GSA Data Repository Item 2017145

Casale, G., Levine, J.S.F., Craig, T.D., and Stewart, C., 2017, Timing and deformation conditions of the Tallulah Falls dome, NE Georgia: Implications for the Alleghanian orogeny: GSA Bulletin, doi:10.1130/B31595.1.

Summary of $^{40}Ar/^{39}Ar$ results

													Preferred Age					
Fig 1 Smaple #	Sample	Latitude	Longitude	L#	Irrad	min	analysis	n	$\%^{39}Ar$	MSWD	K/Ca	± 2σ	Age(Ma)	± 1σ	n	Age(Ma)	± 1σ
1	130309-1	34.795642	-83.533821	62713-01	NM-265D	Biotite	Plateau	10	69.9	5.57	5599.0	± 12363.3	356.8	± 0.1	14	356.16	± 0.04
1	130309-1	34.795642	-83.533821	62714-01	NM-265D	Muscovite	Plateau	10	86.8	133	1471.8	± 522.5	318.5	± 0.2	14	319.33	± 0.02
2	092212-5	34.759357	-83.503684	62717-01	NM-265D	Biotite	-								15	291.64	± 0.04
2	092212-5	34.759357	-83.503684	62718-01	NM-265D	Muscovite	Plateau	9	61.7	32.2	110.0	± 69.3	313.1	± 0.3	16	312.93	± 0.05
3	130310-5	34.730693	-83.389686	62720-01	NM-265D	Biotite	-								16	364.78	± 0.03
3	130310-5	34.730693	-83.389686	62721-01	NM-265D	Muscovite	Plateau	5	42.3	53.8	1806.7	± 1045.5	309.7	± 0.2	16	309.70	± 0.02
4	092312-1	34.67176	-83.416992	62715-01	NM-265D	Muscovite	Plateau	3	9.7	15.7	0.0	± 0.0	308.9	± 0.5	14	307.57	± 0.03
4	092312-1	34.67176	-83.416992	62716-01	NM-265D	Biotite	Plateau	6	11.6	11.2	24.2	± 21.0	319.3	± 0.4	14	312.83	± 0.03
5	092312-3	34.694152	-83.41101	62711-01	NM-265D	Muscovite	Plateau	2	25.2	329	0.0	± 0.0	309.1	± 0.6	13	307.60	± 0.02
5	092312-3	34.694152	-83.41101	62712-01	NM-265D	Biotite	Plateau	3	21.6	157	0.0	± 0.0	306.5	± 0.4	13	304.66	± 0.02
6	130310-4	34.629188	-83.389663	62719-01	NM-265D	Muscovite	Plateau	5	30.6	36.1	709.4	± 1164.5	305.8	± 0.4	15	303.77	± 0.04

Methods

Sample preparation and irradiation:

Mica separated by gentle crushing and hand-picking.

Samples were loaded into machined Al discs and irradiated for 32 hours in the central thimble at the USGS reactor, Denver, CO.

Neutron flux monitor Fish Canyon Tuff sanidine (FC-2). Assigned age = 28.201 Ma (Kuiper et al., 2008).

^{40}K Decay constant 5.463e-10 /a (Min et al., 2000).

Instrumentation:

Thermo-Fisher Scientific ARGUS VI mass spectrometer on line with automated all-metal extraction system.

System = Obama

Multi-collector configuration: 40Ar-H1, 39Ar-Ax, 38Ar-L1, 37Ar-L2, 36Ar-L3

Amplification: H1, L1, L2 1E12 Ohm Faraday, AX 1E13 Ohm Faraday, L3 - CDD ion counter, deadtime 14 nS.

Laser Step-heating:

Samples step-heated with 75W Photon-Machines 810 nm diode laser. 60 second heating time

Reactive gases removed by 1 min reaction with 1 SAES GP-50 getters operated at 450°C.

Gas also exposed to cold finger operated at -140°C and a W filament operated at ~2000°C.

Analytical parameters:

Mass spectrometer sensitivity = 1E-16 mol/fA

Total system blank and background: 10±10%, 0.5±1%, 0.3±75%, 0.1±15%, 0.03±5%, x 10^{-17} moles for masses 40, 39, 38, 37, 36, respectively.

J-factors determined to a precision of ~± 0.01% by CO_2 laser-fusion of 6 single crystals from each of 10 radial positions around a 40-hole irradiation tray.

Correction factors for interfering nuclear reactions were determined using K-glass and CaF_2 and are as follows:

$(^{40}Ar/^{39}Ar)_K = 0.007529 \pm 0.000237$; $(^{36}Ar/^{37}Ar)_{Ca} = 0.0002633 \pm 0.00000034$; and $(^{39}Ar/^{37}Ar)_{Ca} = 0.000653 \pm 0.00000036$.

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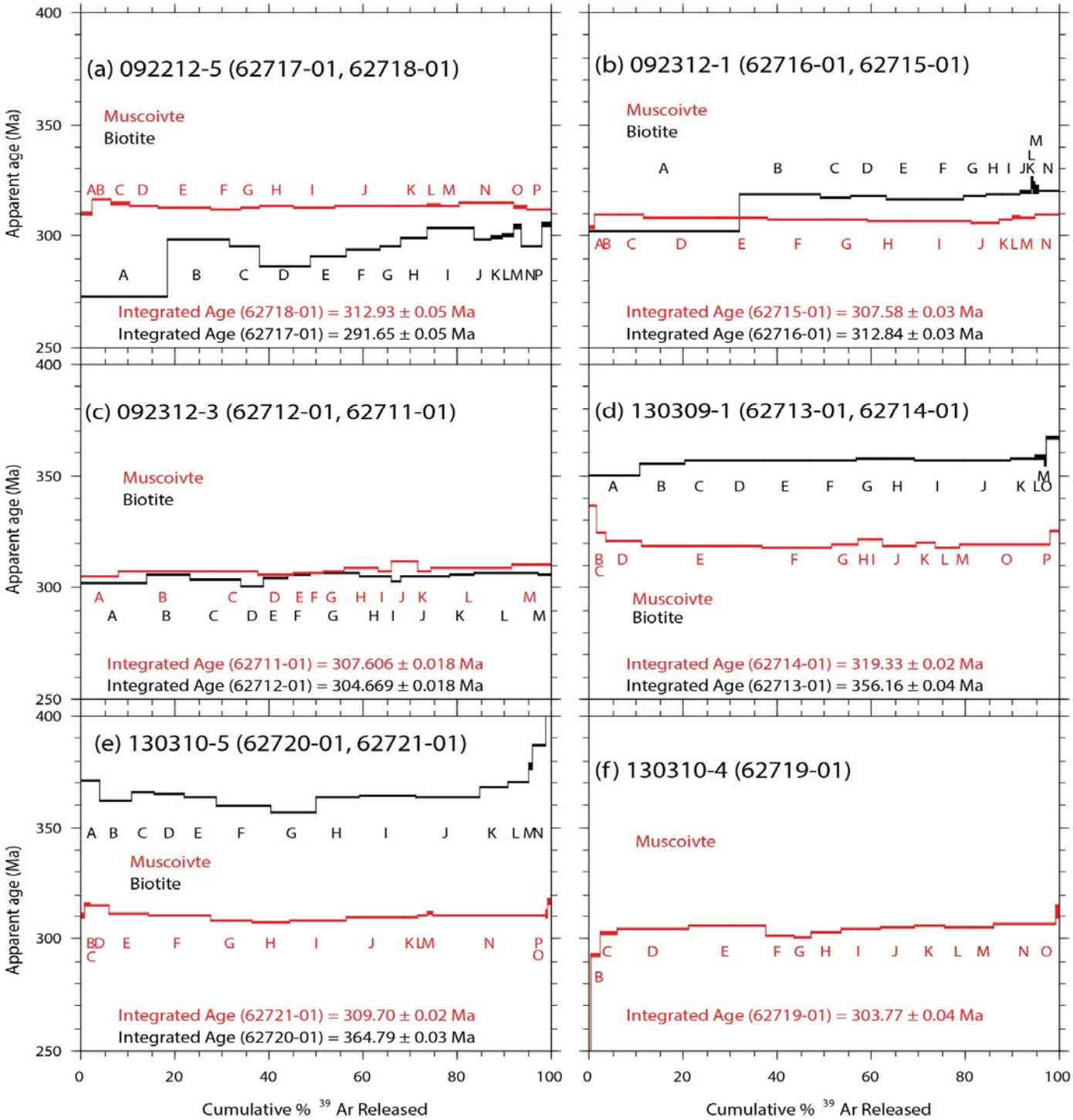

	ID	Power (Watts)	$^{40}Ar/^{39}Ar$	$^{37}Ar/^{39}Ar$	$^{36}Ar/^{39}Ar$ (x 10^{-3})	$^{39}Ar_K$ (x 10^{-15} mol)	K/Ca	$^{40}Ar^*$ (%)	^{39}Ar (%)	Age (Ma)	±1σ (Ma)	Dur Heating At Req Pwr	Comment (mg)	Irrad.	Ar40_ Disc	Ar40_ DiscEr
	092212-5, Biotite, 0.28 mg, J=0.0078956±0.00%, 1.02372±0.00106, NM-265D, Lab#=62717-01															
X	A	0.3	22.25	0.0030	6.388	5.89	170.0	91.5	18.5	272.845	0.095	40	Biotite, 0.28	NM-265D	1	0
X	B	0.4	22.98	0.0052	1.953	4.28	97.7	97.5	31.9	297.99	0.10	40	Biotite, 0.28	NM-265D	1	0
X	C	0.5	22.66	-0.0052	1.704	1.961	-	97.8	38.1	295.02	0.16	40	Biotite, 0.28	NM-265D	1	0
X	D	0.6	22.23	0.0022	2.601	3.49	229.9	96.5	49.1	286.48	0.12	40	Biotite, 0.28	NM-265D	1	0
X	E	0.7	22.41	0.0036	2.089	2.46	140.2	97.2	56.8	290.58	0.14	40	Biotite, 0.28	NM-265D	1	0
X	F	0.8	22.61	-0.0009	1.854	2.21	-	97.6	63.7	293.91	0.16	40	Biotite, 0.28	NM-265D	1	0
X	G	0.9	22.65	0.0010	1.645	1.482	518.6	97.9	68.4	295.08	0.21	40	Biotite, 0.28	NM-265D	1	0
X	H	1.0	22.88	0.0034	1.308	1.771	150.6	98.3	74.0	299.10	0.18	40	Biotite, 0.28	NM-265D	1	0
X	I	1.2	23.18	0.0059	1.239	3.11	86.4	98.4	83.7	303.06	0.12	40	Biotite, 0.28	NM-265D	1	0
X	J	1.4	22.82	-0.0138	1.440	1.174	-	98.1	87.4	297.97	0.27	40	Biotite, 0.28	NM-265D	1	0
X	K	1.6	22.95	-0.0090	1.498	0.782	-	98.1	89.9	299.36	0.41	40	Biotite, 0.28	NM-265D	1	0
X	L	1.9	22.93	-0.0041	1.248	0.768	-	98.4	92.3	299.98	0.39	40	Biotite, 0.28	NM-265D	1	0
X	M	2.2	23.19	-0.0063	0.9989	0.542	-	98.7	94.0	304.10	0.50	40	Biotite, 0.28	NM-265D	1	0
X	N	5.0	22.67	-0.0067	1.805	1.407	-	97.6	98.4	294.80	0.22	40	Biotite, 0.28	NM-265D	1	0
X	P	20.0	23.22	-0.0074	0.8446	0.511	-	98.9	100.0	305.00	0.53	40	Biotite, 0.28	NM-265D	1	0
	Integrated age ± 1σ			n=15		31.84			K2O=5.53%	291.64	0.04			NM-265D		
	No Plateau													NM-265D		
	092212-5, Muscovite, 0.27 mg, J=0.0079025±0.00%, 1.02372±0.00106, NM-265D, Lab#=62718-01															
X	A	0.3	24.58	0.0225	4.208	0.667	22.7	94.9	2.6	309.75	0.49	40	Muscovite, 0.27	NM-265D	1	0
X	B	0.4	24.10	0.0030	0.7982	1.013	172.5	99.0	6.5	316.11	0.29	40	Muscovite, 0.27	NM-265D	1	0
X	C	0.5	24.16	0.0086	1.522	1.108	59.2	98.1	10.7	314.23	0.30	40	Muscovite, 0.27	NM-265D	1	0
X	D	0.6	24.04	0.0033	1.538	1.520	153.4	98.1	16.5	312.72	0.21	40	Muscovite, 0.27	NM-265D	1	0
X	E	0.7	23.84	0.0042	0.9446	2.96	122.7	98.8	27.9	312.43	0.12	40	Muscovite, 0.27	NM-265D	1	0
X	F	0.8	23.73	0.0065	0.7725	1.655	78.9	99.0	34.3	311.78	0.20	40	Muscovite, 0.27	NM-265D	1	0
X	G	0.9	23.63	0.0010	0.3490	1.045	496.2	99.6	38.3	312.07	0.26	40	Muscovite, 0.27	NM-265D	1	0
	H	1.0	23.74	0.0026	0.5001	1.813	195.9	99.4	45.2	312.83	0.17	40	Muscovite, 0.27	NM-265D	1	0
	I	1.2	23.71	-0.0003	0.5198	2.32	-	99.4	54.2	312.35	0.14	40	Muscovite, 0.27	NM-265D	1	0
	J	1.4	23.72	0.0042	0.4178	3.50	122.0	99.5	67.6	312.84	0.11	40	Muscovite, 0.27	NM-265D	1	0
	K	1.6	23.70	0.0027	0.3665	1.581	187.3	99.5	73.7	312.78	0.21	40	Muscovite, 0.27	NM-265D	1	0
	L	1.9	23.71	0.0238	0.1829	0.711	21.4	99.8	76.4	313.64	0.43	40	Muscovite, 0.27	NM-265D	1	0
	M	2.2	23.66	0.0028	0.2413	1.110	183.2	99.7	80.7	312.82	0.26	40	Muscovite, 0.27	NM-265D	1	0
	N	5.0	24.21	0.0087	1.580	2.99	58.9	98.1	92.1	314.75	0.13	40	Muscovite, 0.27	NM-265D	1	0
	O	7.0	23.91	0.0110	1.066	0.746	46.3	98.7	95.0	312.89	0.39	40	Muscovite, 0.27	NM-265D	1	0
	P	20.0	23.57	0.0119	0.2769	1.300	42.8	99.7	100.0	311.59	0.22	40	Muscovite, 0.27	NM-265D	1	0
	Integrated age ± 1σ			n=16		26.05			K2O=4.69%	312.93	0.05			NM-265D		
	Plateau ± 1σ		steps H-P	n=9	MSWD=32.2	16.075			61.7	313.1	0.3			NM-265D		
	092312-1, Muscovite, 0.37 mg, J=0.0078881±0.00%, 1.02372±0.00106, NM-265D, Lab#=62715-01															
X	A	0.3	24.38	0.0204	5.030	0.703	25.1	93.9	1.5	303.83	0.44	40	Musovite, 0.37	NM-265D	1	0
X	B	0.4	23.51	-0.0008	0.4950	2.54	-	99.4	7.0	309.58	0.13	40	Musovite, 0.37	NM-265D	1	0
X	C	0.5	23.65	-0.0036	0.9174	2.14	-	98.9	11.6	309.65	0.16	40	Musovite, 0.37	NM-265D	1	0
X	D	0.6	23.34	0.0010	0.2503	7.65	524.6	99.7	28.1	308.348	0.052	40	Musovite, 0.37	NM-265D	1	0
X	E	0.7	23.28	-0.0023	0.2209	4.60	-	99.7	38.0	307.753	0.080	40	Musovite, 0.37	NM-265D	1	0
X	F	0.8	23.46	-0.0013	0.9629	6.28	-	98.8	51.6	307.208	0.074	40	Musovite, 0.37	NM-265D	1	0
X	G	0.9	23.23	0.0016	0.1221	3.61	318.6	99.8	59.4	307.44	0.11	40	Musovite, 0.37	NM-265D	1	0
X	H	1.0	23.15	-0.0018	0.0661	4.25	-	99.9	68.6	306.739	0.086	40	Musovite, 0.37	NM-265D	1	0

X	I	1.2	23.14	-0.0011	0.1079	5.95	-	99.9	81.4	306.355	0.068	40	Musovite, 0.37	NM-265D	1	0
X	J	1.4	23.10	-0.0027	0.1047	2.79	-	99.9	87.4	305.97	0.12	40	Musovite, 0.37	NM-265D	1	0
X	K	1.6	23.16	0.0014	0.0516	1.361	357.8	99.9	90.3	306.80	0.24	40	Musovite, 0.37	NM-265D	1	0
	L	1.9	23.23	-0.0017	-0.0881	0.758	-	100.1	92.0	308.18	0.38	40	Musovite, 0.37	NM-265D	1	0
	M	2.2	23.22	-0.0096	-0.0599	1.352	-	100.1	94.9	308.02	0.23	40	Musovite, 0.37	NM-265D	1	0
	N	5.0	23.36	-0.0033	0.0007	2.36	-	100.0	100.0	309.42	0.15	40	Musovite, 0.37	NM-265D	1	0
	Integrated age ± 1σ			n=14		46.3			K2O=6.10%	307.57	0.03			NM-265D		
	Plateau ± 1σ		steps L-N	n=3	MSWD=15.7	4.475			9.7	308.9	0.5			NM-265D		

092312-1, Biotite, 0.26 mg, J=0.0078892±0.00%, 1.02372±0.00106, NM-265D, Lab#=62716-01

X	A	0.3	23.25	0.0005	1.611	15.03	1038.3	98.0	32.1	302.355	0.044	40	Biotite, 0.26	NM-265D	1	0
X	B	0.4	24.17	-0.0019	0.2397	8.15	-	99.7	49.6	318.517	0.059	40	Biotite, 0.26	NM-265D	1	0
X	C	0.5	24.07	-0.0009	0.2764	2.98	-	99.7	55.9	317.22	0.14	40	Biotite, 0.26	NM-265D	1	0
X	D	0.6	24.08	0.0017	0.2738	3.47	297.6	99.7	63.3	317.35	0.10	40	Biotite, 0.26	NM-265D	1	0
X	E	0.7	23.99	-0.0004	0.2714	3.88	-	99.7	71.6	316.27	0.10	40	Biotite, 0.26	NM-265D	1	0
X	F	0.8	23.98	-0.0025	0.2446	3.79	-	99.7	79.7	316.211	0.094	40	Biotite, 0.26	NM-265D	1	0
X	G	0.9	24.03	0.0026	0.1211	2.31	196.6	99.9	84.7	317.22	0.15	40	Biotite, 0.26	NM-265D	1	0
X	H	1.0	24.15	0.0108	0.3006	1.745	47.3	99.6	88.4	318.06	0.18	40	Biotite, 0.26	NM-265D	1	0
	I	1.2	24.10	0.0077	0.0981	1.534	65.9	99.9	91.7	318.22	0.20	40	Biotite, 0.26	NM-265D	1	0
	J	1.4	24.20	0.0288	0.1071	1.143	17.7	99.9	94.1	319.41	0.25	40	Biotite, 0.26	NM-265D	1	0
	K	1.6	24.47	0.0781	-0.1414	0.223	6.5	100.2	94.6	323.6	1.3	40	Biotite, 0.26	NM-265D	1	0
	L	1.9	24.34	-0.0214	0.0317	0.214	-	100.0	95.0	321.3	1.4	40	Biotite, 0.26	NM-265D	1	0
	M	2.2	24.21	0.0175	-0.1108	0.282	29.2	100.1	95.6	320.26	1.00	40	Biotite, 0.26	NM-265D	1	0
	N	5.0	24.24	-0.0101	0.1100	2.04	-	99.9	100.0	319.87	0.17	40	Biotite, 0.26	NM-265D	1	0
	Integrated age ± 1σ			n=14		46.8	476.1		K2O=8.76%	312.83	0.03			NM-265D		
	Plateau ± 1σ		steps I-N	n=6	MSWD=11.2	5.436			11.6	319.3	0.4			NM-265D		

092312-3, Muscovite, 0.39 mg, J=0.0079167±0.00%, 1.02372±0.00106, NM-265D, Lab#=62711-01

X	A	0.5	23.67	0.0053	2.646	5.78	96.0	96.7	8.2	304.704	0.080	40	Muscovite 0.39	NM-265D	1	0
X	B	0.6	23.17	0.0017	0.2926	13.72	308.6	99.6	27.7	307.174	0.034	40	Muscovite 0.39	NM-265D	1	0
X	C	0.7	23.14	0.0012	0.2429	7.21	443.2	99.7	37.9	306.945	0.048	40	Muscovite 0.39	NM-265D	1	0
X	D	0.8	22.99	0.0020	0.1506	5.20	252.5	99.8	45.3	305.500	0.054	40	Muscovite 0.39	NM-265D	1	0
X	E	0.9	23.08	0.0013	0.2130	2.65	407.6	99.7	49.0	306.295	0.088	40	Muscovite 0.39	NM-265D	1	0
X	F	1.0	23.12	0.0035	0.2299	2.03	144.4	99.7	51.9	306.78	0.11	40	Muscovite 0.39	NM-265D	1	0
X	G	1.2	23.17	0.0057	0.3649	2.90	89.5	99.5	56.0	306.895	0.083	40	Muscovite 0.39	NM-265D	1	0
X	H	1.4	23.56	0.0020	1.246	5.30	251.8	98.4	63.5	308.417	0.059	40	Muscovite 0.39	NM-265D	1	0
X	I	1.5	23.17	0.0032	0.3563	1.820	159.2	99.5	66.1	306.96	0.12	40	Muscovite 0.39	NM-265D	1	0
X	J	1.9	23.53	0.0044	0.2536	3.90	114.9	99.7	71.6	311.686	0.074	40	Muscovite 0.39	NM-265D	1	0
X	K	2.1	23.15	0.0035	0.1769	2.22	147.4	99.8	74.8	307.31	0.10	40	Muscovite 0.39	NM-265D	1	0
	L	2.5	23.23	-0.0007	0.0640	11.96	-	99.9	91.8	308.734	0.038	40	Muscovite 0.39	NM-265D	1	0
	M	7.0	23.35	-0.0008	0.1167	5.81	-	99.9	100.0	309.915	0.053	40	Muscovite 0.39	NM-265D	1	0
	Integrated age ± 1σ			n=13		70.5	283.2		K2O=8.77%	307.60	0.02			NM-265D		
	Plateau ± 1σ		steps L-M	n=2	MSWD=329	17.768			25.2	309.1	0.6			NM-265D		

092312-3, Biotite, 0.32 mg, J=0.0079081±0.00%, 1.02372±0.00106, NM-265D, Lab#=62712-01

X	A	0.5	23.18	-0.0005	1.627	9.04	-	97.9	14.3	302.063	0.045	40	Biotite 0.32	NM-265D	1	0
X	B	0.6	23.06	-0.0009	0.3029	5.67	-	99.6	23.3	305.399	0.052	40	Biotite 0.32	NM-265D	1	0
X	C	0.7	22.91	0.0005	0.3840	6.93	1045.3	99.5	34.3	303.342	0.047	40	Biotite 0.32	NM-265D	1	0
X	D	0.8	22.69	0.0027	0.3991	3.05	186.9	99.5	39.1	300.530	0.083	40	Biotite 0.32	NM-265D	1	0
X	E	0.9	22.98	0.0031	0.4024	3.14	164.7	99.5	44.1	304.160	0.080	40	Biotite 0.32	NM-265D	1	0
X	F	1.0	23.18	0.0015	0.5954	3.14	329.9	99.2	49.1	305.849	0.086	40	Biotite 0.32	NM-265D	1	0

X	G	1.2	23.22	0.0013	0.4709	6.47	387.3	99.4	59.3	306.759	0.051	40	Biotite 0.32	NM-265D	1	0
X	H	1.4	23.03	-0.0006	0.2571	4.26	-	99.7	66.0	305.289	0.065	40	Biotite 0.32	NM-265D	1	0
X	I	1.5	22.84	-0.0002	0.2551	1.460	-	99.7	68.4	302.91	0.15	40	Biotite 0.32	NM-265D	1	0
X	J	1.9	23.02	-0.0015	0.3259	6.36	-	99.6	78.4	304.846	0.049	40	Biotite 0.32	NM-265D	1	0
	K	2.1	23.09	-0.0052	0.4054	3.34	-	99.5	83.7	305.480	0.071	40	Biotite 0.32	NM-265D	1	0
	L	2.5	23.11	-0.0008	0.0614	8.76	-	99.9	97.6	306.892	0.041	40	Biotite 0.32	NM-265D	1	0
	M	7.0	23.05	-0.0066	0.1530	1.525	-	99.8	100.0	305.92	0.14	40	Biotite 0.32	NM-265D	1	0
	Integrated age ± 1σ			n=13		63.1			K2O=9.58%	304.66	0.02			NM-265D		
	Plateau ± 1σ		steps K-M	n=3	MSWD=157	13.616			21.6	306.5	0.4			NM-265D		

130309-1, Biotite, 0.23 mg, J=0.0078968±0.00%, 1.02372±0.00106, NM-265D, Lab#=62713-01

X	A	0.3	27.07	0.0030	1.411	4.81	171.1	98.5	10.9	349.611	0.095	40	Biotite, 0.23	NM-265D	1	0
X	B	0.4	27.25	-0.0006	0.3771	4.36	-	99.6	20.7	355.375	0.092	40	Biotite, 0.23	NM-265D	1	0
X	C	0.5	27.27	0.0009	0.2048	2.94	570.5	99.8	27.4	356.24	0.14	40	Biotite, 0.23	NM-265D	1	0
	D	0.6	27.29	0.0020	0.1628	4.42	260.5	99.8	37.4	356.55	0.10	40	Biotite, 0.23	NM-265D	1	0
	E	0.7	27.38	0.0048	0.3450	4.29	106.2	99.6	47.1	356.95	0.10	40	Biotite, 0.23	NM-265D	1	0
	F	0.8	27.31	0.0000	0.2237	4.33	-	99.8	56.8	356.580	0.099	40	Biotite, 0.23	NM-265D	1	0
	G	0.9	27.30	0.0029	0.0905	2.61	173.0	99.9	62.7	356.98	0.15	40	Biotite, 0.23	NM-265D	1	0
	H	1.0	27.32	0.0025	0.0913	3.01	204.0	99.9	69.5	357.19	0.14	40	Biotite, 0.23	NM-265D	1	0
	I	1.2	27.28	0.0043	0.0820	4.62	117.7	99.9	80.0	356.72	0.11	40	Biotite, 0.23	NM-265D	1	0
	J	1.4	27.29	0.0000	0.0989	4.42	-	99.9	90.0	356.77	0.11	40	Biotite, 0.23	NM-265D	1	0
	K	1.6	27.35	-0.0004	0.0878	2.32	-	99.9	95.2	357.55	0.16	40	Biotite, 0.23	NM-265D	1	0
	L	1.9	27.38	-0.0028	0.0896	0.734	-	99.9	96.9	357.87	0.47	40	Biotite, 0.23	NM-265D	1	0
	M	2.2	27.38	0.0119	0.4858	0.200	43.0	99.5	97.3	356.6	1.5	40	Biotite, 0.23	NM-265D	1	0
X	O	5.0	28.14	0.0147	0.1801	1.192	34.7	99.8	100.0	366.65	0.27	40	Biotite, 0.23	NM-265D	1	0
	Integrated age ± 1σ			n=14		44.2	235.7		K2O=9.36%	356.16	0.04			NM-265D		
	Plateau ± 1σ		steps D-M	n=10	MSWD=5.57	30.9			69.9	356.8	0.1			NM-265D		

130309-1, Muscovite, 0.49 mg, J=0.0078915±0.00%, 1.02372±0.00106, NM-265D, Lab#=62714-01

X	B	0.4	26.15	-0.0138	1.990	1.446	-	97.7	1.9	336.22	0.26	40	Musovite, 0.49	NM-265D	1	0
X	C	0.5	24.92	-0.0100	1.267	1.442	-	98.5	3.9	324.02	0.22	40	Musovite, 0.49	NM-265D	1	0
X	D	0.6	24.83	-0.0019	1.852	5.56	-	97.8	11.3	320.857	0.092	40	Musovite, 0.49	NM-265D	1	0
	E	0.7	24.16	-0.0002	0.3375	19.25	-	99.6	37.2	318.177	0.037	40	Musovite, 0.49	NM-265D	1	0
	F	0.8	24.07	-0.0010	0.1298	11.04	-	99.8	52.0	317.786	0.046	40	Musovite, 0.49	NM-265D	1	0
	G	0.9	24.21	-0.0007	0.2197	3.88	-	99.7	57.2	319.109	0.095	40	Musovite, 0.49	NM-265D	1	0
	H	1.0	24.44	-0.0017	0.3858	1.795	-	99.5	59.6	321.36	0.18	40	Musovite, 0.49	NM-265D	1	0
	I	1.2	24.87	0.0022	1.853	2.09	228.9	97.8	62.4	321.28	0.17	40	Musovite, 0.49	NM-265D	1	0
	J	1.4	24.16	-0.0012	0.2789	5.40	-	99.7	69.7	318.352	0.075	40	Musovite, 0.49	NM-265D	1	0
	K	1.6	24.28	-0.0017	0.2659	2.99	-	99.7	73.7	319.87	0.11	40	Musovite, 0.49	NM-265D	1	0
	L	1.9	24.07	-0.0044	0.1474	3.99	-	99.8	79.0	317.77	0.10	40	Musovite, 0.49	NM-265D	1	0
	M	2.2	24.20	0.0048	0.2166	1.228	106.2	99.7	80.7	319.05	0.25	40	Musovite, 0.49	NM-265D	1	0
	O	5.0	24.15	0.0003	0.0611	12.99	1816	99.9	98.1	318.963	0.046	40	Musovite, 0.49	NM-265D	1	0
X	P	7.0	24.67	-0.0008	0.2212	1.412	-	99.7	100.0	324.72	0.22	40	Musovite, 0.49	NM-265D	1	0
	Integrated age ± 1σ			n=14		74.5			K2O=7.40%	319.33	0.02			NM-265D		
	Plateau ± 1σ		steps E-O	n=10	MSWD=133	64.654			86.8	318.5	0.2			NM-265D		

130310-4, Muscovite, 0.37 mg, J=0.007915±0.00%, 1.02372±0.00106, NM-265D, Lab#=62719-01

X	A	0.3	22.75	0.0704	24.51	0.156	7.2	68.2	0.5	211.9	1.6	40	Muscovite, 0.37	NM-265D	1	0
X	B	0.4	23.14	0.0033	4.269	0.683	154.6	94.5	2.8	292.21	0.44	40	Muscovite, 0.37	NM-265D	1	0
X	C	0.5	23.03	0.0088	1.163	1.066	58.0	98.5	6.3	302.27	0.27	40	Muscovite, 0.37	NM-265D	1	0
X	D	0.6	23.01	0.0016	0.5908	4.57	315.7	99.2	21.4	304.080	0.088	40	Muscovite, 0.37	NM-265D	1	0

X	E	0.7	23.15	-0.0007	0.5255	4.98	-	99.3	37.8	305.957	0.082	40	Muscovite, 0.37	NM-265D	1	0
X	F	0.8	22.76	0.0005	0.6718	1.858	995.3	99.1	43.9	300.70	0.17	40	Muscovite, 0.37	NM-265D	1	0
X	G	0.9	22.61	0.0058	0.2880	1.075	88.3	99.6	47.5	300.19	0.27	40	Muscovite, 0.37	NM-265D	1	0
X	H	1.0	22.78	0.0022	0.1542	1.914	233.1	99.8	53.8	302.83	0.15	40	Muscovite, 0.37	NM-265D	1	0
X	I	1.2	22.91	0.0020	0.1440	2.54	249.2	99.8	62.1	304.44	0.13	40	Muscovite, 0.37	NM-265D	1	0
X	J	1.4	22.97	-0.0026	0.1749	2.20	-	99.8	69.4	305.01	0.16	40	Muscovite, 0.37	NM-265D	1	0
	K	1.6	23.10	0.0002	0.5387	1.895	2732.7	99.3	75.6	305.29	0.18	40	Muscovite, 0.37	NM-265D	1	0
	L	1.9	22.94	0.0093	0.1703	1.926	54.7	99.8	82.0	304.70	0.17	40	Muscovite, 0.37	NM-265D	1	0
	M	2.2	22.90	0.0092	0.0555	1.299	55.7	99.9	86.3	304.60	0.22	40	Muscovite, 0.37	NM-265D	1	0
	N	5.0	23.08	0.0016	0.1443	3.96	309.5	99.8	99.3	306.455	0.095	40	Muscovite, 0.37	NM-265D	1	0
	O	7.0	24.49	-0.0374	3.458	0.200	-	95.8	100.0	311.8	1.4	40	Muscovite, 0.37	NM-265D	1	0
	Integrated age ± 1σ			n=15		30.3	231.9		K2O=3.98%	303.77	0.04			NM-265D		
	Plateau ± 1σ		steps K-O	n=5	MSWD=36.1	9.277	709.425±1164.46		30.6	305.8	0.4			NM-265D		

130310-5, Biotite, 0.36 mg, J=0.0079237±0.00%, 1.02372±0.00106, NM-265D, Lab#=62720-01

X	A	0.3	28.80	0.0099	1.563	2.26	51.5	98.4	4.1	370.69	0.17	40	Biotite, 0.36	NM-265D	1	0
X	B	0.4	27.75	0.0049	0.4140	3.88	105.0	99.6	11.1	362.29	0.10	40	Biotite, 0.36	NM-265D	1	0
X	C	0.5	27.97	0.0143	0.2877	2.49	35.8	99.7	15.6	365.31	0.15	40	Biotite, 0.36	NM-265D	1	0
X	D	0.6	27.88	0.0171	0.1957	3.57	29.9	99.8	22.1	364.57	0.12	40	Biotite, 0.36	NM-265D	1	0
X	E	0.7	27.79	0.0232	0.1364	3.85	22.0	99.9	29.0	363.759	0.092	40	Biotite, 0.36	NM-265D	1	0
X	F	0.8	27.43	0.0169	0.1430	6.32	30.2	99.9	40.5	359.480	0.077	40	Biotite, 0.36	NM-265D	1	0
X	G	0.9	27.17	0.0179	0.0850	5.41	28.4	99.9	50.2	356.520	0.079	40	Biotite, 0.36	NM-265D	1	0
X	H	1.0	27.73	0.0240	0.0782	5.05	21.3	99.9	59.4	363.254	0.080	40	Biotite, 0.36	NM-265D	1	0
X	I	1.2	27.79	0.0263	0.0775	6.70	19.4	99.9	71.5	363.953	0.077	40	Biotite, 0.36	NM-265D	1	0
X	J	1.4	27.74	0.0205	0.0692	7.39	24.9	99.9	84.9	363.373	0.075	40	Biotite, 0.36	NM-265D	1	0
X	K	1.6	28.10	0.0328	0.0861	3.37	15.6	99.9	90.9	367.62	0.12	40	Biotite, 0.36	NM-265D	1	0
X	L	1.9	28.34	0.0641	0.1339	2.39	8.0	99.9	95.3	370.37	0.17	40	Biotite, 0.36	NM-265D	1	0
X	M	2.2	28.98	0.1355	0.4282	0.453	3.8	99.6	96.1	376.96	0.74	40	Biotite, 0.36	NM-265D	1	0
X	N	5.0	29.74	0.0998	0.1919	1.592	5.1	99.8	99.0	386.73	0.23	40	Biotite, 0.36	NM-265D	1	0
X	O	7.0	31.63	0.3883	0.5343	0.430	1.3	99.6	99.7	407.88	0.88	40	Biotite, 0.36	NM-265D	1	0
X	P	20.0	40.10	0.6843	2.349	0.139	0.75	98.4	100.0	498.2	2.7	40	Biotite, 0.36	NM-265D	1	0
	Integrated age ± 1σ			n=16		55.3	17.4		K2O=7.45%	364.78	0.03			NM-265D		
	No Plateau													NM-265D		

130310-5, Muscovite, 0.64 mg, J=0.0079278±0.00%, 1.02372±0.00106, NM-265D, Lab#=62721-01

X	A	0.3	39.51	0.0206	53.70	0.233	24.7	59.8	0.3	314.4	1.6	40	Muscovite, 0.64	NM-265D	1	0
X	B	0.4	26.09	-0.0189	9.507	0.663	-	89.2	1.1	309.90	0.52	40	Muscovite, 0.64	NM-265D	1	0
X	C	0.5	24.65	-0.0023	3.326	0.849	-	96.0	2.1	314.70	0.37	40	Muscovite, 0.64	NM-265D	1	0
X	D	0.6	24.11	0.0032	1.528	3.21	160.1	98.1	6.1	314.57	0.12	40	Muscovite, 0.64	NM-265D	1	0
X	E	0.7	23.51	-0.0002	0.5074	7.00	-	99.4	14.7	310.899	0.065	40	Muscovite, 0.64	NM-265D	1	0
X	F	0.8	23.42	0.0001	0.4468	10.82		99.4	27.9	310.049	0.046	40	Muscovite, 0.64	NM-265D	1	0
X	G	0.9	23.25	0.0004	0.3249	7.19	1291.7	99.6	36.7	308.346	0.066	40	Muscovite, 0.64	NM-265D	1	0
X	H	1.0	23.17	-0.0024	0.2790	6.48	-	99.6	44.7	307.550	0.066	40	Muscovite, 0.64	NM-265D	1	0
X	I	1.2	23.20	-0.0019	0.1705	9.87	-	99.8	56.8	308.330	0.052	40	Muscovite, 0.64	NM-265D	1	0
	J	1.4	23.25	0.0009	0.1243	10.07	559.4	99.8	69.1	309.156	0.048	40	Muscovite, 0.64	NM-265D	1	0
	K	1.6	23.29	0.0008	0.1705	2.24	612.1	99.8	71.9	309.45	0.15	40	Muscovite, 0.64	NM-265D	1	0
	L	1.9	23.35	-0.0001	0.2517	1.473	-	99.7	73.7	309.84	0.20	40	Muscovite, 0.64	NM-265D	1	0
	M	2.2	23.43	0.0188	0.1951	0.946	27.1	99.8	74.8	311.05	0.32	40	Muscovite, 0.64	NM-265D	1	0
	N	5.0	23.31	0.0002	0.0966	19.79	2676.8	99.9	99.1	309.970	0.033	40	Muscovite, 0.64	NM-265D	1	0
X	O	7.0	23.50	0.0205	0.4773	0.320	24.8	99.4	99.5	310.98	0.87	40	Muscovite, 0.64	NM-265D	1	0
X	P	20.0	23.91	0.0140	0.4284	0.404	36.4	99.5	100.0	316.14	0.68	40	Muscovite, 0.64	NM-265D	1	0

Integrated age ± 1σ		n=16		81.5	K2O=6.17%	309.70	0.02		NM-265D
Plateau ± 1σ	steps J-N	n=5	MSWD=53.8	34.51	42.3	309.7	0.2		NM-265D

Notes:

Isotopic ratios corrected for blank, radioactive decay, and IC, not corrected for interfering reactions.

Errors quoted for individual analyses include analytical error only, without interfering reaction or J uncertainties.

Integrated age calculated by summing isotopic measurements of all steps.

Integrated age error calculated by quadratically combining errors of isotopic measurements of all steps.

Plateau age is inverse-variance-weighted mean of selected steps.

Plateau age error is inverse-variance-weighted mean error (Taylor, 1982) times root MSWD where MSWD>1.

Plateau error is weighted error of Taylor (1982).

Isotopic abundances after Steiger and Jäger (1977).

X preceding sample ID denotes analyses excluded from plateau age calculations.

Ages calculated relative to FC-2 Fish Canyon Tuff sanidine interlaboratory standard at 28.201 Ma, Kuiper et al. (2008).

IC = Measured (40Ar/36Ar)/295.5

Decay Constant (LambdaK (total)) = 5.463e-10/a, Min et al. (2000)

Correction factors:

$(^{39}Ar/^{37}Ar)_{Ca}$ = 0.000653 ± 0.00000036

$(^{36}Ar/^{37}Ar)_{Ca}$ = 0.0002633 ± 0.00000034

$(^{40}Ar/^{39}Ar)_{K}$ = 0.007529 ± 0.000237