0.000010	99.89	2.5670	0.0162	48.58 ± 0.61		59.126
BC7734	35	1.721E-14	1.247805	0.001599	0.373393	0.000339	0.004755	0.000025	0.000582	0.000029	0.000104	0.000010	99.27	3.2895	0.0166	62.02 ± 0.61		70.712
BC7737	35	2.432E-14	1.755032	0.001210	0.529499	0.000385	0.006485	0.000051	0.003456	0.000018	0.000113	0.000012	99.14	3.2736	0.0117	61.72 ± 0.43		16.440
BC7739	35	3.603E-13	8.047875	0.008842	0.172492	0.000361	0.002057	0.000019	0.000352	0.000015	0.000099	0.000014	99.73	46.7983	0.1140	728.55 ± 2.92		52.629
BC7740	35	3.895E-14	2.800626	0.003091	0.437057	0.000496	0.005517	0.000048	0.001109	0.000023	0.000197	0.000009	98.73	6.3262	0.0144	117.44 ± 0.52		42.337
BC7742	35	3.172E-14	2.283623	0.002006	0.372759	0.000170	0.004544	0.000080	0.000776	0.000025	0.000132	0.000013	99.31	6.0758	0.0155	112.93 ± 0.56		51.965
BC7743	35	1.216E-14	0.886469	0.000888	0.334774	0.000203	0.004050	0.000023	0.002119	0.000031	0.000145	0.000012	97.84	2.5546	0.0155	48.35 ± 0.58		16.912

Sample: 05-CP-154 Lab #: UW53D-6 J: 0.0108300 ± 0.0000217 D/amu: 1.0069 ±0.0003 Heating: 60s

K-feldspar single crystal total fusion experiments

BC7746	35	5.540E-14	3.975120	0.002892	0.831434	0.000795	0.011853	0.000086	0.007608	0.000031	0.006503	0.000027	53.33	2.5545	0.0113	49.23 ± 0.43		11.640
BC7748	35	5.445E-14	3.907078	0.004036	0.694312	0.000580	0.008544	0.000057	0.000272	0.000016	0.000491	0.000021	96.76	5.4552	0.0137	103.56 ± 0.50		288.833
BC7749	35	2.008E-14	1.451903	0.001631	0.277688	0.000271	0.003343	0.000053	0.000707	0.000015	0.000108	0.000007	98.94	5.1433	0.0213	97.79 ± 0.79		42.687
BC7751	35	5.619E-14	4.030800	0.001071	0.764482	0.000717	0.009392	0.000047	0.000476	0.000022	0.000441	0.000012	97.29	5.1404	0.0132	97.74 ± 0.49		177.880
BC7752	35	2.680E-14	1.932068	0.001259	0.519329	0.000486	0.006482	0.000052	0.000305	0.000023	0.000078	0.000008	99.76	3.7019	0.0177	70.92 ± 0.67		193.561
BC7754	35	1.629E-13	11.655092	0.009307	0.781884	0.000723	0.009713	0.000052	0.001067	0.000028	0.000220	0.000017	99.63	14.9255	0.0211	270.32 ± 0.71		79.268
BC7755	35	1.727E-14	1.250592	0.001194	0.482254	0.000568	0.006003	0.000052	0.000403	0.000011	0.000104	0.000010	99.20	2.5535	0.0138	49.21 ± 0.53		133.487

TABLE DR2. (cont.)- COMPLETE $^{40}Ar/^{39}Ar$ RESULTS

BC7757	35	8.435E-13	4.464202	0.001691	0.059982	0.000097	0.000759	0.000014	0.000088	0.000013	0.000029	0.000013	99.85	74.7700	0.1428	1070.17 ± 3.08	73.103
BC7758	35	9.489E-13	5.021906	0.004225	0.050650	0.000117	0.000610	0.000011	0.000046	0.000014	0.000084	0.000033	99.54	99.3114	0.3096	1317.38 ± 5.83	119.629
BC7760	35	2.636E-14	1.901496	0.001299	0.536255	0.000345	0.006627	0.000030	0.000604	0.000016	0.000189	0.000019	98.08	3.4659	0.0133	66.48 ± 0.50	97.636
BC7761	35	1.622E-12	8.583199	0.004175	0.092361	0.000162	0.001155	0.000030	0.000020	0.000010	0.000154	0.000054	99.50	93.0440	0.2415	1257.39 ± 4.70	533.778
BC7763	35	9.453E-13	5.003049	0.001740	0.072392	0.000172	0.000893	0.000029	0.000000	0.000003	0.000111	0.000039	99.39	69.1122	0.2288	1008.03 ± 5.11	0.268
BC7764	35	1.246E-12	6.592419	0.002036	0.063742	0.000133	0.000759	0.000017	0.000021	0.000009	0.000114	0.000043	99.52	103.5732	0.2948	1357.06 ± 5.43	345.067
BC7766	35	2.435E-14	1.756896	0.002249	0.479131	0.000323	0.005956	0.000038	0.000912	0.000021	0.000136	0.000006	98.78	3.6089	0.0158	69.17 ± 0.59	57.048

Sample: 06-FR-86 Lab #: UW65A3b J: 0.01060200 ± 0.0000352 D/amu: 1.0032 ±0.0002 Heating: 60s

K-feldspar single crystal total fusion experiments

N	Power (W)	^{40}Ar (moles)	^{40}Ar (10^{-9} A)	± s_{40} (10^{-12} A)	^{39}Ar (10^{-10} A)	± s_{39} (10^{-13} A)	^{38}Ar (10^{-12} A)	± s_{38} (10^{-14} A)	^{37}Ar (10^{-9} A)	± s_{37} (10^{-12} A)	^{36}Ar (10^{-13} A)	± s_{36} (10^{-14} A)	$\%^{40}Ar^*$	$^{40}Ar^*/^{39}Ar_K$	± s	Age (Ma)	± 2s (Ma)	K/Ca
BE1478	35	1.657E-14	1.500312	0.000840	0.149347	0.000085	0.001823	0.000028	0.000219	0.000013	0.000151	0.000009	99.47	9.8211	0.1072	263.61 ± 5.35		63.892
BE1479	35	1.654E-13	4.586615	0.001569	0.121494	0.000111	0.001466	0.000028	0.000114	0.000004	0.000162	0.000009	99.23	37.5115	0.0714	848.98 ± 2.58		99.176
BE1481	35	2.240E-13	6.209310	0.003475	0.084569	0.000134	0.000999	0.000019	0.000047	0.000006	0.000131	0.000006	99.58	73.3464	0.1818	1401.83 ± 4.83		196.700
BE1482	35	5.805E-14	5.179588	0.002672	0.154191	0.000158	0.001927	0.000015	0.000051	0.000008	0.000178	0.000006	99.72	33.4755	0.1425	774.60 ± 5.36		882.180
BE1484	35	7.394E-15	0.691531	0.000574	0.254262	0.000328	0.003094	0.000032	0.000336	0.000017	0.000145	0.000007	98.97	2.5606	0.0604	72.53 ± 3.35		77.308
BE1485	35	1.453E-13	4.030440	0.002554	0.107927	0.000168	0.001349	0.000020	0.000024	0.000008	0.000134	0.000009	99.29	37.1433	0.0930	842.32 ± 3.37		810.825
BE1487	35	2.712E-13	7.512516	0.004329	0.166052	0.000146	0.002028	0.000022	0.000049	0.000007	0.000133	0.000011	99.63	45.1756	0.0699	982.28 ± 2.34		372.526
BE1488	35	7.760E-14	6.906139	0.004527	0.192242	0.000120	0.002436	0.000023	0.000066	0.000011	0.000146	0.000006	99.90	35.8992	0.1183	819.63 ± 4.34		383.874
BE1491	35	5.542E-15	0.520322	0.000625	0.187216	0.000125	0.002329	0.000023	0.000309	0.000008	0.000151	0.000013	98.21	2.5873	0.0835	73.27 ± 4.63		55.727
BE1493	35	6.717E-14	5.961107	0.004677	0.141878	0.000120	0.001816	0.000012	0.000031	0.000009	0.000159	0.000010	99.79	42.0811	0.1132	929.64 ± 3.91		5814.118
BE1494	35	5.259E-15	0.481637	0.000387	0.216452	0.000351	0.002654	0.000038	0.000295	0.000009	0.000125	0.000006	99.47	2.1491	0.0146	61.07 ± 0.82		73.709
BE1496	35	9.105E-14	8.074793	0.005475	0.216140	0.000110	0.002690	0.000023	0.000149	0.000014	0.000123	0.000010	99.96	37.4196	0.0680	847.32 ± 2.46		163.829
BE1499	35	1.692E-14	1.515147	0.001503	0.318904	0.000301	0.003860	0.000039	0.000421	0.000012	0.000172	0.000006	98.66	4.6459	0.0124	129.51 ± 0.67		71.057
BE1502	35	5.341E-15	0.490176	0.000741	0.082759	0.000054	0.001033	0.000019	0.000145	0.000007	0.000143	0.000007	97.81	5.6166	0.0457	155.43 ± 2.42		59.576
BE1503	35	9.637E-15	0.870051	0.001440	0.279337	0.000306	0.003369	0.000030	0.000329	0.000018	0.000126	0.000005	99.48	3.0486	0.0124	86.02 ± 0.68		81.368
BE1505	35	2.018E-15	0.195850	0.000113	0.099394	0.000143	0.001217	0.000019	0.000209	0.000010	0.000129	0.000007	98.72	1.7874	0.0337	50.93 ± 1.89		49.847
BE1506	35	3.474E-15	0.325594	0.000419	0.170656	0.000160	0.002091	0.000012	0.000206	0.000006	0.000143	0.000012	98.46	1.7845	0.0253	50.85 ± 1.42		89.490
BE1508	35	7.021E-15	0.644653	0.000592	0.175876	0.000107	0.002136	0.000034	0.000063	0.000011	0.000203	0.000007	96.71	3.4383	0.0198	96.73 ± 1.08		724.562
BE1509	35	8.926E-14	7.927523	0.006513	0.157321	0.000213	0.001937	0.000025	0.000049	0.000005	0.000133	0.000006	99.99	50.5225	0.1348	1069.78 ± 4.31		1253.753
BE1511	35	3.386E-14	3.039071	0.002202	0.059509	0.000118	0.000725	0.000014	0.000024	0.000007	0.000130	0.000006	99.94	50.9690	0.1392	1076.90 ± 4.43		1278.316
BE1512	35	1.646E-13	4.565882	0.003199	0.103237	0.000096	0.001265	0.000021	0.000031	0.000007	0.000126	0.000010	99.44	44.0452	0.0608	963.23 ± 2.06		401.685
BE1514	35	5.415E-13	3.553427	0.002570	0.058286	0.000115	0.000749	0.000014	0.000027	0.000008	0.000081	0.000005	99.40	60.7571	0.1313	1226.27 ± 3.85		204.704
BE1515	35	1.227E-13	3.408341	0.002897	0.075863	0.000088	0.000931	0.000016	0.000075	0.000014	0.000114	0.000005	99.33	44.6816	0.0708	973.98 ± 2.38		98.089
BE1517	35	2.417E-13	6.694316	0.004679	0.113977	0.000184	0.001358	0.000026	0.000040	0.000006	0.000142	0.000008	99.53	58.5929	0.1071	1194.29 ± 3.19		295.464
BE1518	35	2.418E-15	0.240339	0.000356	0.098163	0.000085	0.001212	0.000014	0.000155	0.000008	0.000148	0.000008	94.82	2.0798	0.0433	59.13 ± 2.42		64.372
BE1520	35	6.388E-15	0.580653	0.000634	0.237077	0.000248	0.002968	0.000014	0.000098	0.000015	0.000136	0.000009	98.97	2.3697	0.0189	67.22 ± 1.05		291.745
BE1521	35	6.583E-15	0.600279	0.000669	0.258427	0.000485	0.003204	0.000039	0.000098	0.000010	0.000180	0.000012	97.34	2.2061	0.0195	62.66 ± 1.09		345.081

TABLE DR2. (cont.)- COMPLETE $^{40}Ar/^{39}Ar$ RESULTS

Constants used		Source
Atmospheric argon ratios		
$(^{40}Ar/^{36}Ar)_A$	296.0±0.74	Nier (1950)
$(^{40}Ar/^{38}Ar)_A$	0.1880±0.0001	Nier (1950)
Interfering isotope production ratios		
$(^{40}Ar/^{39}Ar)_K$	(7.30±0.92)E-04	Renne et al. (2005)
$(^{38}Ar/^{39}Ar)_K$	(1.22±0.00)E-02	Renne et al. (2005)
$(^{37}Ar/^{39}Ar)_K$	(2.24±0.16)E-04	Renne et al. (2005)
$(^{39}Ar/^{37}Ar)_{Ca}$	(6.95±0.09)E-04	Renne et al. (2005)
$(^{38}Ar/^{37}Ar)_{Ca}$	(1.96±0.08)E-05	Renne et al. (2005)
$(^{36}Ar/^{37}Ar)_{Ca}$	(2.65±0.02)E-04	Renne et al. (2005)
$(^{36}Cl/^{38}Cl)_{Cl}$	263±2	Renne et al. (2008)
Decay constants		
$^{40}K\ I_e$	(5.81±0.00)E-11 a^{-1}	Steiger & Jäger (1977)
$^{40}K\ I_b$	(4.962±0.000)E-10 a^{-1}	Steiger & Jäger (1977)
^{39}Ar	(2.58±0.03)E-03 a^{-1}	Stoenner et al. (1965)
^{37}Ar	(5.4300±0.0063)E-02 a^{-1}	Renne & Norman (2001)
$^{36}Cl\ I_b$	(2.35±0.02)E-06 a^{-1}	NUDAT

TABLE DR3. Geochronologic data for Cenozoic and Mesozoic source rocks NW of the gGRB

Location	Zircon crystallization age (Ma)		$^{40}Ar/^{39}Ar$ or K-Ar cooling age (Ma)		Notes	References
	min	max	min	max		
Shuswap Metamorphic Core Complex (BC)	160	170	83	155	High-grade metamorphic and plutonic rocks in the Canadian cordillera as well as those of western the allothonous terrains.	Mathews (1981); Sevigny et al. (1990); Parrish (1995); Vanderhaeghe et al. (2003)
	130	140	47	60		
	115	120				
	92	100				
	55	70				
Priest River Metamorphic Core Complex (ID, WA)	48	72	46	54	hornblende-biotite and two-mica granites	Miller and Engels (1975); Doughty et al. (1998); Doughty and Price (2000)
			93	101		
Terrains west of the Western Idaho suture zone (OR)	114	160	90	155	island arc related plutons of gabbro or diorite, quartz diorite, and biotite and biotite hornblende granodiorite, Permian Arc rocks	Armstrong et al. (1977); Avé Lallemant et al. (1980); Snee et al. (1995); Vallier (1995); Walker (1995); Unruh et al. (2008)
	215	280	213	239		
Main Western Idaho suture zone (ID)	100	125	72	87	deformed tonalite, trondhjemite, and quartz diorite plutons, peak metamorphism 128 ± 3 Ma	Getty et al. (1993); Gaschnig et al. (2007); Giorgis et al. (2008)
East of Western Idaho suture zone (ID)	82	94	71	84	tonalite	Lewis et al. (1987); Snee et al., (1995); Unruh et al. (2008)
Main Atlanta Lobe of Idaho Batholith (ID)	67	95	60	87	peraluminous; biotite granodiorite and two-mica granite	Lewis et al. (1987); Unruh et al. (2008); Gaschnig et al. (2008)
Eastern Atlanta Lobe of the Idaho Batholith	85	102	78	98	metaluminous	Armstrong (1975); Lewis et al. (1987); Gaschnig et al. (2008)
Mylonite of Bitterroot lobe	55	64	43	46		Foster and Fanning (1997)
Main Bitterroot lobe of Idaho Batholith (ID)	54	66	47	65	peraluminous	Criss and Fleck (1987); Foster and Fanning (1997); Gaschnig et al. (2008)
Satellite plutons east of the Bitterroot MCC	53	75	50	75	Includes Phillipsburg pluton, Chief Joseph Pluton, and plutons that intrude the Anaconda detachment	Hyndman et al. (1972); Desmarias (1983); O'Neill et al. (2004); Foster et al. (2007)
Pioneer Mountains and environs (MT)	72	77	65	80	calc-alkaline	Snee (1982); Murphey et al. (2002)
Boulder Batholith (MT)	65	80	60	77	Mostly granitic plutons intruded into Middle Proterozoic and Mesozoic sedimentary rocks and cogenetic Elkhorn Mtns. Volcanics.	Lund et al. (2002)
SE Challis volcanic field, lava flows and eruptive centers (ID, MT)	None Reported		45.45	49.82	Andesitic and dacitic volcanic rocks SE of the main caldera zone.	Janecke and Snee (1993); Snider (1995); M'Gonigle and Dalrymple (1996); VanDenberg et al. (1998); Janecke et al. (1999); Janecke and Blankenau (2003); Sanford (2005)
Granitic and dioritic plutons of the Challis Volcanic field (ID)	43	48	41	47	Granitic suite includes granite and syenite, subvolcanic rhyolite. Granitic plutons include Casto, Sawtooth, Lolo and Bungalo, Caribou Mtn. stock and associated stocks in SE Idaho. Dioritic suite includes granodiorite, quartz monzodiorite, granite and diorite of the Jackson Peak, Beaver Creek, Marsh Creek, and Summit Creek stocks and subvolcanic dacitic stocks.	Leonard and Marvin (1982); McIntyre et al. (1982); Lewis and Kiilsgaard (1991); Foster and Fanning (1997); Foster et al. (2007); Gaschnig et al. (2007)
Trans-Challis volcanic belt, calderas, and eruptive centers (ID)	None Reported		44	50		McIntyre et al. (1982); Leonard and Marvin (1982); Janecke et al. (1997)
Lowland Creek Volcanics (MT)	None Reported		48.5	53		Isplatov (1997)

TABLE DR4. Geochronologic data for Pre-Mesozoic source terrains NW of the gGRB

Location	Zircon crystallization age	$^{40}Ar/^{39}Ar$ or K-Ar cooling age	Notes	References
Cretaceous metamorphism of the Belt Supergroup	82 – 87 Ma	58 – 80 Ma	metamorphism related to emplacement of the Idaho Batholith	Criss and Fleck (1987); Lewis et al. (2007)
Ordovician pluton - Beaverhead syenite	492 ± 39 Ma	467 ± 16 Ma 482 ± 16 Ma	alkalic plutons in east central Idaho. Medium to small volume	Skipp (1984); Evans and Zartman (1988)
'Ghost' Neoproterozoic grains of central Idaho	580-800 Ma	None reported	Found in modern streams draining the Pioneer MCC. Small volume.	Beranek et al. (2004)
Neoproterozoic sedimentary rocks and intrusions in W Salmon River Arch area	685 ± 7 Ma 684 ± 4 Ma	None reported	Edwardsburg Formation (rhyodacite flow); northwest of the Thunder Mountain Caldera. Small volume.	Lund et al. (2003)
Neoproterozoic dikes of 'Gunbarrel event' intruded into craton and Belt Basin	~780 Ma	779 ± 5 Ma	mafic dikes in the Tobacco Root Mtns, Tetons, Beartooth, and the Belt Supergroup in NW Montana, small volume and rockiy typ-e that has few feldspar grains.	Harlan et al. (1997; 2005)
Grenville-aged metamorphism of the Belt Supergroup	1127 ± 110 Ma	1040 – 1130 Ma	Not yet documented in Belt S or SE of the Bitterroot Lobe	Obradovich and Peterman (1968); Doughty and Chamberlain (2007, 2008)
Post-Belt Anorogenic granite and amphibolite, bimodal intrusive suite, regional metamorphism of the country rock	1379 ± 12 Ma 1371 ± 7 Ma	None reported	Large feldspar-bearing plutons and possibly widespread regional metamorphism of the host Belt Supergroup. To date this has been identified only between the Atlanta and Bitterroot lobes of the Idaho batholith.	Evans and Zartman (1990); Doughty and Chamberlain (1996); Lewis et al. (2007)
Syn-Belt volcanic rocks in the upper Belt Supergroup	1380-1470 Ma 1454 ± 9 Ma 1443 ± 7 Ma 1401 ± 6 Ma	None reported	Tuffs, flows and sills within the Belt Supergroup	Evans et al. (2000)
Mafic volcanic coeval with initial deposition of the Belt Supergroup	~1470 Ma overall 1469 ± 3 Ma 1468 ± 2 Ma 1445 ± 11 Ma	None reported	Small volume and a rock type that has few feldspar grains	Sears et al. (1998)
Paleoproterozoic basement of Selway province and Great Falls tectonic zone	1869 Ma	1775 Ma	Exposed in the Priest River Complex and the Great Falls Tectonic zone	Holm and Schneider (2002); Brewer et al. (2008)
Archean basement of Wyoming province in SW Montana	2670 Ma	1740 – 1780 Ma	Some Archean basement has been identified in the Pioneer MCC and in the northern Idaho panhandle area west of presumed W edge of Wyoming province	Roberts et al. (2002); Brewer et al. (2008)
Dillon Gneiss	2.456 Ga	High temp argon loss 889 – 908 Ma Lower temp argon loss 600-850 Ma	Low temperature age range is discordant from high-temperature steps. This shows significant Ar loss in the breccia zone of the Beaverhead impact structure.	Kellogg et al. (2003)