DATA REPOSITORY ITEM 1 (DR-1), $^{40}Ar/^{39}Ar$ ANALYTICAL DATA

$^{40}Ar/^{39}Ar$ Analytical Procedures

Anorthoclase and sanidine concentrates were obtained using standard mineral-separation techniques, including crushing, grinding, Frantz magnetic separation, and heavy liquids. Basaltic groundmass concentrates were obtained from the 100-250 μm fraction that behaved magnetically at 0.5 A with a 15º forward slope and a 10º side slope and nonmagnetically at 0.1 A with the same parameters. All samples were rinsed ultrasonically with acetone and deionized water to remove surface contaminants. Final mineral separates were hand picked under a binocular microscope to remove any impurities and composite or altered mineral grains. Samples were loaded in 99.99% copper foil packets that were stacked single-file in quartz vials with flux monitors between every five samples. Sanidine from the Taylor Creek Rhyolite (standard TCR-2) with an assumed age of 27.92 ± 0.05 Ma (Duffield and Dalrymple, 1990) was used as a flux monitor. Samples were irradiated at the Oregon State University TRIGA reactor for 2 hours in the cadmium-shielded CLICLIT facility.

All samples were analyzed at the Stanford University Noble Gas Geochronology Laboratory. *J*-values of unknowns were interpolated from weighted-mean *J*-values calculated from multi-grain laser-fusion analyses of each monitor. Step heating experiments were carried out using a Staudacher-type double-vacuum resistance furnace, and multi-grain laser fusion experiments (sanidine and anorthoclase) were carried out using a 10W Spectra Physics argon ion laser. Extracted gas was purified using SAES getters for 5 minutes and analyzed for 10 minutes in a MAP 216 noble-gas mass spectrometer with a Johnston MM1 electron multiplier and a Baur-Signer ion source. Mass spectrometer sensitivity for typical gain values is ~5.21×10^{-13} mol-volt^{-1} and mass discrimination is ~286.0 ± 0.5 based on air analyses. Mass spectrometer dynamic blanks for ^{40}Ar were ~3×10^{-17} moles and for ^{36}Ar were ~9×10^{-19} moles. Resistance furnace static blanks for ^{40}Ar ranged from ~8×10^{-16} moles at 700ºC to 4×10^{-15} moles at 1200ºC. Laser blanks for ^{40}Ar were typically ~8×10^{-16} moles.

Raw data were trimmed and regressed to inlet time using in-house LabView® software written my M. McWilliams, and measured isotopic ratios were corrected for machine blanks, decay, and interfering reactions using an Excel® routine written by M. McWilliams. Interference correction factors are: $(^{36}Ar/^{37}Ar)_{Ca} = 2.24 \times 10^{-4}$; $(^{39}Ar/^{37}Ar)_{Ca} = 8.1 \times 10^{-4}$; $(^{40}Ar/^{39}Ar)_{K} = 3.0 \times 10^{-2}$. Isochron plots and ages, release spectra, and plateau ages were produced using the IsoPlot 3.0 program written by K. Ludwig. All data reduction assumed a ^{40}K decay constant of 5.543×10^{-10} yr^{-1} (Steiger and Jäger, 1977).

Plateau ages meet the following criteria: (1) The plateau consists of 3 or more contiguous steps that comprise >60% of the total ^{39}Ar released, (2) Steps are concordant at the 95% confidence interval, (3) There is no resolvable slope on the plateau, (4) There are no trends or outliers on the upper and lower steps. The inverse-isochron plot provides a critical test for the assumption that trapped argon gas has an atmospheric composition

($^{40}Ar/^{36}Ar$ = 295.5). Concordance of inverse-isochron ages defined by isochronous (low MSWD) data is the final criteria for defining a "true plateau" age (McDougall and Harrison, 1999). IsoPlot calculates inverse isochrones using the York (1969) regression.

We quote plateau ages in the text for step-heated samples that meet the above criteria. For samples that fail the test for a true plateau, we quote either the inverse-isochron age (for samples with low radiogenic yields), or a weighted-mean age (weighted steps with high radiogenic yields). For laser-fusion analyses, we calculate weighted-mean ages (weighted by data point errors) of 4-5 multi-grain aliquots. For all samples, the total fusion age is a weighted-mean of all heating steps or laser analyses, weighted by the percent of ^{39}Ar released for each step. All quoted uncertainties are 2σ.

References

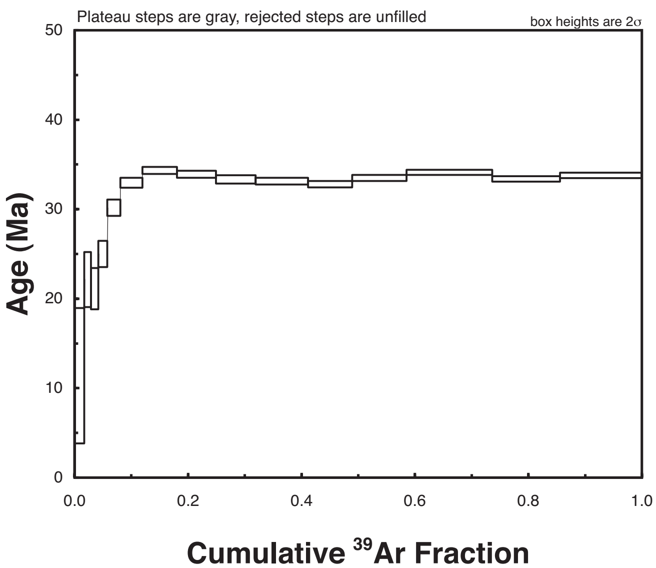
Duffield, W.A. and Dalrymple, G.B., 1990, The Taylor Creek Rhyolite of New Mexico; a rapidly emplaced field of lava domes and flows: Bulletin of Volcanology, v. 52, p. 475-487.
McDougall, I., and Harrison, T.M., 1999, Geochronology and thermochronology by the 40Ar/39Ar method: Oxford University Press, 269 p.
Steiger, R.H., and Jäger, E., 1977, Convention on the use of decay constants in geo- and cosmochronology, Earth and Planetary Science Letters, v. 36, p. 359-362.
York, D., 1969, Least-squares fitting of a straight line with correlate errors; Earth and Planetary Science Letters, v. 5, p. 320-324.

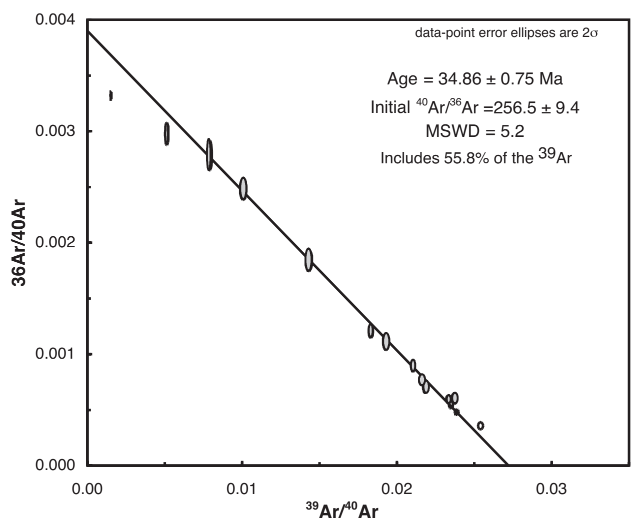
Key to data tables

Step	Heating step or laser analysis number
Temp	Furnace temperature (°C)
Laser #	Laser analysis number
$^{40}Ar/^{39}Ar$	$^{40}Ar/^{39}Ar$ ratio, corrected for blanks, decay, and mass discrimination
$^{37}Ar/^{39}Ar$	$^{37}Ar/^{39}Ar$ ratio, corrected for blanks, decay, and mass discrimination
$^{36}Ar/^{39}Ar$	$^{36}Ar/^{39}Ar$ ratio, corrected for blanks, decay, and mass discrimination
$^{39}Ar_K$	Moles of ^{39}Ar produced from ^{39}K (x 10^{-15} mol)
K/Ca	K/Ca ratio calculated from the production of ^{37}Ar
$^{40}Ar^*$	Radiogenic ^{40}Ar (%)
Age	Age of each heating step or laser analysis (Ma ± 1σ)

DL03-BR11 wrb | Total Fusion Age: 32.8 ± 0.5 Ma | J = 0.0005311 ± 0.7%

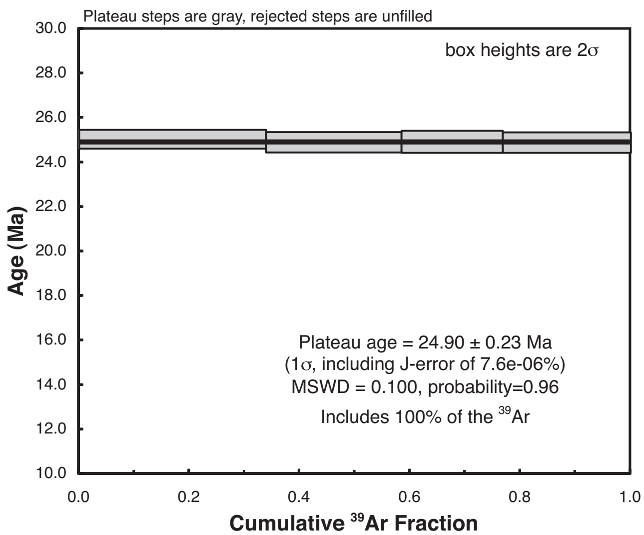
Step	Temp (ºC)	$^{40}Ar/^{39}Ar$	$^{37}Ar/^{39}Ar$	$^{36}Ar/^{39}Ar$	$^{39}Ar_K$ x 10^{-15} mol	K/Ca	$^{40}Ar^*$ (%)	^{39}Ar(%) (%)	Age (Ma)	± 1σ
1	550	653.67	2.1250	2.1706	0.6307	0.230	1.9%	1.5%	11.84	7.43
2	600	194.50	2.2912	0.5791	0.4623	0.213	12.1%	2.7%	22.40	3.01
3	650	126.29	2.3037	0.3519	0.5309	0.212	17.8%	4.1%	21.40	2.26
4	700	99.15	2.1546	0.2464	0.6369	0.227	26.7%	5.7%	25.21	1.44
5	750	69.83	1.8170	0.1289	0.8992	0.269	45.6%	7.9%	30.28	0.91
6	800	51.78	1.5339	0.0579	1.5509	0.319	67.2%	11.8%	33.03	0.55
7	850	45.74	1.2416	0.0326	2.4516	0.394	79.1%	18.0%	34.36	0.40
8	900	46.25	1.0198	0.0357	2.7247	0.480	77.3%	24.8%	33.94	0.38
9	950	54.59	0.9313	0.0660	2.8175	0.526	64.4%	31.9%	33.36	0.47
10	1000	47.52	1.0621	0.0427	3.7072	0.461	73.6%	41.1%	33.19	0.39
11	1050	42.14	1.2574	0.0258	3.0969	0.389	82.1%	48.9%	32.86	0.35
12	1100	42.85	1.0083	0.0257	3.8361	0.486	82.4%	58.5%	33.53	0.32
13	1150	41.90	1.2411	0.0203	6.0117	0.394	85.9%	73.6%	34.15	0.29
14	1200	39.23	5.0306	0.0151	4.7466	0.097	89.4%	85.6%	33.42	0.30
15	1300	42.21	11.3799	0.0258	5.7078	0.043	83.7%	100.0%	33.83	0.32

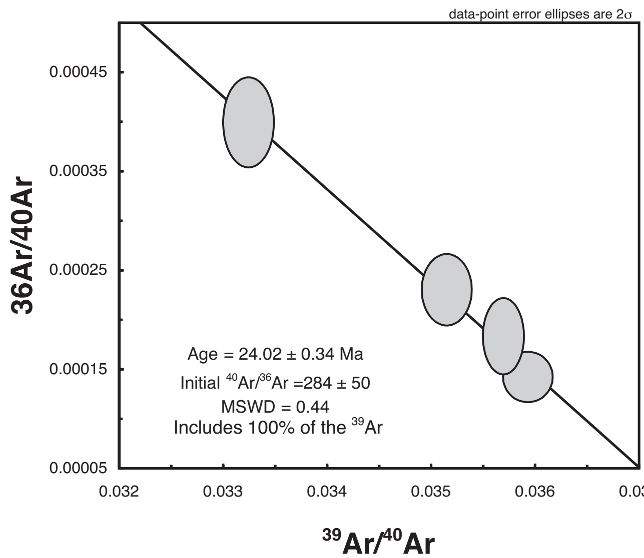




DL03-BR21 anc | Total Fusion Age: 24.9 ± 0.2 Ma | J = 0.0005233 ± 0.7 %

Step	Laser (#)	$^{40}Ar/^{39}Ar$	$^{37}Ar/^{39}Ar$	$^{36}Ar/^{39}Ar$	$^{39}Ar_K$ x 10^{-15} mol	K/Ca	$^{40}Ar^*$ (%)	^{39}Ar(%) (%)	Age (Ma)	± 1σ
1	1	27.86	0.0132	0.0040	17.2788	37.028	95.8%	34.8%	24.99	0.20
2	2	28.48	0.0113	0.0066	12.0152	43.526	93.2%	59.0%	24.86	0.23
3	3	30.11	0.0143	0.0120	8.9757	34.384	88.2%	77.0%	24.88	0.25
4	4	28.05	0.0302	0.0051	11.4135	16.237	94.6%	100.0%	24.85	0.22

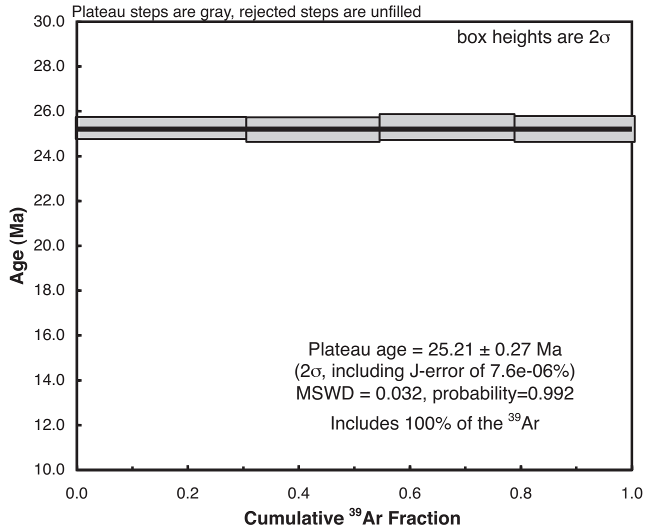


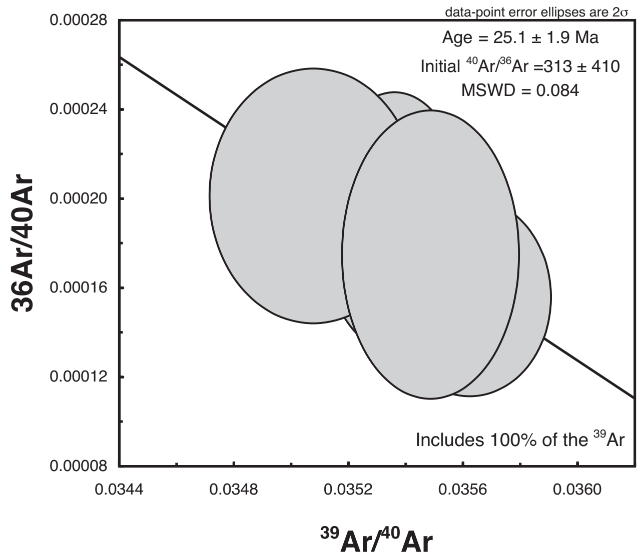


DR2008048

DL03-BR28 anc   Total Fusion Age: 25.2 ± 0.3 Ma   J = 0.0005260 ± 0.7 %

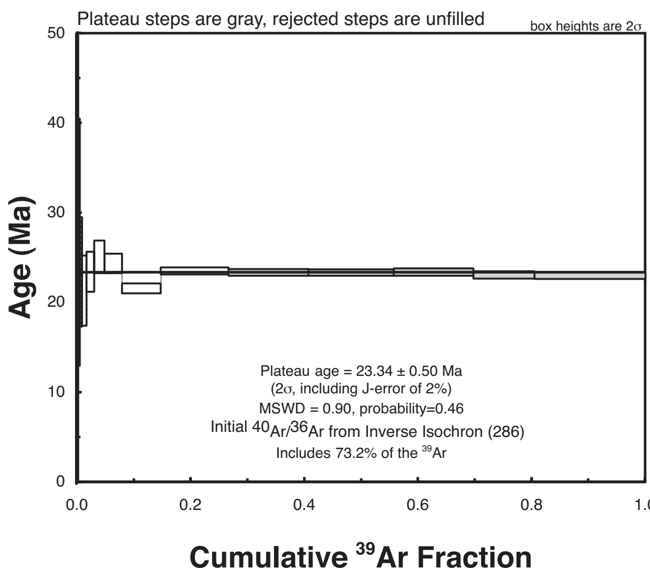
Step	Laser (#)	$^{40}Ar/^{39}Ar$	$^{37}Ar/^{39}Ar$	$^{36}Ar/^{39}Ar$	$^{39}Ar_K$ x 10^{-15} mol	K/Ca	$^{40}Ar^*$ (%)	$^{39}Ar(\%)$ (%)	Age (Ma)	± 1σ
1	1	28.10	0.0542	0.0044	7.4049	9.038	95.4%	31.2%	25.23	0.24
2	2	28.31	0.0088	0.0054	5.6025	55.719	94.4%	54.8%	25.16	0.27
3	3	28.54	0.0474	0.0057	8.9757	10.333	94.1%	78.7%	25.27	0.28
4	4	28.21	0.0521	0.0049	5.0633	9.408	94.8%	100.0%	25.18	0.29

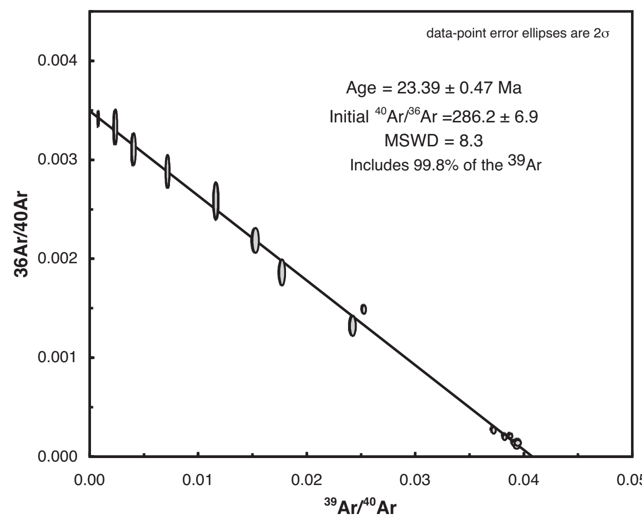




DL03-BR31 wrb | Total Fusion Age: 23.3 ± 0.3 Ma | J = 0.0005325 ± 0.7%

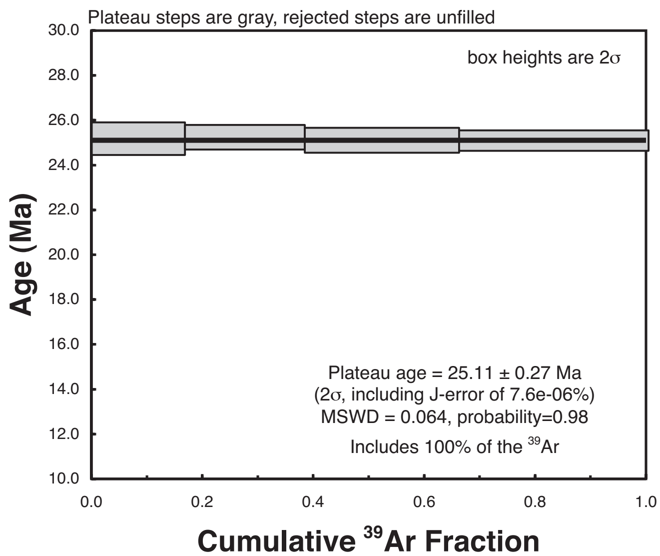
Step	Temp (ºC)	$^{40}Ar/^{39}Ar$	$^{37}Ar/^{39}Ar$	$^{36}Ar/^{39}Ar$	$^{39}Ar_K$ x 10^{-15} mol	K/Ca	$^{40}Ar^*$ (%)	^{39}Ar(%) (%)	Age (Ma)	± 1σ
1	550	1275.00	1.4785	4.3581	0.2870	0.331	2.3%	0.2%	27.36	38.52
2	600	429.06	1.6835	1.4268	0.2071	0.291	4.9%	0.4%	20.16	15.84
3	650	249.14	1.5758	0.7732	0.3032	0.311	11.3%	0.7%	26.82	6.84
4	700	139.30	1.5702	0.4011	0.5315	0.312	17.7%	1.1%	23.54	3.02
5	750	85.95	1.4478	0.2222	0.9596	0.338	26.2%	2.0%	21.46	1.94
6	800	65.65	1.2486	0.1436	1.5029	0.392	37.6%	3.2%	23.53	1.10
7	850	56.52	1.0112	0.1054	2.0829	0.484	46.8%	5.0%	25.20	0.91
8	900	41.31	0.8644	0.0549	3.6622	0.566	62.1%	8.0%	24.48	0.53
9	950	39.63	1.0260	0.0594	8.1456	0.477	57.3%	14.9%	21.69	0.27
10	1000	26.93	0.8800	0.0077	14.1077	0.556	92.0%	26.8%	23.64	0.20
11	1050	25.46	0.7844	0.0032	16.6320	0.624	96.7%	40.8%	23.48	0.19
12	1100	25.67	0.5757	0.0039	17.8174	0.851	95.8%	55.8%	23.44	0.18
13	1150	26.21	0.4690	0.0056	16.5156	1.044	94.0%	69.7%	23.50	0.20
14	1200	25.41	1.1607	0.0041	12.6943	0.422	95.6%	80.4%	23.19	0.20
15	1300	25.79	3.1681	0.0063	23.1320	0.154	93.8%	100.0%	23.11	0.18

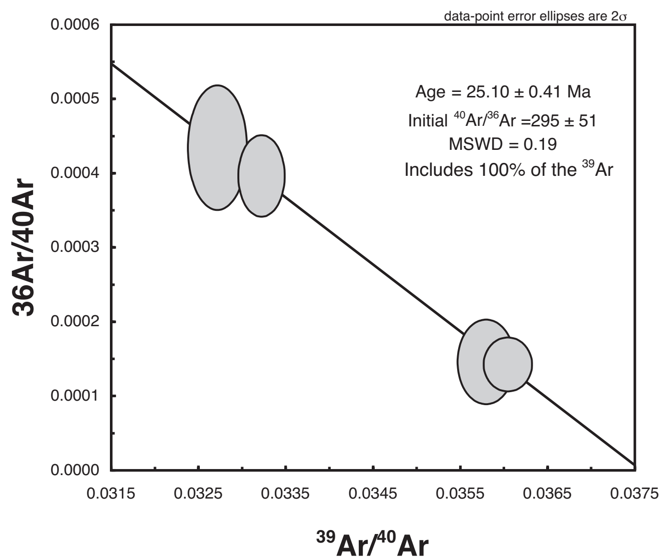




DL03-BR40 anc | Total Fusion Age: 25.1 ± 0.3 Ma | J = 0.0005264 ± 0.7 %

Step	Laser (#)	$^{40}Ar/^{39}Ar$	$^{37}Ar/^{39}Ar$	$^{36}Ar/^{39}Ar$	$^{39}Ar_K$ x 10^{-15} mol	K/Ca	$^{40}Ar^*$ (%)	^{39}Ar(%) (%)	Age (Ma)	± 1σ
1	1	30.59	0.0123	0.0132	4.8173	39.847	87.2%	17.7%	25.13	0.36
2	2	27.96	0.0041	0.0041	5.7925	35.926	95.7%	39.0%	25.20	0.27
3	3	30.12	0.0119	0.0119	7.4641	32.913	88.3%	66.5%	25.07	0.27
4	4	27.77	0.0040	0.0040	9.1232	34.149	95.8%	100.0%	25.05	0.23

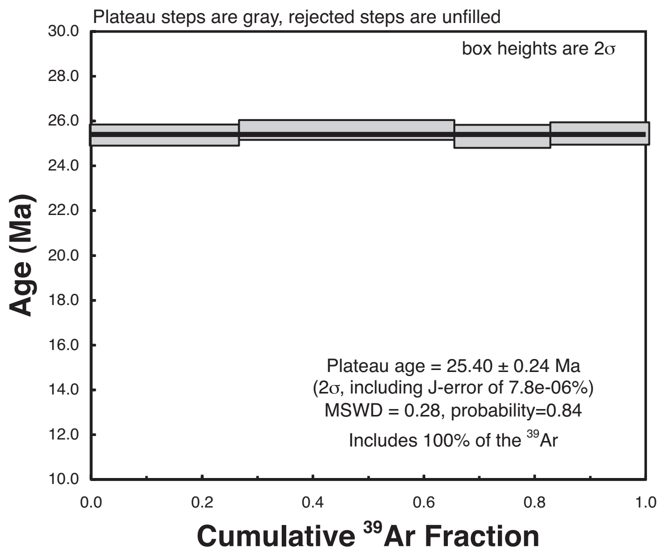


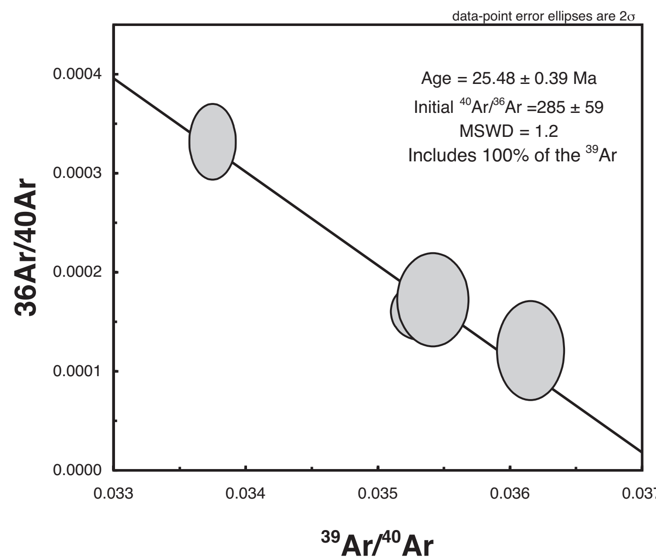


DR2008048

DL03-BR46 anc   Total Fusion Age: 25.4 ± 0.2 Ma   J = 0.0005290 ± 0.7 %

Step	Laser (#)	$^{40}Ar/^{39}Ar$	$^{37}Ar/^{39}Ar$	$^{36}Ar/^{39}Ar$	$^{39}Ar_K$ x 10^{-15} mol	K/Ca	$^{40}Ar^*$ (%)	^{39}Ar(%) (%)	Age (Ma)	± 1σ
1	1	29.66	0.0139	0.0098	10.8386	35.186	90.2%	27.3%	25.33	0.23
2	2	28.34	0.0132	0.0045	15.1496	37.028	95.3%	65.6%	25.56	0.22
3	3	27.69	0.0125	0.0034	6.7090	39.056	96.4%	82.5%	25.27	0.25
4	4	28.27	0.0128	0.0049	6.9403	38.145	94.9%	100.0%	25.40	0.25



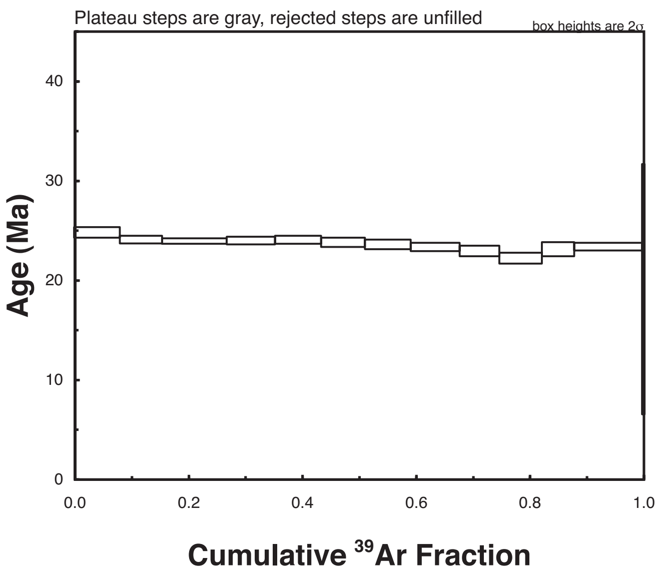


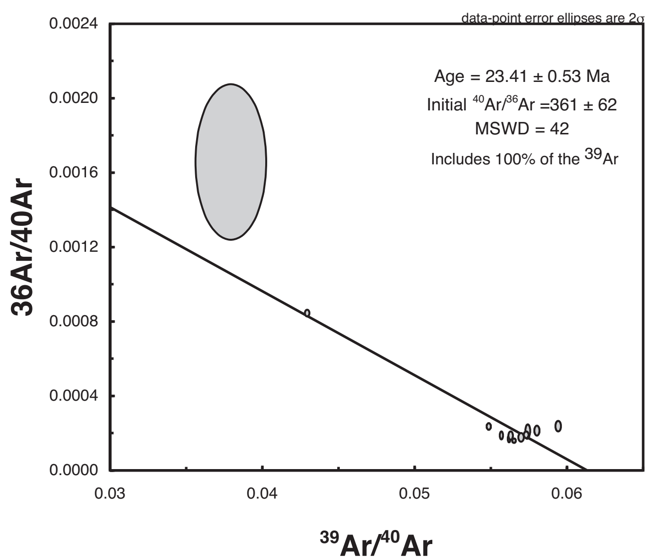
DL03-BR66 anc   Total Fusion Age: 25.5 ± 0.3 Ma   J = 0.0005295 ± 0.7 %

Step	Laser (#)	$^{40}Ar/^{39}Ar$	$^{37}Ar/^{39}Ar$	$^{36}Ar/^{39}Ar$	$^{39}Ar_K$ x 10^{-15} mol	K/Ca	$^{40}Ar^*$ (%)	$^{39}Ar(\%)$ (%)	Age (Ma)	± 1σ
1	1	27.88	0.0140	0.0032	5.1299	34.956	96.6%	32.8%	25.53	0.29
2	2	28.21	0.0143	0.0052	6.0676	34.251	94.6%	71.6%	25.29	0.27
3	3	29.26	0.0123	0.0076	4.4347	39.813	92.3%	100.0%	25.59	0.38

DL-Tbx wrb Total Fusion Age: 23.8 ± 0.1 Ma J = 0.0008013 ± 0.7%

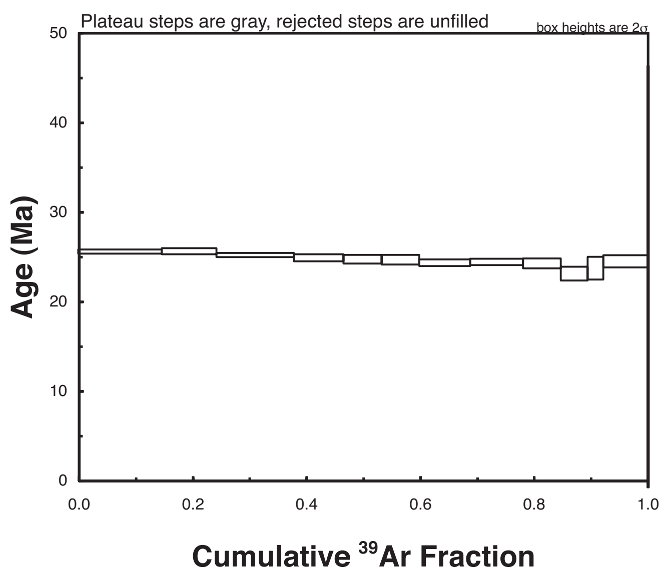
Step	Temp (ºC)	$^{40}Ar/^{39}Ar$	$^{37}Ar/^{39}Ar$	$^{36}Ar/^{39}Ar$	$^{39}Ar_K$ x 10^{-15} mol	K/Ca	$^{40}Ar^*$ (%)	$^{39}Ar(\%)$ (%)	Age (Ma)	± 1σ
1	550	23.32	0.1878	0.0200	11.0495	2.7680	74.4%	8.1%	24.95	0.09
2	600	18.28	0.2196	0.0047	10.0821	2.3674	92.2%	15.4%	24.23	0.06
3	700	17.73	0.3101	0.0032	15.5022	1.6764	94.3%	26.7%	24.08	0.05
4	750	17.83	0.3663	0.0034	11.6252	1.4191	94.0%	35.2%	24.14	0.06
5	800	17.99	0.4651	0.0038	11.0379	1.1177	93.3%	43.2%	24.21	0.07
6	850	17.79	0.6338	0.0038	10.5940	0.8200	93.3%	51.0%	23.97	0.08
7	900	17.58	0.7675	0.0036	11.0755	0.6771	93.4%	59.0%	23.75	0.08
8	950	17.46	0.8678	0.0038	11.6840	0.5988	93.0%	67.6%	23.50	0.07
9	1000	17.27	0.9287	0.0042	9.6549	0.5595	92.3%	74.6%	23.08	0.09
10	1100	16.87	1.0041	0.0046	10.0212	0.5174	91.4%	81.9%	22.37	0.09
11	1200	17.43	1.7225	0.0044	7.8464	0.3015	91.7%	87.6%	23.31	0.12
12	1300	17.46	2.1660	0.0042	16.2780	0.2396	92.0%	99.5%	23.51	0.06
13	1400	26.33	3.1779	0.0444	0.6485	0.1632	49.2%	100.0%	19.29	2.08

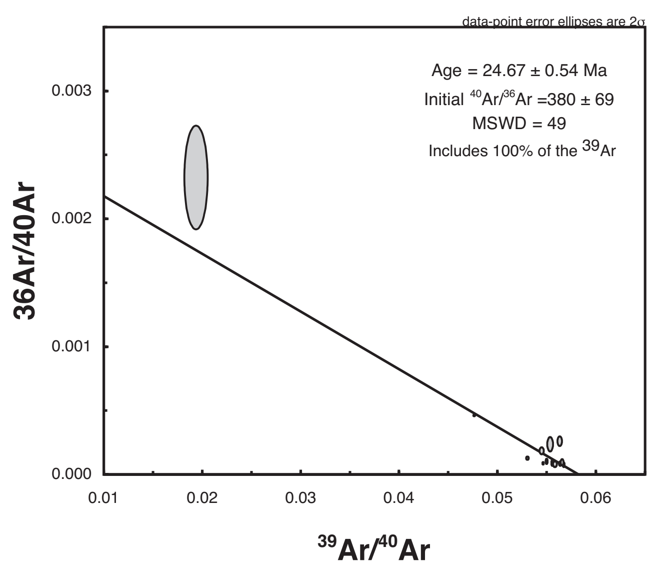




DL-Tby wrb | Total Fusion Age: 25.0 ± 0.1 Ma | J = 0.0008022 ± 0.7%

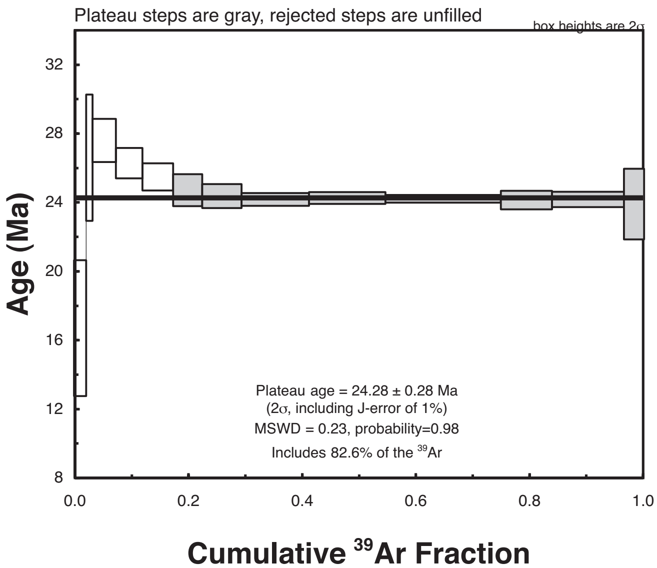
Step	Temp (ºC)	$^{40}Ar/^{39}Ar$	$^{37}Ar/^{39}Ar$	$^{36}Ar/^{39}Ar$	$^{39}Ar_K$ x 10^{-15} mol	K/Ca	$^{40}Ar^*$ (%)	^{39}Ar(%) (%)	Age (Ma)	± 1σ
1	550	20.99	0.1793	0.0103	20.3483	2.8994	85.3%	14.6%	25.78	0.04
2	600	18.86	0.2082	0.0030	13.4079	2.4971	95.0%	24.3%	25.79	0.06
3	700	18.32	0.3185	0.0022	18.7870	1.6321	96.1%	37.7%	25.37	0.04
4	750	18.19	0.4925	0.0025	12.2192	1.0554	95.5%	46.5%	25.08	0.06
5	800	18.00	0.5673	0.0023	9.2045	0.9162	95.9%	53.1%	24.93	0.08
6	850	17.92	0.6468	0.0021	9.2985	0.8035	96.0%	59.8%	24.87	0.09
7	900	17.63	0.7369	0.0020	12.2420	0.7052	96.2%	68.6%	24.54	0.06
8	950	17.74	0.8938	0.0022	13.0066	0.5813	95.8%	78.0%	24.62	0.06
9	1000	17.69	1.2302	0.0025	9.2076	0.4223	95.2%	84.6%	24.47	0.09
10	1100	17.75	1.9386	0.0055	6.4034	0.2678	89.9%	89.2%	23.34	0.13
11	1200	18.03	3.8833	0.0057	3.9705	0.1335	89.1%	92.1%	23.92	0.21
12	1300	18.32	3.3140	0.0046	10.6622	0.1565	91.2%	99.7%	24.70	0.11
13	1400	51.21	5.1281	0.1204	0.3612	0.1010	29.8%	100.0%	23.01	3.89

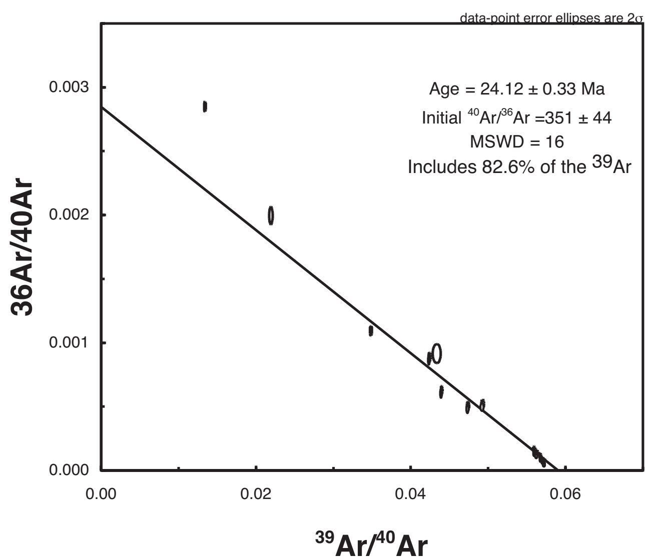




DL04-BR05 wrb — Total Fusion Age: 24.5 ± 0.1 Ma — J = 0.0007946 ± 0.5%

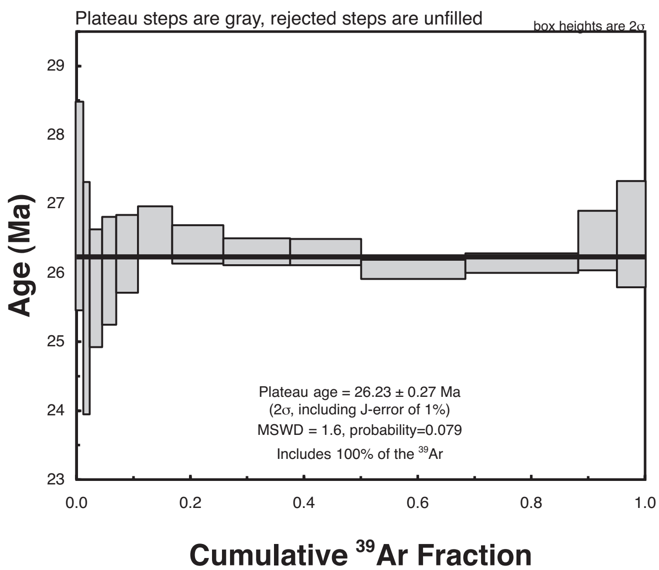
Step	Temp (ºC)	$^{40}Ar/^{39}Ar$	$^{37}Ar/^{39}Ar$	$^{36}Ar/^{39}Ar$	$^{39}Ar_K$ x 10^{-15} mol	K/Ca	$^{40}Ar^*$ (%)	^{39}Ar(%) (%)	Age (Ma)	± 1σ
1	550	74.51	1.3277	0.2125	2.3669	0.3912	15.6%	2.1%	16.82	0.65
2	600	45.56	1.8882	0.0913	1.2546	0.2750	40.5%	3.2%	26.63	0.61
3	700	28.69	1.4384	0.0316	4.6739	0.3611	67.0%	7.4%	27.63	0.21
4	750	22.73	1.2698	0.0146	5.2760	0.4091	80.6%	12.0%	26.33	0.15
5	800	21.11	1.1572	0.0110	6.1020	0.4490	84.2%	17.4%	25.53	0.13
6	850	23.57	1.1186	0.0211	5.6999	0.4645	73.1%	22.5%	24.75	0.15
7	900	20.30	0.8875	0.0108	7.8306	0.5855	83.9%	29.4%	24.43	0.12
8	950	17.64	0.6889	0.0022	13.2193	0.7544	95.9%	41.2%	24.23	0.06
9	1000	17.48	0.7089	0.0015	15.1267	0.7331	97.0%	54.6%	24.30	0.06
10	1100	17.54	0.6900	0.0018	22.9675	0.7532	96.6%	74.9%	24.27	0.04
11	1200	17.86	2.4921	0.0035	10.0992	0.2082	93.1%	83.9%	24.19	0.09
12	1300	17.76	3.0905	0.0032	14.1632	0.1678	93.3%	96.5%	24.23	0.07
13	1400	23.04	2.7817	0.0217	3.9772	0.1865	71.3%	100.0%	23.96	0.34

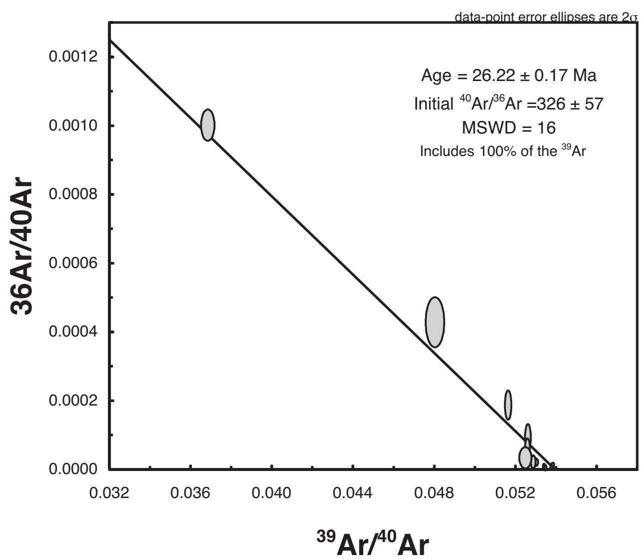




DL04-BR06 wrb | Total Fusion Age: 26.3 ± 0.3 Ma | J = 0.0007896 ± 0.5%

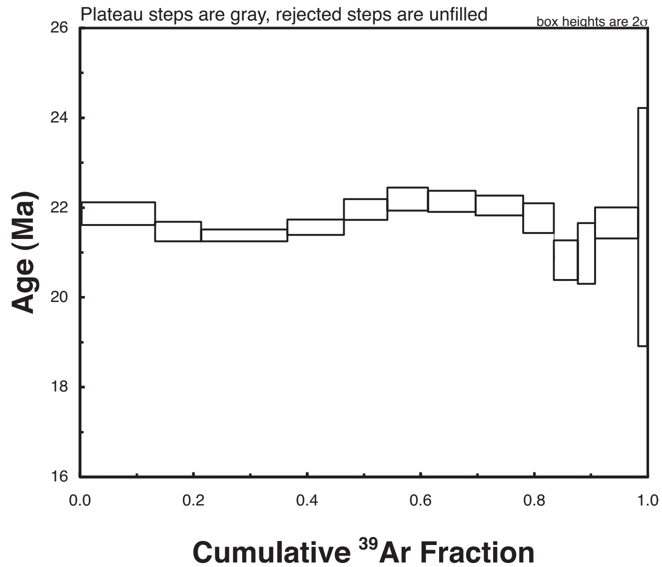
Step	Temp (ºC)	$^{40}Ar/^{39}Ar$	$^{37}Ar/^{39}Ar$	$^{36}Ar/^{39}Ar$	$^{39}Ar_K$ x 10^{-15} mol	K/Ca	$^{40}Ar^*$ (%)	^{39}Ar(%) (%)	Age (Ma)	± 1σ
1	550	27.15	0.1448	0.0272	2.7900	3.5919	70.2%	1.3%	26.99	0.25
2	600	20.85	0.1614	0.0091	2.2250	3.2210	86.9%	2.4%	25.66	0.28
3	700	19.40	0.1493	0.0038	4.6638	3.4831	93.9%	4.6%	25.80	0.14
4	750	19.04	0.1777	0.0020	5.3185	2.9261	96.6%	7.1%	26.05	0.13
5	800	19.04	0.2003	0.0015	8.0010	2.5960	97.5%	10.9%	26.30	0.09
6	850	19.05	0.2200	0.0007	12.5710	2.3629	98.6%	16.9%	26.61	0.06
7	900	18.90	0.2450	0.0007	18.8290	2.1222	98.7%	25.9%	26.43	0.05
8	950	18.75	0.2672	0.0004	24.6672	1.9456	99.1%	37.6%	26.33	0.03
9	1000	18.73	0.2812	0.0004	26.1263	1.8489	99.1%	50.1%	26.32	0.03
10	1100	18.60	0.3040	0.0005	38.4773	1.7099	98.9%	68.4%	26.07	0.02
11	1200	18.63	0.3273	0.0004	41.6866	1.5883	99.1%	88.2%	26.16	0.02
12	1300	18.94	0.3793	0.0007	14.2112	1.3704	98.6%	95.0%	26.49	0.07
13	1400	19.08	0.4772	0.0010	10.5763	1.0892	98.2%	100.0%	26.58	0.13

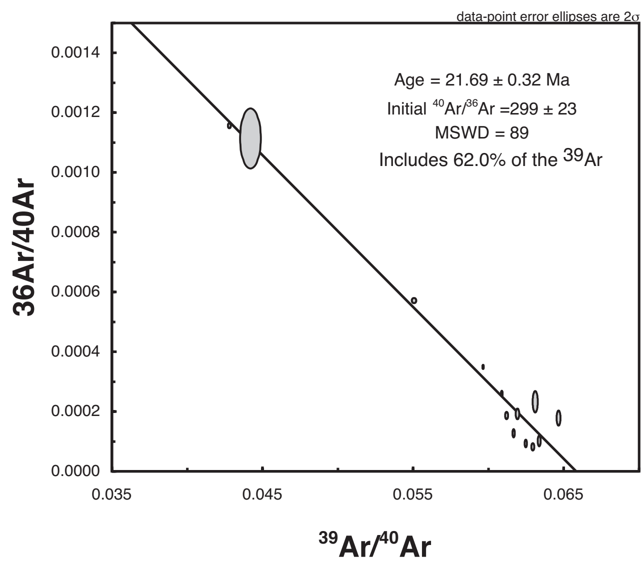




DL04-BR08 wrb — Total Fusion Age: 21.7 ± 0.1 Ma — J = 0.0007963 ± 0.5%

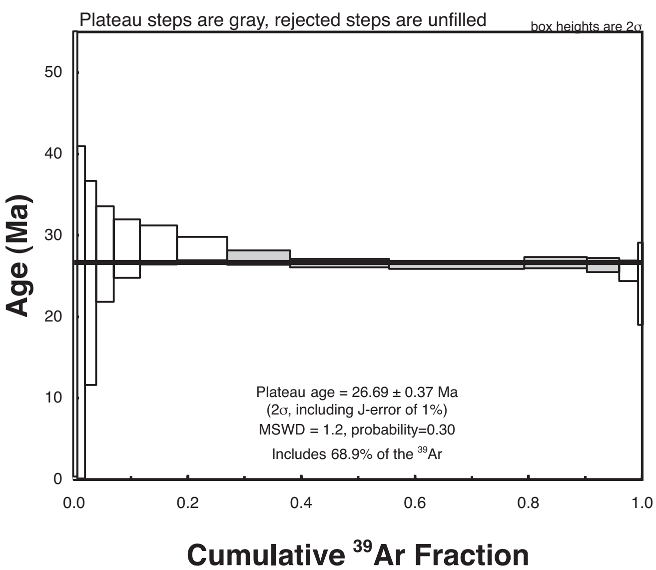
Step	Temp (ºC)	$^{40}Ar/^{39}Ar$	$^{37}Ar/^{39}Ar$	$^{36}Ar/^{39}Ar$	$^{39}Ar_K$ x 10^{-15} mol	K/Ca	$^{40}Ar^*$ (%)	^{39}Ar(%) (%)	Age (Ma)	± 1σ
1	550	23.42	0.1532	0.0270	31.4392	3.3929	65.3%	13.0%	21.87	0.04
2	600	18.20	0.1673	0.0105	19.7809	3.1085	82.5%	21.1%	21.48	0.04
3	700	16.80	0.2207	0.0060	36.9961	2.3555	89.0%	36.4%	21.39	0.02
4	750	16.46	0.3305	0.0045	24.3346	1.5728	91.5%	46.4%	21.57	0.03
5	800	16.37	0.4656	0.0033	18.4533	1.1164	93.6%	54.0%	21.96	0.04
6	850	16.24	0.5160	0.0024	17.5695	1.0074	95.3%	61.3%	22.20	0.04
7	900	16.03	0.4853	0.0018	20.2417	1.0710	96.3%	69.6%	22.14	0.04
8	950	15.91	0.5974	0.0016	20.4757	0.8699	96.5%	78.1%	22.06	0.04
9	1000	15.80	0.9194	0.0020	13.1886	0.5652	95.7%	83.5%	21.78	0.05
10	1100	15.48	1.4646	0.0032	10.2118	0.3546	92.9%	87.8%	20.85	0.07
11	1200	15.84	2.6211	0.0044	7.3080	0.1980	90.4%	90.8%	20.99	0.11
12	1300	16.16	1.5640	0.0036	18.5782	0.3320	92.5%	98.4%	21.67	0.06
13	1400	22.64	1.8666	0.0256	3.7587	0.2782	65.5%	100.0%	21.58	0.44

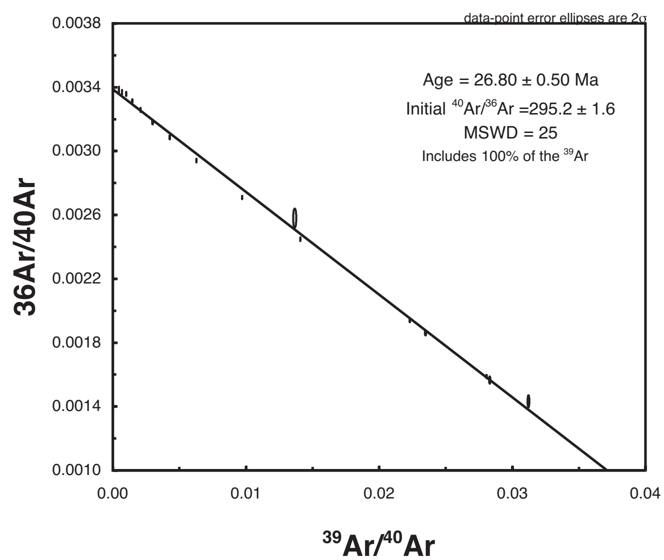




DL04-BR09 anc Total Fusion Age: 26.7 ± 0.8 Ma J = 0.0007879 ± 0.5%

Step	Temp (ºC)	$^{40}Ar/^{39}Ar$	$^{37}Ar/^{39}Ar$	$^{36}Ar/^{39}Ar$	$^{39}Ar_K$ x 10^{-15} mol	K/Ca	$^{40}Ar^*$ (%)	$^{39}Ar(\%)$ (%)	Age (Ma)	± 1σ
1	600	13324.77	6.6842	45.0708	0.1587	0.0774	0.0%	0.2%	9.62	363.58
2	700	2057.31	3.4352	6.9695	0.2937	0.1510	-0.1%	0.5%	-2.81	24.42
3	750	1417.19	2.7768	4.7776	0.4073	0.1868	0.4%	0.9%	7.93	15.55
4	800	963.03	1.6079	3.2345	0.6874	0.3230	0.7%	1.7%	10.39	8.27
5	850	672.70	1.1687	2.2299	1.1412	0.4445	2.0%	2.9%	19.57	3.58
6	900	473.22	0.8286	1.5431	1.8154	0.6271	3.6%	4.9%	24.40	2.07
7	950	332.26	0.5970	1.0575	2.8041	0.8706	5.9%	8.0%	27.89	0.97
8	1000	233.77	0.4171	0.7226	4.1463	1.2463	8.6%	12.5%	28.55	0.60
9	1050	159.08	0.3441	0.4687	5.8428	1.5108	12.9%	18.9%	29.01	0.39
10	1100	102.77	0.2689	0.2792	7.9587	1.9331	19.7%	27.6%	28.55	0.24
11	1150	71.19	0.2127	0.1750	10.0602	2.4439	27.3%	38.7%	27.47	0.14
12	1200	44.95	0.1330	0.0878	15.7551	3.9102	42.2%	55.9%	26.79	0.09
13	1250	35.73	0.0986	0.0574	21.4440	5.2751	52.5%	79.4%	26.47	0.07
14	1300	42.69	0.1774	0.0800	9.9322	2.9313	44.5%	90.2%	26.84	0.12
15	1350	35.44	0.3131	0.0562	5.1966	1.6605	53.0%	95.9%	26.57	0.14
16	1400	32.11	0.4088	0.0468	2.9414	1.2715	56.8%	99.1%	25.83	0.21
17	1500	73.11	1.6219	0.1896	0.7858	0.3202	23.2%	100.0%	24.26	0.83

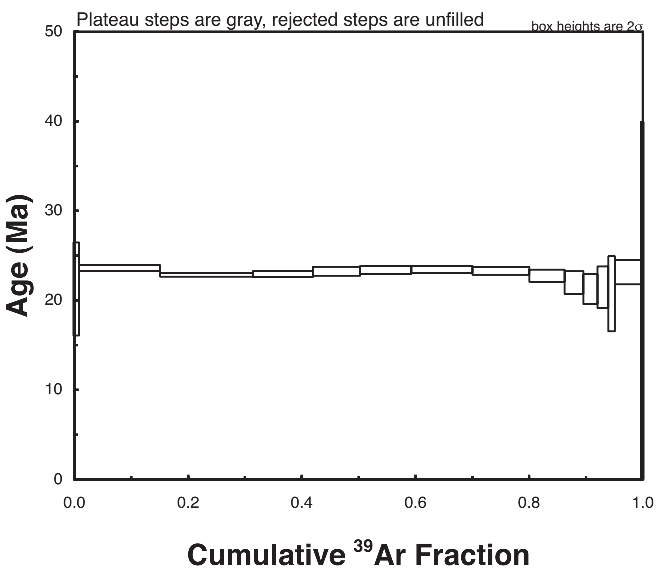


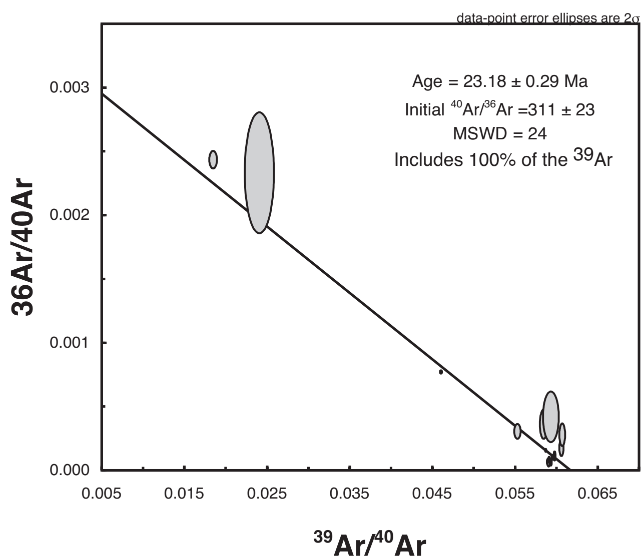


DR2008048

DL04-BR12 wrb — Total Fusion Age: 23.2 ± 0.1 Ma — J = 0.0007981 ± 0.5%

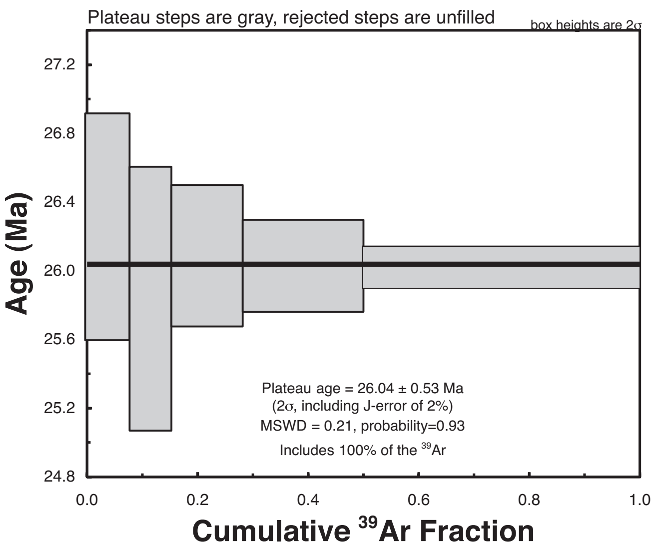
Step	Temp (ºC)	$^{40}Ar/^{39}Ar$	$^{37}Ar/^{39}Ar$	$^{36}Ar/^{39}Ar$	$^{39}Ar_K$ x 10^{-15} mol	K/Ca	$^{40}Ar^*$ (%)	^{39}Ar(%) (%)	Age (Ma)	± 1σ
1	550	53.93	0.8575	0.1318	1.1056	0.6060	27.6%	1.1%	21.48	0.86
2	600	21.74	0.2299	0.0173	14.7791	2.2612	76.3%	15.2%	23.77	0.05
3	700	17.06	0.3222	0.0032	17.1140	1.6135	94.1%	31.6%	23.03	0.04
4	750	16.83	0.4930	0.0023	10.9665	1.0543	95.5%	42.0%	23.11	0.06
5	800	16.95	0.6533	0.0020	8.6165	0.7956	96.0%	50.3%	23.42	0.08
6	850	16.98	0.6671	0.0018	9.4089	0.7791	96.5%	59.3%	23.57	0.08
7	900	16.96	0.6322	0.0015	11.1683	0.8221	96.9%	70.0%	23.63	0.07
8	950	16.87	0.7487	0.0017	10.4750	0.6941	96.5%	80.0%	23.45	0.07
9	1000	16.75	1.1242	0.0026	6.4386	0.4621	94.7%	86.1%	22.93	0.11
10	1050	16.50	1.5686	0.0037	3.4949	0.3311	92.5%	89.5%	22.17	0.20
11	1100	16.48	2.0172	0.0055	2.6077	0.2574	89.2%	92.0%	21.45	0.28
12	1150	17.09	3.7892	0.0075	1.9277	0.1368	85.4%	93.8%	21.68	0.38
13	1200	16.79	6.4996	0.0089	1.1394	0.0796	81.5%	94.9%	20.94	0.70
14	1300	18.06	4.4985	0.0070	4.8254	0.1152	86.7%	99.6%	23.33	0.22
15	1400	41.25	4.4363	0.0975	0.4553	0.1168	29.4%	100.0%	18.26	3.62

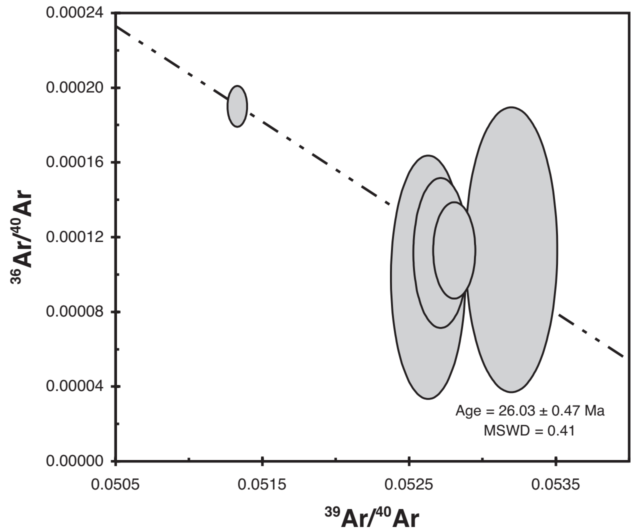




DL04-BR13 anc   Total Fusion Age: 26.0 ± 0.1 Ma   J = 0.0008002 ± 0.5%

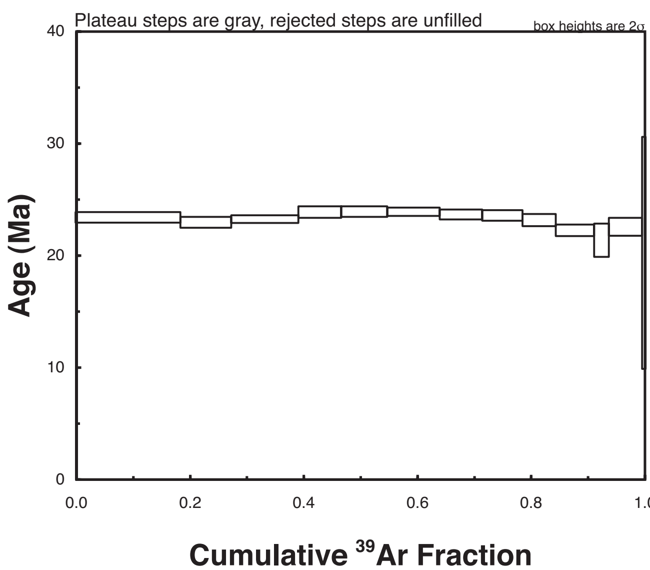
Step	Laser (#)	$^{40}Ar/^{39}Ar$	$^{37}Ar/^{39}Ar$	$^{36}Ar/^{39}Ar$	$^{39}Ar_K$ x 10^{-15} mol	K/Ca	$^{40}Ar^*$ (%)	^{39}Ar(%) (%)	Age (Ma)	± 1σ
1	1	19.03	0.0425	0.0019	3.7046	12.2410	96.3%	8.1%	26.27	0.22
2	2	18.83	0.0552	0.0022	3.4448	9.4277	95.8%	15.6%	25.85	0.25
3	3	19.00	0.0499	0.0021	5.8993	10.4114	95.8%	28.4%	26.10	0.14
4	4	18.96	0.0352	0.0022	10.0167	14.7646	95.8%	50.3%	26.04	0.09
5	5	19.51	0.0235	0.0037	22.8252	22.1059	93.1%	100.0%	26.03	0.04

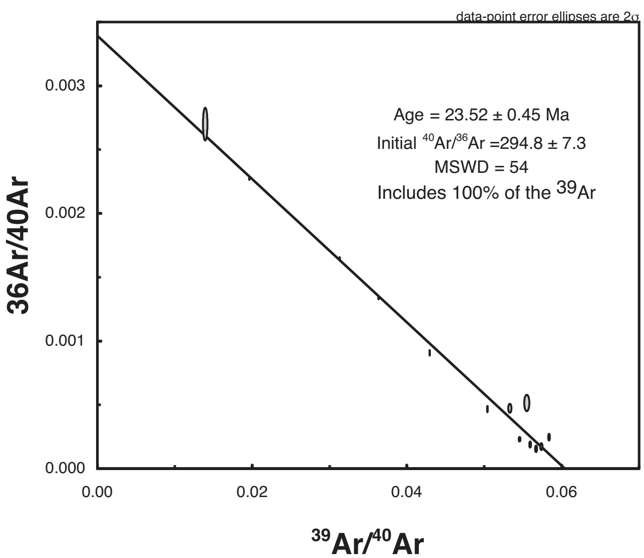




DL04-BR17 wrb   Total Fusion Age: 23.4 ± 0.1 Ma   J = 0.0007927 ± 0.5%

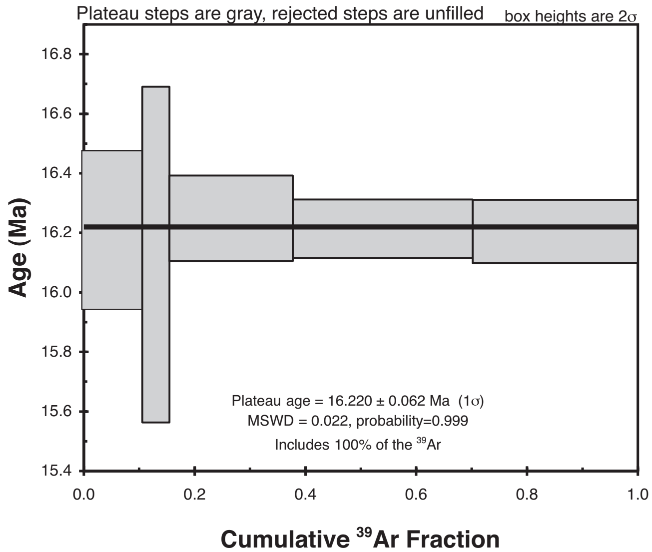
Step	Temp (ºC)	$^{40}Ar/^{39}Ar$	$^{37}Ar/^{39}Ar$	$^{36}Ar/^{39}Ar$	$^{39}Ar_K$ x 10^{-15} mol	K/Ca	$^{40}Ar^*$ (%)	^{39}Ar(%) (%)	Age (Ma)	± 1σ
1	550	50.77	0.2692	0.1158	24.3187	1.9309	32.5%	18.4%	23.51	0.08
2	600	31.86	0.3682	0.0529	11.7007	1.4119	50.8%	27.3%	23.07	0.08
3	700	27.47	0.7447	0.0374	15.5882	0.6978	59.5%	39.2%	23.36	0.06
4	750	23.26	1.2845	0.0219	9.8214	0.4044	71.7%	46.6%	23.97	0.08
5	800	19.82	1.6413	0.0101	10.6396	0.3164	84.2%	54.7%	24.04	0.08
6	850	18.32	1.4966	0.0051	12.0332	0.3470	91.1%	63.8%	24.02	0.06
7	900	17.89	0.9771	0.0041	9.9282	0.5318	92.7%	71.4%	23.76	0.07
8	950	17.64	0.7754	0.0034	9.2661	0.6702	93.8%	78.4%	23.68	0.08
9	1000	17.43	1.1513	0.0038	7.7279	0.4512	93.0%	84.3%	23.27	0.09
10	1100	17.13	2.1350	0.0052	8.8267	0.2431	90.1%	91.0%	22.38	0.09
11	1200	17.90	9.5355	0.0118	3.3657	0.0541	76.8%	93.5%	21.50	0.24
12	1300	18.69	6.1671	0.0107	7.6457	0.0839	80.7%	99.4%	22.70	0.13
13	1400	70.78	6.2564	0.1926	0.8403	0.0827	19.0%	100.0%	20.38	1.71

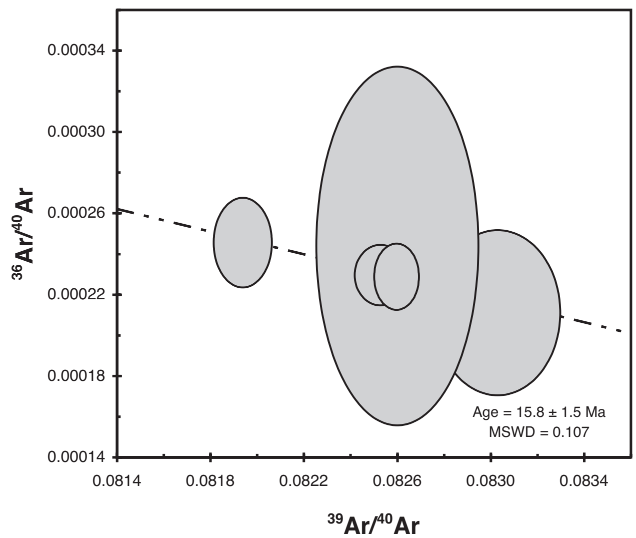




DL04-BR19 san | Total Fusion Age: 16.2 ± 0.1 Ma | J = 0.0007997 ± 0.5%

Step	Laser (#)	$^{40}Ar/^{39}Ar$	$^{37}Ar/^{39}Ar$	$^{36}Ar/^{39}Ar$	$^{39}Ar_K$ x 10^{-15} mol	K/Ca	$^{40}Ar^*$ (%)	^{39}Ar(%) (%)	Age (Ma)	± 1σ
1	1	12.07	0.0870	0.0026	9.5070	5.9739	93.4%	10.7%	16.21	0.09
2	2	12.14	0.0694	0.0030	4.3235	7.4882	92.5%	15.6%	16.13	0.19
3	3	12.23	0.0538	0.0030	19.6809	9.6627	92.4%	37.8%	16.25	0.05
4	4	12.15	0.0561	0.0028	28.6872	9.2713	92.9%	70.2%	16.22	0.03
5	5	12.14	0.0565	0.0028	26.3538	9.2001	92.9%	100.0%	16.21	0.03





DATA REPOSITORY ITEM 2 (DR-2), RECALCULATED $^{40}Ar/^{39}Ar$ AGES

Reference	Unit	Cited Age	Laboratory	Standard	Age TCs[4] = 27.92
Henry and Castor, 2000	Idaho Canyon Tuff	16.30 ± 0.06	NMT[1]	FCT[3] = 27.84	16.12 ± 0.06
Swisher, 1990	Idaho Canyon Tuff	16.48 ± 0.04	BGC[2]	FCT = 27.84	16.30 ± 0.04
Swisher, 1990	Steens Basalt (top)	16.583 ± 0.048	BGC	FCT = 27.84	16.40 ± 0.05
Swisher, 1990	Steens Basalt	16.589 ± 0.022	BGC	FCT = 27.84	16.41 ± 0.02
Swisher, 1990	Ashdown Tuff	26.55 ± 0.03	BGC	FCT = 27.84	26.26 ± 0.03

[1]New Mexico Tech

[2]Berkeley Geochronology Center

[3]Fish Canyon Tuff

[4]Taylor Creek Rhyolite

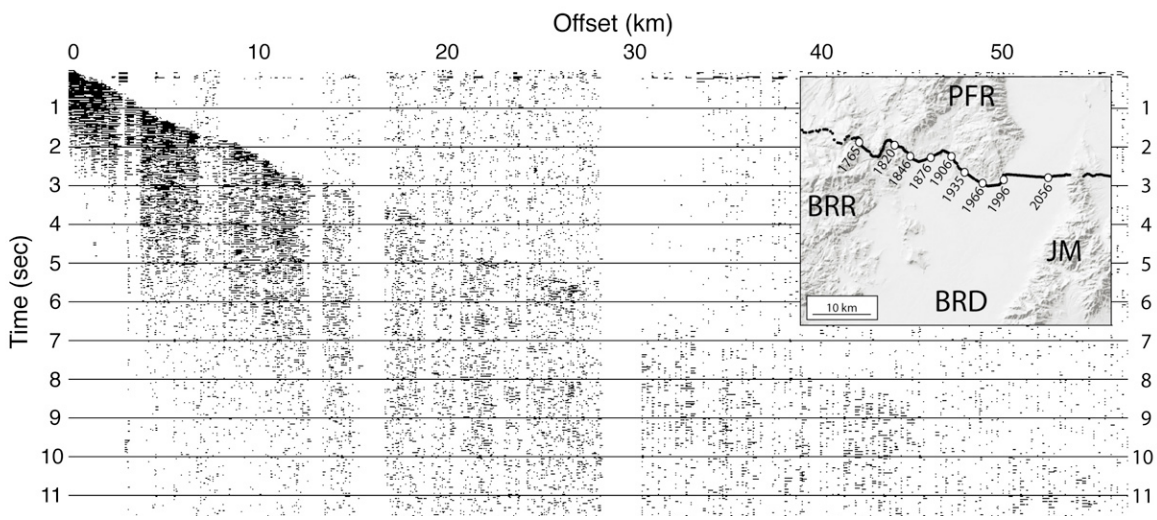
DATA REPOSITORY ITEM 3 (DR-3), SEISMIC DATA ACQUISITION AND PROCESSING

Recording in the Black Rock Range and Black Rock Desert was completed using single channel RefTek 125A seismographs spaced every 100 m. Source gathers from nine pad locations were produced by summing ten individual one-minute sweeps (10 min. total source effort). The gathers show clear first arrivals to offsets of ~25 km, with visible arrivals beyond this distance usually confined to regions of above average signal - noise ratio (see Data Repository Item 3 for a representative source gather). A bandpass filter (corner frequencies of 2, 4, 24, and 30 Hz) and a minimum phase predictive deconvolution (500 ms operator length, 50 ms prediction distance, 0.1% pre-whitening) were applied to all source gathers. A total of 515 picks were made from the vibrator-source gathers, illuminating the surface velocities in the vicinity of the Black Rock and Pine Forest Ranges (Figure 9). These picks were incorporated into the larger-scale refraction experiment (Lerch et al. (2007)) through forward modeling with Modeling (a GUI by Gou Fujie based on Colin Zelt's RayInvr, Zelt and Smith (1992)).

References

Lerch, D.W., Klemperer, S.L., Glen, J.M.G., Ponce, D.A., Miller, E.L., and Colgan, J.P., 2007, Crustal structure of the northwestern Basin and Range and its transition to unextended volcanic plateaus: Geochemistry, Geophysics, and Geosystems, v. 8, doi: 10.1029/2006GC001429.

Zelt, C.A. and Smith, R.B., 1992, Seismic traveltime inversion for 2-D crustal velocity structure: Geophysical Journal International, v. 108, no. 1, p. 16-34.



Sample vibrator gather (SP 1820) used for velocity modeling from the Black Rock Range. Coherent arrivals visible to offsets of ~25 km, with arrivals beyond this distance usually restricted to above average signal-noise regions. Inset figure shows vibrator locations (white circles), receiver locations (black line), Black Rock Desert (BRD), Black Rock Range (BRR), Pine Forest Range (PFR), and Jackson Mountains (JM).