Table DR1. $^{40}Ar/^{39}Ar$ analytical data.

	ID	Temp (C or 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)
	Copper Canyon-03 hb, A15:170, Hornblende, 26.08 mg, J=0.0008133±0.09%, D=1.00562±0.00081, NM-170, Lab#=54263-01											
#	A	800	138.9	0.8799	411.7	3.47	0.58	12.4	10.0	25.2	±	1.1
	B	900	68.66	0.6760	163.9	1.63	0.75	29.5	14.7	29.51	±	0.77
	C	1000	60.66	0.9130	139.0	1.27	0.56	32.4	18.3	28.64	±	0.86
	D	1030	72.20	1.181	184.7	0.844	0.43	24.5	20.8	25.8	±	1.3
	E	1060	82.98	2.128	213.5	0.745	0.24	24.2	22.9	29.2	±	1.4
	F	1090	65.92	4.988	153.2	0.929	0.10	31.9	25.6	30.7	±	1.1
	G	1120	61.73	8.407	146.6	2.23	0.061	31.0	32.0	27.99	±	0.70
	H	1170	91.33	10.06	245.4	14.5	0.051	21.5	73.9	28.81	±	0.52
	I	1200	78.50	9.940	201.6	3.99	0.051	25.2	85.4	28.95	±	0.76
	J	1250	88.49	11.82	234.5	3.98	0.043	22.8	96.8	29.62	±	0.75
	K	1300	114.6	14.56	327.4	0.836	0.035	16.6	99.3	28.0	±	1.4
	L	1700	256.1	12.44	810.0	0.258	0.041	7.0	100.0	26.3	±	4.1
	Integrated age ± 2σ		n=12			34.7	K2O=0.63 %			28.48	±	0.85
	Plateau ± 2σ	steps B-L	n=11	MSWD=1.3		31.2	0.12		90.0	28.84	±	0.58
	Copper Canyon-03 bi, A6:170, Biotite, single crystal, J=0.0008115±0.09%, D=1.00562±0.00081, NM-170, Lab#=54264											
#	12A	1.6	43.02	0.0670	83.10	0.081	7.6		42.9	26.8	±	1.7
#	01A	1.6	97.95	0.4496	267.7	0.179	1.1		19.3	27.4	±	1.2
#	02A	1.6	72.57	0.2428	179.5	0.168	2.1		26.9	28.4	±	1.1
#	11A	1.6	29.97	0.0531	33.60	0.182	9.6		66.8	29.09	±	0.88
#	05A	1.6	37.86	0.0906	57.63	0.548	5.6		55.0	30.25	±	0.37
#	03A	1.6	34.62	0.0773	46.10	0.245	6.6		60.7	30.49	±	0.74
#	04A	1.6	27.52	0.1127	22.00	0.217	4.5		76.4	30.51	±	0.73
#	06A	1.6	134.6	0.0530	384.0	0.039	9.6		15.7	30.7	±	4.3
#	07A	1.6	73.60	0.1330	177.1	0.067	3.8		28.9	30.9	±	3.6
#	09A	1.6	54.60	0.3440	110.4	0.047	1.5		40.3	31.9	±	3.4
#	10A	1.6	33.01	11.17	25.80	0.054	0.046		79.7	38.4	±	3.0
#	08A	1.6	32.02	-0.0130	18.00	0.039	-		83.0	38.6	±	6.0

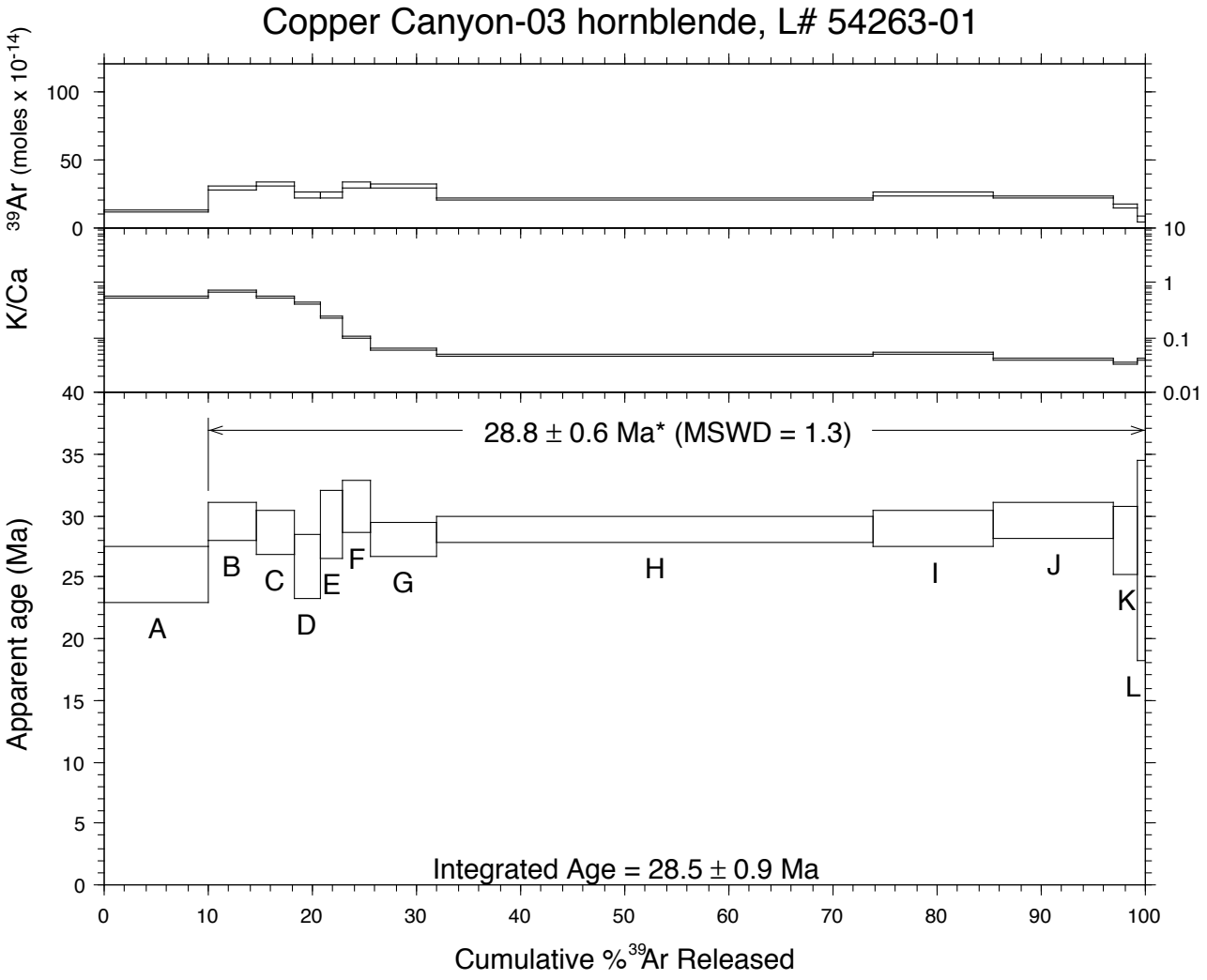
#	11B	10	38.62	0.0290	67.30	0.103	17.6		48.5	27.2	±	1.4
#	08B	10	33.95	-0.0201	47.50	0.152	-		58.6	28.9	±	1.6
	03B	10	23.12	0.0072	10.05	1.246	70.9		87.2	29.27	±	0.16
	05B	10	24.44	0.0093	13.83	0.948	54.9		83.3	29.55	±	0.20
	01B	10	26.21	0.1351	19.84	1.578	3.8		77.7	29.56	±	0.15
	07B	10	29.15	0.0240	29.40	0.357	21.3		70.2	29.73	±	0.70
	04B	10	24.72	0.0234	13.42	0.607	21.8		84.0	30.13	±	0.32
	02B	10	24.99	0.0508	13.78	0.718	10.0		83.7	30.37	±	0.24
#	06B	10	59.41	0.0506	129.5	0.417	10.1		35.6	30.68	±	0.59
#	09B	10	46.84	0.0520	85.50	0.222	9.8		46.1	31.30	±	0.87
#	12B	10	33.32	0.0047	39.60	0.264	108.6		64.9	31.38	±	0.59
#	10B	10	370.0	18.20	980.0	0.003	0.028		22.1	117.0	±	56.0
	Mean age ± 2σ			n=6	MSWD=3.6		30.4	±53.0		29.62	±	0.32

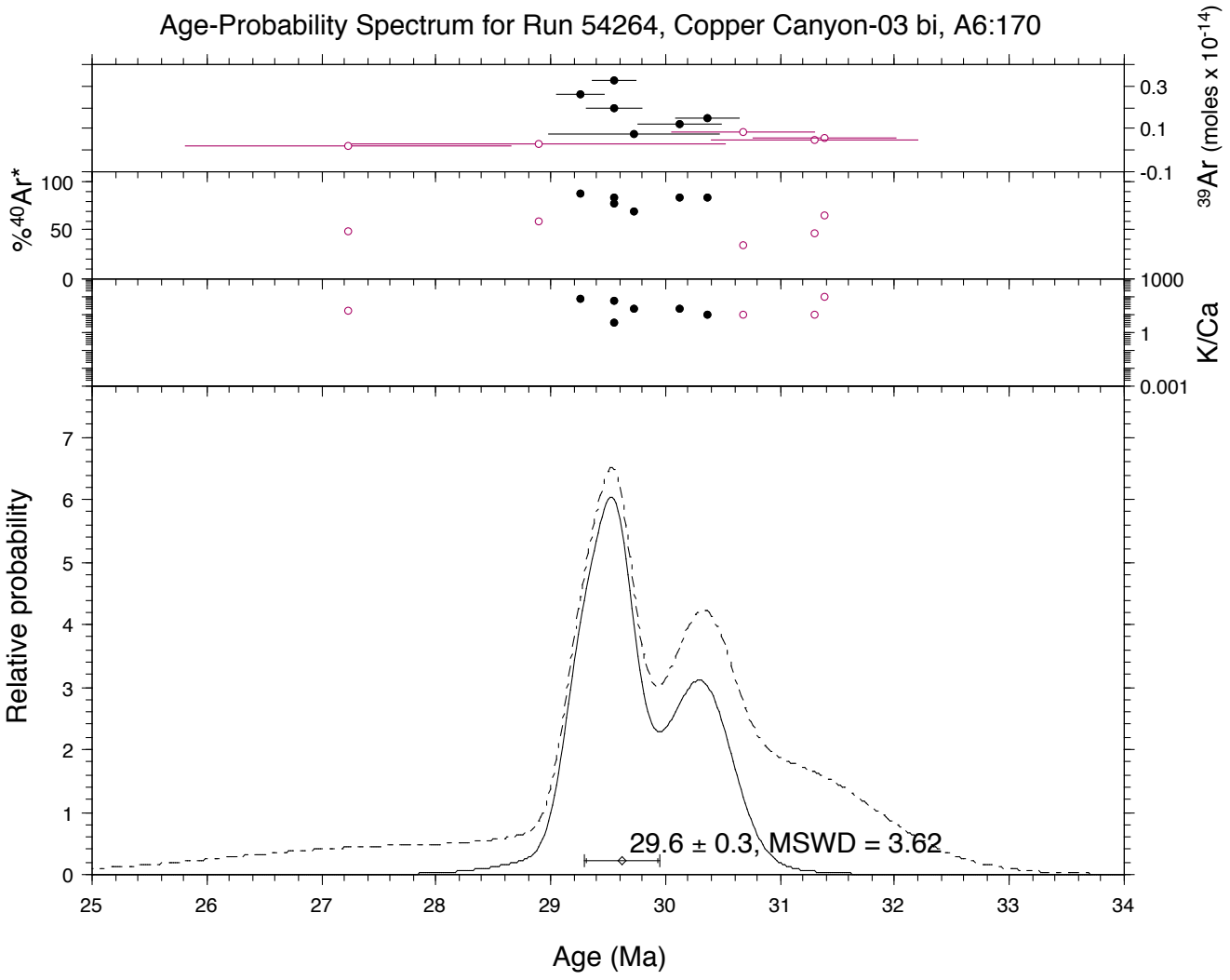
Notes:

# symbol preceding sample ID denotes analyses excluded from mean age calculations.
J = J-factor ± 1s, D = discrimination ± 1s, K/Ca calculated from measured $(^{37}Ar/^{39}Ar)_K$
NM- followed by a number indicates the irradiation batch, and Lab# is a unique laboratory identifier for the analysis.
Following the individual analyses for each sample, n=number of analyses used in the mean age calculation,
MSWD is mean of standard weighted deviates, and mean K/Ca is arithmetic mean and standard dev. of Kea determinations.

Analytical methods and parameters:

Mineral separation methods	heavy liquid (lithium metatungstate), magnetic (Franz), hand-picking
Irradiation geometry	alternating samples and monitors in machined Al discs
Irradiation facility	D-3 position, Nuclear Science Center, College Station, TX
Irradiation batch	NM-170 (7 hours)
Neutron flux monitor	Fish Canyon Tuff sanidine (FC-1) @ 28.02 Ma (Renne et al., 1998)
Lab	New Mexico Geochronology Research Laboratory, New Mexico Tech, Socorro, NM
Spectrometer	Mass Analyzer Products 215-50
Extraction system	automated, all-metal
Laser	50 watt Synrad CO_2 laser
Heating procedures	hornblende: resistance furnace step-heating; biotite: single-crystal two-step laser heating
Gas cleanup	two SAES GP-50 getters@ ~450°C and 20°C, W filament @ ~2000°C, cold finger @ -120°C
Gas cleanup times	2 minutes
Electron multiplier sensitivity	1.7 x 10^{-17} moles/pA (laser analyses); 3.5 x 10-17 moles/pA (\furnace analyses);
Mean system blank furnace	202, 0.6, 0.3, 2.3, 0.7 x 10^{-18} moles @ masses 40, 39, 38, 37 and 36
Mean system blank laser	275, 0.2, 0,2, 0.1, 1.1 x 10^{-18} moles @ masses 40, 39, 38, 37 and 36
J-factor determination	CO_2 laser-fusion of 4 single crystals from each of 4 radial positions around irradiation tray
J-factor precision	±0.2%
Correction factor monitors	K-glass and CaF_2
Correction factors NM-77	$(^{40}Ar/^{39}Ar)_K$ = 0.0002±0.0003; $(^{36}Ar/^{37}Ar)_{Ca}$ = 0.00028±0.000005; $(^{39}Ar/^{37}Ar)_{Ca}$ = 0.0007±0.000032
Isotopic ratio corrections	blank, radioactive decay, mass discrimination (not corrected for interfering reactions)
Individual analysis errors	analytical error only (uncertainties in interfering reactions and J factors excluded)
Mean age	weighted mean age of Taylor (1982)
Mean age error calculation	weighted error of the mean (Taylor, 1982), multiplied by root of MSWD where MSWD>1
Mean age errors	uncertainties in interfering reactions and J factors included
Integrated age	recombination of isotopic measurements of all steps.
Integrated age error	recombination of errors of isotopic measurements of all steps.
Decay constants	Steiger and Jaeger (1977)


Copper Canyon-03 hornblende, L# 54263-01
39Ar (moles x 10-14)
100
50
0
K/Ca
10
1
0.1
0.01
40
35
30
25
20
15
10
5
0
28.8 ± 0.6 Ma* (MSWD = 1.3)
A
B
C
D
E
F
G
H
I
J
K
L
Apparent age (Ma)
Integrated Age = 28.5 ± 0.9 Ma
0
10
20
30
40
50
60
70
80
90
100
Cumulative %39Ar Released


Age-Probability Spectrum for Run 54264, Copper Canyon-03 bi, A6:170
^{39}Ar (moles x 10^{-14})
0.3
0.1
-0.1
%^{40}Ar*
100
50
0
1000
1
0.001
K/Ca
Relative probability
7
6
5
4
3
2
1
0
29.6 ± 0.3, MSWD = 3.62
25
26
27
28
29
30
31
32
33
34
Age (Ma)