DR# 2002092 **Appendix 1: Table DR1a: Results of 40Ar/39Ar laser probe dating**

Sample No.	Age ± 1σ [Ma]	Type	Longitude	Latitude (Altitude)	Type of data	% ^{39}Ar in Plateau / No. of heating steps or total fusions	MSWD	Total gas age ± 1σ [Ma] (^{40}Ar/^{36}Ar$_i$)
Malpelo Island								
MO2	**15.8 ± 0.1**	AB LI	4°00.45´	81°36.65´ (255 masl)	Matrix STH PLA	60.6 /16 of 35	0.64	17.4 ± 0.2
TA2	**16.7 ± 0.5**	AB LI	4°00.45´	81°36.65´ (80 masl)	Matrix STH PLA	60.5 / 8 of 22	0.75	18.1 ± 0.6
PA1	**17.3 ± 0.3**	AB LI	4°00.45´	81°36.65´	Matrix STH PLA	51.5 / 6 of 29	0.54	19.2 ± 0.4
Azuero Peninsula								
AZ72-1	**20.8 ± 1.8**	AB LF	7°14.11´	80°53.57´	Plagioclase STH PLA	58.0 / 9 of 25	0.37	34.0 ± 1.6
G22	**21.2 ± 1.0**	TH PI	7°25.00´	80°10.65´	Matrix SXX ISA	/ 8	4.04	(311 ± 3)
G33	**32.8 ± 0.5**	AB SA	7°14.31´	80°34.09´	Matrix STH PLA	46.5 / 11 of 28	0.78	40.2 ± 0.4
AZ67	**51.9 ± 1.3**	AB LI	7°14.31´	80°33.54´	Matrix STH PLA	68.5 / 23 of 37	0.91	70.6 ± 1.6
AZ103-2	**52.1 ± 0.8**	TH LB	7°12.40´	80°48.16´	Plagioclase STH PLA	99.8 / 26 of 28	0.91	59.5 ± 1.1
G46	**52.6 ± 0.6**	AB LF	7°23.76´	80°48.76´	Matrix SXX MAA	/ 8	3.59	
AZ39-1	**54.4 ± 1.5**	TH PI	7°25.19´	80°08.73´	Matrix STH PLA	99.1 / 28 of 35	1.40	55.9 ± 2.3
AZ59-4	**56.0 ± 1.7**	AB LB	7°13.95´	80°53.57´	Plagioclase SXX MA	/ 13	1.39	
G42	**58.6 ± 0.3**	AB LB	7°23.02	80°49.22´	Matrix SXX MAA	/ 9	3.20	
AZ104-1	**60.7 ± 1.1**	AB LI	7°13.81	80°36.81	Matrix STH PLA	57.2 / 11 of 34	0.14	61.6 ± 1.3
AZ66-1	**61.7 ± 1.2**	AB LI	7°14.22	80°33.45´	Matrix STH PLA	49.2 / 8 of 30	2.30	65.5 ± 0.4
AZ55-1	**63.2 ± 0.6**	AB LB	7°26.61´	80°53.51´	Plagioclase SXX MA	/ 13	2.00	
AZ69-1	**66.0 ± 0.7**	AB LI	7°14.50´	80°32.83´	Matrix STH PLA	36.6 / 8 of 31	0.77	60.7 ± 0.5

Sample No.	Age ± 1σ [Ma]	Type	Longitude	Latitude (Altitude)	Type of data	% ^{39}Ar in Plateau / No. of heating steps or total fusions	MSWD	Total gas age ± 1σ [Ma] (^{40}Ar/^{36}Ar$_i$)
Coiba Island								
G63	**38.2 ± 2.4**	TH LI	7°37.30´	81°46.54´	Matrix SXX MAA	/ 5	2.11	
Sona Peninsula								
G54	**71.3 ± 2.1**	TH LI	7°39.10	81°12.94´	Matrix SXX MAA	/ 10	0.69	
Osa Peninsula								
OS4	**54.5 ± 1.5**	Th LI	8°47.66´	83°39.05´	Matrix SXX MAA	/ 5	2.59	
Burica Peninsula								
BUR5	**64.2 ± 1.1**	Th LI	8°13.13´	82°57.17´	Matrix SXX MAA	/ 9	0.69	
Quepos Peninsula								
AQ66	**65.0 ± 0.4**	TH LI	9°22.84´	84°9.24´	Matrix SXX MAA	/ 7	2.29	

AB = Alkali Basalt
TH = Tholeiite
LI = Lava in situ
LB = Lava boulder
AG = Scoria agglutinate

SXX = Single-crystal total fusion
STH = Laser step-heating analysis
PLA = Plateau age
MAA = Mean apparent age (inverse-variance-weighted)
ISA = Isochron age
MSWD = Mean Square Weighted Deviates

Plateau age: Plateau comprises three or more contiguous steps and >>30% of total ^{39}Ar released. Probability-of-fit of the weighted-mean age of the steps is greater than 5%. Slope of the error-weighted line through the plateau ages is not different from zero at 5% confidence. Ages of outermost 2 steps on either side of the plateau are not significantly different (at 1.8σ) than the weighted-mean plateau age (6 or more steps only). Outermost 2 steps on either side of the plateau must not have non-zero slopes (at 1.8s) with the same sign (9 or more steps only). (ISOPLOT/EX; Ludwig, 2001).

Appendix 1: Table DR1b: Laser step-heating $^{40}Ar/^{39}Ar$ data

Sample G33, 2.950 mg Matrix, J=0.00469751 ± 0.00000631

Heating step	Laser power [mW]	Cumulative fraction ^{39}Ar	$^{40}Ar/^{39}Ar$	Ca/K	$^{40}Ar_{atm}$ %	Age [Ma]	1σ [Ma]
A	50	1.29E-03	1.88E+00	-5.52E+00	9.93E+01	15.9	36.1
B	100	1.41E-02	4.29E+00	2.65E+00	9.74E+01	36.0	6.6
C	150	3.29E-02	5.72E+00	2.89E+00	9.43E+01	47.8	6.3
D	200	7.01E-02	6.48E+00	3.66E+00	9.08E+01	54.1	2.6
E	250	1.15E-01	7.00E+00	5.16E+00	8.69E+01	58.4	2.7
F	300	1.62E-01	7.00E+00	4.20E+00	8.50E+01	58.3	1.4
G	350	2.03E-01	6.94E+00	5.99E+00	8.32E+01	57.9	2.3
H	400	2.42E-01	6.31E+00	7.68E+00	8.47E+01	52.7	2.7
I	450	2.77E-01	6.02E+00	1.14E+01	8.72E+01	50.3	1.7
J	500	3.05E-01	5.62E+00	1.40E+01	8.57E+01	47.0	3.4
K	550	3.30E-01	5.31E+00	8.43E+00	8.48E+01	44.4	2.5
L	600	3.52E-01	4.92E+00	1.13E+01	8.49E+01	41.2	3.6
M	700	3.84E-01	4.33E+00	1.31E+01	8.55E+01	36.3	2.5
N	800	4.19E-01	4.30E+00	1.66E+01	8.10E+01	36.1	1.8
O	900	4.56E-01	4.17E+00	1.87E+01	8.08E+01	35.0	2.4
P	1000	4.98E-01	4.48E+00	2.09E+01	6.97E+01	37.6	1.7
Q	1100	5.35E-01	4.42E+00	2.07E+01	6.26E+01	37.1	1.3
R	1200	**5.78E-01**	4.27E+00	2.20E+01	6.45E+01	35.8	1.7
S	1350	**6.30E-01**	3.91E+00	2.69E+01	6.75E+01	32.8	1.1
T	1500	**6.72E-01**	3.89E+00	2.81E+01	6.76E+01	32.7	1.5
U	1750	**7.22E-01**	3.69E+00	3.13E+01	7.19E+01	31.0	1.8
V	2000	**7.57E-01**	3.83E+00	2.66E+01	6.99E+01	32.1	2.0
W	3000	**8.47E-01**	3.84E+00	3.24E+01	7.46E+01	32.3	0.9
X	4000	**9.04E-01**	4.01E+00	2.49E+01	7.12E+01	33.7	0.9
Y	6000	**9.76E-01**	3.77E+00	2.14E+01	7.28E+01	31.7	1.0
Z	8000	**9.96E-01**	4.15E+00	2.27E+01	7.51E+01	34.8	2.5
Z1	15000	**1.00E+00**	4.69E+00	1.14E+01	8.25E+01	39.3	12.9
Z2	22000	**1.00E+00**	1.78E+00	-2.08E+02	9.57E+01	15.0	251.2
Total gas age	n = 28					40.2	0.4
Plateau	n = 11	46.50%	MSWD=0.78	Steps R-Z2		32.8	0.4

Sample AZ104-1, Matrix, J= 0.00374314 ± 0.00000585

Heating step	Laser power [mW]	Cumulative fraction ^{39}Ar	$^{40}Ar/^{39}Ar$	Ca/K	$^{40}Ar_{atm}$ %	Age [Ma]	1σ [Ma]
A	70	-2.26E-05	-5.70E+02	-4.94E+02	9.96E+01	-67366.0	15070.0
B	100	1.17E-03	9.12E+01	4.27E+01	9.91E+01	529.7	208.8
C	125	2.72E-03	7.09E+01	2.77E+01	9.85E+01	424.4	178.7
D	150	6.32E-03	2.22E+01	2.66E+01	9.94E+01	143.8	71.1
E	175	1.17E-02	3.84E+01	2.27E+01	9.85E+01	242.0	58.2
F	200	1.84E-02	1.90E+01	2.07E+01	9.89E+01	123.7	51.6
G	225	2.65E-02	1.80E+01	1.97E+01	9.84E+01	117.5	41.5
H	250	3.49E-02	1.47E+01	2.03E+01	9.82E+01	96.4	42.2
I	275	4.38E-02	9.31E+00	1.95E+01	9.85E+01	61.8	32.3
J	300	5.33E-02	1.04E+01	1.95E+01	9.76E+01	68.6	19.5
K	350	6.79E-02	6.63E+00	2.06E+01	9.80E+01	44.3	12.9
L	400	8.73E-02	6.52E+00	2.22E+01	9.70E+01	43.5	10.4
M	450	1.11E-01	7.92E+00	2.36E+01	9.66E+01	52.7	10.3
N	500	1.39E-01	7.02E+00	2.37E+01	9.63E+01	46.8	8.6
O	550	1.72E-01	7.61E+00	2.66E+01	9.55E+01	50.7	6.8
P	600	2.04E-01	7.42E+00	2.96E+01	9.49E+01	49.5	7.7
Q	700	2.52E-01	8.37E+00	3.21E+01	9.28E+01	55.6	4.1
R	800	2.98E-01	7.70E+00	3.53E+01	8.93E+01	51.3	4.8
S	900	3.43E-01	7.75E+00	4.66E+01	8.44E+01	51.6	3.9
T	1000	3.88E-01	7.51E+00	6.36E+01	8.42E+01	50.0	3.5
U	1100	4.24E-01	7.18E+00	7.51E+01	8.54E+01	47.8	5.3
V	1200	**4.64E-01**	8.88E+00	8.68E+01	8.34E+01	59.0	4.0
W	1350	**5.13E-01**	9.13E+00	9.63E+01	8.35E+01	60.6	3.9
X	1500	**5.44E-01**	9.13E+00	1.04E+02	8.42E+01	60.6	4.2
Y	1750	**5.79E-01**	8.96E+00	1.06E+02	8.49E+01	59.5	4.4
Z	2500	**6.49E-01**	9.31E+00	1.03E+02	8.47E+01	61.8	2.7
Z1	3000	**7.00E-01**	9.62E+00	9.98E+01	8.93E+01	63.8	4.7
Z2	4000	**7.61E-01**	9.02E+00	9.52E+01	8.71E+01	59.9	4.1
Z3	6000	**8.63E-01**	9.08E+00	9.48E+01	8.46E+01	60.3	2.6
Z4	8000	**9.63E-01**	9.08E+00	9.37E+01	8.59E+01	60.3	2.3
Z5	10000	**9.96E-01**	9.59E+00	9.61E+01	8.60E+01	63.6	5.7
Z6	15000	**9.98E-01**	2.33E+01	9.96E+01	6.34E+01	151.0	35.6
Z7	20000	**1.00E+00**	3.41E+01	1.12E+02	6.28E+01	217.0	83.8
Z8	25000	**1.00E+00**	2.04E+02	9.70E+01	-5.91E+01	1023.8	316.4
Total gas age	n = 34					61.6	
Plateau	n = 11	57.20%	MSWD=0.14	Steps W-Z8		60.7	1.1
		+/-	3.04E-06				

Sample AZ66-1, Matrix, J= 0.00391249 ± 0.00000304

Heating step	Laser power [mW]	Cumulative fraction ^{39}Ar	$^{40}Ar/^{39}Ar$	Ca/K	$^{40}Ar_{atm}$ %	Age [Ma]	1σ [Ma]
A	50	-1.74E-05	2.60E+02	4.26E+01	1.28E+03	1264.6	2310.0
B	100	6.96E-06	1.53E+02	2.23E+01	9.39E+01	846.0	1851.0
C	150	2.93E-04	2.63E+01	1.01E+01	9.69E+01	176.5	230.6
D	200	1.46E-03	7.70E+00	4.72E+00	9.80E+01	53.6	52.9
E	250	3.97E-03	1.39E+01	4.20E+00	9.34E+01	95.8	20.6
F	300	8.75E-03	7.17E+00	4.45E+00	9.33E+01	49.9	16.1
G	350	1.56E-02	6.52E+00	4.25E+00	8.84E+01	45.5	10.9
H	400	2.51E-02	8.99E+00	3.67E+00	7.45E+01	62.3	8.6
I	450	3.64E-02	1.06E+01	3.93E+00	6.20E+01	73.2	6.9
J	500	4.92E-02	1.02E+01	4.38E+00	5.75E+01	70.9	7.0
K	550	6.45E-02	1.16E+01	5.09E+00	4.24E+01	79.8	5.1
L	600	8.26E-02	1.09E+01	5.32E+00	3.59E+01	75.5	3.1
M	700	1.19E-01	1.09E+01	5.92E+00	2.53E+01	75.1	1.7
N	800	1.64E-01	1.10E+01	6.38E+00	1.59E+01	76.1	1.2
O	900	2.16E-01	1.05E+01	6.81E+00	1.77E+01	72.5	1.3
P	1000	2.70E-01	1.02E+01	7.27E+00	1.85E+01	70.4	1.0
Q	1100	3.16E-01	9.95E+00	8.23E+00	1.66E+01	68.9	1.0
R	1200	3.70E-01	9.80E+00	1.01E+01	1.85E+01	67.9	1.0
S	1350	4.32E-01	9.43E+00	1.38E+01	2.13E+01	65.4	1.0
T	1500	4.96E-01	9.40E+00	1.85E+01	2.46E+01	65.2	0.8
U	1750	**5.59E-01**	9.22E+00	2.20E+01	2.75E+01	63.9	0.8
V	2000	**6.09E-01**	8.90E+00	2.90E+01	3.20E+01	61.8	1.1
W	3000	**7.03E-01**	8.71E+00	3.86E+01	3.59E+01	60.5	0.7
X	4000	**7.82E-01**	8.96E+00	3.76E+01	2.81E+01	62.1	0.7
Y	5000	**8.50E-01**	8.70E+00	3.71E+01	2.85E+01	60.4	1.4
Z	6000	**8.87E-01**	8.83E+00	4.36E+01	2.79E+01	61.3	2.3
Z1	8000	**9.22E-01**	9.01E+00	3.84E+01	2.53E+01	62.5	1.7
Z2	15000	**9.88E-01**	8.68E+00	4.43E+01	2.64E+01	60.2	0.9
Z3	20000	9.97E-01	7.25E+00	5.02E+01	3.63E+01	50.5	6.7
Z4	25000	1.00E+00	7.79E+00	5.24E+01	3.36E+01	54.2	20.3
Total gas age	n = 30					65.5	0.4
Plateau	n = 8	49.20%	MSWD=2.3	StepsU-Z2		61.7	1.2

Sample AZ72-1, Plagioclase, J = 0.00368995 ± 0.00000915296

Heating step	Laser power [mW]	Cumulative fraction ^{39}Ar	$^{40}Ar/^{39}Ar$	Ca/K	$^{40}Ar_{atm}$ %	Age [Ma]	1σ [Ma]
A	100	3.81E-04	5.33E+01	7.54E+01	9.90E+01	323.8	538.0
B	200	7.97E-03	-1.49E+00	4.52E+01	1.00E+02	-9.9	56.8
C	300	**5.74E-02**	2.95E+00	2.97E+01	9.96E+01	19.5	9.3
D	400	**1.66E-01**	3.50E+00	3.71E+01	9.88E+01	23.1	7.1
E	500	**2.67E-01**	2.74E+00	6.63E+01	9.78E+01	18.2	4.9
F	600	**3.53E-01**	3.48E+00	1.30E+02	9.53E+01	23.0	3.8
G	700	**4.30E-01**	3.15E+00	1.61E+02	9.51E+01	20.8	3.7
H	800	**4.98E-01**	2.94E+00	2.58E+02	9.54E+01	19.5	4.2
I	1000	**5.39E-01**	1.70E+00	4.84E+02	9.87E+01	11.3	9.0
J	1200	**5.58E-01**	4.97E+00	3.79E+02	9.53E+01	32.8	11.4
K	1350	**5.83E-01**	3.53E+00	3.46E+02	9.72E+01	23.3	10.8
L	1500	6.15E-01	6.44E+00	1.60E+02	9.47E+01	42.4	8.4
M	1750	6.55E-01	7.01E+00	9.47E+01	9.38E+01	46.1	9.5
N	2000	6.92E-01	6.05E+00	9.16E+01	9.30E+01	39.9	8.0
O	2500	7.53E-01	7.28E+00	1.02E+02	9.17E+01	47.8	4.3
P	3000	8.17E-01	6.45E+00	1.05E+02	8.99E+01	42.4	4.6
Q	4000	8.88E-01	7.83E+00	1.06E+02	8.38E+01	51.4	3.6
R	5000	9.35E-01	8.28E+00	1.13E+02	7.95E+01	54.3	5.5
S	6000	9.68E-01	1.07E+01	1.11E+02	6.36E+01	69.8	3.8
T	8000	9.90E-01	8.15E+00	1.05E+02	6.91E+01	53.4	11.3
U	10000	9.98E-01	1.40E+01	1.16E+02	5.88E+01	90.7	18.8
V	12000	9.99E-01	2.09E+01	9.12E+01	2.60E+01	134.2	98.2
W	15000	1.00E+00	1.85E+02	1.35E+02	-8.89E+02	937.1	394.4
X	20000	1.00E+00	4.14E+02	8.38E+01	-4.18E+03	1672.3	1027.0
Y	25000	1.00E+00	6.52E+02	-7.00E+00	2.50E+04	2210.8	1132.0
Total gas age	n = 25					34.0	1.6
Plateau	n = 9	58.30%	MSWD=0.37	Steps C-K		20.8	1.8

Sample MO2, Matrix, J = 0.00391249 ± 0.00000304353

Heating step	Laser power [mW]	Cumulative fraction ^{39}Ar	$^{40}Ar/^{39}Ar$	Ca/K	$^{40}Ar_{atm}$ %	Age [Ma]	1σ [Ma]
A	70	1.64E-05	7.08E+01	6.91E+00	9.96E+01	441.2	1097.0
B	100	2.99E-04	6.40E+01	5.93E+00	9.87E+01	402.9	100.6
C	125	5.52E-04	6.48E+01	2.03E+00	9.84E+01	407.9	61.2
D	150	1.33E-03	3.21E+01	3.16E+00	9.86E+01	213.2	43.3
E	175	2.93E-03	2.30E+01	2.58E+00	9.81E+01	155.2	13.6
F	200	5.90E-03	6.30E+00	2.37E+00	9.89E+01	43.9	9.8
G	225	1.07E-02	4.91E+00	2.34E+00	9.87E+01	34.3	5.3
H	250	1.76E-02	3.53E+00	2.14E+00	9.86E+01	24.7	5.0
I	275	2.69E-02	3.40E+00	2.06E+00	9.80E+01	23.8	2.3
J	300	3.86E-02	3.41E+00	2.01E+00	9.76E+01	23.9	3.8
K	350	**6.04E-02**	2.74E+00	1.93E+00	9.69E+01	19.2	2.5
L	400	**8.56E-02**	2.41E+00	2.07E+00	9.56E+01	16.9	1.8
M	450	**1.16E-01**	2.33E+00	2.07E+00	9.29E+01	16.4	0.8
N	500	**1.47E-01**	2.30E+00	2.10E+00	8.95E+01	16.1	0.9
O	550	**1.81E-01**	2.18E+00	2.04E+00	8.64E+01	15.3	0.7
P	600	**2.16E-01**	2.25E+00	2.14E+00	8.30E+01	15.8	0.6
Q	700	**2.73E-01**	2.30E+00	2.27E+00	8.07E+01	16.2	0.4
R	800	**3.34E-01**	2.26E+00	3.08E+00	8.04E+01	15.9	0.3
S	900	**3.86E-01**	2.24E+00	3.96E+00	8.09E+01	15.8	0.3
T	1000	**4.32E-01**	2.18E+00	5.00E+00	8.25E+01	15.3	0.5
U	1100	**4.69E-01**	2.17E+00	5.61E+00	8.25E+01	15.3	0.3
V	1200	**5.00E-01**	2.22E+00	6.09E+00	8.20E+01	15.6	0.7
W	1350	**5.36E-01**	2.20E+00	6.60E+00	8.19E+01	15.5	0.6
X	1500	**5.69E-01**	2.29E+00	6.86E+00	8.15E+01	16.1	0.4
Y	1750	**6.06E-01**	2.28E+00	6.99E+00	8.17E+01	16.0	0.5
Z	2000	**6.45E-01**	2.29E+00	6.47E+00	8.05E+01	16.1	0.6
Z2	2500	6.90E-01	2.48E+00	6.52E+00	7.96E+01	17.5	0.4
Z3	3000	7.25E-01	2.26E+00	6.25E+00	8.15E+01	15.9	0.4
Z4	4000	7.75E-01	2.38E+00	5.30E+00	8.03E+01	16.7	0.5
Z5	6000	8.65E-01	2.45E+00	5.36E+00	8.00E+01	17.2	0.3
Z6	8000	9.56E-01	2.45E+00	4.83E+00	7.96E+01	17.2	0.3
Z7	10000	9.95E-01	2.38E+00	4.53E+00	8.10E+01	16.8	0.5
Z8	15000	1.00E+00	2.57E+00	3.42E+00	7.84E+01	18.0	1.9
Z9	20000	1.00E+00	5.85E+00	9.18E-01	5.56E+01	40.8	17.7
Z10	25000	1.00E+00	-3.56E+01	7.98E+01	-1.62E+02	-270.5	612.1
Total gas age	n = 35					17.4	0.2
Plateau	n = 16	60.60%	MSWD=0.64	Steps K-Z		15.8	0.1

Sample PA1, Matrix, J = 0.00391249 ± 0.00000304353

Heating step	Laser power [mW]	Cumulative fraction ^{39}Ar	$^{40}Ar/^{39}Ar$	Ca/K	$^{40}Ar_{atm}$ %	Age [Ma]	1σ [Ma]
A	50	1.12E-06	2.09E+03	-3.64E+02	9.10E+01	3996.5	26580.0
B	100	2.14E-05	2.90E+01	1.54E+02	9.99E+01	193.6	2589.0
C	150	1.59E-04	1.65E+02	6.26E+01	9.87E+01	896.9	429.1
D	200	9.03E-04	9.55E+01	2.76E+01	9.77E+01	572.7	61.3
E	250	2.85E-03	2.45E+01	1.87E+01	9.86E+01	165.1	41.3
F	300	7.01E-03	1.55E+01	1.31E+01	9.81E+01	106.0	15.7
G	350	1.42E-02	7.70E+00	9.28E+00	9.79E+01	53.6	8.8
H	400	2.42E-02	5.10E+00	8.18E+00	9.82E+01	35.6	7.9
I	450	3.67E-02	3.04E+00	8.10E+00	9.84E+01	21.3	7.6
J	500	5.41E-02	1.06E+00	7.10E+00	9.92E+01	7.5	4.5
K	550	8.06E-02	1.58E+00	7.28E+00	9.87E+01	11.1	4.5
L	600	1.16E-01	2.99E+00	6.52E+00	9.62E+01	21.0	3.5
M	700	1.61E-01	1.92E+00	7.32E+00	9.62E+01	13.5	1.8
N	800	2.16E-01	2.23E+00	8.03E+00	9.43E+01	15.7	1.7
O	900	2.67E-01	2.11E+00	9.12E+00	9.36E+01	14.9	1.0
P	1000	3.01E-01	2.20E+00	1.13E+01	8.97E+01	15.5	1.9
Q	1100	3.28E-01	2.58E+00	1.47E+01	8.97E+01	18.2	1.7
R	1200	3.53E-01	2.73E+00	1.67E+01	9.04E+01	19.2	2.2
S	1350	3.80E-01	2.70E+00	1.93E+01	9.14E+01	18.9	1.8
T	1500	4.07E-01	3.26E+00	2.18E+01	9.04E+01	22.9	1.2
U	1750	4.46E-01	3.27E+00	2.17E+01	9.05E+01	23.0	1.4
V	2000	**4.84E-01**	2.64E+00	2.09E+01	9.19E+01	18.6	1.6
W	3000	**5.63E-01**	2.46E+00	1.63E+01	9.14E+01	17.3	0.8
X	4000	**6.33E-01**	2.56E+00	1.31E+01	9.01E+01	18.0	0.7
Y	6000	**7.78E-01**	2.47E+00	1.22E+01	9.09E+01	17.4	0.7
Z	8000	**8.38E-01**	2.53E+00	9.82E+00	8.93E+01	17.8	1.2
Z2	15000	**9.61E-01**	2.39E+00	1.01E+01	9.00E+01	16.8	0.5
Z3	20000	9.99E-01	3.01E+00	8.92E+00	8.74E+01	21.1	1.2
Z4	25000	1.00E+00	1.13E+01	9.71E+00	5.41E+01	77.9	30.7
Total gas age	n = 29					19.2	0.4
Plateau	n = 6	51.50%	MSWD=0.54	Steps V-Z2		17.3	0.3

Sample TA2, Matrix, J = 0.00391249 ± 0.00000304353

Heating step	Laser power [mW]	Cumulative fraction ^{39}Ar	$^{40}Ar/^{39}Ar$	Ca/K	$^{40}Ar_{atm}$ %	Age [Ma]	1σ [Ma]
A	50	-1.22E-05	-2.76E+03	-1.84E+02	7.69E+01	-539500000.0	7992.0
B	100	1.15E-03	3.63E+01	1.50E+01	9.84E+01	239.8	123.5
C	150	4.40E-03	1.05E+01	1.02E+01	9.91E+01	72.4	50.7
D	200	**1.61E-02**	3.00E+00	1.04E+01	9.93E+01	21.0	13.7
E	600	**6.50E-02**	1.72E+00	2.72E+01	9.44E+01	12.1	2.3
F	700	**1.51E-01**	2.24E+00	2.65E+01	9.04E+01	15.8	2.1
G	800	**2.51E-01**	2.50E+00	2.85E+01	8.36E+01	17.6	1.7
H	900	**3.53E-01**	2.41E+00	2.80E+01	8.31E+01	16.9	1.1
I	1000	**4.63E-01**	2.31E+00	2.97E+01	8.36E+01	16.3	1.3
J	1100	**5.37E-01**	2.48E+00	2.90E+01	8.16E+01	17.4	1.2
K	1200	**6.09E-01**	2.45E+00	3.26E+01	8.32E+01	17.2	1.5
L	1350	6.72E-01	3.09E+00	4.30E+01	8.16E+01	21.7	1.4
M	1500	7.29E-01	3.02E+00	4.78E+01	8.40E+01	21.2	2.4
N	1750	7.70E-01	3.59E+00	6.83E+01	8.15E+01	25.2	2.5
O	2000	8.02E-01	2.01E+00	6.92E+01	9.02E+01	14.1	3.3
P	3000	8.53E-01	2.65E+00	9.67E+01	8.93E+01	18.6	2.4
Q	4000	9.00E-01	2.92E+00	1.48E+02	9.09E+01	20.5	3.1
R	6000	9.41E-01	1.93E+00	1.65E+02	9.37E+01	13.6	2.6
S	8000	9.68E-01	3.17E+00	1.66E+02	9.03E+01	22.2	4.3
T	15000	9.96E-01	1.26E+00	1.68E+02	9.64E+01	8.9	4.5
U	20000	1.00E+00	-1.26E+00	2.32E+02	1.02E+02	-8.9	44.6
V	25000	1.00E+00	-6.05E+01	1.28E+02	1.28E+02	-487.4	927.5
Total gas age	n = 22					18.1	0.6
Plateau	n = 8	60.50%	MSWD=0.75	Steps D-K		16.7	0.5

Sample AZ103-2, Plagioclase, J = 0.00368676 ± 0.00000283487

Heating step	Laser power [mW]	Cumulative fraction ^{39}Ar	$^{40}Ar/^{39}Ar$	Ca/K	$^{40}Ar_{atm}$ %	Age [Ma]	1σ [Ma]
A	100	1.65E-04	-5.06E+01	2.81E+02	1.00E+02	-372.9	2194.0
B	200	2.71E-04	3.64E+03	2.37E+03	8.17E+01	4812.8	1601.0
C	300	7.50E-04	1.13E+03	-3.13E+02	8.39E+01	2958.3	379.5
D	400	**2.50E-03**	8.30E+01	-3.49E+01	8.96E+01	481.4	110.6
E	500	**2.94E-02**	9.25E+00	6.94E+01	9.71E+01	60.5	13.9
F	600	**6.55E-02**	7.87E+00	8.31E+01	9.48E+01	51.6	7.2
G	700	**1.07E-01**	6.66E+00	9.69E+01	9.37E+01	43.8	6.0
H	800	**1.50E-01**	7.92E+00	1.08E+02	8.64E+01	51.9	9.8
I	900	**1.98E-01**	7.17E+00	1.06E+02	8.42E+01	47.1	4.3
J	1000	**2.48E-01**	7.96E+00	1.13E+02	6.73E+01	52.2	3.7
K	1100	**2.98E-01**	8.28E+00	9.00E+01	4.31E+01	54.3	3.8
L	1200	**3.51E-01**	7.86E+00	9.27E+01	3.95E+01	51.5	3.8
M	1350	**4.14E-01**	8.53E+00	7.33E+01	2.80E+01	55.8	3.4
N	1500	**4.70E-01**	8.03E+00	6.90E+01	2.54E+01	52.6	3.6
O	1750	**5.38E-01**	8.45E+00	5.41E+01	1.84E+01	55.3	2.4
P	2000	**5.96E-01**	7.90E+00	3.82E+01	1.71E+01	51.8	2.7
Q	2500	**6.69E-01**	7.75E+00	3.53E+01	1.71E+01	50.8	3.0
R	3000	**7.23E-01**	7.27E+00	5.07E+01	2.22E+01	47.7	2.5
S	4000	**8.09E-01**	7.55E+00	7.41E+01	2.39E+01	49.5	2.4
T	5000	**8.89E-01**	7.88E+00	8.85E+01	2.12E+01	51.7	2.2
U	6000	**9.24E-01**	8.49E+00	1.19E+02	1.68E+01	55.6	4.4
V	8000	**9.56E-01**	8.64E+00	1.44E+02	1.93E+01	56.6	4.0
W	10000	**9.68E-01**	1.11E+01	1.59E+02	5.57E+00	72.6	11.2
X	12000	**9.77E-01**	1.01E+01	2.09E+02	8.93E+00	66.1	17.3
Y	15000	**9.95E-01**	8.88E+00	1.54E+02	1.80E+01	58.1	8.6
Z	20000	**9.97E-01**	1.14E+01	2.87E+02	2.73E+01	74.3	53.2
Z1	22000	1.00E+00	2.17E+01	2.91E+02	-4.05E+01	138.7	52.1
Z2	25000	1.00E+00	-1.33E+01	1.91E+03	1.34E+02	-90.4	1240.0
Total gas age	n = 28					59.5	1.1
Plateau	n = 23	99.75	MSWD=0.91	Steps D-Z		52.1	0.8

Sample AZ39, Matrix, J = 0.00356908 ± 0.00000377868

Heating step	Laser power [mW]	Cumulative fraction ^{39}Ar	$^{40}Ar/^{39}Ar$	Ca/K	$^{40}Ar_{atm}$ %	Age [Ma]	1σ [Ma]
A	70	-7.97E-06	-5.31E+03	-6.96E+03	9.70E+01	-14798000000.0	33440.0
B	100	4.05E-04	-1.52E+02	-5.72E+02	1.01E+02	-1404.4	2813.0
C	125	9.81E-04	1.61E+01	-3.44E+02	9.97E+01	100.7	462.3
D	150	2.26E-03	9.10E+01	-3.89E+01	9.81E+01	507.3	272.7
E	175	5.17E-03	1.15E+01	-1.09E+02	9.95E+01	72.5	117.3
F	200	8.88E-03	4.23E+01	2.46E+01	9.75E+01	253.8	64.5
G	225	**1.42E-02**	2.42E+01	-6.80E+00	9.79E+01	149.7	77.4
H	250	**2.15E-02**	1.60E+01	2.29E+01	9.79E+01	100.0	31.9
I	275	**2.97E-02**	7.29E+00	2.80E+01	9.87E+01	46.4	40.4
J	300	**3.98E-02**	8.81E+00	2.94E+01	9.80E+01	55.8	28.8
K	350	**5.75E-02**	5.03E+00	2.89E+01	9.87E+01	32.1	21.9
L	400	**8.14E-02**	1.01E+01	4.54E+01	9.71E+01	64.1	27.1
M	450	**1.12E-01**	-1.03E+00	4.96E+01	1.00E+02	-6.7	23.7
N	500	**1.46E-01**	7.39E+00	5.58E+01	9.77E+01	47.0	15.8
O	550	**1.78E-01**	4.99E+00	5.56E+01	9.83E+01	31.8	8.1
P	600	**2.05E-01**	1.38E+01	4.88E+01	9.50E+01	87.0	16.7
Q	700	**2.43E-01**	9.79E+00	5.30E+01	9.55E+01	61.9	8.3
R	800	**2.81E-01**	9.24E+00	4.88E+01	9.38E+01	58.6	12.2
S	900	**3.15E-01**	1.05E+01	5.74E+01	9.04E+01	66.3	10.0
T	1000	**3.46E-01**	1.16E+01	7.16E+01	8.78E+01	73.2	11.9
U	1100	**3.75E-01**	6.41E+00	7.22E+01	9.29E+01	40.8	10.2
V	1200	**4.06E-01**	9.68E+00	7.57E+01	8.96E+01	61.3	12.2
W	1350	**4.48E-01**	7.43E+00	7.78E+01	9.24E+01	47.2	8.0
X	1500	**4.89E-01**	8.43E+00	8.73E+01	9.12E+01	53.5	6.6
Y	1750	**5.37E-01**	7.99E+00	8.87E+01	9.15E+01	50.7	6.5
Z	2000	**5.86E-01**	9.54E+00	8.69E+01	8.95E+01	60.4	4.6
Z1	2500	**6.58E-01**	9.25E+00	7.45E+01	8.91E+01	58.6	3.6
Z2	3000	**7.26E-01**	7.52E+00	8.52E+01	9.18E+01	47.8	4.5
Z2	4000	**7.90E-01**	8.81E+00	9.95E+01	9.05E+01	55.9	9.4
Z3	6000	**8.65E-01**	8.19E+00	1.02E+02	9.10E+01	52.0	4.2
Z4	8000	**9.23E-01**	9.53E+00	9.65E+01	8.80E+01	60.3	9.3
Z5	10000	**9.93E-01**	8.67E+00	1.10E+02	9.04E+01	55.0	6.9
Z6	15000	**9.99E-01**	7.02E+00	1.42E+02	9.20E+01	44.6	41.2
Z7	20000	**9.99E-01**	3.51E+01	-1.54E+02	5.16E+01	213.1	212.5
Z8	25000	**1.00E+00**	4.20E+01	2.49E+02	6.19E+01	251.8	277.9
Total gas age	n = 35					55.9	2.3
Plateau	n = 28	99.10%	MSWD=1.4	Steps G-Z8		54.4	1.5

Sample AZ67, Matrix, J = 0.00395787 ± 0.00000163599

Heating step	Laser power [mW]	Cumulative fraction ^{39}Ar	$^{40}Ar/^{39}Ar$	Ca/K	$^{40}Ar_{atm}$ %	Age [Ma]	1σ [Ma]
A	30	9.92E-05	3.44E+02	-4.74E+02	4.48E+01	1551.2	1463.0
B	50	5.65E-04	2.53E+01	-1.74E+02	9.93E+01	172.3	448.4
C	70	3.64E-03	-1.32E+01	-3.39E+01	1.01E+02	-97.2	79.6
D	100	7.49E-03	8.80E+01	-5.95E+00	9.08E+01	539.1	51.7
E	125	1.16E-02	6.32E+01	-5.75E+01	9.00E+01	403.0	51.9
F	150	1.88E-02	3.80E+01	-1.34E+01	8.88E+01	252.5	23.6
G	175	2.90E-02	3.72E+01	1.58E+00	8.56E+01	247.9	31.0
H	200	3.97E-02	2.57E+01	-2.72E+00	8.74E+01	175.1	15.2
I	225	4.76E-02	2.09E+01	-7.95E+00	8.72E+01	143.7	21.1
J	250	1.15E-01	1.44E+01	1.29E-01	8.97E+01	99.8	8.2
K	275	1.69E-01	1.24E+01	3.64E+00	8.99E+01	86.6	7.3
L	300	2.14E-01	1.16E+01	6.64E+00	8.97E+01	81.3	5.1
M	350	2.69E-01	1.22E+01	6.97E+00	8.73E+01	84.9	7.0
N	400	3.15E-01	9.85E+00	9.47E+00	8.64E+01	69.0	7.5
O	450	**3.52E-01**	8.11E+00	1.46E+01	8.69E+01	57.0	8.2
P	500	**3.82E-01**	8.44E+00	2.20E+01	8.45E+01	59.3	6.6
Q	550	**4.09E-01**	8.01E+00	2.58E+01	8.39E+01	56.3	9.4
R	600	**4.34E-01**	8.32E+00	2.59E+01	8.13E+01	58.5	6.8
S	700	**4.73E-01**	7.72E+00	2.20E+01	8.21E+01	54.3	4.7
T	800	**5.19E-01**	6.83E+00	2.20E+01	8.03E+01	48.1	4.7
U	900	**5.64E-01**	6.15E+00	2.71E+01	8.22E+01	43.4	3.6
V	1000	**6.08E-01**	7.25E+00	3.06E+01	7.98E+01	51.0	5.7
W	1100	**6.46E-01**	6.66E+00	3.77E+01	8.17E+01	47.0	5.9
X	1200	**6.79E-01**	7.83E+00	5.15E+01	7.94E+01	55.1	5.8
Y	1350	**7.10E-01**	8.81E+00	6.08E+01	7.93E+01	61.8	7.2
Z	1500	**7.32E-01**	7.86E+00	7.61E+01	8.35E+01	55.3	5.2
Z1	1750	**7.57E-01**	7.35E+00	8.37E+01	8.62E+01	51.7	7.1
Z2	2000	**7.81E-01**	8.50E+00	7.96E+01	8.39E+01	59.7	9.2
Z2	2500	**8.09E-01**	9.41E+00	7.66E+01	8.31E+01	66.0	7.4
Z3	3000	**8.41E-01**	7.33E+00	8.02E+01	8.74E+01	51.6	12.9
Z4	4000	**8.66E-01**	6.88E+00	6.91E+01	8.79E+01	48.5	8.0
Z5	6000	**9.13E-01**	6.75E+00	6.70E+01	8.69E+01	47.6	6.4
Z6	8000	**9.73E-01**	7.15E+00	6.02E+01	8.56E+01	50.3	4.0
Z7	10000	**9.95E-01**	6.58E+00	5.60E+01	8.61E+01	46.3	11.7
Z8	15000	**9.97E-01**	1.80E+01	6.73E+01	6.26E+01	124.0	134.3
Z9	20000	**1.00E+00**	-3.80E+00	6.18E+01	1.06E+02	-27.3	68.6
Z10	25000	**1.00E+00**	-4.79E+01	4.56E+02	1.08E+02	-379.6	761.2
Total gas age	n = 37					70.6	1.6
Plateau	n = 23	68.50%	MSWD=0.91	Steps O-Z10		51.9	1.3

Isotopic ratios corrected for blank, radioactive decay, mass discrimination, and interfering reactions. Individual analyses show analytical error. Plateau and total gas age errors include error in J and irradiation parameters. n = number of heating steps, Ca/K = molar ratio calculated from reactor-produced 37ArCa/39ArK, MSWD = Mean Square Weighted Deviates, Nominal laser power in mW.

Appendix 1: Table DR1c: Single-crystal and matrix total fusion $^{40}Ar/^{39}Ar$ data

Sample ID	Mass [mg]	$^{40}Ar^{*}/^{39}ArK$	Ca/K	$^{40}Ar_{atm}$ %	Age [Ma]	1σ [Ma]
Sample AQ66, matrix						
J =	**0.00103825**	**±**	**0.00000342**			
AQ66 100	0.062	3.43767E+01	24.3	49.7	63.3	2.6
AQ66 101	0.17	3.49355E+01	19.9	69.4	64.3	1.4
AQ66 104	0.445	3.53492E+01	22.6	44.4	65.0	0.6
AQ66 1	0.494	3.47284E+01	19.5	69.1	63.9	0.8
AQ66 2	0.664	3.49079E+01	18.9	46.5	64.2	0.5
AQ66 4	0.474	3.60996E+01	20.5	45.5	66.4	0.6
AQ66 5	0.344	3.60797E+01	19.2	59.3	66.3	0.7
Mean apparent age		MSWD = 2.29	n = 7		65.0	0.4
Sample BUR5, matrix						
J =	**0.00103825**	**+/-**	**0.00000342**			
BUR5 85	0.387	3.88517E+01	363.1	82.2	71.3	7.2
BUR5 86	0.243	3.37015E+01	204.9	83.0	62.0	3.2
BUR5 88	0.325	3.52522E+01	234.4	87.6	64.9	2.5
BUR5 89	0.508	3.39044E+01	568.3	85.5	62.4	4.1
BUR5 24	0.653	3.82027E+01	321.2	81.1	70.2	3.4
BUR5 26	0.763	3.40086E+01	261.5	85.0	62.6	3.5
BUR5 27	0.489	3.50279E+01	239.7	81.6	64.4	2.9
BUR5 28	0.481	3.41703E+01	140.2	79.1	62.9	2.3
BUR5 29	0.324	3.35800E+01	262.4	85.2	61.8	5.1
Mean apparent age		MSWD = 0.69	n = 9		64.2	1.1
Sample G22, matrix						
J =	**0.00102838**	**+/-**	**0.00000343**			
G22 55	3.57E-01	3.05797E+01	105.1	92.5	55.9	4.0
G22 56	5.38E-01	1.62196E+01	31.2	84.3	29.8	0.6
G22 57	3.55E-01	1.90025E+01	75.7	88.6	34.9	2.9
G22 58	5.01E-01	2.24817E+01	84.9	86.1	41.2	1.8
G22 121	6.23E-01	2.83644E+01	67.6	91.6	51.9	2.6
G22 123	4.26E-01	1.55918E+01	40.5	86.3	28.7	1.1
G22 124	4.24E-01	2.25477E+01	53.7	92.7	41.4	3.6
G22 125	4.21E-01	1.51550E+01	32.5	83.9	27.9	1.1
Mean apparent age		MSWD = 23.38	n = 8		31.4	2.2
Isochron age		MSWD = 4.04	n = 8		21.2	1.0
Initial		311.2±2.6				
Sample G42, matrix						
J =	**0.00102838**	**+/-**	**0.00000343**			
G42 29	1.24E-01	3.28180E+01	9.3	49.5	59.9	0.8
G42 31	2.45E-01	3.27767E+01	5.0	39.1	59.8	0.4
G42 33	4.41E-01	3.18512E+01	6.5	50.5	58.1	0.4

G42	102	3.86E-01	3.20576E+01	8.7	59.3	58.5	0.6
G42	103	4.16E-01	3.15398E+01	7.3	51.2	57.6	0.4
G42	104	4.17E-01	3.07462E+01	6.6	80.3	56.2	1.6
G42	106	2.44E-01	3.01422E+01	8.8	79.1	55.1	4.3
G42	107	1.62E-01	3.17139E+01	15.4	61.9	57.9	1.1
G42	108	2.28E-01	3.19837E+01	10.3	70.4	58.4	0.7
Mean apparent age			MSWD = 3.20	n = 9		58.6	0.3

Sample G46, matrix

J = 0.00102838 +/- 0.00000343

G46	50	2.75E-01	2.72637E+01	28.5	79.4	49.9	2.0
G46	51	2.49E-01	2.85768E+01	21.7	87.0	52.3	1.7
G46	52	5.71E-01	2.72076E+01	24.5	81.2	49.8	0.9
G46	114	5.67E-01	2.81648E+01	20.4	81.1	51.5	0.8
G46	115	5.20E-01	2.93962E+01	14.5	73.8	53.7	0.5
G46	116	4.21E-01	2.86141E+01	23.9	81.0	52.3	1.4
G46	117	3.70E-01	2.86986E+01	22.3	77.7	52.5	1.5
G46	119	2.08E-01	3.11850E+01	27.0	76.1	56.9	1.9
Mean apparent age			MSWD = 3.59	n = 8		52.6	0.6

Sample G50, matrix

J = 0.00102838 +/- 0.00000343

G50	65	1.31E-01	9.37462E+00	86.4	95.4	17.3	8.9
G50	66	1.79E-01	1.07284E+01	55.0	89.2	19.8	3.9
G50	67	2.61E-01	1.17975E+01	66.3	89.2	21.8	3.2
G50	68	2.69E-01	1.76497E+01	121.9	92.6	32.5	6.4
G50	69	3.84E-01	1.72501E+01	93.2	92.6	31.7	4.2
G50	126	6.90E-01	2.80591E+01	165.1	93.6	51.3	4.9
G50	127	6.01E-01	9.62980E+00	26.8	88.0	17.8	0.8
G50	129	5.50E-01	2.77510E+01	216.4	97.2	50.8	9.4
G50	130	5.08E-01	2.38786E+01	205.2	97.4	43.8	7.9
Mean apparent age			MSWD = 10.0	n = 9		19.7	2.2
Isochron age			MSWD = 2.89			14.9	1.6
Initial			303.4±1.8				

Sample G54, matrix

J = 0.00102838 +/- 0.00000343

G54	71	2.24E-01	4.60176E+01	92.2	96.4	83.4	15.2
G54	72	2.84E-01	3.65040E+01	118.2	91.4	66.5	6.1
G54	73	4.38E-01	4.00859E+01	120.4	90.8	72.9	3.8
G54	74	4.72E-01	4.10378E+01	196.7	91.6	74.6	4.2
G54	132	4.36E-01	3.80745E+01	153.7	95.9	69.3	6.3
G54	133	4.71E-01	3.92895E+01	108.4	95.0	71.5	6.9
G54	134	4.70E-01	3.20361E+01	39.8	99.1	58.5	49.5
G54	135	2.54E-01	2.78853E+01	170.2	97.3	51.0	10.6
G54	136	3.22E-01	4.07899E+01	113.5	93.8	74.1	6.8
G54	137	1.40E-01	3.58567E+01	141.1	95.9	65.3	12.1
Mean apparent age			MSWD = 0.69	n = 10		71.3	2.1

Sample G63, matrix

J =		**0.00102838**	**+/-**	**0.00000343**			
G63	75	2.30E-01	2.82570E+01	90.9	92.8	51.7	5.6
G63	76	2.37E-01	1.96499E+01	168.6	96.2	36.1	9.6
G63	77	3.04E-01	2.21914E+01	95.8	93.0	40.7	3.7
G63	78	4.01E-01	2.05237E+01	70.7	92.9	37.7	2.8
G63	79	4.99E-01	1.84647E+01	87.1	95.9	33.9	2.9
Mean apparent age			MSWD = 2.11	n = 5		38.2	2.4

Sample OS4, matrix

J =		**0.00103825**	**+/-**	**0.00000342**			
OS4	52	6.00E-02	2.86450E+01	189.1	95.8	52.9	17.5
OS4	56	3.71E-01	2.99880E+01	20.0	77.7	55.3	1.0
OS4	16	2.87E-01	2.58876E+01	115.2	96.3	47.8	4.1
OS4	21	2.75E-01	1.96329E+01	125.8	97.2	36.4	8.4
OS4	23	1.64E-01	2.14487E+01	103.0	97.5	39.7	9.6
Mean apparent age			MSWD = 2.59	n = 5		54.5	1.5

Sample AZ55-1, plagioclase

J =		**0.00368676**	**+/-**	**0.00000283**			
551	93	3.66E-01	1.01792E+01	74.3	24.8	66.5	1.1
551	85	7.14E-01	9.65912E+00	75.7	23.1	63.1	1.7
551	86	4.12E-01	9.20914E+00	71.1	33.2	60.2	1.4
551	87	5.32E-01	9.59581E+00	68.5	22.4	62.7	1.1
551	88	8.07E-01	9.37066E+00	71.7	19.2	61.3	1.2
551	89	7.24E-01	9.29910E+00	80.2	22.9	60.8	1.8
551	90	7.66E-01	9.69466E+00	74.3	13.3	63.4	1.5
551	91	7.21E-01	9.39368E+00	79.0	17.9	61.4	1.7
551	92	5.30E-01	1.02136E+01	77.1	28.9	66.7	2.3
551	93	5.62E-01	1.02266E+01	77.5	6.1	66.8	2.3
551	94	3.78E-01	1.00455E+01	78.4	6.7	65.6	2.7
551	95	5.83E-01	9.82970E+00	78.6	21.1	64.2	2.5
551	96	3.72E-01	9.66072E+00	73.0	11.7	63.1	2.9
Mean apparent age			MSWD = 2.00	n = 13		63.2	0.6

Sample AZ59-4, plagioclase

J =		**0.00374561**	**+/-**	**0.00000253**			
594	87	6.25E-01	8.75805E+00	1232.0	96.9	58.2	17.6
594	88	8.50E-01	1.19431E+01	649.9	92.8	79.0	9.4
594	133	8.58E-01	6.99561E+00	160.5	86.4	46.7	4.6
594	134	8.45E-01	8.29493E+00	688.7	95.5	55.2	26.5
594	135	1.12E+00	8.48532E+00	449.5	84.6	56.4	11.5
594	137	1.03E+00	8.03308E+00	197.5	82.6	53.5	2.1
594	138	6.65E-01	8.80370E+00	296.7	84.7	58.5	9.4
594	139	5.56E-01	8.54171E+00	268.3	78.4	56.8	7.7
594	140	8.05E-01	8.87063E+00	237.0	83.3	59.0	4.4
594	141	4.91E-01	8.22212E+00	450.4	90.3	54.7	13.3
594	142	5.63E-01	9.14997E+00	143.3	73.4	60.8	3.0

594	143	7.80E-01	8.86762E+00	278.8	87.4	58.9	6.7
594	144	4.39E-01	4.27652E+00	579.4	94.0	28.7	19.5
Mean apparent age			MSWD = 1.39	n = 13		56.0	1.7

Isotopic ratios corrected for blank, radioactive decay, mass discrimination,and interfering reactions. Individual analyses, mean apparent ages and isochron ages are shown with 1s errors. n = number of single-crystal or single-matrix total fusions. Ca/K = molar ratio calculated from reactor-produced 37ArCa and 39ArK.

Appendix 2: Table DR2a. X-ray fluorescene data from GEOMAR for Central American Igneous Complexes and standards.

Sample	Locality	Rock Type	Long	Lat	AGE(Ma)	SiO2	Al2O3	MnO	MgO	Na2O	CaO	TiO2	P2O5	K2O	Fe2O3	Ba	Co	Cr	Cu	La	Nb
						%	%	%	%	%	%	%	%	%	%	ppm	ppm	ppm	ppm	ppm	ppm
G 22	Azuero	TH PI	7°25.00´	80°10.65´	21	47.42	13.92	0.28	7.65	2.27	12.33	1.25	0.105	0.24	12.00	117	50	243	126	<14	13
G 22	Azuero	TH PI	7°25.00´	80°10.65´	21	47.92	14.04	0.28	7.96	2.39	12.34	1.24	0.097	0.23	11.99	77	50	239	131	<14	7
G 30	Azuero	AB SA	7°14.31´	80°34.09´	33?	47.55	13.55	0.17	6.61	3.18	9.00	2.88	0.265	1.26	13.84	249	50	72	136	<14	22
G 33	Azuero	AB SA	7°14.31´	80°34.09´	33	46.52	13.31	0.23	6.38	3.45	9.33	2.93	0.282	0.60	13.85	238	50	57	72	23	24
G 33	Azuero	AB SA	7°14.31´	80°34.09´	33	46.91	13.45	0.23	6.59	3.56	9.35	2.91	0.275	0.59	13.87	235	51	66	72	23	23
G 42	Azuero	AB LB	7°23.02	80°49.22´	59	46.41	14.25	0.17	6.16	2.70	11.01	2.90	0.322	1.12	11.57	187	34	97	89	24	36
G 44	Azuero	AB LB	7°23.02	80°49.22´	45?	47.45	15.62	0.17	4.16	3.53	9.59	3.99	0.440	1.29	12.20	254	33	31	119	51	49
G 46	Azuero	AB LF	7°23.76´	80°48.76´	53	47.70	13.65	0.18	7.18	2.68	11.62	2.68	0.258	0.45	11.99	99	45	171	131	<14	29
G 54	Sona	TH LI	7°39.10´	81°12.94´	71	47.74	13.33	0.20	7.19	3.08	11.36	1.66	0.133	0.09	12.94	51	49	164	221	<14	16
G 63	Coiba	TH LI	7°37.30´	81°46.54´	38	48.04	13.93	0.20	7.93	2.79	11.65	1.27	0.096	0.12	12.07	38	45	293	133	<14	9

Sample	Locality	Rock Type	Long	Lat	AGE(Ma)	Ni	Ga	Pb	Pr	Rb	Sr	Th	V	Y	Zr	Zn	Sum	H2O	CO2	Sum
						ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	%	%	%
G 22	Azuero	TH PI	7°25.00´	80°10.65´	21	94	25	<4	<8	6	119	<4	320	24	64	92	97.52	1.33	0.03	**98.88**
G 22	Azuero	TH PI	7°25.00´	80°10.65´	21	93	20	<4	<8	4	120	<4	315	27	67	92	98.54	1.16	0.04	99.74
G 30	Azuero	AB SA	7°14.31´	80°34.09´	33?	81	23	9	<8	14	254	8	383	32	173	137	98.36	1.64	0.03	100.03
G 33	Azuero	AB SA	7°14.31´	80°34.09´	33	60	21	<4	<8	6	253	<4	383	39	177	118	96.93	1.91	0.05	98.89
G 33	Azuero	AB SA	7°14.31´	80°34.09´	33	64	19	13	<8	7	252	<4	390	37	177	120	97.78	1.78	0.05	99.61
G 42	Azuero	AB LB	7°23.02	80°49.22´	59	72	23	9	<8	25	465	<4	294	31	211	131	96.66	2.76	0.37	99.80
G 44	Azuero	AB LB	7°23.02	80°49.22´	45?	36	27	6	<8	27	517	9	339	36	294	104	98.49	1.58	0.04	100.11
G 46	Azuero	AB LF	7°23.76´	80°48.76´	53	99	21	<4	8	6	412	<4	318	25	169	98	98.44	1.22	0.03	99.69
G 54	Sona	TH LI	7°39.10´	81°12.94´	71	83	22	<4	<8	<4	129	<4	346	36	92	87	97.77	1.66	0.05	99.48
G 63	Coiba	TH LI	7°37.30´	81°46.54´	38	104	15	10	<8	<4	191	<4	320	26	71	84	98.15	2.74	0.03	100.92

Standards run with the above samples.

	SiO2	Al2O3	MnO	MgO	Na2O	CaO	TiO2	P2O5	K2O	Fe2O3	Ba	Co	Cr	Cu	La	Nb
	%	%	%	%	%	%	%	%	%	%	ppm	ppm	ppm	ppm	ppm	ppm
BM-1	49.97	16.13	0.15	7.54	5.17	6.38	1.15	0.113	0.18	9.68	264	44	118	45	<14	6
BM-1	49.60	15.85	0.15	7.41	5.23	6.37	1.17	0.117	0.17	9.65	258	45	126	47	23	8
BM-2	49.90	16.15	0.15	7.58	5.14	6.35	1.15	0.120	0.17	9.65	239	42	131	63	16	15
BM-2	49.80	15.97	0.15	7.38	5.12	6.35	1.14	0.120	0.17	9.60	241	43	128	62	<14	9
JB-2	53.23	14.57	0.22	4.74	2.20	9.77	1.16	0.088	0.42	14.07	245	39	39	216	23	5
JB-2	53.42	14.54	0.22	4.63	2.24	9.77	1.18	0.097	0.42	14.02	225	38	57	213	27	9
JB-3	50.91	17.23	0.18	5.26	2.95	9.72	1.44	0.293	0.77	11.55	231	33	71	138	42	8
JB-3	51.14	17.16	0.18	5.26	3.00	9.73	1.44	0.272	0.77	11.56	226	35	58	138	29	9
JGB-1	43.61	17.43	0.19	8.10	1.42	11.84	1.61	0.053	0.23	14.95	61	58	75	77	18	6
JGB-2	46.41	23.25	0.13	6.19	1.08	14.10	0.56	0.015	0.06	6.60	34	28	119	34	54	<2
JGB-2	46.67	23.71	0.13	6.36	1.13	14.14	0.55	<0,006	0.06	6.58	46	25	122	39	31	5

	Ni	Ga	Pb	Pr	Rb	Sr	Th	V	Y	Zr	Zn	Sum	H2O	CO2	Sum
	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	%	%	%
BM-1	71	18	21	<8	8	227	<4	211	32	104	121	96.46			96.46
BM-1	65	21	17	<8	10	228	10	200	33	99	118	95.72			95.72
BM-2	60	22	14	<8	8	224	4	203	30	99	118	96.36			96.36
BM-2	59	17	17	<8	8	222	<4	210	29	98	119	95.80			95.80
JB-2	9	20	4	<8	9	178	<4	566	25	46	129	100.47	0.31	0.06	100.84
JB-2	5	20	<4	<8	8	175	<4	554	21	49	129	100.54	0.31	0.06	100.91
JB-3	26	20	10	<8	17	412	4	385	25	91	115	100.30	0.21	0.05	100.56
JB-3	29	23	7	8	16	413	<4	381	29	90	113	100.51	0.21	0.05	100.77
JGB-1	66	22	<4	<8	9	323	<4	634	10	30	122	99.43	1.10	0.14	100.68
JGB-2	6	24	5	<8	4	450	<4	162	<2	8	62	98.40	1.39	0.28	100.07
JGB-2	10	12	<4	8	6	451	<4	164	<2	10	67	99.33	1.39	0.28	101.00

Sample	Locality	Rock Type	Long	Lat	AGE(Ma)	SiO2	Al2O3	MnO	MgO	Na2O	CaO	TiO2	P2O5	K2O	Fe2O3	Ba	Co	Cr	Cu	La	Nb
						%	%	%	%	%	%	%	%	%	%	ppm	ppm	ppm	ppm	ppm	ppm
AZ39-1	Azuero	TH PI	7°25.19´	80°08.73´	54	49.17	14.1	0.18	8.07	2.26	12	0.1	0.1	1.2	12.08	29	55	198	<10	<14	6
AZ55-1	Azuero	AB LB	7°26.61´	80°53.51´	63	47.42	12.6	0.2	5.92	2.17	10.1	0.48	0.58	4.05	15.76	132	49	144	31	<14	27
AZ59-4	Azuero	TH LB	7°13.95´	80°53.57´	56	47.46	19.1	0.15	6.46	2.07	12.7	0.1	0.05	1	9.27	30	43	195	<10	<14	3
AZ66-1	Azuero	AB LI	7°14.22	80°33.45´	62	48.5	13.5	0.18	5.73	2.14	10.8	0.34	0.4	3.45	14.46	88	47	196	59	<14	18
AZ67	Azuero	AB LI	7°14.31´	80°33.54´	52	47.97	13.8	0.2	6.11	3.02	10	0.28	0.48	2.87	14.23	96	53	81	49	<14	16
AZ69-1	Azuero	AB LI	7°14.50´	80°32.83´	66	48.12	14.2	0.21	6.57	2.6	10.7	0.27	0.32	2.86	14.11	96	51	75	15	<14	15
AZ72-1	Azuero	AB LF	7°14.11´	80°53.57´	21	45.41	16.2	0.17	4.65	2.98	10.1	0.96	0.83	3.85	12.61	286	39	68	129	21	44
AZ103-2	Azuero	TH LB	7°12.40´	80°48.16´	52	45.59	11	0.15	16.9	1.15	10.6	0.17	0.39	1.76	10.79	119	62	1162	11	<14	17
AZ104-1	Azuero	AB LI	7°13.81	80°36.81	61	47.37	14.1	0.2	6.09	2.36	11.2	0.31	0.13	3.24	14.6	43	53	122	<25	<14	19

Sample	Locality	Rock Type	Long	Lat	AGE(Ma)	Ni	Ga	Pb	Pr	Rb	Sr	Th	V	Y	Zr	Zn	Sum	H2O	CO2	Sum
						ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	%	%	%
AZ39-1	Azuero	TH PI	7°25.19´	80°08.73´	54	93	18	12	<4	<4	123	<4	317	25	70	107	99.19	1.74	0.26	101.19
AZ55-1	Azuero	AB LB	7°26.61´	80°53.51´	63	81	19	8	<4	16	287	7	470	43	311	135	99.31	1.27	0.03	100.61
AZ59-4	Azuero	TH LB	7°13.95´	80°53.57´	56	65	15	6	<4	<4	139	<4	223	27	77	58	98.39	1.3	0.02	99.71
AZ66-1	Azuero	AB LI	7°14.22	80°33.45´	62	86	21	<4	<4	7	266	<4	445	37	233	121	99.51	1.27	0.04	100.82
AZ67	Azuero	AB LI	7°14.31´	80°33.54´	52	79	20	4	<4	9	230	<7	402	30	183	121	98.95	1.67	0.03	100.65
AZ69-1	Azuero	AB LI	7°14.50´	80°32.83´	66	72	23	11	4	<4	263	7	424	30	182	129	99.97	1.24	0.07	101.28
AZ72-1	Azuero	AB LF	7°14.11´	80°53.57´	21	39	25	<4	<4	19	650	5	325	46	396	136	97.7	2.38	0.09	100.17
AZ103-2	Azuero	TH LB	7°12.40´	80°48.16´	52	532	13	5	<4	10	277	4	204	18	99	73	98.56	1.65	0.05	100.26
AZ104-1	Azuero	AB LI	7°13.81	80°36.81	61	76	15	6	4	<4	271	<<4	436	33	208	132	99.61	1.03	0.04	100.68

Standards run with the above samples.

	SiO2	Al2O3	MnO	MgO	Na2O	CaO	TiO2	P2O5	K2O	Fe2O3	Ba	Co	Cr	Ce	La	Nb
	%	%	%	%	%	%	%	%	%	%	ppm	ppm	ppm	ppm	ppm	ppm
JB-2	53.33	14.9	0.21	4.5	2	10.1	1.16	0.1	0.44	14.63	235	51	23	11	<14	<2
JB-2	53.45	14.9	0.21	4.49	1.95	10.1	1.16	0.1	0.43	14.64	209	51	<18	18	<14	2
JB-2	53.43	14.9	0.21	4.63	1.9	10.1	1.17	0.1	0.43	14.54	236	51	<18	<10	<14	<2
JB-2	53.48	14.9	0.21	4.63	1.96	10.1	1.17	0.1	0.43	14.55	210	51	19	27	<14	<2
JB-3	51.01	17.4	0.17	5.08	2.55	9.87	1.42	0.29	0.77	11.99	274	43	59	45	<14	4
JB-3	50.86	17.5	0.17	5.05	2.61	9.86	1.41	0.3	0.77	11.97	244	42	56	21	19	3
JB-3	50.91	17.4	0.17	5.11	2.5	9.88	1.41	0.29	0.77	11.91	234	43	57	<10	14	3
JB-3	50.96	17.4	0.17	5.16	2.43	9.88	1.41	0.29	0.77	11.93	269	43	59 <	36	<14	4
JA-2	56.53	15.6	0.11	7.93	2.83	6.28	0.67	0.16	1.76	6.46	306	24	509	20	<14	11
JA-2	56.38	15.5	0.11	7.87	2.78	6.29	0.68	0.16	1.76	6.45	303	25	507	<10	26	9
JA-2	56.41	15.6	0.11	8.01	2.79	6.29	0.68	0.16	1.77	6.43	292	26	508	21	22	9
JR-1	75.35	13	0.1	<0.03	3.91	0.72	0.11	0.02	4.51	0.89	70	<4	<18	29	38	11
JR-1	75.52	13	0.1	0.08	3.96	0.72	0.11	0.02	4.51	0.89	48	<4	<18	27	33	14

	Ni	Ga	Pb	Pr	Rb	Sr	Th	V	Y	Zr	Zn	Sum
	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%
JB-2	26	14	18	<4	6	177	<4	549	23	54	129	101.4
JB-2	28	16	24	6	7	178	<4	552	25	54	130	101.6
JB-2	21	15	24	7	8	177	<4	543	23	56	128	101.5
JB-2	21	15	27	9	6	178	<4	552	25	55	129	101.7
JB-3	45	17	8	4	15	410	7	365	29	98	125	100.7
JB-3	46	18	16	<4	17	408	8	365	25	94	124	100.6
JB-3	44	20	12	7	17	409	4 >	371	27	99	126	100.6
JB-3	45	17	15	7	18	407	<4 >	375	27	99	125	100.5
JA-2	133	17	23	7	71	248	15	124	20	100	82	98.54
JA-2	133	13	26	7	70	245	7	126	19	99	81	98.19
JA-2	131	16	20	6	71	244	<4	122	18	100	83	98.45
JR-1	<2	22	16	5	256	29	23	14	35	99	44	98.58
JR-1	<2	19	19	5	263	27	30	13	35	97	43	98.97

AB = Alkali Basalt
TH = Tholeiite
LI = Lava in situ
LB = Lava boulder
SA = Scoria agglutinate
PI = Pillow in situ
LF = Lava Flow
CA = Calcalkaline

Appendix 2: Table DR2b. ICP-MS data for Central American igneous complexes, standards and blanks.

Sample Name	Element	Rb	Sr	Y	Zr	Nb	Cs	Ba	La	Ce	Pr	Nd	Sm	Eu
G22	ppm	3.018	120	21.720	67	3.605	0.009	77.000	3.288	8.942	1.454	7.550	2.523	0.959
G30	ppm	13.993	254	29.023	173	15.363	0.186	249.000	12.043	30.646	4.553	21.312	5.985	2.070
G33	ppm	6.431	252	32.056	177	15.700	0.210	235.000	12.976	32.216	4.732	22.169	6.038	2.099
G42	ppm	24.078	465	22.311	211	27.824	0.281	187.000	21.444	48.326	6.549	28.430	6.810	2.215
G44	ppm	24.989	545	31.505	294	42.095	0.239	254.000	30.114	67.073	8.813	37.427	8.771	2.793
G54	ppm	0.634	128	28.413	93	6.399	0.009	42.000	5.812	14.302	2.171	10.755	3.533	1.279
G63	ppm	2.295	191	22.288	69	3.672	0.205	45.000	3.286	9.054	1.488	7.705	2.650	0.984
Blank	ppb	0.005	0	0.000	0	0.001	0.002	0.045	0.001	0.002	0.000	0.001	0.000	0.000
BM Standard	ppm	6.827	234	25.255	60	2.883	2.130	258.947	8.151	18.659	2.632	12.013	3.526	1.080
BHVO-1	ppm	9.747	413	23.919	169	17.691	0.108	134.909	15.390	37.205	5.335	23.940	6.004	2.001
Hst-N Morb 1 Stand	ppm	1.430	103	23.888	53	1.793	0.029	16.596	2.293	6.609	1.146	6.184	2.321	0.859

Sample Name	Element	Gd	Tb	Dy	Ho	Er	Th	Yb	Lu	Hf	Ta	Pb	Th	U
G22	ppm	3.407	0.618	4.051	0.855	2.327	0.359	2.319	0.346	1.824	0.216	0.261	0.232	0.083
G30	ppm	6.620	1.048	6.151	1.174	2.961	0.427	2.619	0.360	4.651	0.942	0.878	1.050	0.220
G33	ppm	6.849	1.083	6.439	1.246	3.147	0.452	2.775	0.387	4.659	0.942	0.881	1.061	0.378
G42	ppm	6.548	0.956	5.152	0.906	2.130	0.275	1.565	0.198	2.842	1.633	0.763	0.896	0.325
G44	ppm	8.479	1.273	7.040	1.265	2.999	0.400	2.302	0.297	2.148	2.510	1.103	2.559	0.542
G54	ppm	4.574	0.811	5.341	1.111	3.072	0.465	3.011	0.441	2.559	0.386	0.290	0.491	0.158
G63	ppm	3.542	0.630	4.127	0.874	2.363	0.361	2.375	0.346	1.932	0.221	0.204	0.242	0.089
Blank	ppb	-0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.004	-0.001	0.000
BM Standard	ppm	4.163	0.735	4.720	0.981	2.635	0.396	2.486	0.339	1.845	0.211	13.530	2.321	0.797
BHVO-1	ppm	6.162	0.927	5.148	0.950	2.338	0.322	1.968	0.273	4.470	1.065	2.113	1.221	0.437
Hst-N Morb 1 Stand	ppm	3.226	0.610	4.240	0.934	2.643	0.416	2.775	0.420	1.677	0.113	0.328	0.135	0.137

Sample Name	Element	Rb	Sr	Y	Zr	Nb	Cs	Ba	La	Ce	Pr	Nd	Sm	Eu
AZ39-1	ppm	1.134	119	21.197	59	3.284	0.008	14.703	2.818	8.168	1.321	6.906	2.378	0.924
AZ59-4	ppm	0.689	136	22.573	62	1.003	0.087	14.832	2.195	6.852	1.213	6.671	2.465	0.989
AZ67	ppm	7.122	240	32.613	180	15.932	0.266	79.827	12.948	33.416	4.816	22.558	6.401	2.150
AZ69-1	ppm	2.287	253	29.734	163	14.579	0.013	69.163	11.845	30.609	4.393	20.622	5.782	1.977
AZ72-1	ppm	15.847	623	42.145	344	49.172	0.064	293.237	42.658	100.794	13.207	56.715	12.948	4.062
AZ103-2	ppm	8.054	268	15.545	105	13.825	0.111	93.995	10.014	24.028	3.242	14.383	3.728	1.272
AZ104-1	ppm	0.641	261	33.136	183	16.927	0.009	40.358	13.716	35.455	5.096	23.887	6.633	2.238
Blank	ppb	0.041	0	0.035	0	0.005	0.000	0.067	0.003	0.007	0.001	0.003	0.001	0.001
JB-2	ppm	5.860	163	20.461	42	0.447	0.719	207.928	2.149	6.356	1.086	5.889	2.204	0.783
BIR-1	ppm	0.285	110	14.625	14	0.533	0.004	6.250	0.598	1.911	0.372	2.296	1.078	0.506

Sample Name	Element	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu	Hf	Ta	Pb	Th	U
AZ39-1	ppm	3.202	0.593	3.956	0.844	2.410	0.360	2.373	0.348	1.819	0.167	0.113	0.250	0.084
AZ59-4	ppm	3.353	0.627	4.164	0.894	2.550	0.386	2.520	0.369	1.855	0.053	0.248	0.129	0.046
AZ67	ppm	6.960	1.124	6.726	1.299	3.414	0.467	2.899	0.407	4.972	0.807	0.858	1.222	0.278
AZ69-1	ppm	6.344	1.029	6.139	1.185	3.118	0.427	2.663	0.369	4.566	0.731	0.766	1.118	0.340
AZ72-1	ppm	12.112	1.759	9.605	1.727	4.260	0.551	3.330	0.446	8.680	2.468	1.528	4.084	0.691
AZ103-2	ppm	3.793	0.596	3.393	0.628	1.590	0.206	1.306	0.176	2.983	0.701	0.567	1.030	0.278
AZ104-1	ppm	7.264	1.184	6.996	1.345	3.508	0.494	3.048	0.429	5.243	0.849	0.927	1.277	0.391
Blank	ppb	0.003	0.001	0.005	0.001	0.005	0.001	0.006	0.001	0.014	0.013	0.031	0.006	0.003
JB-2	ppm	2.955	0.559	3.745	0.818	2.391	0.371	2.464	0.365	1.459	0.028	4.901	0.254	0.146
BIR-1	ppm	1.756	0.356	2.550	0.571	1.653	0.243	1.645	0.241	0.605	0.034	2.844	0.033	0.010

Trace Elements (Rb, Sr, Y, Zr, Nb, Cs, Ba, Hf, Ta, Pb, Th, U and all rare earth elements [REE]) were analyzed using an upgraded VG Plasmaquad PQ1 ICP-MS at the Geological Institue, University of Kiel, after the method of Garbe-Schoenberg (1993). Precision of the results was estimated from duplicate masurements and was found to be generally below 3% relative standard deviation except for low quantities of Rb (< 5ppm), Cs (< 1ppm), and Pb (< 0.5 ppm).

Appendix 2: Table DR2c. Sr-Nd-Pb isotope data for Central American igneous complexes determined by thermal ionization mass spectrometry at GEOMAR.

sample #	Locality	AGE(Ma)	87Sr/86Sr* measured	error	87Rb/86Sr	87Sr/86Sr initial	87Sr/86Sr I=90 Ma	143/144 Nd measured	3/4ER	147SM/144ND	143Nd/144Nd initial	143Nd/144Nd I=90 Ma	Et ND	E0 ND
Panama														
G22	Azuero	21	0.703298	0.000008	0.07	0.703276	0.703205	0.513097	0.000009	0.201	0.513069	0.512979	8.94	8.95
G30	Azuero	33	0.703235	0.000007	0.16	0.703160	0.703031	0.513008	0.000008	0.169	0.512971	0.512908	7.33	7.21
G30	Azuero	33						0.513007	0.000008	0.169	0.512971	0.512908	7.32	7.20
G33	Azuero	33	0.703254	0.000008	0.07	0.703220	0.703160	0.512990	0.000008	0.164	0.512955	0.512893	7.00	6.87
G42	Azuero	59	0.703416	0.000007	0.15	0.703290	0.703224	0.512940	0.000008	0.144	0.512884	0.512855	6.28	5.89
G44	Azuero	45	0.703391	0.000009	0.13	0.703306	0.703221	0.512936	0.000007	0.141	0.512895	0.512853	6.14	5.82
G44	Azuero	45						0.512945	0.000004	0.141	0.512903	0.512862	6.30	5.98
G46	Azuero	53	0.703267	0.000007	0.04	0.703235	0.703213	0.512947	0.000007	0.150	0.512895	0.512859	6.35	6.03
G50	Azuero	45	0.703195	0.000008	0.03	0.703175	0.703155			0.204				
G54	Sona	71	0.703158	0.000007	0.01	0.703143	0.703139	0.513048	0.000009	0.198	0.512956	0.512931	7.98	7.99
G63	Coiba	38	0.703446^	0.000008	0.03	0.703427	0.703401	0.513075	0.000007	0.207	0.513024	0.512953	8.48	8.53
G63	Coiba	38	0.703375^	0.000005	0.03	0.703356	0.703330							
OS04	Osa	55	0.703761^	0.000007	0.04	0.703733	0.703714	0.513062	0.000005	0.203	0.512989	0.512942	8.23	8.27
BUR5	Burica	64	0.703955^	0.000008	0.03	0.703924	0.703911	0.513020	0.000008	0.213	0.512931	0.512895	7.32	7.45

sample #	Locality	AGE(Ma)	206Pb/204Pb measured	207Pb/204Pb measured	208Pb/204Pb measured	238U/204Pb	232TH/204Pb	232Th/238U	206Pb/204Pb initial	207Pb/204Pb initial	208Pb/204Pb initial	206Pb/204Pb I=90 Ma	207Pb/204Pb I=90 Ma	208Pb/204Pb I=90 Ma
Panama														
G22	Azuero	21	19.143	15.598	38.763	20.5	59.0	2.87	19.076	15.595	38.701	18.855	15.584	38.499
G30	Azuero	33	19.225	15.571	38.832	16.2	79.7	4.93	19.142	15.567	38.702	18.997	15.560	38.477
G30	Azuero	33				16.1	80.2	4.98						
G33	Azuero	33	19.246	15.568	38.761	27.7	80.2	2.90	19.104	15.561	38.630	18.857	15.549	38.403
G42	Azuero	59				27.5	78.2	2.85						
G44	Azuero	45	19.497	15.592	39.240	32.0	156.1	4.88	19.273	15.581	38.892	19.047	15.570	38.543
G44	Azuero	45												
G46	Azuero	53	19.322	15.581	38.955	20.0	80.0	4.00	19.157	15.574	38.745	19.041	15.568	38.598
G50	Azuero	45	19.624	15.627	39.091	37.0	110.1	2.98	19.366	15.615	38.846	19.105	15.602	38.600
G54	Sona	71	19.862	15.597	39.391	35.7	114.9	3.22	19.466	15.579	38.987	19.359	15.573	38.878
G63	Coiba	38	19.186	15.588	38.842	28.1	79.2	2.82	19.020	15.580	38.693	18.791	15.569	38.489
G63	Coiba	38												
OS04	Osa	55	19.119	15.574	38.703	21.3	62.3	2.92	18.936	15.565	38.533	18.819	15.559	38.425
BUR5	Burica	64	19.114	15.556	38.728	16.5	53.8	3.26	18.949	15.548	38.558	18.882	15.545	38.488

*The 87Sr/86Sr isotope ratio has been affected by seawater alteration and therefore the measured 87Sr/86Sr ratios, even of the leached samples, could not be used to identify source characteristics.

Rock powders were leached in 6N HCL at 130°C for 1 hour prior to dissolution in HF-HNO3, except for Sr isotope analyses denoted with ^. Ion exchange procedures followed those of Hoernle and Tilton (1991). Isotopic ratios were determined on a Finnigan MAT262 RPQ2+ Thermal Ionization Mass Spectrometer (TIMS) at the GEOMAR Research Center, operating in static mode for Sr and Pb and in multidynamic mode for Nd. Sr and Nd isotopic ratios are normalized within run to 86Sr/88Sr= 0.1194 and 146Nd/144Nd= 0.7219 respectively. All errors are reported as 2 sigma. Over the course of this study NBS 987 gave 87Sr/86Sr= 0.710249± 0.000022 (N=160), 143Nd/144Nd= 0.511844± 0.000011 (N=68) for La Jolla and 143Nd/144Nd= 0.511709± 0.000013 (N=114) for our inhouse Nd-monitor ND-SPEX. NBS 981 (N=46) gave 206Pb/204Pb= 16.897± 0.006, 207Pb/204Pb= 15.435± 0.008, 208Pb/204Pb= 36.522± 0.024 and are corrected to the NBS 981 values given in Todt et al. (1996). Total chemistry blanks were <100 pg for Sr, Nd and Pb and thus considered negligible.

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