Table 1. Ar/Ar Summary Table

				Preferred Age						
Sample	L#	Irrad	Material	Type	N	MSWD	K/Ca	± 1σ	Age	± 1σ
MB06-826a	57475	NM-213A 20	Sanidine	Weighted Mean	15	140.4	0.0788	0.0005	38.4440	0.0946
MB06-556	57546	NM-213J 5	GMC	Plateau	4	2.9	0.0180	0.0001	13.5847	0.3115
MB06-596	57550	NM-213K 3	GMC	Integrated	10	26.4	0.3258	0.0008	12.2125	12.1713
MB06-697	61602	NM-256E 5	GMC	Integrated	11	2.25E+03	0.3970	0.0001	11.9233	11.8840
MB06-595	57549	NM-213K 2	GMC	Plateau	5	0.4	0.2241	0.0009	11.8745	0.0229
MB06-727	61604	NM-256F 4	Sanidine	Weighted Mean	32	42.6	2.7270	0.0139	11.7046	0.0025
MB06-546	57545	NM-213J 4	GMC	Integrated	11	24.1	1.1583	0.0049	11.6855	11.6478
MB06-560	57547	NM-213J 6	GMC	Integrated	10	40.4	0.0213	0.0002	11.6785	11.6417
MB06-710	56977	NM-205H 12	Sanidine	Weighted Mean	15	3.1	6.7929	0.0176	11.6444	0.0093
MB06-761	57551	NM-213K 4	GMC	Integrated	10	27.7	0.3544	0.0011	11.6292	11.5919
MB06-734	61605	NM-256F 6	Sanidine	Weighted Mean	25	154.5	4.6635	0.0109	11.6279	0.0007
MB06-704	61603	NM-256F 2	Sanidine	Weighted Mean	29	9.3	13.8020	0.2102	11.5616	0.0016
MB06-763	57553	NM-213K 6	GMC	Plateau	5	1.1	0.2671	0.0009	11.4532	0.0267
MB06-762	57552	NM-213K 5	GMC	Plateau	5	1.8	0.8056	0.0035	11.3547	0.0220
MB06-712	56964	NM-205F 5	GMC	Integrated	10	23.0	0.0621	0.0002	11.3059	11.2718
MB07-009	58768	NM-222A 3	Wr	Integrated	12	8.9	0.3884	0.0016	11.2516	11.2210
MB07-007	58767	NM-222A 2	Wr	Plateau	3	3.1	0.5348	0.0030	11.2148	0.4717
MB06-764	57554	NM-213L 1	GMC	Integrated	10	17.0	0.0242	0.0002	10.9884	10.9564
MB06-765	57555	NM-213L 2	GMC	Plateau	8	1.8	0.0406	0.0002	10.8942	0.1677
MB06-829	57556	NM-213L 3	GMC	Integrated	10	50.5	0.0656	0.0003	10.6615	10.6303
MB07-139	58627	NM-220N 6	GMC	Plateau	6	2.0	1.1048	0.0023	10.6294	0.1017
MB06-834	57557	NM-213L 4	GMC	Plateau	6	1.3	0.0217	0.0001	10.4872	0.0662
MB06-828	57540	NM-213I 5	Kaersutite	Plateau	5	1.9	0.0174	6.33E-05	10.4839	0.0673
MB07-163	58784	NM-222D 1	Wr	Plateau	9	2.0	0.8245	0.0046	10.4574	0.0298
MB06-833	57543	NM-213J 2	Kaersutite	Plateau	8	0.6	0.0418	0.0001	10.4524	0.0592
MB06-832	57542	NM-213J 1	Kaersutite	Plateau	7	0.8	0.0627	0.0002	10.3814	0.0429
MB06-830	57494	NM-213C 20	Sanidine	Weighted Mean	15	14.8	0.0939	0.0017	10.3469	0.0550
MB06-582	56966	NM-205G 1	GMC	Plateau	7	0.8	0.2783	0.0007	10.3449	0.0184
MB07-177	57726	NM-216D 3	GMC	Integrated	10	24.5	0.1767	0.0006	10.3427	10.3132
MB06-826b	57539	NM-213I 4	Kaersutite	Integrated	10	16.2	0.0226	9.67E-05	10.2046	10.1759
MB07-142	57743	NM-216F 10	Feldspar	Weighted Mean	8	2.6	2.6178	0.0147	10.1978	0.0410
MB06-831	57541	NM-213I 6	Kaersutite	Integrated	10	6.6	0.0214	0.0002	10.1738	10.1453
MB06-825	57538	NM-213I 3	Kaersutite	Plateau	8	0.7	0.0049	3.14E-05	10.1362	0.1434
MB06-547	61610	NM-256F 16	Plagioclase	Plateau	9	1.4	0.0439	1.94E-05	10.1207	0.0569
MB06-524	57018	NM-205O 10	Kaersutite	Plateau	7	0.2	0.0112	6.59E-05	10.0185	0.0968

				Preferred Age						
Sample	L#	Irrad	Material	Type	N	MSWD	K/Ca	± 1σ	Age	± 1σ
MB07-141	57725	NM-216D 2	GMC	Plateau	7	0.5	0.0392	0.0002	9.9858	0.3351
MB07-144	57736	NM-216E 16	Kaersutite	Plateau	3	0.9	0.1188	0.0005	9.9262	0.0417
MB07-113	57741	NM-216F 6	Feldspar	Weighted Mean	27	2.0	2.2790	0.0063	9.9112	0.0194
MB07-174	57738	NM-216E 20	Kaersutite	Plateau	6	1.9	0.1167	0.0004	9.9101	0.0624
MB07-064	58630	NM-220O 3	GMC	Plateau	6	0.7	0.2276	0.0005	9.8316	0.0779
MB07-139	58615	NM-220L 20	Kaersutite	Integrated	9	13.7	0.1022	0.0002	9.8166	9.7911
MB06-508	56968	NM-205G 3	Kaersutite	Plateau	3	0.3	0.1033	0.0003	9.8048	0.0219
MB06-741	61606	NM-256F 8	Sanidine	Weighted Mean	24	3.24E+03	7.1030	0.0420	9.7748	0.0011
MB07-169	58785	NM-222D 2	Wr	Plateau	9	0.9	1.9306	0.0099	9.6677	0.0161
MB07-015	58616	NM-220M 1	GMC	Plateau	6	2.1	0.3525	0.0007	9.6188	0.1738
MB07-017	57729	NM-216E 2	Kaersutite	Plateau	8	1.5	0.0107	0.0002	9.6153	0.0590
MB06-501	57536	NM-213I 1	Kaersutite	Integrated	10	6.3	0.1072	0.0006	9.6033	9.5779
MB06-539	61612	NM-256F 20	Plagioclase	Plateau	10	1.6	0.2663	0.0003	9.5989	0.0148
MB07-004	61598	NM-256E 1	GMC	Integrated	12	273.9	0.0424	7.88E-06	9.5945	9.5691
MB06-509	57016	NM-205O 6	Kaersutite	Integrated	9	6.4	0.0488	0.0005	9.5881	0.0572
MB07-176	57745	NM-216F 14	Feldspar	Weighted Mean	15	5.2	3.0704	0.0123	9.5678	0.0233
MB06-524	57018	NM-205O 10	Kaersutite	Plateau	7	0.5	0.0053	2.73E-05	9.4750	0.0257
MB06-634	56970	NM-205G 5	Kaersutite	Plateau	7	1.9	0.0058	0.0002	9.4645	0.0340
MB06-507	56955	NM-205E 2	GMC	Plateau	5	1.5	0.0407	0.0003	9.4159	0.0260
MB06-565	57548	NM-213K 1	GMC	Plateau	5	1.2	0.0117	0.0001	9.3870	0.0831
MB06-827	57493	NM-213C 18	Sanidine	Weighted Mean	15	1.0	0.0421	0.0003	9.3571	0.3292
MB07-022	57739	NM-216F 2	Feldspar	Weighted Mean	24	2.1	7.2522	0.0285	9.3524	0.0184
MB07-030	58769	NM-222A 4	Wr	Plateau	9	1.0	0.2536	0.0009	9.3400	0.0316
MB07-119	57723	NM-216C 6	GMC	Plateau	10	1.2	0.0976	0.0005	9.3298	0.1431
MB06-587	56965	NM-205F 6	GMC	Plateau	6	1.8	0.0304	0.0002	9.2410	0.1046
MB07-008	57719	NM-216C 2	GMC	Plateau	10	1.2	0.1584	0.0006	9.2331	0.2665
MB06-612	56960	NM-205F 1	GMC	Plateau	6	0.3	0.4412	0.0010	9.2174	0.0204
MB07-022	57720	NM-216C 3	GMC	Plateau	7	0.6	0.1602	0.0007	9.1607	0.0254
MB06-525	57017	NM-205O 8	Kaersutite	Plateau	10	0.4	0.0661	0.0002	9.1455	0.0864
MB07-045	57730	NM-216E 4	Kaersutite	Integrated	9	3.5	0.0148	0.0001	9.1232	9.1006
MB06-611	56961	NM-205F 2	GMC	Plateau	7	3.1	0.7704	0.0015	9.1169	0.0227
MB07-134	57742	NM-216F 8	Feldspar	Weighted Mean	29	1.1	3.0577	0.0076	9.1137	0.0154
MB06-670	56967	NM-205G 2	Kaersutite	Plateau	10	0.8	0.0576	0.0002	9.0927	0.0568
MB06-525	57017	NM-205O 8	Kaersutite	Plateau	6	1.7	0.0154	6.16E-05	9.0858	0.0171
MB07-121	57724	NM-216D 1	GMC	Plateau	5	0.7	0.1803	0.0006	9.0756	0.0666
MB06-674	56954	NM-205E 1	GMC	Plateau	7	1.5	0.0133	9.16E-05	9.0481	0.1231

				Preferred Age						
Sample	L#	Irrad	Material	Type	N	MSWD	K/Ca	± 1σ	Age	± 1σ
MB07-143	57744	NM-216F 12	Feldspar	Weighted Mean	17	1.6	2.7815	0.0117	9.0321	0.0353
MB06-636	56956	NM-205E 3	GMC	Plateau	4	3.1	0.0722	0.0002	8.9960	0.1073
MB07-167	58631	NM-220O 4	GMC	Integrated	10	14.1	0.4651	0.0009	8.9880	8.9661
MB06-753	56974	NM-205H 6	Sanidine	Weighted Mean	15	2.6	2.4434	0.0140	8.9043	0.0259
MB07-025	57728	NM-216D 5	GMC	Plateau	4	1.2	0.1545	0.0005	8.8804	0.0652
MB06-750b	56973	NM-205H 4	Sanidine	Weighted Mean	14	1.4	2.4953	0.0087	8.8779	0.0457
MB06-615	56958	NM-205E 5	GMC	Plateau	4	0.2	0.0263	0.0001	8.8730	0.1513
MB06-610	56962	NM-205F 3	GMC	Plateau	5	0.8	0.0788	0.0002	8.7383	0.0674
MB07-136	57735	NM-216E 14	Kaersutite	Plateau	3	0.6	0.1150	0.0004	8.7352	0.0812
MB07-133	57734	NM-216E 12	Kaersutite	Plateau	8	1.1	0.1117	0.0004	8.7209	0.0588
MB07-145	57737	NM-216E 18	Kaersutite	Plateau	3	1.8	0.1057	0.0004	8.6546	0.1124
MB07-114	57732	NM-216E 8	Kaersutite	Plateau	8	2.3	0.0492	0.0005	8.6455	0.0424
MB06-670	56967	NM-205G 2	Kaersutite	Plateau	5	0.8	0.0975	0.0004	8.6001	0.0574
MB06-747	56971	NM-205G 6	Kaersutite	Plateau	8	1.1	0.1054	0.0004	8.5242	0.0250
MB06-748	57537	NM-213I 2	Kaersutite	Plateau	9	1.2	0.1108	0.0003	8.5144	0.0739
MB06-673b	56976	NM-205H 10	Sanidine	Weighted Mean	15	2.5	22.2455	0.1609	8.5092	0.0145
MB06-670	56967	NM-205G 2	Kaersutite	Plateau	7	0.3	0.0820	0.0002	8.4159	0.0728
MB07-193	61601	NM-256E 4	GMC	Integrated	11	21.2	0.0283	1.71E-05	8.2715	0.0293
MB06-840	57544	NM-213J 3	Kaersutite	Plateau	8	0.5	0.0911	0.0002	8.2355	0.0394
MB06-671	56957	NM-205E 4	GMC	Integrated	10	103.8	0.0263	0.0002	8.1419	8.1237
MB06-746	56975	NM-205H 8	Sanidine	Weighted Mean	14	7.1	20.0815	0.2092	8.0856	0.0342
MB06-673a	56972	NM-205H 2	Kaersutite	Plateau	7	1.2	0.0088	0.0001	8.0819	0.0608
MB07-001	57718	NM-216C 1	GMC	Plateau	7	2.2	0.1418	0.0007	8.0656	0.0729
MB06-613	56959	NM-205E 6	GMC	Integrated	10	8.4	0.0202	7.99E-05	8.0585	8.0418
MB07-005	58766	NM-222A 1	Wr	Integrated	10	21.8	0.2849	0.0011	8.0517	8.0352
MB06-750a	56969	NM-205G 4	Kaersutite	Plateau	3	1.9	0.0180	9.74E-05	8.0359	0.0341
MB07-027	57721	NM-216C 4	GMC	Plateau	10	1.6	1.0525	0.0030	8.0300	0.0124
MB06-608	56963	NM-205F 4	GMC	Integrated	10	57.9	0.0423	0.0001	8.0069	7.9895

				Preferred Age						
Sample	L#	Irrad	Material	Type	N	MSWD	K/Ca	± 1σ	Age	± 1σ

L# = Lab number, Irrad = Irradiation number and tray letter, n = number of analyses use to compute age, MSWD = Mean Square Weighted Deviation Kaer= kaersutite phenocrysts, Glass= basaltic glass shard concentrate, GM= grondmass concentrate, San/An= sanidine and/or anorthoclase phenocrysts

Notes:

Sample preparation and irradiation:

Basaltic glass shard samples were separated by extensive washing with water followed by an ultrasonic water bath. Sieved and washed samples were processed in magnetic separator and hand picked to remove additional contaminants. Groundmass concentrates were separated by mechanical crushing and sieving, followed by magnetic separation to remove phenocrysts, a 5-10 min HCl acid bath, a finally hand picked to ensure sample homogeneity Feldspar phenocrysts (85-01, 481.80-01, 1277.91-01, 1278.84-01, 1279.00-01) and kaersutite phenocrysts (822.78B), were hand picked using a binocular microscope. Samples treated with acid were immersed in 10% HCl or 15% HF in an ultrasonic bath, followed by ultrasonic rinsing with distilled water to remove the residual acid. All samples and neutron flux monitors were loaded into machined Al discs in a known geometry Neutron flux monitor Fish Canyon Tuff sanidine (FC-2). Assigned age = 28.02 Ma (Renne et al, 1998)

Instrumentation:

Mass Analyzer Products 215-50 mass spectrometer on line with automated all-metal extraction system. Samples step-heated using a Mo double-vacuum resistance furnace or defocused CO2 laser. Heating duration in the furnace and laser were 10 min and 30 sec, respectively. Reactive gases removed during analysis by reaction with 3 SAES GP-50 getters, 2 operated at ~450°C and 1 at 20°C. Gas also exposed to a W filament operated at ~2000°C.

Analytical parameters:

Averaged furnace sensitivity 1.24×10^{-16} mol/pA. Averaged laser sensitivity 7.12×10^{-17} mol/pA Total system blank and background for the furnace averaged 5017, 5.6, 6.5, 29.1, 7.8, 21.7 x 10^{-18} moles. Total system blank and background for the laser averaged 376, 5.3, 1.9, 5.6, 7.8, 29.7 x 10^{-18} moles. J-factors determined to a precision of ± 0.1% by CO2 laser-fusion of 4 to 6 single crystals from each of the 6 or 10 radial positions around the irradiation tray (6 for a 12 hole disc, 10 for a 20 hole disc). Correction factors for interfering nuclear reactions were determined using K-glass and CaF2 and are as follows: $(^{40}Ar/^{39}Ar)_K = 0 \pm 0.0004$; $(^{36}Ar/^{37}Ar)_{Ca} = 0.000289 \pm 0.000005$; and $(^{39}Ar/^{37}Ar)_{Ca} = 0.00068 \pm 0.00002$

Age calculations:

Plateau age or preferred age calculated for the indicated steps by weighting each step by the inverse of the $^{40}Ar/^{39}Ar$ variance. Plateau age error is inverse-variance-weighted mean error (Taylor, 1982) times root MSWD where MSWD>1. MSWD values are calculated for n-1 degrees of freedom for plateau age. Isochron ages, $^{40}Ar/^{39}Ar$ and MSWD values calculated from regression results obtained by the methods of York (1969). Decay constants and isotopic abundances after Steiger and Jäger (1977). All errors reported at ±2σ, unless otherwise noted.