

Appendix 1. $^{40}\text{Ar}/^{39}\text{Ar}$ analytical data for northern Abiquiu Embayment sanidine and biotite samples.

ID	$^{40}\text{Ar}/^{39}\text{Ar}$	$^{37}\text{Ar}/^{39}\text{Ar}$	$^{36}\text{Ar}/^{39}\text{Ar}$ ($\times 10^{-3}$)	$^{39}\text{Ar}_k$ ($\times 10^{-15}$ mol)	K/Ca	$^{40}\text{Ar}^*$ (%)	Age (Ma)	$\pm 1\sigma$ (Ma)
VGP-1 , san, J=0.0023311 \pm 0.04%, D=1.006 \pm 0.001, NM-231B, Lab#=59477								
11A	6.253	0.0005	0.8931	7.261	1019.0	95.8	24.973	0.083
10A	6.149	0.0017	0.5089	7.008	294.2	97.6	25.012	0.089
03A	6.128	0.0020	0.3819	19.659	256.2	98.2	25.078	0.051
12A	6.181	0.0011	0.5296	6.519	468.3	97.5	25.119	0.080
04A	6.654	0.0013	2.126	29.853	384.1	90.5	25.124	0.052
07A	6.072	0.0012	0.1324	7.589	441.8	99.4	25.154	0.070
02A	6.133	0.0014	0.3393	29.370	362.9	98.4	25.155	0.042
15A	6.161	0.0010	0.4330	12.247	528.9	97.9	25.156	0.054
01A	6.434	0.0015	1.319	14.284	350.6	93.9	25.201	0.060
05A	6.317	0.0014	0.9096	21.251	375.3	95.7	25.219	0.051
13A	6.340	0.0013	0.9383	10.247	378.9	95.6	25.278	0.070
14A	6.548	0.0007	1.626	11.950	727.5	92.7	25.296	0.071
09A	6.157	0.0018	0.2772	12.324	291.5	98.7	25.330	0.061
08A	6.210	0.0022	0.3696	11.384	226.9	98.2	25.436	0.060
06A	6.254	0.0012	0.2002	10.757	426.2	99.1	25.826	0.064
Mean age $\pm 2\sigma$	n=14	MSWD=3.53			436.2 \pm 420.2		25.19	0.06
VG-63-250907-djk , Sanidine, J=0.001577 \pm 0.06%, D=1.005 \pm 0.001, NM-226E, Lab#=59157								
01A	9.496	0.0089	7.089	7.846	57.4	77.9	20.91	0.09
16A	7.664	0.0088	0.7811	14.164	57.8	97.0	21.00	0.05
06A	10.91	0.0221	11.73	9.272	23.0	68.2	21.03	0.11
11A	7.522	0.0076	0.2556	12.525	67.4	99.0	21.04	0.05
09A	7.851	0.0107	1.351	7.355	47.6	94.9	21.05	0.07
04A	7.625	0.0094	0.5547	9.955	54.2	97.9	21.08	0.05
05A	7.608	0.0073	0.4749	5.777	69.6	98.2	21.10	0.07
12A	7.676	0.0080	0.7008	12.223	63.8	97.3	21.10	0.05
14A	7.643	0.0132	0.5718	13.374	38.8	97.8	21.12	0.05
10A	7.672	0.0103	0.6392	14.916	49.5	97.5	21.14	0.05
13A	7.639	0.0095	0.4949	9.268	53.9	98.1	21.17	0.06
08A	7.728	0.0073	0.7728	4.628	69.8	97.0	21.18	0.08
02A	7.938	0.0256	1.485	4.912	19.9	94.5	21.19	0.09
03A	7.612	0.0094	0.2850	10.378	54.5	98.9	21.27	0.05
15A	7.790	0.0085	0.7926	9.252	60.0	97.0	21.34	0.06
Mean age $\pm 2\sigma$	n=15	MSWD=2.97			52.5 \pm 30.3		21.12	0.06
OC-759-300605-djk , Biotite, 4 mg, J=0.0007753 \pm 0.10%, D=1.0068 \pm 0.0015, NM-208M, Lab#=57205								
11B	62.11	0.0198	161.8	0.336	25.8	23.0	19.9	1.2
05B	40.33	0.0792	81.33	0.376	6.4	40.4	22.66	0.83
14B	45.95	0.0578	98.85	1.692	8.8	36.4	23.27	0.36
13B	45.66	0.0969	97.78	2.604	5.3	36.7	23.31	0.29
12B	46.45	0.0836	100.3	1.385	6.1	36.2	23.37	0.37
07B	46.95	0.0929	101.2	1.581	5.5	36.3	23.71	0.36
10B	46.00	0.0510	97.78	1.611	10.0	37.2	23.78	0.31
06B	37.26	0.0584	67.85	1.182	8.7	46.2	23.92	0.36
08B	37.62	0.0917	68.98	1.897	5.6	45.8	23.96	0.33
09B	51.94	0.0668	117.2	1.038	7.6	33.3	24.04	0.49
04B	43.01	0.0325	86.04	0.694	15.7	40.9	24.42	0.55
03B	39.17	0.0636	71.41	0.569	8.0	46.1	25.11	0.50
02C	53.69	-0.3131	61.92	0.005	-	65.9	48.8	36.9
02B	64.13	3.922	-206.1516	0.002	0.13	195.5	167.8	122.1

Mean age $\pm 2\sigma$ n=11 MSWD=1.68 8.0 ± 6.0 23.73 0.30

OC-808-1808805-djk, Biotite, J=0.0007763 \pm 0.10%, D=1.0044 \pm 0.001, NM-208M, Lab#=57206

08B	71.83	-0.0327	194.5	0.104	-	20.0	20.0	2.5
04B	50.25	0.1268	119.5	0.142	4.0	29.7	20.8	2.1
15B	45.21	0.0055	101.5	0.616	92.7	33.7	21.18	0.70
03B	40.86	0.1096	85.41	0.228	4.7	38.2	21.8	1.5
05B	55.10	0.0270	133.4	0.190	18.9	28.5	21.9	1.5
17B	48.13	0.0537	107.9	0.656	9.5	33.8	22.61	0.58
14B	55.23	0.0399	130.8	0.436	12.8	30.0	23.08	0.74
11B	58.45	0.0934	141.5	0.542	5.5	28.5	23.16	0.56
02B	30.64	0.0067	46.61	0.519	76.6	55.0	23.47	0.68
16B	47.05	0.0448	101.8	1.036	11.4	36.1	23.61	0.46
13B	47.82	0.0250	104.1	0.522	20.4	35.7	23.74	0.76
09B	43.66	-0.2811	89.33	0.108	-	39.5	24.0	2.3
06B	40.60	-0.0189	79.03	0.377	-	42.5	23.99	0.80
12B	50.75	0.0309	113.0	0.614	16.5	34.2	24.16	0.58
07B	71.87	-0.1255	183.6	0.170	-	24.5	24.5	1.8
Mean age $\pm 2\sigma$	n=15		MSWD=1.43		24.8 ± 51.9		23.18	0.48

Notes:

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

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

Mean age is weighted mean age of Taylor (1982). Mean age error is weighted error

of the mean (Taylor, 1982), multiplied by the root of the MSWD where MSWD>1, and also incorporates uncertainty in J factors and irradiation correction uncertainties.

Decay constants and isotopic abundances after Steiger and Jäger (1977).

Ages calculated relative to FC-2 Fish Canyon Tuff sanidine interlaboratory standard at 28.02 Ma

Decay Constant (LambdaK (total)) = 5.543e-10/a

Correction factors for irradiations NM-231 and NM-226

$$({}^{38}\text{Ar}/{}^{37}\text{Ar})_{\text{Ca}} = 0.0007 \pm 5\text{e-}05$$

$$({}^{36}\text{Ar}/{}^{37}\text{Ar})_{\text{Ca}} = 0.00028 \pm 2\text{e-}05$$

$$({}^{38}\text{Ar}/{}^{39}\text{Ar})_{\text{K}} = 0.013$$

$$({}^{40}\text{Ar}/{}^{39}\text{Ar})_{\text{K}} = 0.01 \pm 0.002$$

Correction factors for irradiation NM-208:

$$({}^{38}\text{Ar}/{}^{37}\text{Ar})_{\text{Ca}} = 0.00068 \pm 2\text{e-}05$$

$$({}^{36}\text{Ar}/{}^{37}\text{Ar})_{\text{Ca}} = 0.00028 \pm 1\text{e-}05$$

$$({}^{38}\text{Ar}/{}^{39}\text{Ar})_{\text{K}} = 0.0125$$

$$({}^{40}\text{Ar}/{}^{39}\text{Ar})_{\text{K}} = 0 \pm 0.0004$$