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$^{40}Ar/^{39}Ar$ Age-Spectrum Data for Amphibole, Muscovite, Biotite, and K-feldspar samples from metamorphic rocks in the Blue Ridge Anticlinorium, northern Virginia

by

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INTRODUCTION

The Blue Ridge tectonic province in northern Virginia consists of a Middle Proterozoic basement core of granites and gneisses that are unconformably overlain by a cover sequence of Late Proterozoic and Early Paleozoic metavolcanic and metasedimentary rocks. This area has been the subject of detailed geological mapping (McDowell and Milton, 1992; Burton, et al., 1995; Southworth, 1994;1995; and Southworth and Brezinski,1996) that has raised questions about the timing and intensity of Paleozoic metamorphism in this part of the Blue Ridge.

This publication contains reduced $^{40}Ar/^{39}Ar$ data of hornblende, phlogopite, muscovite, biotite, and K-feldspar mineral separates from metamorphic rocks of Blue Ridge anticlinorium in northern Virginia. This data will be used to answer some of the questions regarding the timing and intensity of Paleozoic metamorphism in the Blue Ridge of northern Virginia, and is intended only to be a preliminary publication of these results, in more detail than can be accommodated in today's professional journals. Also included in this report is information on the location of the samples, and the formation or lithology from which the sample was collected. The data contained herein are not interpreted in a geological context, and care should be taken by users unfamiliar with argon isotopic data in the use of these results. No geological meaning is implied for any of the apparent ages presented below and many of the individual apparent ages are not geologically meaningful. This report is primarily a detailed source document for subsequent publications that will integrate these data into a geological context.

METHODS

Sample Preparation

All of the samples were crushed, ground, and sized using 250, 180, and 150 μm sieves. Mineral separates were produced using magnetic separation, heavy liquid separation, paper shaking, and hand picking to a purity >99% for muscovite, biotite, and Kspar and >99.9% for hornblende. The samples were washed in acetone, alcohol, and deionized water(X3) in a Branson B-220 ultrasonic cleaner to remove dust and then re-sieved by hand using a 100 μm sieve. Approximately 100 mg of hornblende and 10 mg of muscovite, biotite, and Kspar were packaged in aluminum capsules and sealed under vacuum in quartz tubes. The type of container, and the geometry of samples and standards is similar to that described by Snee et al. (1988). The samples were irradiated in six separate packages (RD72, RD74 RD77, RD80, RD87, and RD93) in the central thimble facility at the TRIGA reactor (GSTR) at the U.S. Geological Survey, Denver, Colorado. The monitor mineral used in all packages was MMhb-1 with an age of 519.4 ± 2.5 Ma (Alexander et al.,1978; and Dalrymple et al., 1981).

Sample Analysis

All samples were analyzed on a VG Isotopes, Ltd, Model 1200 B Mass Spectrometer fitted with a Faraday cup collector at the U.S. Geological Survey, Reston, VA using the $^{40}Ar/^{39}Ar$ step heating method of dating. Heating for 15 minutes (RD72, RD74 RD77, RD80& RD87) or 10 minutes (RD93) per step followed a schedule of 1-22 steps per sample. For most samples,the number and temperature of heating steps was selected to limit the

percentage of gas released to less than 5-20%/step for most samples. Most biotite samples were totally fused.

Heating of samples was done in a small volume, molybdneum-lined low blank tantalum furnace similar to that described by Staudacher (1978). Temperature was monitored by a W5Re-W26Re thermocouple and controlled by a proportional, programmable controller.

The furnace and the rear manifold were pumped between steps with a turbo molecular pump. Two isolated ion pumps evacuated the front manifold and the mass spectrometer tube between each incremental step.

The gas to be analyzed was purified in the rear manifold by a SAES ST707 Zr-V-Fe getter operated at room temperature and a hot filament. Gas was equilibrated with the front manifold with an empty cold finger in the first manifold at LN_2 temperature to trap water, then isolated and cleaned in the front manifold with a SAES ST101 Al-Zr getter operated at 400^0 C and a Ti getter operated at 350^0 C.

For all samples, an activated charcoal finger submerged in a constant boiling mixture of dry ice and acetone was used to remove gasses with a molecular weight greater than 60 or 80 (primarily other noble gasses) prior to the admission of the argon dominated gas to the mass spectrometer by expansion. The argon-rich gas was further purified in the mass spectrometer by a second SAES ST101 active gas getter operated at room temperature. Its successful operation could be monitored by the drop in counts of mass 44 (dominated by CO_2) after the first gas analysis cycle. Argon isotopes with masses 40 through 36 and CO_2, mass 44 were analyzed as a function of time in five analysis cycles. ^{40}Ar, ^{39}Ar, ^{38}Ar, ^{37}Ar and ^{36}Ar peaks and their baselines, were measured for five second integrations in each of the five cycles with a faraday cup collector. After the analysis the mass spectrometer was evacuated All phases of the sample heating, cleanup, equilibration and sample analysis were preformed under computer control.

Isotopic Data Reduction

All the Ar isotopic data were reduced using an updated version of the computer program ArAr* (Haugerud and Kunk, 1988) and decay constants recommended by Steiger and Jäger (1977). The isotopic measurements, made in the five-cycle analysis, had baseline values subtracted and then were regressed to time zero, using standard linear regression techniques. These regressed values and associated statistical estimates of analytical uncertainties of the time zero peak values were used in the data reduction. For our samples the system blank in all cases was atmospheric in composition, was less than 0.1%of the signal, and was not subtracted. Corrections for interfering reactor-produced argon isotopes from Ca, K, and Cl in the sample were made using the production ratios given in Dalrymple et al. (1981) and Roddick(1983). Errors in calculating ages or ratios include: analytical errors in the analysis; decay factor uncertainties; measured atmospheric or calculated initial $^{40}Ar/^{36}Ar$ ratios; the irradiation parameter J; the production ratios of the various reactor induced argon producing reactions; the initial $^{38}Ar/^{36}Ar$ ratio; and the uncertainty in the age of the monitor mineral (Haugerud and Kunk, 1988).

The tables and figures below include the identification of individual step ages, Minimum ages, maximum ages, plateau ages, and total gas ages. We have used the plateau test of Fleck, Sutter and Elliot (1977), as modified by Haugerud and Kunk (1988) to determine if an age spectrum has an age plateau. Total gas ages represent the age calculated from the addition of all of the measured argon peaks for all steps in a single

sample. The total gas ages are roughly equivalent to conventional K/Ar ages. No analytical precision is calculated for total gas ages in an age spectrum. Isotope correlation analysis of the analytical data to assess if non-atmospheric argon components were trapped in any samples and to calculate an isochron age was also preformed and the results are presented.

SAMPLE LOCATIONS

Table A. Location of the samples included in this report from the Blue Ridge of northern Virginia. The mineral analyzed and unit from which the sample collected are indicated.

Sample #	Mineral	N Latitude	W Longitude	7 1/2' Quadrangle	Unit
HF2-90	Hornblende	39° 17' 14"	77° 44' 24"	Harpers Ferry VA-MD-WV	Quartz Monzonite
Kline	Hornblende	38° 59' 35"	77° 43' 23"	Middleburg VA	Metagabbro
Pu1A	Hornblende	39° 13' 58"	77° 44' 58"	Purcellville VA	Charnockite
RRNB-400	Hornblende	38° 45' 56"	78° 01'35"	Flint Hill VA	Laurel Mills Granite
YNPVILLE	Hornblende	39° 13' 57"	77° 41' 13"	Purcellville VA	Mt Zion Norite
LN-186	Phlogopite	39° 02' 01"	77° 40' 46"	Lincoln VA	Catoctin Formation
K92-7-15B	Phlogopite	39° 01' 28"	77° 40' 50"	Lincoln VA	Catoctin Formation
BR 138	Muscovite	39° 16' 47"	77° 44' 20"	Point of Rocks MD-VA	Catoctin Formation
BR 873	Muscovite	39° 16' 12"	77° 33' 15"	Point of Rocks MD-VA	Weaverton Formation
BR 904	Muscovite	39° 16' 13"	77° 32' 41"	Point of Rocks MD-VA	Loudoun Formation
CBR-10-92	Muscovite	37° 47' 52"	78° 45' 40"	Lovingston VA	Lynchburg Formation
T185B	Muscovite	39° 41' 28"	77° 51' 43"	Thoroughfare Gap VA	Weaverton Formation
T65	Muscovite	39° 42' 23"	77° 51' 40"	Thoroughfare Gap VA	Weaverton Formation
K92-7-11A	Muscovite	38° 49' 30"	77° 42' 34"	Thoroughfare Gap VA	Weaverton Formation
K92-7-11B	Muscovite	38° 49' 30"	77° 42' 34"	Thoroughfare Gap VA	Weaverton Formation
K92-7-11C	Muscovite	38° 49' 33"	77° 42' 47"	Thoroughfare Gap VA	Weaverton Formation
K92-7-29A	Muscovite	39° 17' 06"	77° 44' 20"	Harpers Ferry VA-MD-WV	Swift Run Formation
CBR-10-92	Biotite	37° 47' 52"	78° 45' 40"	Lovingston VA	Lynchburg Formation
RR89-28	Biotite	38° 29' 50"	78° 12' 06"	Brightwood VA	Laurel Mills Granite
K92-5-16B	Biotite	38° 52' 46"	77° 51' 32"	Rectortown VA	Marshall Granite
K92-5-17B	Biotite	38° 54' 50"	77° 46' 25"	Rectortown VA	Marshall granite
K92-5-17C	Biotite	38° 54' 50"	77° 46' 25"	Rectortown VA	Marshall granite
K92-8-4B	Biotite	38° 35' 07"	77° 57' 03"	Brandy Station VA	Lynchburg Formation
K92-8-4D	Biotite	38° 38' 25"	77° 54' 57"	Jeffersonton VA	Ball Mtn. Formation
CBR-10-92	Kspar	37° 47' 52"	78° 45' 40"	Lovingston VA	Lynchburg Formation
RRNB-400	Kspar	38° 45' 56"	78° 01'35"	Flint Hill VA	Laurel Mills Granite
RR89-28	Kspar	38° 29' 50"	78° 12' 06"	Brightwood VA	Laurel Mills Granite
K92-5-16A	Kspar	39° 07' 08"	77° 47' 30"	Bluemont VA	Marshall Granite
K92-5-16B	Kspar	38° 52' 46"	77° 51' 32"	Rectortown VA	Marshall Granite
K92-5-17C	Kspar	38° 54' 50"	77° 46' 25"	Rectortown VA	Marshall Granite

RESULTS

$^{40}Ar/^{39}Ar$ Data

The $^{40}Ar/^{39}Ar$ data presented in this report are presented in two different formats. Data within both formats are arranged in the same order as the section on sample locations (Table A.). The first of these formats is a condensed tabular form (Table B). The data presented in this table are organized by the mineral analyzed. These tables summarize the data contained in the succeeding, more detailed individual data sets. Included in this table are: the sample numbers; the material analyzed; the apparent age and its error (see below for a detailed explanation); the percent ^{39}Ar of the total that this apparent age represents; the number of steps / total number of steps that this apparent age represents; and; a comment listing the type of apparent age. For inverse isotope correlation ages, the table includes the MSWD (a goodness of fit indicator) and the calculated initial $^{40}Ar/^{36}Ar$ ratio.

The individual data sets include a series of four tables, as well as one or two graphical representations of some of the age spectrum data. The tables are numbered nA, nB, nC, and nD, and the figures share the same number, n, for a given sample. No figures are presented for biotite samples that were totally fused.

The first table, RAW DATA, includes the computer file number of the individual argon analysis, the temperature of the step, regressed peak values and their precision, the trap current (filament amperage, in microamps) and the manifold splitting option used. The relationship between the trap currents and manifold options can be found in the footnotes of the third table. No corrections have been made to the peak values, these are raw numbers. Included as table footnotes are: (1) the measured atmospheric $^{40}Ar/^{36}Ar$ ratio for calculation of mass spectrometer discrimination; (2) the trap current at which the samples were run in micro amps of current; (3) the manifold splitting option used; (4) the sensitivity of the mass spectrometer at the time of the analysis; (5) an estimate of the limit of reproducibility of the mass spectrometer when the sample was analyzed (If an intra-sample error is less than this value times the age of the step, this value should be used when comparing with other steps from the same age spectrum) and; the detection limit of the mass spectrometer in counts. For a further explanation of these footnotes see Haugarud and Kunk, 1988.
The second table, CORRECTIONS, contains calculated corrections for decay of radioactive isotopes of argon, as well as the production of interfering isotopes during irradiation, and a calculated initial ^{38}Ar value. All of these values have been corrected only for the affects of mass discrimination as discerned by measuring atmospheric argon. All tabular data in this table, as well as the two subsequent tables, is indexed by the temperature of the step analyzed.

The third data table, MOLAR VALUES, lists molar quantities of the indicated argon isotope derived from the sources indicated. The age of the step and an estimate of intra-sample precision in millions of years (Ma) are given. All precision estimates, in all tables, are at the one sigma level of confidence. The precision stated for the ages of individual temperature steps does not include the error in J.

The fourth table includes the percent of potassium derived $^{39}Ar_K$ of the age spectrum total that each step contains, the

radiogenic yield (percentage of ^{40}Ar (R) that is derived from the decay of potassium), calculated apparent K/Ca and K/Cl ratios for each step (or asterisk if the measured ^{38}Ar or ^{37}Ar signal measured was less than the detection limit of the mass spectrometer), a corrected $^{40}Ar_R/^{39}Ar_K$ ratio from which the age can be directly calculated, a calculated age for the step, in millions of years and an estimate of the precision of each age. The sample precision includes estimates of the errors that are unique to a single sample and can be used only for comparisons with other steps of the same sample. This error estimate does not include the error in "J", except for total fusion analyses. The J-value and its precision estimate, and sample weight are listed near the top of this table.

One or two figures are included with each age spectrum data set. The first figure includes one or two graphs. The lower and larger graph plots cumulative percent $^{39}Ar_K$ of the steps in the age spectrum against apparent age in millions of years. The precision estimate used to construct the error boxes of each step is two sigma. The upper, smaller graph plots the apparent K/Ca ratio of each step against cumulative $^{39}Ar_K$ released. Many times the degree of sample purity or the presence of compositional zoning can be inferred from this figure. Homogeneous samples with no compositional zoning or impurities are reflected by horizontal patterns in this figure, the patterns of those with zoning or impurities typically depart from horizontal.

The second figure is an inverse isotope correlation diagram, and plots $^{39}Ar/^{40}Ar$ vs $^{36}Ar/^{40}Ar$ for each of the steps of the age spectrum data. In many cases the data is linearly regressed by the method of York (1969). For this graph to have any meaning, the regressed line must have a negative slope. The X-axis intercept is the inverse of the $^{40}Ar/^{39}Ar$ ratio and can be used to calculate an age for the sample. The Y-axis intercept is the inverse of the calculated initial $^{40}Ar/^{36}Ar$ ratio for the sample. This ratio should have a value of 295.5 (modern atmosphere) or greater if the isotope correlation data is to be considered useful. Included in the caption of these figures is the MSWD of the points used in the isochron. The MSWD is a goodness of fit indicator and a value of 2.5 or less indicates a good fit of the data to the line. For additional information on the sample data sets see Haugerud and Kunk(1988).

Table B. Summary of argon isotopic results from the Blue Ridge of northern Virginia.

Sample #	Mineral	Apparent Age (Ma)	$\%^{39}Ar$	Steps Total	Initial $^{40}Ar/^{36}Ar$	MSWD	Comment
HF2-90	Hornblende	978 ± 2	84.3	6/11	295.5		Preferred age
		956.6 ± 22.5	96.6	8/11	3830 ± 2764		Isochron
Kline	Hornblende	1000.4 ± 4.3	55.7	2/7	295.5		Plateau age
		992.9 ± 4.2	67.0	5/7	821 ± 20	1.58	Isochron
		997.76	13.8	1/7	295.5		Minimum
Pu1A	Hornblende	920 ± 2	13.8	6/9	295.5		Preferred
		919.7 ± 3.0	100	9/9	-1504 ± 22	5.04	Isochron
RRNB-400	Hornblende	548.3	100	16/16	295.5		Total Gas
		523.9 ± 2.4	100	16/16	492 ± 3	473	Isochron
YNPVILLE	Hornblende	1022	15.4	1/7	295.5		Minimum
		1008 ± 5.4	72.7	4/7	1527 ±140	1.015	Isochron
LN-186	Phlogopite	405.7 ± 2.0	74.7	6/11	295.5		Plateau
		404.7 ± 2.3	100	11/11	396 ± 85	0.803	Isochron
K92-7-15B	Phlogopite	409	6.2	1/12	295.5		Minimum
		403.8 ± 4.7	62.0	8/12	460 ± 59	1.151	Isochron
BR 138	Muscovite	313	7.5	1/8	295.5		Minimum
		338	7.5	1/8	295.5		Maximum
BR 873	Muscovite	323	4.2	1/9	295.5		Minimum
		347	12.0	1/9	295.5		Maximum
BR 904	Muscovite	311	6.5	1/9	295.5		Minimum
		360	1.6	1/9	295.5		Maximum
CBR-10-92	Muscovite	338	8.0	1/7	295.5		Minimum
		346	8.1	1/7	295.5		Maximum
T185B	Muscovite	297	3.3	1/9	295.5		Minimum
		337	10.7	1/9	295.5		Maximum
T65	Muscovite	316	3.5	1/10	295.5		Minimum
		333	5.7	1/10	295.5		Maximum
K92-7-11A	Muscovite	318	3.1	1/8	295.5		Minimum
		334	9.0	1/8	295.5		Maximum
K92-7-11B	Muscovite	135	28.2	1/6	295.5		Minimum
		214	5.8	1/6	295.5		Maximum
K92-7-11C	Muscovite	325	3.3	1/8	295.5		Minimum
		334	10.1	1/8	295.5		Maximum
K92-7-29A	Muscovite	337	6.0	1/7	295.5		Minimum
		347	6.1	1/7	295.5		Maximum
CBR-10-92	Biotite	340 ± 1.56	100	1/1	295.5		Total Gas
RR89-28	Biotite	337.7 ± 1.7	70.2	6/11	295.5		Plateau
		337.7 ± 2.3	91.3	8/11	274 ± 63	0.328	Isochron
K92-5-16B	Biotite	329 ± 1.53	100	1/1	295.5		Total Gas
K92-5-17B	Biotite	396 ± 1.80	100	1/1	295.5		Total Gas
K92-5-17C	Biotite	383 ± 1.76	100	1/1	295.5		Total Gas
K92-8-4B	Biotite	370 ± 1.70	100	1/1	295.5		Total Gas

Table B (Cont.). Summary of argon isotopic results from the Blue Ridge of northern Virginia.

Sample #	Mineral	Apparent Age (Ma)	$\%^{39}Ar$	Steps Total	Initial $^{40}Ar/^{36}Ar$	MSWD	Comment
K92-8-4D	Biotite	377 ± 1.71	100	1/1	295.5		Total Gas
CBR-10-92	Kspar	202	8.8	1/17	295.5		Minimum
		698	7.8	1/17	295.5		Maximum
RRNB-400	Kspar	213	2.5	1/22	295.5		Minimum
		335	6.1	1/22	295.5		Maximum
RR89-28	Kspar	183	4.9	1/18	295.5		Minimum
		349	4.4	1/18	295.5		Maximum
K92-5-16A	Kspar	228	4.8	1/12	295.5		Minimum
		457	13.5	1/12	295.5		Maximum
K92-5-16B	Kspar	223	4.2	1/15	295.5		Minimum
		534	9.4	1/15	295.5		Maximum
K92-5-17C	Kspar	184	9.2	1/16	295.5		Minimum
		577	2.2	1/16	295.5		Maximum

Table 1A. HF-2-90 HORNBLENDE #23RD80 v 4/17/98 08:28:16 15 Sep 1999

RAW DATA

File #	Temperature	^{40}Ar	^{39}Ar	^{38}Ar	^{37}Ar	^{36}Ar	Trap current	Manifold
31177	950	1321497	24454	2111	187	166	200	EALL
	±	2785	34	14	8	2		
31178	1000	2307845	34995	5919	558	124	200	EALL
	±	2323	35	10	20	4		
31179	1020	1514551	20374	3985	257	39	200	ESPLIT 1
	±	2606	68	18	11	5		
31180	1040	1653850	21860	4290	250	34	100	ESPLIT 1
	±	236	40	32	20	2		
31181	1050	4264587	56135	11543	484	88	100	EALL
	±	6489	129	37	24	2		
31182	1060	5041670	66204	13667	615	94	100	EALL
	±	11429	130	35	10	1		
31183	1080	2597050	34362	6987	435	44	100	ESPLIT 2
	±	5987	39	24	11	3		
31184	1100	2952407	38230	7877	332	52	100	EALL
	±	5649	80	40	4	3		
31185	1125	4491956	59197	12136	715	66	100	ESPLIT 2
	±	7857	88	24	9	2		
31186	1150	2906753	37642	7756	406	54	100	ESPLIT 1
	±	1906	84	40	11	1		
31187	1175	1147649	14800	3020	140	32	100	EALL
	±	2214	24	24	15	3		

All values are in counts. Measured $^{40}Ar/^{36}Ar = 290.8 \pm 0.2$

Precisions are at the 1 sigma level and are from linear regression statistics.

Trap current factors: 40 = 5.66 100 = 2.62 200 = 1

Manifold factors: All = 1 Split1 = 3.3 Split2 = 10.89

EAll = 2 Esplit1 = 6.6 Esplit2 = 21.78

Sensitivity = 1.647 $X10^{-17}$ moles/count. Reproducibility limit = .25 %. Detection limit = 40 counts.

Table 1B. HF-2-90 HORNBLENDE #23RD80 v 4/17/98 08:28:16 15 Sep 1999

	CORRECTIONS									
Temp	^{39}Ar	^{37}Ar	-----	K-derived	----	----	Ca-derivec	----	Cl-derived	initial
(°C)	decay	decay	^{40}Ar	^{38}Ar	^{37}Ar	^{39}Ar	^{38}Ar	^{36}Ar	^{36}Ar	^{38}Ar
950	48	41563	138	327	0	28	1	11	1	28
1000	69	124360	198	467	0	83	4	33	3	16
1020	40	57239	115	272	0	38	2	15	2	4
1040	43	55637	124	292	0	37	2	15	2	3
1050	111	108091	318	750	0	72	3	28	6	10
1060	131	137327	375	884	0	92	4	36	7	9
1080	68	97154	194	459	0	65	3	25	3	3
1100	75	74143	216	511	0	50	2	19	4	5
1125	117	159989	335	790	0	107	5	42	6	3
1150	74	90970	213	503	0	61	3	24	4	5
1175	29	31457	84	198	0	21	1	8	1	4

All values are in counts and have been corrected for mass discrimination.

Table 1C. HF-2-90 HORNBLENDE #23RD80 v 4/17/98 08:28:16 15 Sep 1999

	MOLAR VALUES						
Temperture	$^{40}Ar^*$	$^{39}Ar_K$	$^{38}Ar_{Cl}$	^{37}Ca	$^{36}Ar_i$	Apparent Age	Precision
(°C)						(Ma)	(Ma)
950	4.352554	0.080299	0.005913	0.135884	0.000498	727.36	1.34
1000	7.601391	0.114769	0.017850	0.406571	0.000286	871.45	0.82
1020	16.462215	0.220610	0.040045	0.617535	0.000229	962.18	1.51
1040	47.097996	0.620266	0.112968	1.572648	0.000479	976.07	0.36
1050	36.801837	0.482861	0.092428	0.925861	0.000451	978.42	1.17
1060	43.507787	0.569417	0.109447	1.176274	0.000430	980.85	1.72
1080	244.062192	3.216924	0.608426	9.062342	0.001359	976.46	1.77
1100	25.478234	0.328841	0.063074	0.635068	0.000242	991.52	1.48
1125	422.139353	5.542359	1.057246	14.923410	0.001591	979.82	1.33
1150	82.778045	1.068150	0.204907	2.571353	0.000731	991.84	0.52
1175	9.903809	0.127289	0.024179	0.269443	0.000186	992.62	1.60

All gas quantities are in moles x 10^{-12}.

Ages calculated assuming an initial $^{40}Ar/^{36}Ar = 295.5 \pm 0$.

All precision estimates are at the one sigma level of precision.

Ages of individual steps do not include error in the irradiation parameter J.

Table 1D. HF-2-90 HORNBLENDE #23RD80 v 4/17/98 08:28:16 15 Sep 1999

Temperature °C	% ^{39}Ar of total	Radiogenic Yield (%)	$^{39}Ar_K$	$^{40}Ar^*/^{39}Ar_K$	Apparent K/Ca	Apparent K/Cl	Apparent Age Ma		Precision Ma
J = 0.009482 ± 0.5%					Sample wt. = 0.3300g				
950	0.6	96.6	0.080299	52.373	0.31	33	727.36	±	1.34
1000	0.9	98.9	0.114769	65.496	0.15	16	871.45	±	0.82
1020	1.8	99.6	0.220610	74.314	0.19	13	962.18	±	1.51
1040	5.0	99.7	0.620266	75.704	0.21	13	976.07	±	0.36
1050	3.9	99.6	0.482861	75.940	0.27	13	978.42	±	1.17
1060	4.6	99.7	0.569417	76.185	0.25	13	980.85	±	1.72
1080	26.0	99.8	3.216924	75.743	0.18	13	976.46	±	1.77
1100	2.7	99.7	0.328841	77.262	0.27	13	991.52	±	1.48
1125	44.8	99.9	5.542359	76.081	0.19	13	979.82	±	1.33
1150	8.6	99.7	1.068150	77.294	0.22	13	991.84	±	0.52
1175	1.0	99.4	0.127289	77.373	0.25	13	992.62	±	1.60
Total Gas	100.0	99.8	12.371785	75.840	0.20	13	977.42		

NO PLATEAU

Ages calculated assuming an initial $^{40}Ar/^{36}Ar$ = 295.5± 0.

All precision estimates are at the one sigma level.

Ages of individual steps do not include error in the irradiation parameter J.

No error is calculated for the total gas age.

Figure 1A. Age spectrum for HF-2-90 hornblende.

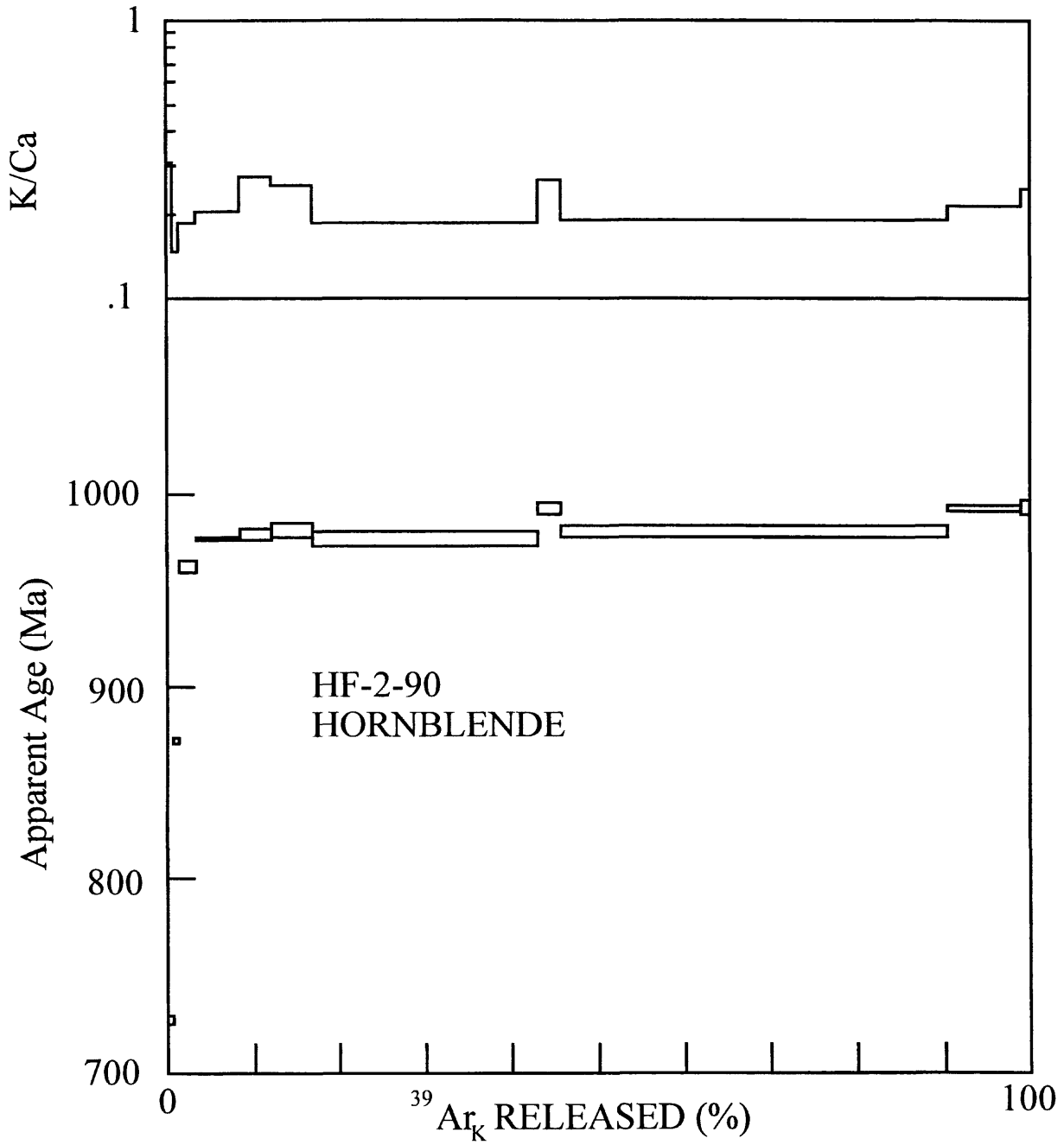
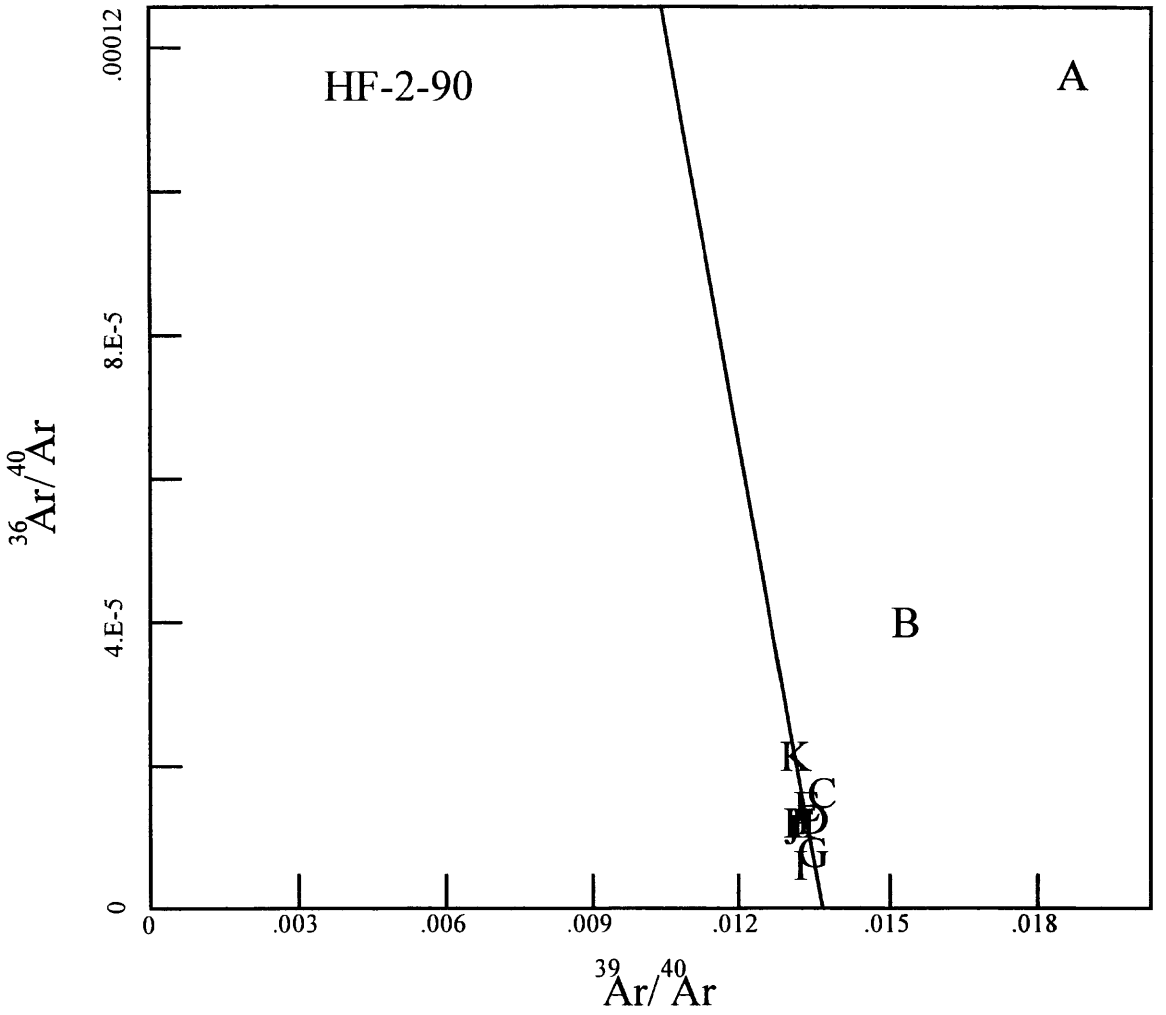


Figure 1B. Inverse isotope correlation diagram for HF-2-90 hornblende. Points D,E,F,G,H,I,J, and K, which contain 96.6% of the ^{39}Ar released, were regressed. MSWD = 0.626, SUMS = 3.756, initial $^{40}Ar/^{36}Ar$ = 3830 ± 2764, and apparent age = 956.6 ± 22.5 Ma.



W/O POINTS ABC

Table 2A. Kline Hornblende #54,55&56 RD74 v. 4/17/98 9:47:13 AM 9/14/1999

		RAW DATA						
File #	Temperature	^{40}Ar	^{39}Ar	^{38}Ar	^{37}Ar	^{36}Ar	Trap current	Manifold
25404	1150	1691040	15737	1813	25028	376	200	ALL
	±	1624	27	9	28	7		
25405	1200	2523726	27208	2647	38361	148	200	SPLIT 1
	±	1568	22	13	24	2		
25406	1200	3735906	41067	3873	57520	166	40	ALL
	±	1919	34	15	33	9		
25407	1250	2020016	22306	2078	30950	56	40	SPLIT 1
	±	806	25	7	31	3		
25408	1250	3994358	44268	4099	61467	143	40	ALL
	±	1555	29	19	29	5		
25409	1350	1906889	20854	1983	28606	45	40	SPLIT 1
	±	1892	2	9	10	6		
25410	1350	2916707	30943	3011	43039	242	100	ALL
	±	1460	32	1	10	12		

All values are in counts. Measured $^{40}Ar/^{36}Ar = 296.5 \pm 0.5$

Precisions are at the 1 sigma level and are from linear regression statistics.

Trap current factors: 40 = 3.57 100 = 2.15 200 = 1

Manifold factors: All = 1 Split1 = 4.2 Split2 = 10.89

EAll = 2 Esplit1 = 6.6 Esplit2 = 21.78

Sensitivity = 2.15 X 10^{-17} moles/count. Reproducibility limit = .25 %. Detection limit = 40 counts.

Table 2B. Kline Hornblende #54,55&56 RD74 v. 4/17/98 9:47:13 AM 9/14/1999

			CORRECTIONS							
Temp	^{39}Ar	^{37}Ar	-----	K-derived	----	----	Ca-derivec	----	Cl-derived	initial
(°C)	decay	decay	^{40}Ar	^{38}Ar	^{37}Ar	^{39}Ar	^{38}Ar	^{36}Ar	^{36}Ar	^{38}Ar
1150	7	63206	89	210	0	60	3	23	0	66
1200	12	96977	154	364	0	91	4	36	0	21
1200	19	145543	233	549	0	137	6	54	0	21
1250	10	78397	126	298	0	74	3	29	0	5
1250	20	155832	251	592	0	147	7	58	0	16
1350	10	72597	118	279	0	68	3	27	0	3
1350	14	109325	175	414	0	103	5	40	0	38

All values are in counts and have been corrected for mass discrimination.

Table 2C. Kline Hornblende #54,55&56 RD74 v. 4/17/98 9:47:13 AM 9/14/1999

	MOLAR VALUES						
Temperture (°C)	$^{40}Ar^*$	$^{39}Ar_K$	$^{38}Ar_{Cl}$	^{37}Ca	$^{36}Ar_i$	Apparent Age (Ma)	Precision (Ma)
1150	36.355448	0.337498	0.035883	1.901847	0.007602	1091.12 ±	1.31
1200	227.878554	2.451876	0.208128	12.252099	0.010187	1013.73 ±	0.52
1200	286.731588	3.145715	0.256739	15.625602	0.008647	1002.06 ±	0.66
1250	651.153946	7.176480	0.575418	35.339732	0.008589	1002.43 ±	0.50
1250	306.567668	3.390997	0.270399	16.721115	0.006586	997.76 ±	0.43
1350	614.687623	6.709412	0.550685	32.707865	0.005896	1010.71 ±	1.04
1350	134.816653	1.427470	0.121833	7.060882	0.009341	1020.47 ±	1.01

All gas quantities are in moles x 10^{-12}.

Ages calculated assuming an initial $^{40}Ar/^{36}Ar = 295.5 \pm 0$.

All precision estimates are at the one sigma level of precision.

Ages of individual steps do not include error in the irradiation parameter J.

No error is calculated for the total gas age.

Table 2D. Kline Hornblende #54,55&56 RD74 v. 4/17/98 9:47:13 AM 9/14/1999

Temperature °C	% ^{39}Ar of total	Radiogenic Yield (%)	$^{39}Ar_K$	$^{40}Ar^*/^{39}Ar_K$	Apparent K/Ca	Apparent K/Cl	Apparent Age Ma	Precision Ma
J=0.008222 ± 0.50%					Sample wt. =	0.9019 g		
1150	1.4	93.8	0.337498	101.064	0.09	23	1091.12 ±	1.31
1200	10.0	98.7	2.451876	91.713	0.1	29	1013.73 ±	0.52
1200	12.8	99.1	3.145715	90.338	0.1	30	1002.06 ±	0.66
1250	29.1	99.6	7.176480	90.381	0.11	30	1002.43 ±	0.50
1250	13.8	99.4	3.390997	89.832	0.11	30	997.76 ±	0.43
1350	27.2	99.7	6.709412	91.356	0.11	29	1010.71 ±	1.04
1350	5.8	98.0	1.427470	92.511	0.11	28	1020.47 ±	1.01
Total Gas	100.0	99.3	24.639448	90.968	0.105	29.573	1007.42	

55.66% of gas on plateau in 1200 through 1250 steps Plateau Age =1000.36 ± 4.29

Ages calculated assuming an initial $^{40}Ar/^{36}Ar = 295.5 \pm 0$.

All precision estimates are at the one sigma level.

Ages of individual steps do not include error in the irradiation parameter J.

No error is calculated for the total gas age.

$^{39}Ar_K$ gas quantities are in moles x 10^{-12}.

Figure 2A. Age spectrum for KLINE hornblende.

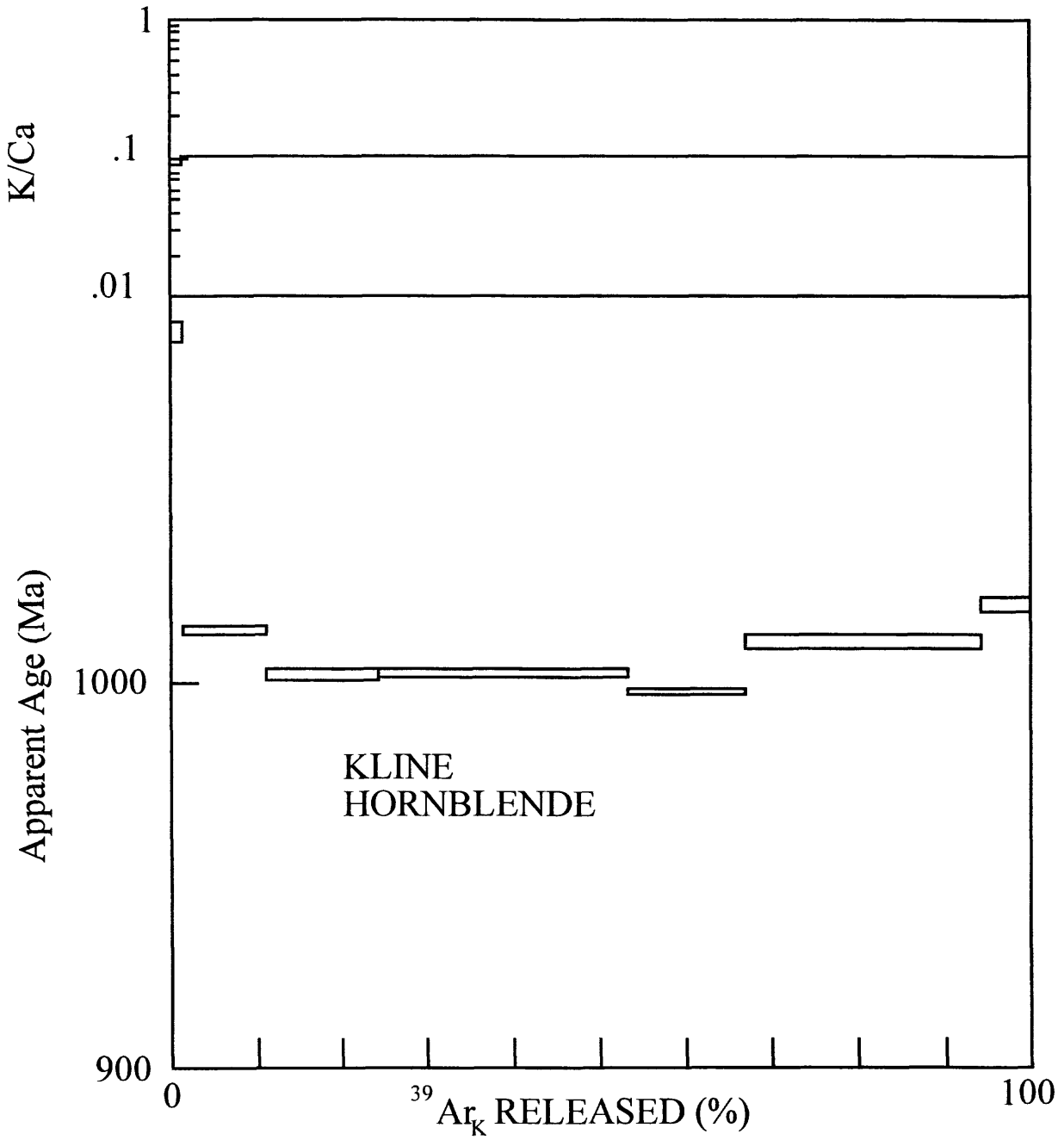
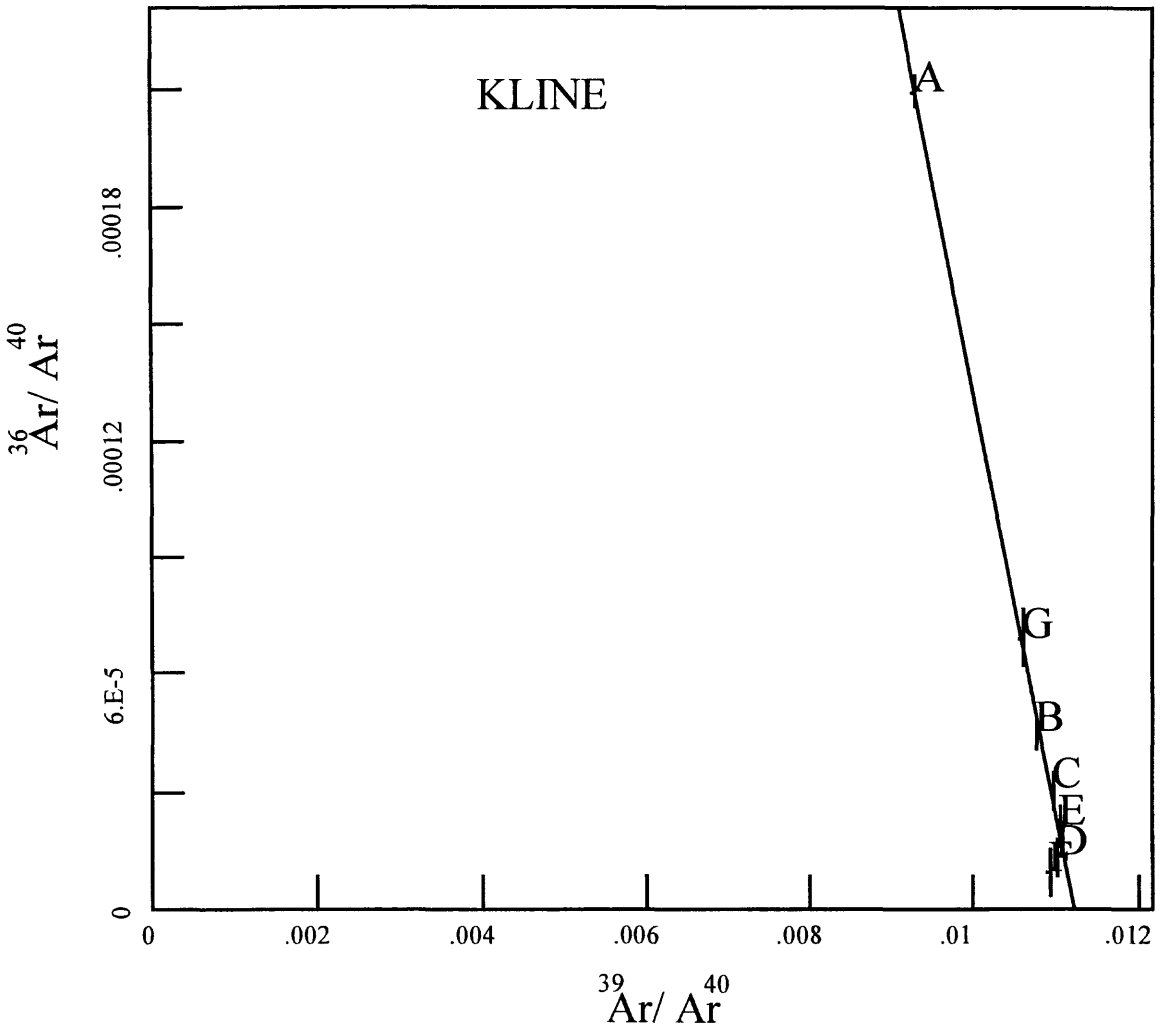


Figure 2B. Inverse isotope correlation diagram for KLINE hornblende. Points A,B,C,D, and E, which contain 67.0% of the ^{39}Ar released, were regressed. MSWD = 1.577, SUMS = 4.731, initial $^{40}Ar/^{36}Ar = 821.3 \pm 20.1$, and apparent age = 992.9± 4.2 Ma.



W/O POINTS FG

Table 3A. PU-1A Hornblende #36,37&38 RD72 v. 4/17/98 9/14/1999 11:19:14 AM

		RAW DATA						
File #	Temperature	^{40}Ar	^{39}Ar	^{38}Ar	^{37}Ar	^{36}Ar	Trap current	Manifold
26325	1050	3979994	91892	6311	2320	1465	200	ALL
	±	1913	83	40	9	15		
26326	1100	2097807	33130	983	1353	50	200	SPLIT 2
	±	903	18	13	8	3		
26327	1100	1444845	21999	514	948	32	200	SPLIT 3
	±	222	15	9	8	6		
26328	1150	2795016	41943	878	1841	52	200	SPLIT 2
	±	428	19	9	10	5		
26329	1175	2649519	39614	836	1713	45	200	SPLIT 2
	±	1330	22	13	6	3		
26330	1200	1360905	20414	423	883	23	200	SPLIT 2
	±	210	18	11	9	3		
26331	1225	4890412	72964	1481	3195	64	200	SPLIT 1
	±	944	27	13	13	3		
26332	1250	1519146	22821	463	970	27	200	SPLIT 2
	±	496	9	11	12	7		
26333	1250	3918942	58588	1159	2708	67	200	ALL
	±	2658	56	23	12	5		

All values are in counts. Measured $^{40}Ar/^{36}Ar$ = 297.2 ± 0.5

Precisions are at the 1 sigma level and are from linear regression statistics.

Trap current factors: 40 = 3.57 100 = 1.4 200 = 1

Manifold factors: All = 1 Split1 = 4.2 Split2 = 17.64

EAll = 2 Esplit1 = 6.6 Esplit2 = 21.78

Sensitivity = 1.344 X $^{-17}$ moles/count. Reproducibility limit = .25 %. Detection limit = 40 counts.

Table 3B. PU-1A Hornblende #36,37&38 RD72 v. 4/17/98 9/14/1999 11:19:14 AM

			CORRECTIONS							
Temp	^{39}Ar	^{37}Ar	-----	K-derived	-----	-----	Ca-derivec	-----	Cl-derivec	initial
(°C)	decay	decay	^{40}Ar	^{38}Ar	^{37}Ar	^{39}Ar	^{38}Ar	^{36}Ar	^{36}Ar	^{38}Ar
1050	137	133026	523	1234	0	91	4	36	2	268
1100	49	77653	188	445	0	53	3	21	0	5
1100	33	54459	125	295	0	37	2	15	0	3
1150	62	105836	239	563	0	73	3	29	0	4
1175	59	98537	225	531	0	68	3	27	0	4
1200	30	50844	116	274	0	35	2	14	0	2
1225	109	184100	415	979	0	127	6	50	0	3
1250	34	55930	130	306	0	38	2	15	0	2
1250	87	156277	333	786	0	107	5	42	0	5

All values are in counts and have been corrected for mass discrimination.

Table 3C. PU-1A Hornblende #36,37&38 RD72 v. 4/17/98 9/14/1999 11:19:14 AM

	MOLAR VALUES						
Temperture (°C)	$^{40}Ar^*$	$^{39}Ar_K$	$^{38}Ar_{Cl}$	^{37}Ca	$^{36}Ar_i$	Apparent Age (Ma)	Precision (Ma)
J = 0.009991 ± 0.25%					Sample wt. =	1.0029g	
1050	53.484092	1.237415	0.072043	1.826896	0.019295	588.61 ±	0.68
1100	497.306745	7.864962	0.129015	18.811640	0.006893	880.46 ±	0.44
1100	1534.722356	23.398486	0.235874	59.112621	0.018010	906.72 ±	0.83
1150	662.590332	9.955850	0.075617	25.638328	0.005601	917.85 ±	0.42
1175	628.098848	9.403120	0.072766	23.869888	0.004513	920.75 ±	0.44
1200	322.618009	4.845700	0.035631	12.316413	0.002129	918.52 ±	0.42
1225	276.030544	4.123616	0.028395	10.618039	0.000807	923.20 ±	0.21
1250	360.130751	5.417122	0.037535	13.548051	0.002727	917.25 ±	1.05
1250	52.666104	0.788289	0.005059	2.145970	0.000337	921.07 ±	0.56

All gas quantities are in moles x 10^{-12}.

Ages calculated assuming an initial $^{40}Ar/^{36}Ar = 295.5 \pm 0$.

All precision estimates are at the one sigma level of precision.

Ages of individual steps do not include error in the irradiation parameter J.

Table 3D. PU-1A Hornblende #36,37&38 RD72 v. 4/17/98 9/14/1999 11:19:14 AM

Temperature °C	% ^{39}Ar of total	Radiogenic Yield (%)	$^{39}Ar_K$	$^{40}Ar^*/^{39}Ar_K$	Apparent K/Ca	Apparent K/Cl	Apparent Age Ma	Precision Ma
J = 0.009991 ± 0.25%						Sample wt = 1.0029 g		
1050	1.8	89.3	1.237415	38.615	0.35	42	588.61 ±	0.68
1100	11.7	99.6	7.864962	62.972	0.22	148	880.46 ±	0.44
1100	34.9	99.7	23.398486	65.363	0.21	240	906.72 ±	0.83
1150	14.9	99.8	9.955850	66.387	0.20	319	917.85 ±	0.42
1175	14.0	99.8	9.403120	66.655	0.20	313	920.75 ±	0.44
1200	7.2	99.8	4.845700	66.448	0.20	329	918.52 ±	0.42
1225	6.2	99.9	4.123616	66.881	0.20	351	923.20 ±	0.21
1250	8.1	99.8	5.417122	66.331	0.21	349	917.25 ±	1.05
1250	1.2	99.8	0.788289	66.684	0.19	377	921.07 ±	0.56
Total Gas	100.0	99.5	0.000000	65.188	0.21	271	904.81	

NO PLATEAU

Ages calculated assuming an initial $^{40}Ar/^{36}Ar = 295.5 \pm 0$.

All precision estimates are at the one sigma level.

Ages of individual steps do not include error in the irradiation parameter J.

No error is calculated for the total gas age.

$^{39}Ar_K$ gas quantities are in moles x 10^{-12}.

Figure 3A. Age spectrum for Pu-1A hornblende.

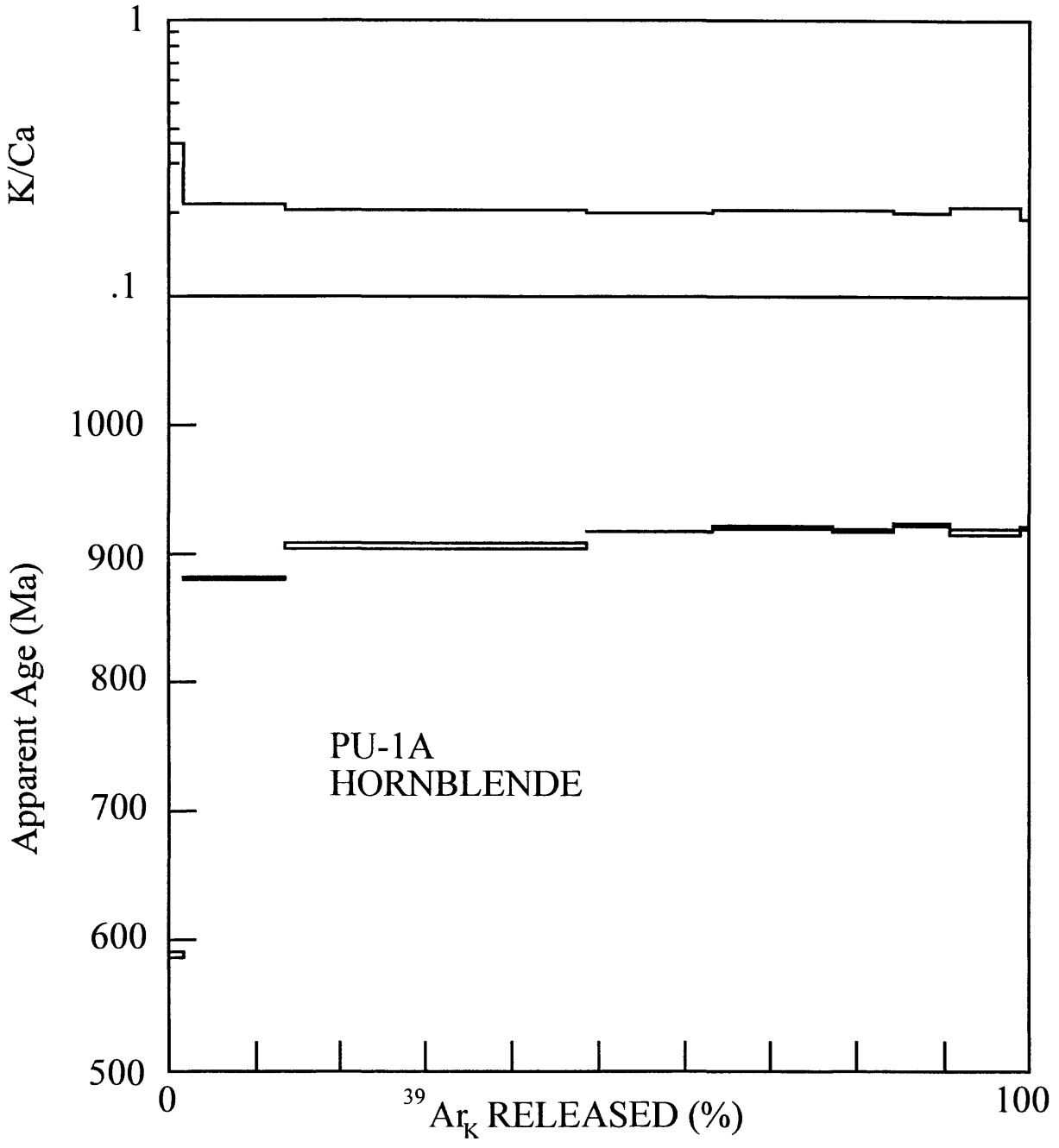


Figure 3B. Inverse isotope correlation diagram for Pu-1A hornblende. Regressing all points. MSWD = 5.04, SUMS = 35.3, initial $^{40}Ar/^{36}Ar$ = -1504± 21.6, and apparent age = 919.7± 3.0 Ma. Deletion of points from the regression did not improve the results.

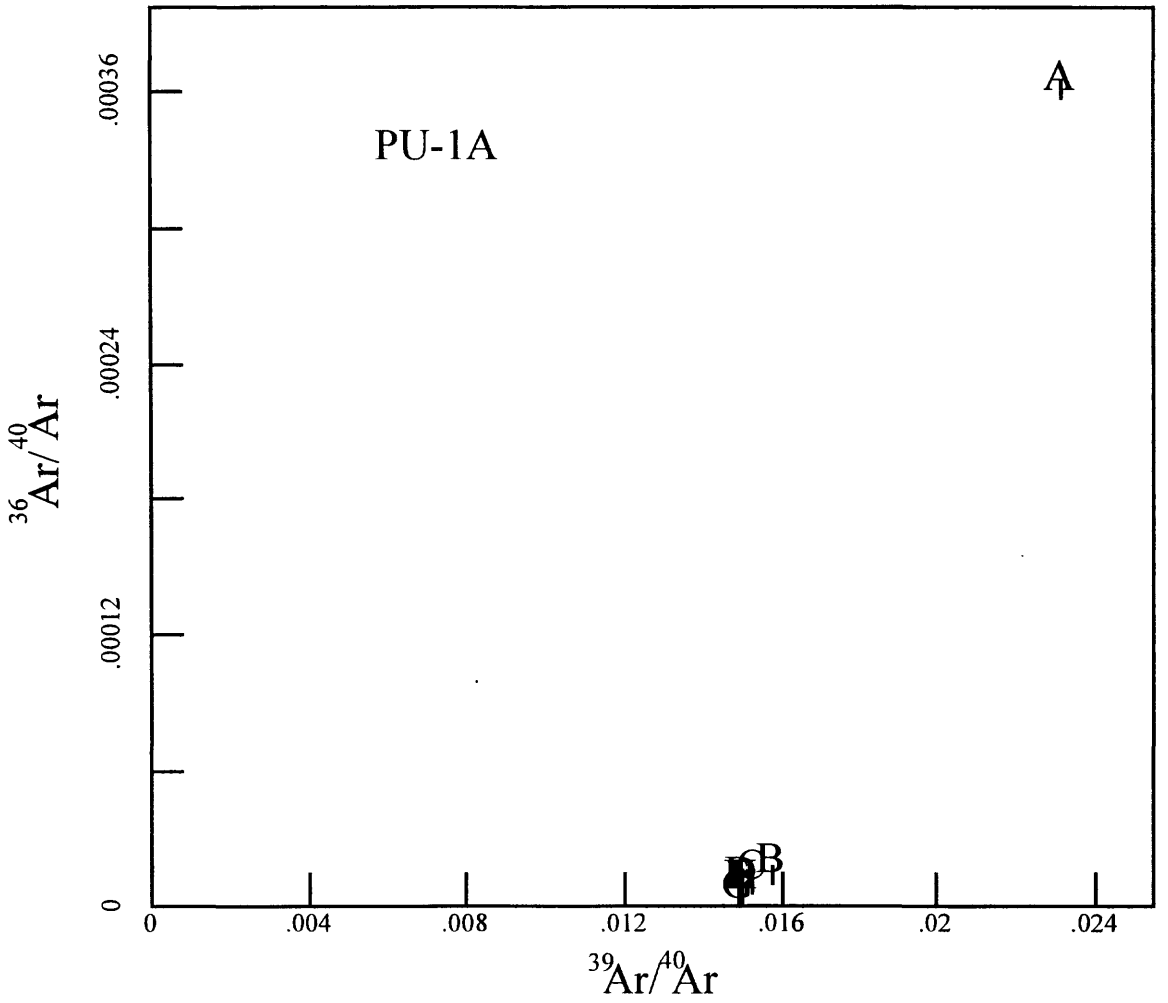


Table 4A. RRNB-400 HORNBLENDE #57,58&59 RD74 v.9/21/99 14:34:58 16 Sep 1999

		RAW DATA						
File #	Temperature	^{40}Ar	^{39}Ar	^{38}Ar	^{37}Ar	^{36}Ar	Trap current	Manifold
26532	850	2763477	41991	5766	2444	2479	200	ALL
	±	2313	40	19	11	12		
26533	1000	1378663	37580	4860	3487	122	200	SPLIT 1
	±	497	21	8	13	8		
26534	1050	1433341	38111	5372	3931	72	200	SPLIT 1
	±	1116	28	25	9	3		
26535	1075	2245492	50700	8635	6162	85	200	SPLIT 2
	±	1941	15	35	16	4		
26536	1100	1516797	32925	5605	4137	54	200	SPLIT 2
	±	809	29	3	13	5		
26537	1125	1503908	32078	5386	4207	51	200	SPLIT 1
	±	472	23	7	14	1		
26538	1125	2553411	57681	8818	7674	112	200	ALL
	±	984	50	18	8	5		
26539	1150	3560645	81111	12662	11350	133	200	ALL
	±	2195	66	31	10	5		
26541	1175	2553455	57989	9157	8700	115	200	ALL
	±	2513	56	2	12	5		
26542	1200	2297968	53005	8308	8212	110	200	ALL
	±	1309	19	17	14	5		
26543	1225	1336208	31163	4965	4679	68	200	ALL
	±	638	18	25	4	9		
26544	1250	1087395	25234	4070	3545	57	200	ALL
	±	550	10	21	15	7		
26545	1300	1626977	35991	6073	4840	57	200	ALL
	±	911	26	20	14	10		
26546	1350	458065	10906	1612	1441	46	200	ALL
	±	212	10	9	8	3		
26547	1450	324995	11206	1058	993	40	200	ALL
	±	259	14	10	14	3		
26548	1650	251607	22062	459	335	53	200	ALL
	±	101	18	6	8	1		

All values are in counts. Initial $^{40}Ar/^{36}Ar = 297.2 \pm 0.5$

Precisions are at the 1 sigma level, and are from linear regression statistics.

Trap current factors: 40 = 3.57 50 = 1 75 = 1

Manifold factors: All = 1, Split1 = 4.2, Split2 = 17.64, Split 3 = 74.09

EAll = 2.26, Esplit1 = 9.49, Esplit2 = 39.87

Sensitivity = 1.344 X 10-17 moles/count. Reproducibility limit = .25 %. Detection limit = 40 counts.

Table 4B. RRNB-400 HORNBLENDE #57,58&59 RD74 v.9/21/99 14:34:58 16 Sep 1999

			CORRECTIONS							
Temp	^{39}Ar	^{37}Ar	-----	K-derived	----	----	Ca-derivec	----	Cl-derivec	initial
(°C)	decay	decay	^{40}Ar	^{38}Ar	^{37}Ar	^{39}Ar	^{38}Ar	^{36}Ar	^{36}Ar	^{38}Ar
850	49	55697	239	1	0	39	2	15	2	463
1000	44	79523	214	2	0	56	3	22	1	19
1050	44	89716	217	3	0	63	3	25	2	9
1075	59	140751	288	4	0	99	5	39	2	8
1100	38	94589	187	5	0	67	3	26	2	5
1125	37	96267	182	6	0	68	3	27	2	4
1125	67	175698	328	7	0	124	6	49	2	11
1150	95	260046	461	8	0	183	9	72	4	11
1175	68	199524	329	9	0	141	7	55	3	11
1200	62	188461	301	10	0	133	6	52	2	11
1225	36	107452	177	11	0	76	4	30	1	7
1250	29	81469	143	12	0	57	3	23	1	6
1300	42	111307	205	13	0	79	4	31	2	5
1350	13	33157	62	14	0	23	1	9	0	7
1450	13	22859	64	15	0	16	1	6	0	6
1650	26	7730	126	16	0	5	0	2	0	10

All values are in counts and have been corrected for mass discrimination.

Table 4C. RRNB-400 HORNBLENDE #57,58&59 RD74 v.9/21/99 14:34:58 16 Sep 1999

			MOLAR VALUES					
Temperature	$^{40}Ar^*$	$^{39}Ar_K$	$^{38}Ar_{Cl}$	^{37}Ca	$^{36}Ar_i$	Apparent Age		Precision
(°C)						(Ma)		(Ma)
850	37.137920	0.565294	0.076348	0.784788	0.033278	603.23	±	1.10
1000	77.810695	2.123694	0.247599	4.705992	0.005623	466.05	±	0.71
1050	80.897015	2.153312	0.275595	5.308974	0.002578	481.53	±	0.41
1075	532.296512	12.027860	1.892895	34.980639	0.010499	556.96	±	0.49
1100	359.560410	7.810538	1.228584	23.507086	0.006318	576.45	±	0.57
1125	84.882330	1.811619	0.280753	5.696049	0.001333	585.48	±	0.20
1125	34.313440	0.775584	0.108550	2.475148	0.000825	556.20	±	0.34
1150	47.848874	1.090510	0.156100	3.663301	0.000780	553.35	±	0.35
1175	34.314006	0.779508	0.113042	2.810608	0.000772	554.02	±	0.55
1200	30.880643	0.712461	0.102503	2.654695	0.000759	546.38	±	0.41
1225	17.956257	0.418898	0.061367	1.513548	0.000506	540.67	±	0.98
1250	14.612657	0.339257	0.050369	1.147516	0.000450	542.56	±	0.92
1300	21.863822	0.483918	0.075397	1.567754	0.000330	567.62	±	0.90
1350	6.155558	0.146643	0.019847	0.466995	0.000497	523.73	±	1.03
1450	4.367075	0.150783	0.012319	0.321944	0.000454	374.62	±	0.98
1650	3.379907	0.297216	0.002329	0.108870	0.000689	151.91	±	0.14

All gas quantities are in moles x 10^{-12}.

Ages calculated assuming an initial $^{40}Ar/^{36}Ar = 295.5 \pm 0$.

All precision estimates are at the one sigma level of precision.

Ages of individual steps do not include error in the irradiation parameter J.

Table 4D. RRNB-400 HORNBLENDE #57,58&59 RD74 v.9/21/99 14:34:58 16 Sep 1999

Temperature °C	% ^{39}Ar of total	Radiogenic Yield (%)	$^{39}Ar_K$	$^{40}Ar^*/^{39}Ar_K$	Apparent K/Ca	Apparent K/Cl	Apparent Age Ma		Precision Ma
J = .008221 ± 0.5%					Sample wt. = .8118 g				
850	1.8	73.5	0.565294	48.301	0.4	18	603.23	±	1.10
1000	6.7	97.9	2.123694	35.857	0.2	21	466.05	±	0.71
1050	6.8	99.1	2.153312	37.215	0.2	19	481.53	±	0.41
1075	38.0	99.4	12.027860	43.997	0.2	15	556.96	±	0.49
1100	24.6	99.5	7.810538	45.796	0.2	15	576.45	±	0.57
1125	5.7	99.5	1.811619	46.637	0.2	16	585.48	±	0.20
1125	2.4	99.3	0.775584	43.928	0.2	17	556.20	±	0.34
1150	3.4	99.5	1.090510	43.666	0.2	17	553.35	±	0.35
1175	2.5	99.3	0.779508	43.727	0.1	17	554.02	±	0.55
1200	2.2	99.3	0.712461	43.029	0.1	17	546.38	±	0.41
1225	1.3	99.2	0.418898	42.509	0.1	17	540.67	±	0.98
1250	1.1	99.1	0.339257	42.681	0.2	16	542.56	±	0.92
1300	1.5	99.6	0.483918	44.979	0.2	16	567.62	±	0.90
1350	0.5	97.6	0.146643	40.975	0.2	18	523.73	±	1.03
1450	0.5	96.9	0.150783	28.074	0.2	30	374.62	±	0.98
1650	0.9	94.0	0.297216	10.687	1.4	309	151.91	±	0.14
Total Gas	100.0	98.8	31.687096	43.199	0.2	19	548.25		

NO PLATEAU

Ages calculated assuming an initial $^{40}Ar/^{36}Ar$ = 295.5± 0.

All precision estimates are at the one sigma level.

Ages of individual steps do not include error in the irradiation parameter J.

No error is calculated for the total gas age.

$^{39}Ar_K$ gas quantities are in moles x 10^{-12}.

*** Below detection limit.

Figure 4A. Age spectrum for RRNB-400 hornblende.

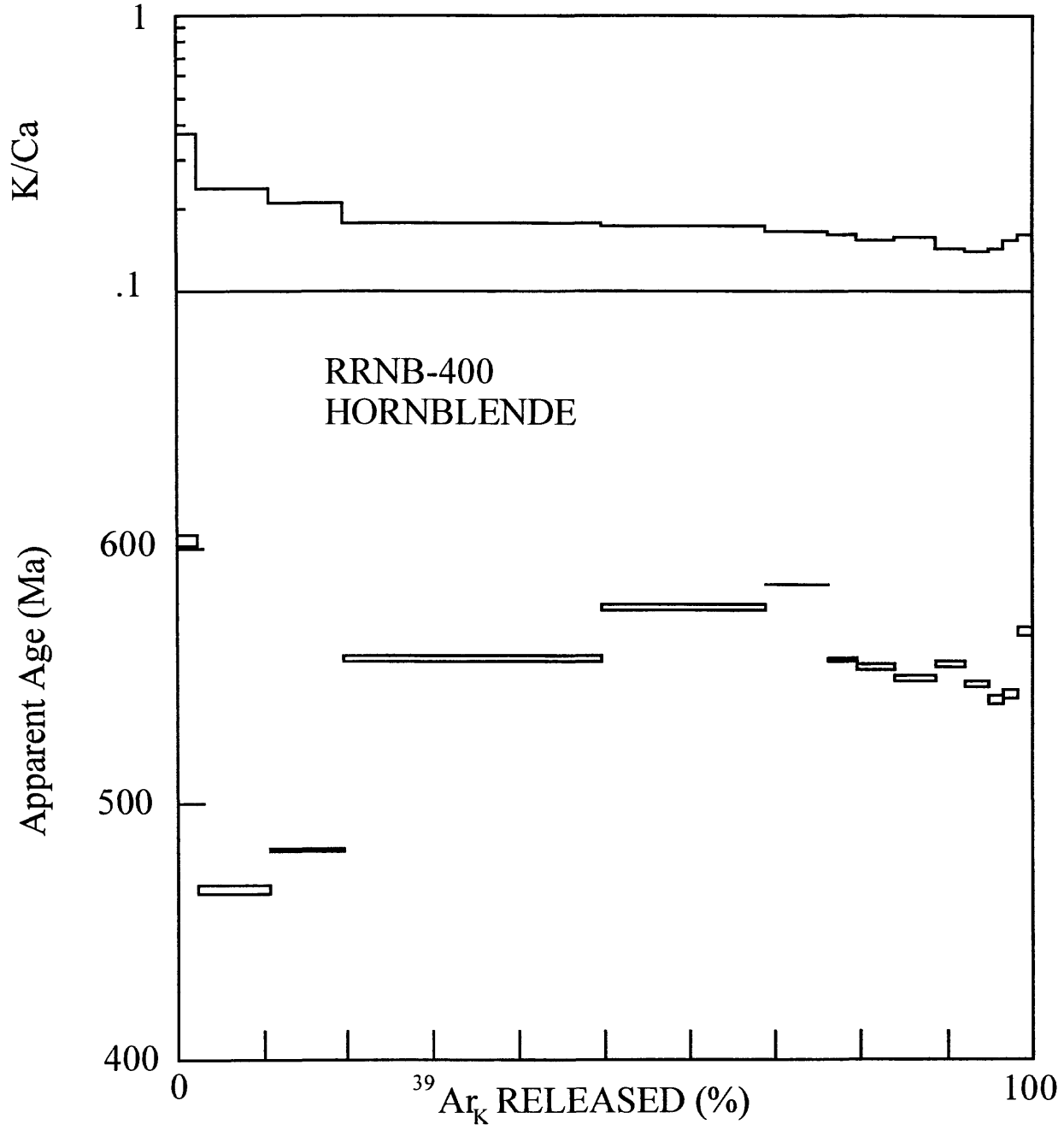


Figure 4B. Inverse isotope correlation diagram for RRNB-400 hornblende. Regressing all points. MSWD = 472.6, SUMS = 5671, initial $^{40}Ar/^{36}Ar = 491.6 \pm 3.1$, and apparent age = 523.9 ± 2.4 Ma. Deletion of points from the regression did not improve the results.

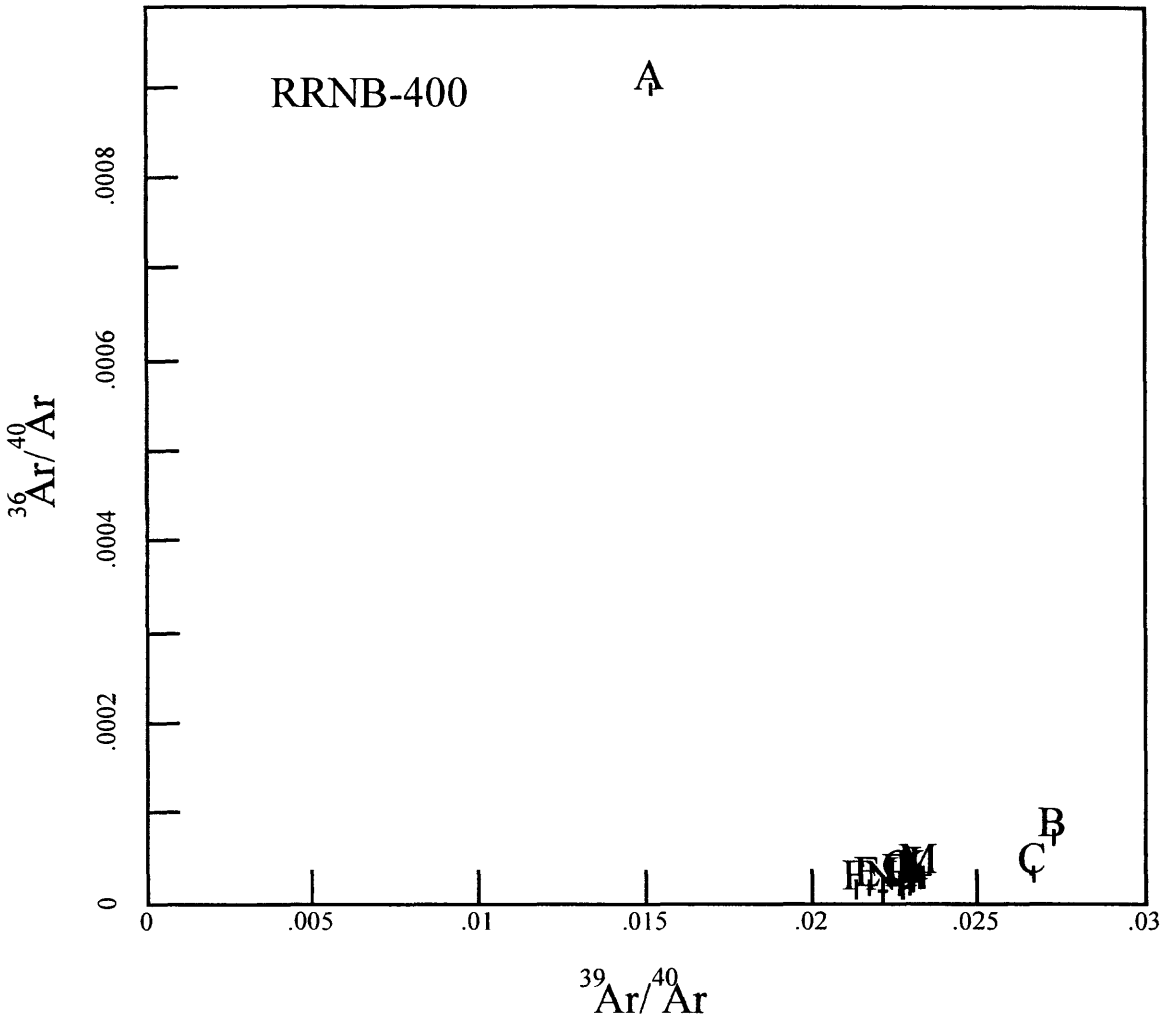


Table 5A. YN-Pville Hornblende #2,3,4&5 RD93 v. 4/17/98 1:55:27 PM 9/14/1999

RAW DATA

File #	Temperature	^{40}Ar	^{39}Ar	^{38}Ar	^{37}Ar	^{36}Ar	Trap current	Manifold
35827	1050	4410143	38998	2267	79919	247	200	EALL
	±	1660	37	11	55	7		
35828	1075	3081986	28137	1519	54756	113	200	ESPLIT 1
	±	1740	30	8	36	4		
35829	1100	3285204	30142	1573	58259	96	200	ESPLIT 1
	±	4210	18	9	101	7		
35830	1125	2036088	18815	1000	36195	63	200	ESPLIT 1
	±	710	45	15	27	4		
35831	1150	1511189	13178	666	25545	52	200	ESPLIT 1
	±	381	6	14	28	3		
35832	1175	1691946	14322	699	27742	60	200	ESPLIT 1
	±	798	18	17	19	9		
35833	1200	2296702	19401	1066	38315	81	200	EALL
	±	3887	41	8	58	4		

All values are in counts. Measured $^{40}Ar/^{36}Ar = 297.2 \pm 0.5$

Precisions are at the 1 sigma level and are from linear regression statistics.

Trap current factors: 40 = 5.66 100 = 2.62 200 = 1

Manifold factors: All = 1 Split1 = 3.3 Split2 = 10.89

EAll = 2 Esplit1 = 6.6 Esplit2 = 21.78

Sensitivity = 1.360 X 10^{-17} moles/count. Reproducibility limit = .25 %. Detection limit = 40 counts.

Table 5B. YN-Pville Hornblende #2,3,4&5 RD93 v. 4/17/98 1:55:27 PM 9/14/1999

CORRECTIONS

Temp (°C)	^{39}Ar decay	^{37}Ar decay	-----	K-derived	-----	-----	Ca-derivec	-----	Cl-derived	initial
			^{40}Ar	^{38}Ar	^{37}Ar	^{39}Ar	^{38}Ar	^{36}Ar	^{36}Ar	^{38}Ar
1050	15	156497	221	521	0	160	8	63	0	35
1075	11	107313	159	376	0	110	5	43	0	13
1100	12	114278	171	403	0	117	5	46	0	9
1125	7	71059	107	252	0	72	3	28	0	6
1150	5	50192	75	176	0	51	2	20	0	6
1175	6	54555	81	192	0	56	3	22	0	7
1200	8	75402	110	259	0	77	4	30	0	10

All values are in counts and have been corrected for mass discrimination.

Table 5C. YN-Pville Hornblende #2,3,4&5 RD93 v. 4/17/98 1:55:27 PM 9/14/1999

			MOLAR VALUES				
Temperture (°C)	$^{40}Ar^*$	$^{39}Ar_K$	$^{38}Ar_{Cl}$	^{37}Ca	$^{36}Ar_i$	Apparent Age (Ma)	Precision (Ma)
1050	317.8672	2.804598	0.128272	17.114367	0.013381	1050.982 ±	0.47
1075	733.055499	6.678910	0.274884	38.716748	0.016816	1030.114 ±	0.545
1100	781.391147	7.155044	0.280411	41.217432	0.011983	1027.959 ±	1.118
1125	484.286772	4.466248	0.179376	25.622076	0.00819	1022.018 ±	0.557
1150	359.439608	3.128071	0.117751	18.092694	0.007658	1066.967 ±	0.553
1175	402.433719	3.399789	0.122189	19.659874	0.009091	1090.763 ±	1.375
1200	165.538379	1.395470	0.058816	8.232104	0.003689	1092.602 ±	1.464

All gas quantities are in moles x 10^{-12}.

Ages calculated assuming an initial $^{40}Ar/^{36}Ar = 295.5 \pm 0$.

All precision estimates are at the one sigma level of precision.

Ages of individual steps do not include error in the irradiation parameter J.

Table 5D. YN-Pville Hornblende #2,3,4&5 RD93 v. 4/17/98 1:55:27 PM 9/14/1999

Temperature °C	% ^{39}Ar of total	Radiogenic Yield (%)	$^{39}Ar_K$	$^{40}Ar^*/^{39}Ar_K$	Apparent K/Ca	Apparent K/Cl	Apparent Age Ma		Precision Ma
J = 0.007064 ± 0.5%						Sample Wt =	1.0028g		
1050	9.7	98.8	2.804598	111.928	0.09	53	1050.98	±	0.47
1075	23.0	99.3	6.678910	109.013	0.09	59	1030.11	±	0.55
1100	24.6	99.5	7.155044	108.714	0.09	62	1027.96	±	1.12
1125	15.4	99.5	4.466248	107.891	0.09	60	1022.02	±	0.56
1150	10.8	99.4	3.128071	114.184	0.09	64	1066.97	±	0.55
1175	11.7	99.3	3.399789	117.580	0.09	67	1090.76	±	1.38
1200	4.8	99.3	1.395470	117.844	0.09	57	1092.60	±	1.46
Total Gas	100.0	99.4	29.028130	111.033	0.09	61	1044.60		

NO PLATEAU

Ages calculated assuming an initial $^{40}Ar/^{36}Ar = 295.5 \pm 0$.

All precision estimates are at the one sigma level.

Ages of individual steps do not include error in the irradiation parameter J.

No error is calculated for the total gas age.

$^{39}Ar_K$ gas quantities are in moles x 10^{-12}.

Figure 5A. Age spectrum for YN-Pville hornblende.

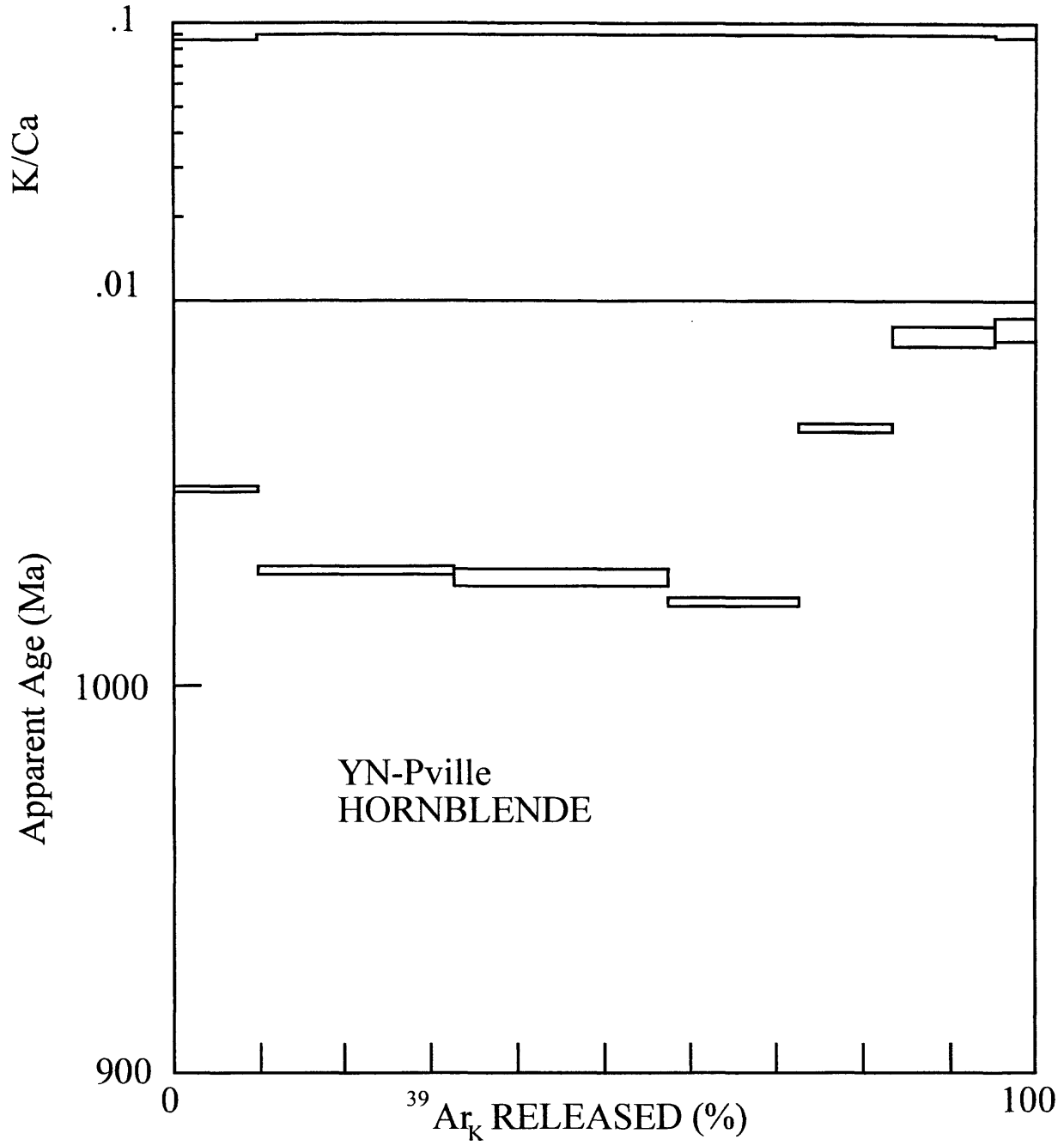
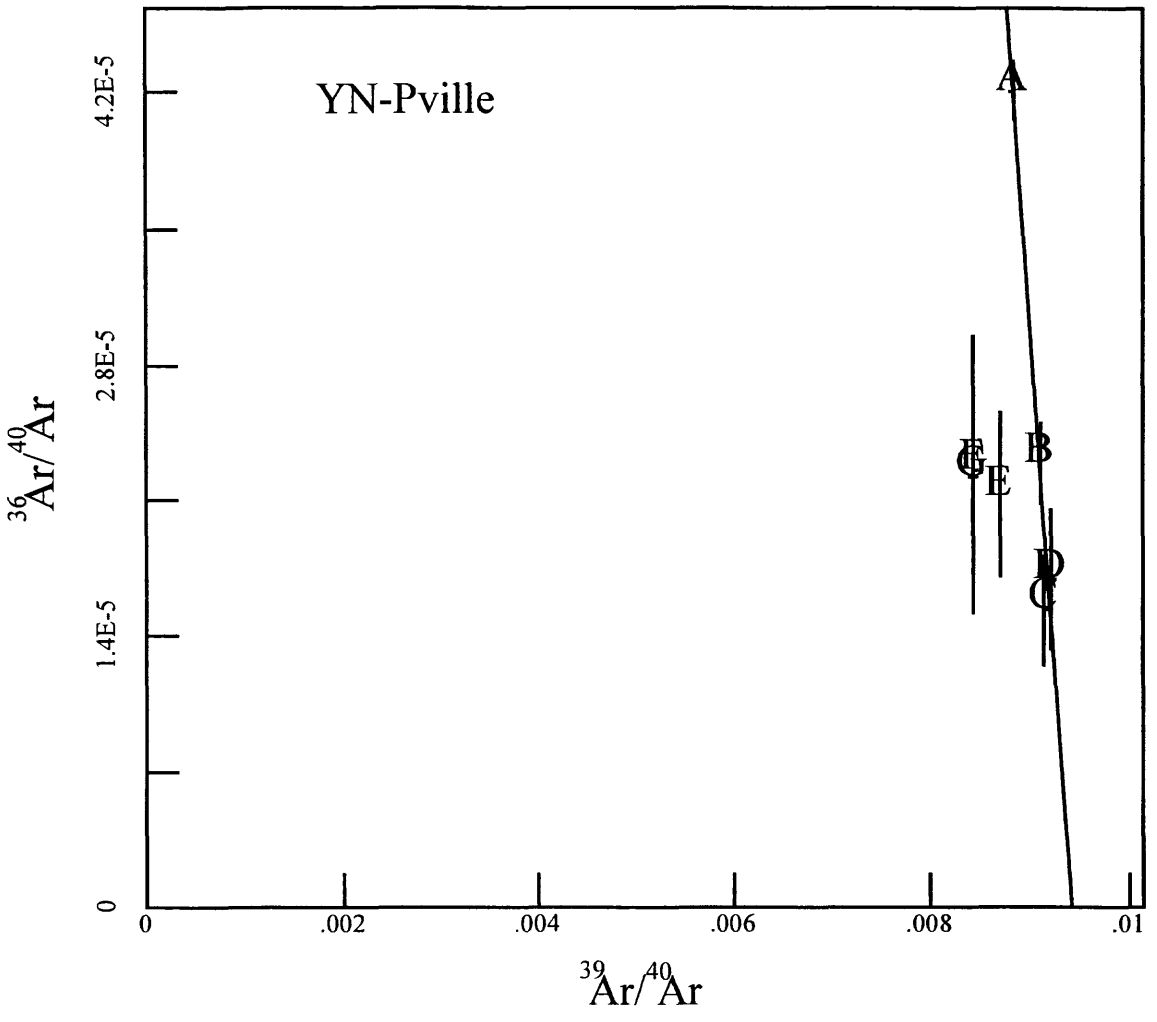


Figure 5B. Inverse isotope correlation diagram for YN-Pville hornblende. Points A,B,C,and D, which contain 72.7% of the ^{39}Ar released, were regressed. MSWD = 1.015, SUMS = 2.03, initial $^{40}Ar/^{36}Ar$ = 1526.9 ± 140.1, and apparent age = 1008.7 ± 5.4 Ma.



W/O POINTS EFG

Table 6A. LN-186 Phlogopite #36 RD77 v. 4/17/98 1:07:03 PM 9/14/1999

		RAW DATA						
File #	Temperature	^{40}Ar	^{39}Ar	^{38}Ar	^{37}Ar	^{36}Ar	Trap current	Manifold
31267	850	1008158	29012	423	0	53	200	EALL
	±	697	51	16	0	4		
31268	900	1316000	38302	508	0	37	200	EALL
	±	1471	38	9	0	11		
31269	925	896432	26112	343	0	27	200	EALL
	±	178	31	7	0	7		
31270	950	799087	23090	108	0	10	200	EALL
	±	402	47	38	0	3		
31271	1000	963766	27989	359	0	18	200	EALL
	±	402	28	11	0	10		
31272	1050	1371337	39841	531	0	29	200	EALL
	±	1938	41	10	0	7		
31273	1100	2739550	79831	1050	0	49	200	EALL
	±	1081	73	13	0	7		
31274	1150	3767261	109958	1439	0	72	200	EALL
	±	5024	119	10	0	4		
31275	1200	3300685	96490	1273	0	52	200	EALL
	±	1810	46	10	0	5		
31276	1250	939888	27436	374	0	12	200	EALL
	±	588	21	11	0	9		
31277	1450	441751	12733	91	0	7	200	EALL
	±	218	18	5	0	3		

All values are in counts. Measured $^{40}Ar/^{36}Ar$ = 296.7 ± 0.5

Precisions are at the 1 sigma level and are from linear regression statistics.

Trap current factors: 40 = 5.66 100 = 2.62 200 = 1

Manifold factors: All = 1 Split1 = 3.3 Split2 = 10.89

EAll = 2 Esplit1 = 6.6 Esplit2 = 21.78

Sensitivity = 1.00 X 10^{-17} moles/count. Reproducibility limit = .25 %. Detection limit = 40 counts.

Table 6B. LN-186 Phlogopite #36 RD77 v. 4/17/98 1:07:03 PM 9/14/1999

	CORRECTIONS									
Temp	^{39}Ar	^{37}Ar	-----	K-derived	-----	-----	Ca-derivec	-----	Cl-derived	initial
(°C)	decay	decay	^{40}Ar	^{38}Ar	^{37}Ar	^{39}Ar	^{38}Ar	^{36}Ar	^{36}Ar	^{38}Ar
850	79	0	165	390	0	0	0	0	0	10
900	104	0	218	515	0	0	0	0	0	7
925	71	0	149	351	0	0	0	0	0	5
950	63	0	132	311	0	0	0	0	0	2
1000	76	0	160	376	0	0	0	0	0	3
1050	109	0	227	536	0	0	0	0	0	5
1100	218	0	455	1074	0	0	0	0	0	9
1150	300	0	627	1479	0	0	0	0	0	14
1200	263	0	550	1298	0	0	0	0	0	10
1250	75	0	156	369	0	0	0	0	0	2
1450	35	0	73	171	0	0	0	0	0	1

All values are in counts and have been corrected for mass discrimination.

Table 6C. LN-186 Phlogopite #36 RD77 v. 4/17/98 1:07:03 PM 9/14/1999

	MOLAR VALUES								
Temperture	$^{40}Ar^*$	$^{39}Ar_K$	$^{38}Ar_{Cl}$	^{37}Ca	$^{36}Ar_i$	Apparent Age		Precision
(°C)						(Ma)		(Ma)
850	20.159856	0.582309	0.000876	0.000000	0.001064	406.89	±	0.50
900	26.315634	0.768768	0.000017	0.000000	0.000748	405.43	±	0.97
925	17.925672	0.524109	0.000000	0.000000	0.000539	404.95	±	0.86
950	15.979098	0.463453	0.000000	0.000000	0.000208	409.73	±	0.51
1000	19.272125	0.561787	0.000000	0.000000	0.000360	407.27	±	1.09
1050	27.422189	0.799660	0.000027	0.000000	0.000586	406.85	±	0.76
1100	54.781895	1.602327	0.000000	0.000000	0.000980	406.12	±	0.31
1150	75.332681	2.207012	0.000000	0.000000	0.001445	405.39	±	0.50
1200	66.002700	1.936686	0.000000	0.000000	0.001048	405.18	±	0.26
1250	18.794628	0.550672	0.000156	0.000000	0.000232	406.10	±	1.01
1450	8.833561	0.255566	0.000000	0.000000	0.000139	410.35	±	0.85

All gas quantities are in moles x 10^{-12}.

Ages calculated assuming an initial $^{40}Ar/^{36}Ar = 295.5 \pm 0$.

All precision estimates are at the one sigma level of precision.

Ages of individual steps do not include error in the irradiation parameter J.

Table 6D. LN-186 Phlogopite #36 RD77 v. 4/17/98 1:07:03 PM 9/14/1999

Temperature °C	% ^{39}Ar of total	Radiogenic Yield (%)	$^{39}Ar_K$	$^{40}Ar^*/^{39}Ar_K$	Apparent K/Ca	Apparent K/Cl	Apparent Age Ma		Precision Ma
J =007424	± 0.50 %				Sample wt =		0.0778 g		
850	5.7	98.4	0.582309	34.080	* * *	1610	406.89	±	0.50
900	7.5	99.2	0.768768	33.943	* * *	109769	405.43	±	0.97
925	5.1	99.1	0.524109	33.898	* * *	* * *	404.95	±	0.86
950	4.5	99.6	0.463453	34.346	* * *	* * *	409.73	±	0.51
1000	5.5	99.4	0.561787	34.116	* * *	* * *	407.27	±	1.09
1050	7.8	99.4	0.799660	34.076	* * *	72594	406.85	±	0.76
1100	15.6	99.5	1.602327	34.008	* * *	* * *	406.12	±	0.31
1150	21.5	99.4	2.207012	33.940	* * *	* * *	405.39	±	0.50
1200	18.9	99.5	1.936686	33.920	* * *	* * *	405.18	±	0.26
1250	5.4	99.6	0.550672	34.006	* * *	8531	406.10	±	1.01
1450	2.5	99.5	0.255566	34.404	* * *	* * *	410.35	±	0.85
Total Gas	100.0	99.4	10.252349	34.007	* * *	14443	406.11		

74.7% of gas on plateau in 1000 through 1250 steps Plateau Age =405.72 ± 2.03

Ages calculated assuming an initial $^{40}Ar/^{36}Ar$ = 295.5± 0.

All precision estimates are at the one sigma level.

Ages of individual steps do not include error in the irradiation parameter J.

No error is calculated for the total gas age.

$^{39}Ar_K$ gas quantities are in moles x 10^{-12}.

*** Below detection limit.

Figure 6A. Age spectrum for Ln-186 phlogopite.

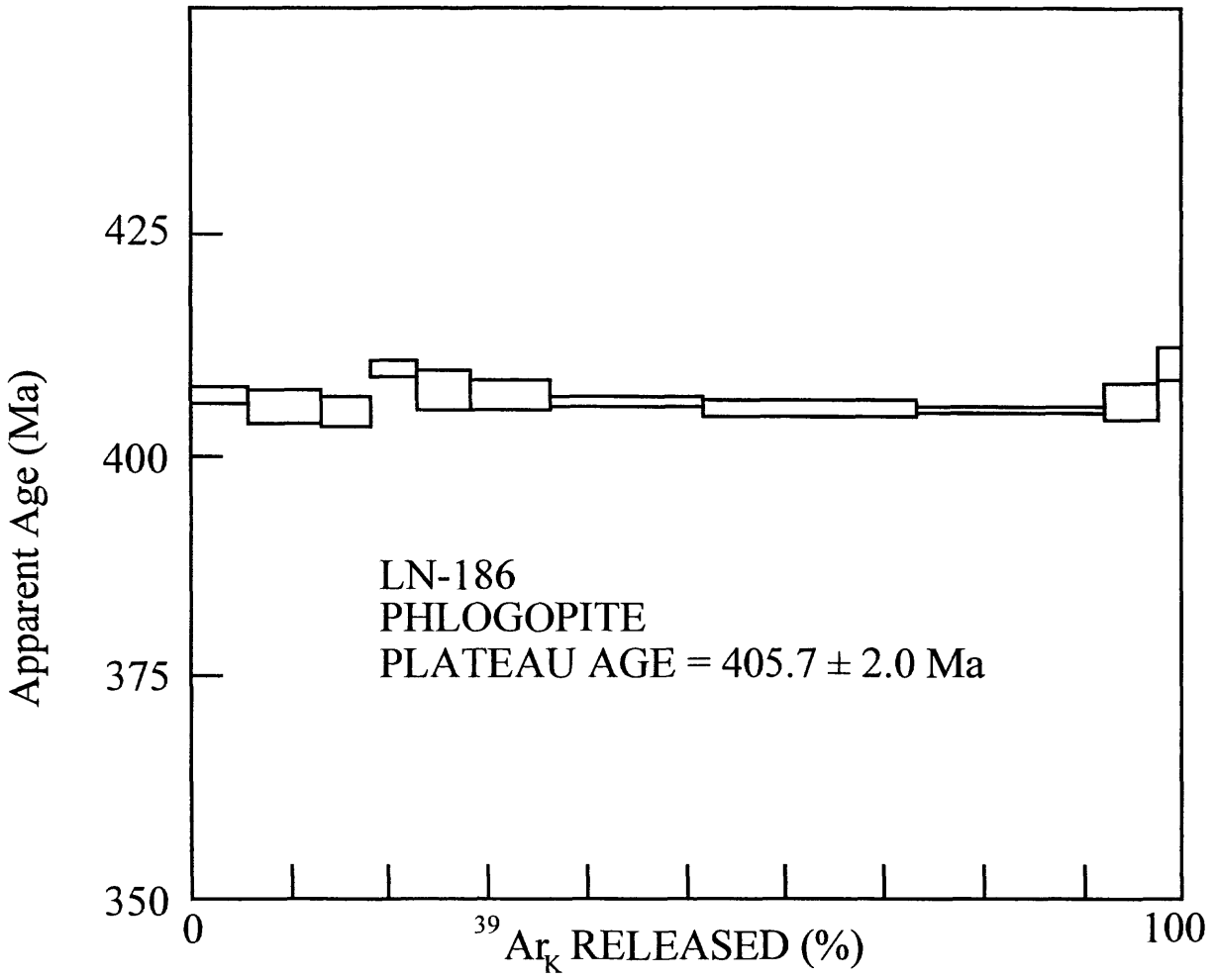


Figure 6B. Inverse isotope correlation diagram for RR89-28 biotite. All points which contain 100% of the ^{39}Ar released, were regressed. MSWD = 0.803, SUMS = 7.288, initial $^{40}Ar/^{36}Ar$ = 395.74 ± 685.22, and apparent age = 404.7 ± 2.3 Ma.

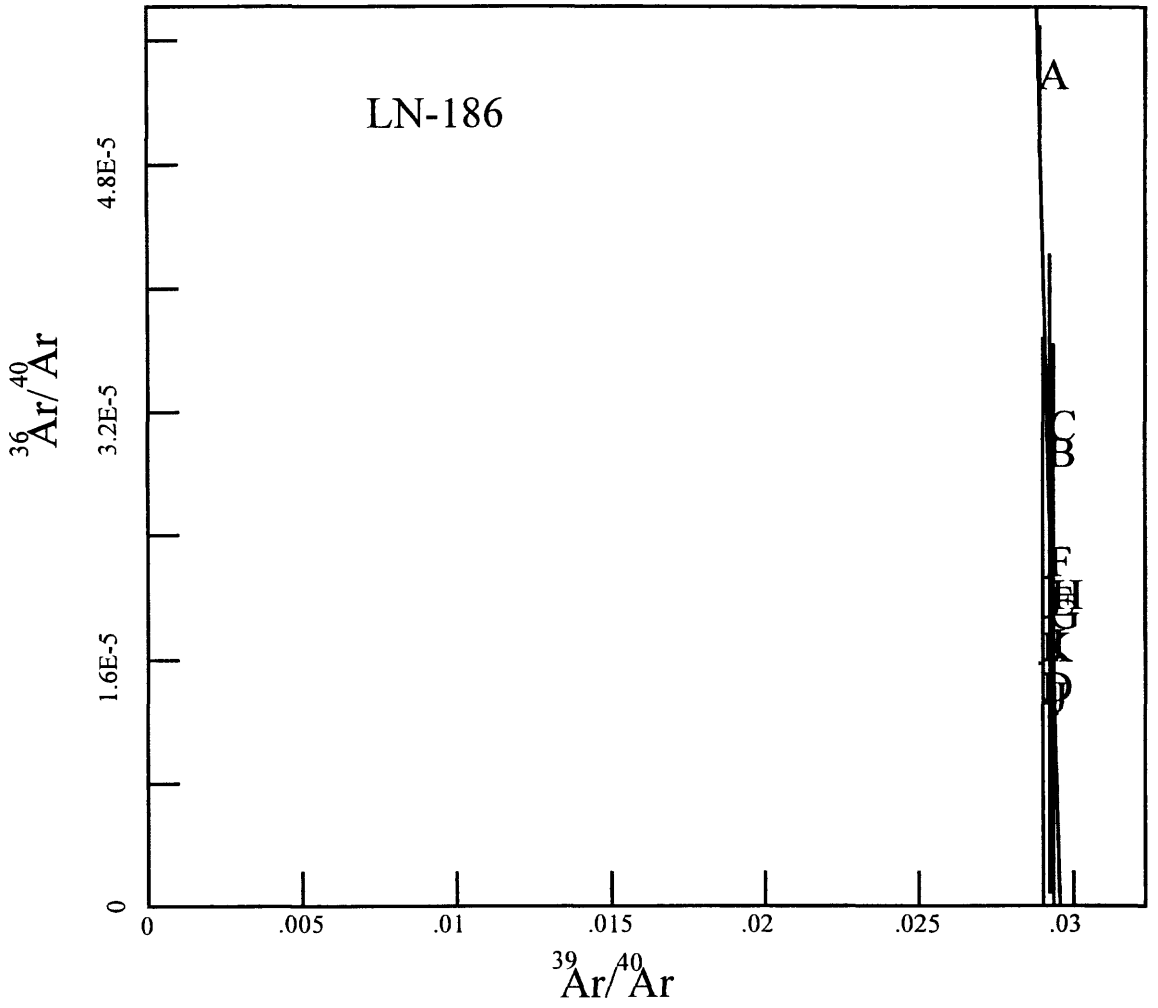


Table 7A. K92-7-15B Phlogopite #11RD93 v. 4/17/98 2:18:24 PM 9/14/1999

		RAW DATA						
File #	Temperature	^{40}Ar	^{39}Ar	^{38}Ar	^{37}Ar	^{36}Ar	Trap current	Manifold
35630	850	1586752	42035	621	3672	334	200	EALL
	±	565	13	8	8	2		
35631	900	2052681	56764	837	157	280	200	EALL
	±	652	14	7	19	7		
35632	925	1133461	31438	449	63	129	200	EALL
	±	229	14	9	7	7		
35633	950	606946	16544	158	49	76	200	EALL
	±	263	13	10	11	5		
35634	1000	700138	18720	121	95	144	200	EALL
	±	561	34	40	2	6		
35635	1050	1181176	31422	487	129	287	200	EALL
	±	417	12	18	13	2		
35636	1100	1450354	39153	583	112	276	200	EALL
	±	1670	60	10	7	4		
35637	1125	937140	25836	399	97	158	200	EALL
	±	730	16	7	14	9		
35638	1150	865558	24123	359	85	143	200	EALL
	±	401	8	10	14	7		
35639	1200	1734023	48792	695	93	212	200	EALL
	±	751	34	11	7	2		
35640	1250	1560855	44163	635	137	123	200	EALL
	±	1490	28	15	16	4		
35641	1450	274575	7603	69	69	46	200	EALL
	±	156	2	11	6	10		

All values are in counts. Measured $^{40}Ar/^{36}Ar = 297.2 \pm 0.5$

Precisions are at the 1 sigma level and are from linear regression statistics.

Trap current factors: 40 = 5.66 100 = 2.62 200 = 1

Manifold factors: All = 1 Split1 = 3.3 Split2 = 10.89

EAll = 2 Esplit1 = 6.6 Esplit2 = 21.78

Sensitivity = 1.3604 X 10^{-17}moles/count. Reproducibility limit = .25 %. Detection limit = 40 counts.

Table 7B. K92-7-15B Phlogopite #11RD93 v. 4/17/98 2:18:24 PM 9/14/1999

	CORRECTIONS									
Temp (°C)	^{39}Ar decay	^{37}Ar decay	----- ^{40}Ar	K-derived ^{38}Ar	----- ^{37}Ar	----- ^{39}Ar	Ca-derivec ^{38}Ar	----- ^{36}Ar	Cl-derived ^{36}Ar	initial ^{38}Ar
850	14	5763	239	564	0	6	0	3	0	62
900	19	247	323	762	0	0	0	0	0	53
925	11	99	179	422	0	0	0	0	0	24
950	6	77	94	222	0	0	0	0	0	14
1000	6	150	107	251	0	0	0	0	0	27
1050	11	203	179	422	0	0	0	0	0	54
1100	13	176	223	526	0	0	0	0	0	52
1125	9	153	147	347	0	0	0	0	0	30
1150	8	134	137	324	0	0	0	0	0	27
1200	17	147	278	655	0	0	0	0	0	40
1250	15	217	251	593	0	0	0	0	0	23
1450	3	108	43	102	0	0	0	0	0	9

All values are in counts and have been corrected for mass discrimination.

Table 7C. K92-7-15B Phlogopite #11RD93 v. 4/17/98 2:18:24 PM 9/14/1999

	MOLAR VALUES							
Temperture (°C)	$^{40}Ar^*$	$^{39}Ar_K$	$^{38}Ar_{Cl}$	^{37}Ca	$^{36}Ar_i$	Apparent Age (Ma)		Precision (Ma)
850	114.355841	3.034778	0.008695	0.683052	0.023997	423.19	±	0.22
900	147.933989	4.098811	0.009337	0.029277	0.020283	415.54	±	0.43
925	81.686974	2.270094	0.003819	0.011707	0.009359	416.99	±	0.76
950	43.741913	1.194570	0.000000	0.009090	0.005492	422.26	±	0.95
1000	50.458246	1.351736	0.000000	0.017704	0.010401	420.09	±	1.10
1050	85.126290	2.268929	0.008655	0.024008	0.020786	417.48	±	0.23
1100	104.525438	2.827156	0.007973	0.020863	0.020015	418.22	±	0.57
1125	67.538466	1.865537	0.005964	0.018114	0.011450	412.96	±	1.16
1150	62.379514	1.741864	0.004543	0.015896	0.010387	409.31	±	0.93
1200	124.968387	3.523170	0.005926	0.017342	0.015393	410.70	±	0.20
1250	112.488283	3.188898	0.004830	0.025595	0.008921	413.59	±	0.46
1450	19.788213	0.548967	0.000000	0.012813	0.003316	411.59	±	4.25

All gas quantities are in moles x 10^{-12}.

Ages calculated assuming an initial $^{40}Ar/^{36}Ar = 295.5 \pm 0$.

All precision estimates are at the one sigma level of precision.

Ages of individual steps do not include error in the irradiation parameter J.

Table 7D. K92-7-15B Phlogopite #11RD93 v. 4/17/98 2:18:24 PM 9/14/1999

Temperature °C	% ^{39}Ar of total	Radiogenic Yield (%)	$^{39}Ar_K$	$^{40}Ar^*/^{39}Ar_K$	Apparent K/Ca	Apparent K/Cl	Apparent Age Ma		Precision Ma
J = 0.007480 ± 0.05%						Sample wt =	0.1017g		
850	10.9	93.8	3.034778	35.345	2.3	845	423.19	±	0.22
900	14.7	95.9	4.098811	34.630	72.8	1062	415.54	±	0.43
925	8.1	96.6	2.270094	34.766	100.8	1438	416.99	±	0.76
950	4.3	96.3	1.194570	35.259	68.3	* * *	422.26	±	0.95
1000	4.8	93.9	1.351736	35.055	39.7	* * *	420.09	±	1.10
1050	8.1	92.8	2.268929	34.811	49.1	634	417.48	±	0.23
1100	10.1	94.3	2.827156	34.880	70.5	858	418.22	±	0.57
1125	6.7	95.0	1.865537	34.389	53.6	757	412.96	±	1.16
1150	6.2	95.1	1.741864	34.050	57.0	928	409.31	±	0.93
1200	12.6	96.4	3.523170	34.179	105.6	1439	410.70	±	0.20
1250	11.4	97.7	3.188898	34.448	64.8	1598	413.59	±	0.46
1450	2.0	95.0	0.548967	34.261	22.3	* * *	411.59	±	4.25
Total Gas	100.0	95.4	27.914510	34.669	63.4	976	415.96		

No age plateau

Ages calculated assuming an initial $^{40}Ar/^{36}Ar = 295.5 \pm 0$.

All precision estimates are at the one sigma level.

Ages of individual steps do not include error in the irradiation parameter J.

No error is calculated for the total gas age.

$^{39}Ar_K$ gas quantities are in moles x 10^{-12}.

Figure 7A. Age spectrum for K92-7-15B phlogopite.

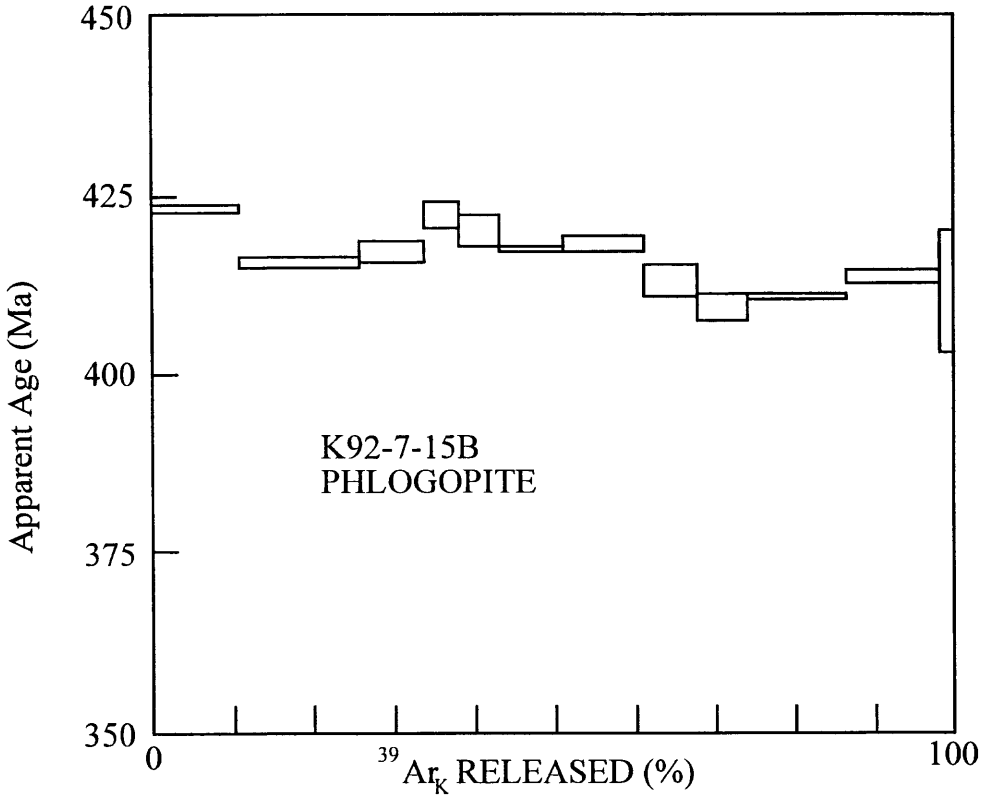
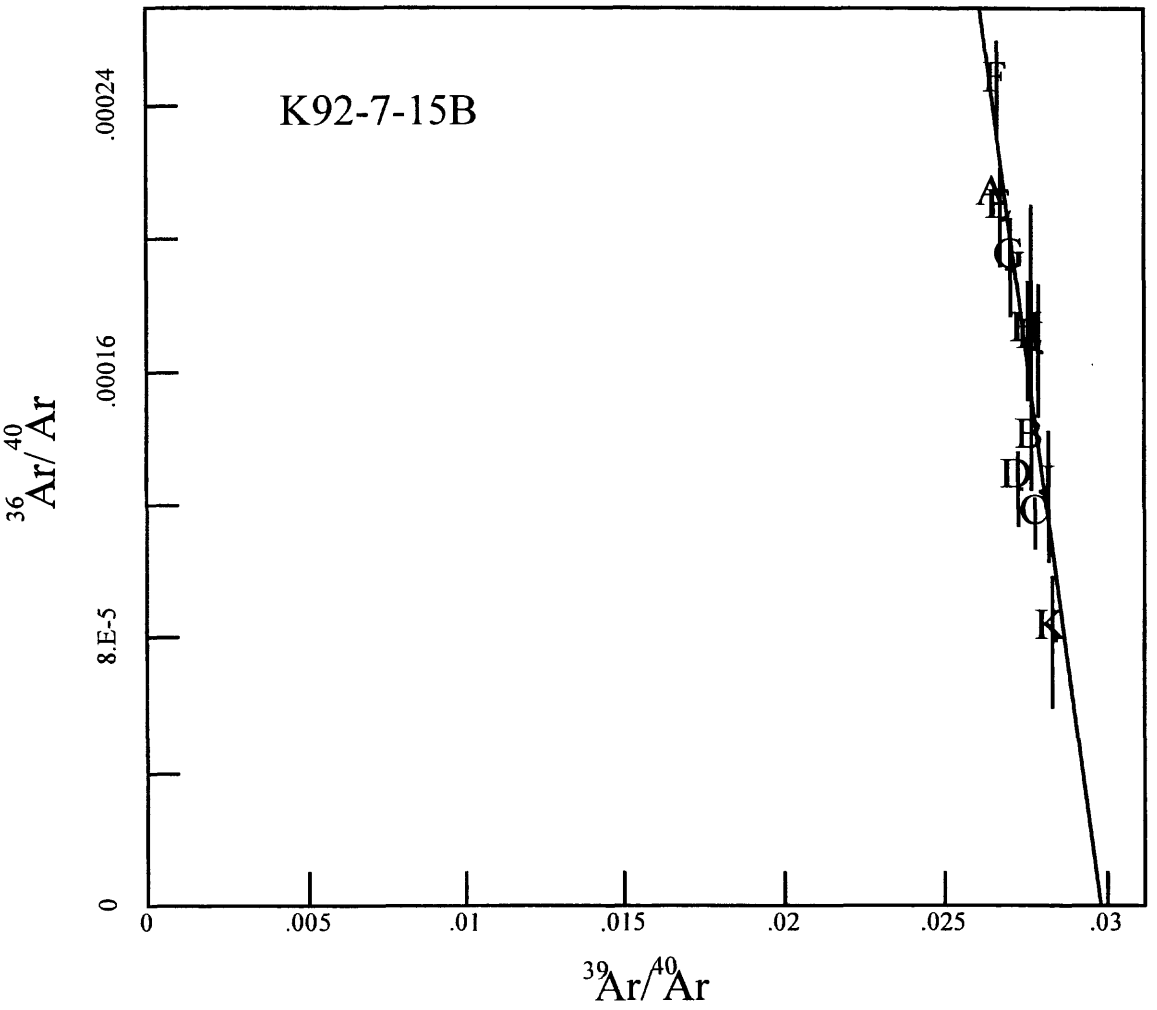


Figure 7B. Inverse isotope correlation diagram for K92-7-15B phlogopite. Points D,E,F,G,H,I,J,K, and L, which contain 62.0% of the ^{39}Ar released, were regressed. MSWD = 1.151, SUMS = 6.909, initial $^{40}Ar/^{36}Ar$ = 459.97 ± 58.65, and apparent age = 403.8 ± 4.7 Ma.



W/O POINTS ABCD

Table 8A. BR-138 Muscovite #46 RD72 v. 4/17/98 11:29:28 AM 9/14/1999

		RAW DATA						
File #	Temperature	^{40}Ar	^{39}Ar	^{38}Ar	^{37}Ar	^{36}Ar	Trap current	Manifold
26472	900	1646559	80492	972	0	122	200	ALL
	±	455	60	23	0	4		
26473	950	989289	51131	561	0	39	200	ALL
	±	431	3	15	0	2		
26474	1000	1624965	83152	882	0	34	200	ALL
	±	1140	53	24	0	4		
26475	1025	1871118	94674	1030	0	36	200	ALL
	±	1375	92	18	0	6		
26476	1050	1814471	91332	908	0	34	200	ALL
	±	1034	85	32	0	4		
26478	1100	2679652	132888	1721	0	41	200	ALL
	±	1841	111	15	0	4		
26479	1150	1706138	82723	866	0	22	200	ALL
	±	1477	35	7	0	7		
26480	1200	1042259	49745	537	0	25	200	ALL
	±	339	47	15	0	3		

All values are in counts. Measured $^{40}Ar/^{36}Ar = 295.7 \pm 0.5$

Precisions are at the 1 sigma level and are from linear regression statistics.

Trap current factors: 40 = 5.66 100 = 2.62 200 = 1

Manifold factors: All = 1 Split1 = 3.3 Split2 = 10.89

EAll = 2 Esplit1 = 6.6 Esplit2 = 21.78

Sensitivity = 1.344 X 10^{-17} moles/count. Reproducibility limit = .25 %. Detection limit = 40 counts.

Table 8B. BR-138 Muscovite #46 RD72 v. 4/17/98 11:29:28 AM 9/14/1999

			CORRECTIONS							
Temp	^{39}Ar	^{37}Ar	-----	K-derived	-----	-----	Ca-derivec	-----	Cl-derived	initial
(°C)	decay	decay	^{40}Ar	^{38}Ar	^{37}Ar	^{39}Ar	^{38}Ar	^{36}Ar	^{36}Ar	^{38}Ar
900	127	0	459	1082	0	0	0	0	0	23
950	81	0	291	687	0	0	0	0	0	7
1000	132	0	474	1118	0	0	0	0	0	6
1025	150	0	539	1272	0	0	0	0	0	7
1050	145	0	520	1228	0	0	0	0	0	6
1100	211	0	757	1786	0	0	0	0	0	8
1150	131	0	471	1112	0	0	0	0	0	4
1200	79	0	283	669	0	0	0	0	0	5

All values are in counts and have been corrected for mass discrimination.

Table 8C. BR-138 Muscovite #46 RD72 v. 4/17/98 11:29:28 AM 9/14/1999

	MOLAR VALUES						
Temperture (°C)	$^{40}Ar^*$	$^{39}Ar_K$	$^{38}Ar_{Cl}$	^{37}Ca	$^{36}Ar_i$	Apparent Age (Ma)	Precision (Ma)
900	22.123592	1.085084	0	0	0.001654	325.97 ±	0.24
950	13.292130	0.689275	0	0	0.000533	312.72 ±	0.19
1000	21.833160	1.120937	0	0	0.000459	317.25 ±	0.31
1025	25.140583	1.276264	0	0	0.000486	320.69 ±	0.37
1050	24.379497	1.231221	0	0	0.000460	322.26 ±	0.25
1100	36.004342	1.791416	0	0	0.000549	327.01 ±	0.24
1150	22.924155	1.115156	0	0	0.000297	334.03 ±	0.45
1200	14.004155	0.670599	0	0	0.000335	337.85 ±	0.32

All gas quantities are in moles x 10^{-12}.

Ages calculated assuming an initial $^{40}Ar/^{36}Ar = 295.5 \pm 0$.

All precision estimates are at the one sigma level of precision.

Ages of individual steps do not include error in the irradiation parameter J.

Table 8D. BR-138 Muscovite #46 RD72 v. 4/17/98 11:29:28 AM 9/14/1999

Temperature °C	% ^{39}Ar of total	Radiogenic Yield (%)	$^{39}Ar_K$	$^{40}Ar^*/^{39}Ar_K$	Apparent K/Ca	Apparent K/Cl	Apparent Age Ma	Precision Ma
J = 0.009933 ± 0.05%					Sample wt = 0.2686 g			
900	12.100	97.800	1.085084	19.938	* * *	* * *	325.97 ±	0.24
950	7.700	98.800	0.689275	19.056	* * *	* * *	312.72 ±	0.19
1000	12.500	99.400	1.120937	19.357	* * *	* * *	317.25 ±	0.31
1025	14.200	99.400	1.276264	19.586	* * *	* * *	320.69 ±	0.37
1050	13.700	99.400	1.231221	19.691	* * *	* * *	322.26 ±	0.25
1100	19.900	99.500	1.791416	20.008	* * *	* * *	327.01 ±	0.24
1150	12.400	99.600	1.115156	20.478	* * *	* * *	334.03 ±	0.45
1200	7.500	99.300	0.670599	20.735	* * *	* * *	337.85 ±	0.32
Total Gas	100.000	99.200	8.979952	19.854	* * *	* * *	324.71	

No age plateau

Ages calculated assuming an initial $^{40}Ar/^{36}Ar = 295.5 \pm 0$.

All precision estimates are at the one sigma level.

Ages of individual steps do not include error in the irradiation parameter J.

No error is calculated for the total gas age.

$^{39}Ar_K$ gas quantities are in moles x 10^{-12}.

*** Below detection limit.

Figure 8. Age spectrum for BR-873 muscovite.

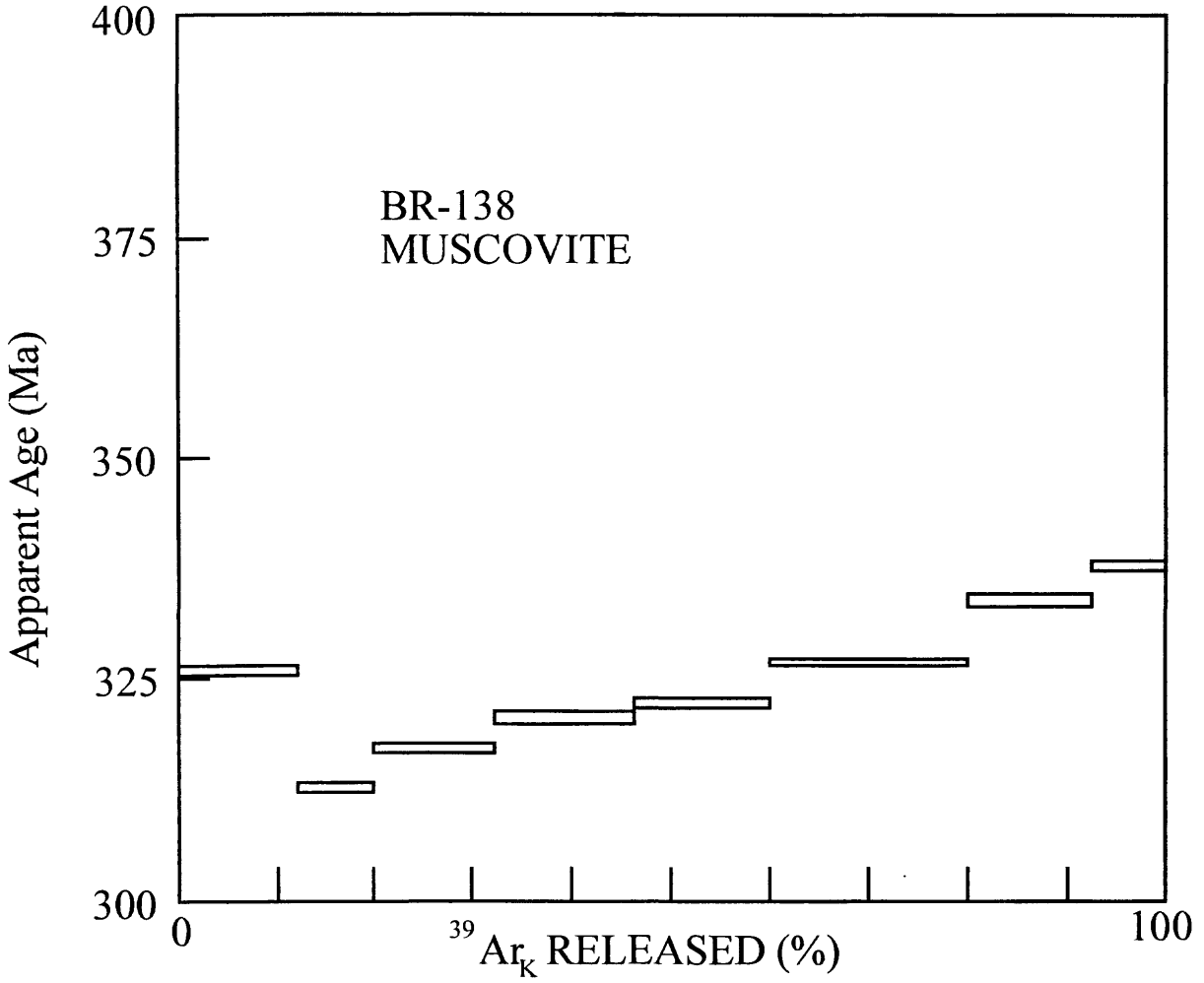


Table 9A. BR-873 Muscovite #49 RD 74 v. 4/17/98 10:35:04 AM 9/14/1999

		RAW DATA						
File #	Temperature	^{40}Ar	^{39}Ar	^{38}Ar	^{37}Ar	^{36}Ar	Trap current	Manifold
25198	900	915478	36428	539	3	195	200	ALL
	±	596	32	14	6	7		
25199	950	1155025	45520	564	0	161	200	ALL
	±	884	29	22	6	3		
25200	1025	1651781	65073	794	4	70	200	SPLIT 1
	±	440	56	20	4	3		
25201	1025	1986977	77844	971	0	130	200	ALL
	±	1599	75	9	6	3		
25203	1050	1513314	59164	755	0	149	200	ALL
	±	609	23	10	8	4		
25204	1100	1472675	58278	722	19	124	200	ALL
	±	646	33	3	7	6		
25205	1150	1843529	73235	908	88	111	200	ALL
	±	1817	58	5	8	4		
25207	1200	3470535	136746	1772	249	127	200	ALL
	±	1536	64	9	6	8		
25209	1250	2718429	104187	1396	69	220	200	ALL
	±	1205	39	8	8	3		

All values are in counts. Measured $^{40}Ar/^{36}Ar = 296.5 \pm 0.5$

Precisions are at the 1 sigma level and are from linear regression statistics.

Trap current factors: 40 = 3.57 100 = 2.15 200 = 1

Manifold factors: All = 1 Split1 = 4.2 Split2 = 10.89

EAll = 2 Esplit1 = 6.6 Esplit2 = 21.78

Sensitivity = 2.15 X 10^{-17} moles/count. Reproducibility limit = .25 %. Detection limit = 40 counts.

Table 9B. BR-873 Muscovite #49 RD 74 v. 4/17/98 10:35:04 AM 9/14/1999

			CORRECTIONS							
Temp	^{39}Ar	^{37}Ar	-----	K-derived	----	----	Ca-derivec	----	Cl-derived	initial
(°C)	decay	decay	^{40}Ar	^{38}Ar	^{37}Ar	^{39}Ar	^{38}Ar	^{36}Ar	^{36}Ar	^{38}Ar
900	14	7	207	489	0	0	0	0	0	37
950	18	0	259	611	0	0	0	0	0	30
1025	25	7	370	873	0	0	0	0	0	13
1025	30	0	443	1044	0	0	0	0	0	24
1050	23	0	336	794	0	0	0	0	0	28
1100	23	37	331	782	0	0	0	0	0	23
1150	28	171	416	983	0	0	0	0	0	21
1200	53	487	778	1835	0	0	0	0	0	24
1250	41	135	593	1398	0	0	0	0	0	41

All values are in counts and have been corrected for mass discrimination.

Table 9C. BR-873 Muscovite #49 RD 74 v. 4/17/98 10:35:04 AM 9/14/1999

	MOLAR VALUES							
Temperature (°C)	$^{40}Ar^*$	$^{39}Ar_K$	$^{38}Ar_{Cl}$	^{37}Ca	$^{36}Ar_i$	Apparent Age (Ma)		Precision (Ma)
900	19.678318	0.784171	0.001896	0.000219	0.004211	323.00	±	0.75
950	24.827467	0.979894	0.000000	0.000000	0.003479	332.79	±	0.37
1025	149.122436	5.883333	0.000000	0.000991	0.006377	342.01	±	0.20
1025	42.710481	1.675705	0.000000	0.000000	0.002815	341.58	±	0.30
1050	32.529025	1.273589	0.000000	0.000000	0.003209	339.15	±	0.30
1100	31.655390	1.254525	0.000000	0.001202	0.002679	336.72	±	0.39
1150	39.626914	1.576485	0.000000	0.005586	0.002399	337.77	±	0.36
1200	74.599780	2.943658	0.000000	0.015874	0.002738	342.52	±	0.26
1250	58.433487	2.242784	0.000891	0.004409	0.004738	347.02	±	0.19

All gas quantities are in moles x 10^{-12}.

Ages calculated assuming an initial $^{40}Ar/^{36}Ar$ = 295.5± 0.

All precision estimates are at the one sigma level of precision.

Ages of individual steps do not include error in the irradiation parameter J.

Table 9D. BR-873 Muscovite #49 RD 74 v. 4/17/98 10:35:04 AM 9/14/1999

Temperature °C	% ^{39}Ar of total	Radiogenic Yield (%)	$^{39}Ar_K$	$^{40}Ar^*/^{39}Ar_K$	Apparent K/Ca	Apparent K/Cl	Apparent Age Ma		Precision Ma
J =0.008341 ± 0.25%					Sample wt = 0.0743				
900	4.2	93.7	0.784171	23.508	1858.4	1001	323.00	±	0.75
950	5.3	95.9	0.979894	24.288	* * *	* * *	332.79	±	0.37
1025	31.6	98.7	5.883333	25.026	3088.2	* * *	342.01	±	0.20
1025	9.0	98.1	1.675705	24.992	* * *	* * *	341.58	±	0.30
1050	6.8	97.1	1.273589	24.797	* * *	* * *	339.15	±	0.30
1100	6.7	97.5	1.254525	24.602	542.7	* * *	336.72	±	0.39
1150	8.5	98.2	1.576485	24.687	146.8	* * *	337.77	±	0.36
1200	15.8	98.9	2.943658	25.068	96.4	* * *	342.52	±	0.26
1250	12.0	97.6	2.242784	25.430	264.5	6090	347.02	±	0.19
Total Gas	100.0	98.0	18.614144	24.902	1150.5	776	340.46		

NO PLATEAU

Ages calculated assuming an initial $^{40}Ar/^{36}Ar$ = 295.5± 0.

All precision estimates are at the one sigma level.

Ages of individual steps do not include error in the irradiation parameter J.

No error is calculated for the total gas age.

$^{39}Ar_K$ gas quantities are in moles x 10^{-12}.

*** Below detection limit.

Figure 9. Age spectrum for BR873 muscovite.

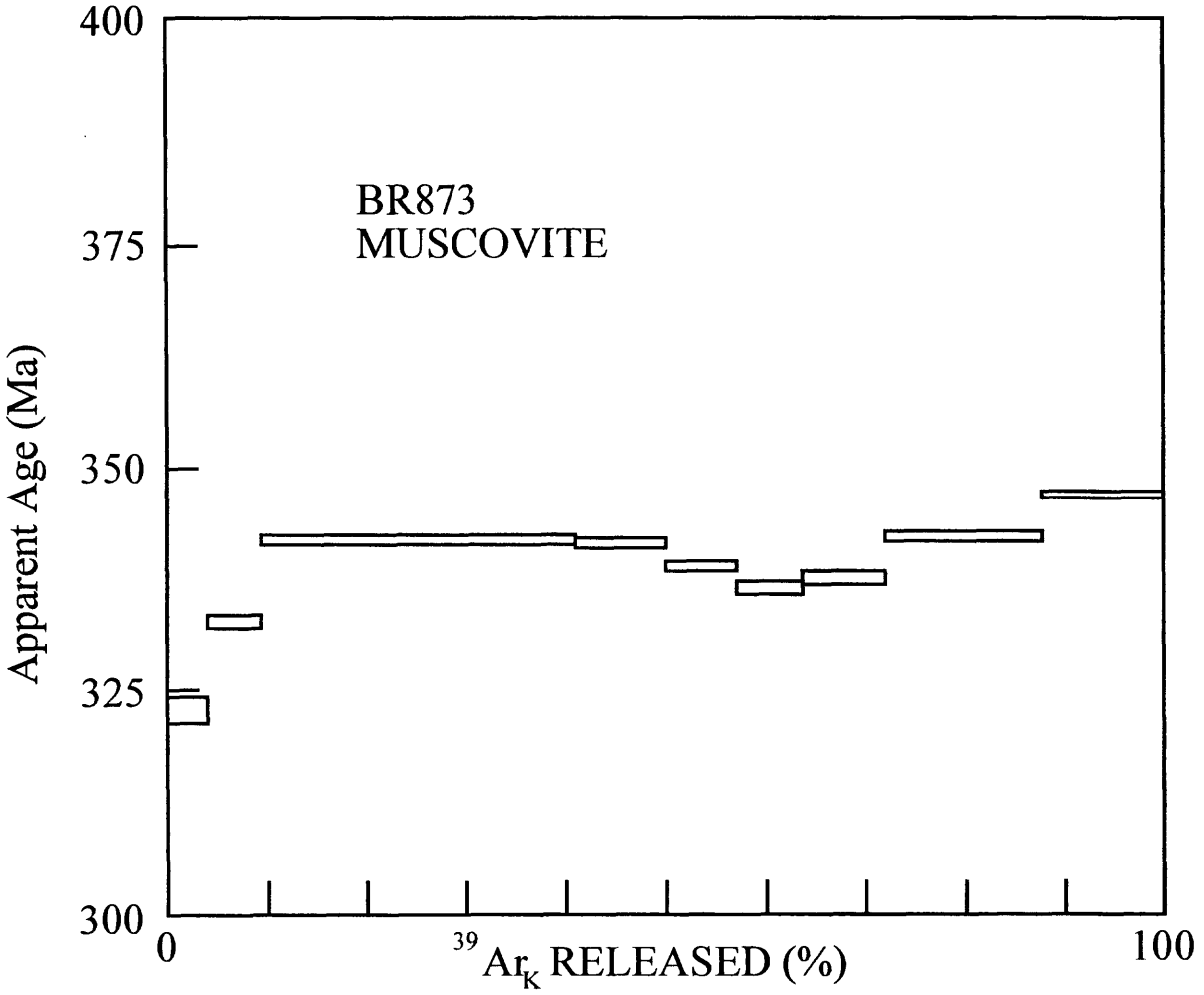


Table 10A. BR-904 MUSCOVITE #51RD87 v 4/17/98 13:28:54 14 Sep 1999

				RAW DATA				
File #	Temperature	^{40}Ar	^{39}Ar	^{38}Ar	^{37}Ar	^{36}Ar	Trap current	Manifold
32969	850	1107530	51857	696	0	88	200	EALL
	±	894	50	19	16	5		
32970	900	2602122	113420	1438	0	40	200	EALL
	±	2628	106	3	18	4		
32971	950	4485784	193036	2432	0	50	200	EALL
	±	3027	129	12	23	4		
32972	1000	2225805	96496	1222	0	26	200	EALL
	±	3591	179	13	20	12		
32973	1050	2634300	112618	1419	0	31	200	EALL
	±	1848	83	10	12	7		
32974	1100	4098575	174596	2206	0	19	200	EALL
	±	3162	60	13	29	8		
32975	1150	915235	38378	487	1	9	200	EALL
	±	358	4	17	10	5		
32976	1200	319084	13011	78	8	5	200	EALL
	±	24	20	15	15	5		
32977	1250	129120	5020	42	27	6	200	EALL

All values are in counts. Measured $^{40}Ar/^{36}Ar$ = 297.2 ± 0.5

Precisions are at the 1 sigma level and are from linear regression statistics.

Trap current factors: 40 = 5.66 100 = 2.62 200 = 1

Manifold factors: All = 1 Split1 = 3.3 Split2 = 10.89

EAll = 2 Esplit1 = 6.6 Esplit2 = 21.78

Sensitivity = 1.00 X 10^{-17} moles/count. Reproducibility limit = .25 %. Detection limit = 40 counts.

Table 10B. BR-904 MUSCOVITE #51RD87 v 4/17/98 13:28:54 14 Sep 1999

				CORRECTIONS						
Temp	^{39}Ar	^{37}Ar	-----	K-derived	-----	----	Ca-derivec	-----	Cl-derived	initial
(°C)	decay	decay	^{40}Ar	^{38}Ar	^{37}Ar	^{39}Ar	^{38}Ar	^{36}Ar	^{36}Ar	^{38}Ar
850	22	0	295	696	0	0	0	0	0	17
900	49	0	645	1523	0	0	0	0	0	8
950	84	0	1098	2592	0	0	0	0	0	9
1000	42	0	549	1295	0	0	0	0	0	5
1050	49	0	641	1512	0	0	0	0	0	6
1100	76	0	994	2344	0	0	0	0	0	4
1150	17	2	218	515	0	0	0	0	0	2
1200	6	19	74	175	0	0	0	0	0	1
1250	2	64	29	67	0	0	0	0	0	1

All values are in counts and have been corrected for mass discrimination.

Table 10C. BR-904 MUSCOVITE #51RD87 v 4/17/98 13:28:54 14 Sep 1999

			MOLAR VALUES					
Temperture (°C)	$^{40}Ar^*$	$^{39}Ar_K$	$^{38}Ar_{Cl}$	^{37}Ca	$^{36}Ar_i$	Apparent Age (Ma)		Precision (Ma)
850	22.144690	1.039087	0.000362	0.000000	0.001776	311.39	±	0.44
900	52.029529	2.272636	0.000000	0.000000	0.000803	338.44	±	0.35
950	89.693717	3.867938	0.000000	0.000000	0.001009	342.80	±	0.23
1000	44.505118	1.933530	0.000000	0.000000	0.000517	340.46	±	0.70
1050	52.673190	2.256574	0.000000	0.000000	0.000626	344.80	±	0.34
1100	81.951624	3.498457	0.000000	0.000000	0.000382	346.59	±	0.31
1150	18.300325	0.769005	0.000000	0.000046	0.000184	351.09	±	0.55
1200	6.380206	0.260698	0.000000	0.000550	0.000101	359.57	±	1.60
1250	2.581830	0.100595	0.000000	0.001830	0.000112	372.60	±	7.27

All gas quantities are in moles x 10^{-12}.

Ages calculated assuming an initial $^{40}Ar/^{36}Ar$ = 295.5± 0.

All precision estimates are at the one sigma level of precision.

Ages of individual steps do not include error in the irradiation parameter J.

No error is calculated for the total gas age.

Table 10D. BR-904 MUSCOVITE #51RD87 v 4/17/98 13:28:54 14 Sep 1999

Temperature °C	% ^{39}Ar of total	Radiogenic Yield (%)	$^{39}Ar_K$	$^{40}Ar^*/^{39}Ar_K$	Apparent K/Ca	Apparent K/Cl	Apparent Age Ma		Precision Ma
J = 009055 ± 0.5%					Sample wt = 0.1026 g				
850	6.5	97.6	1.039087	20.807	***	6939	311.39	±	0.44
900	14.2	99.5	2.272636	22.789	***	***	338.44	±	0.35
950	24.2	99.7	3.867938	23.112	***	***	342.80	±	0.23
1000	12.1	99.7	1.933530	22.939	***	***	340.46	±	0.70
1050	14.1	99.6	2.256574	23.260	***	***	344.80	±	0.34
1100	21.9	99.9	3.498457	23.393	***	***	346.59	±	0.31
1150	4.8	99.7	0.769005	23.727	8688.61	***	351.09	±	0.55
1200	1.6	99.5	0.260698	24.359	246.50	***	359.57	±	1.60
1250	0.6	98.7	0.100595	25.336	28.59	***	372.60	±	7.27
Total Gas	100.0	99.5	0.000000	23.042	421.84	451	341.85		

NO PLATEAU

Ages calculated assuming an initial $^{40}Ar/^{36}Ar$ = 295.5± 0.

All precision estimates are at the one sigma level.

Ages of individual steps do not include error in the irradiation parameter J.

No error is calculated for the total gas age.

$^{39}Ar_K$ gas quantities are in moles x 10^{-12}.

*** Below detection limit.

Figure 10. Age spectrum for BR-904 muscovite.

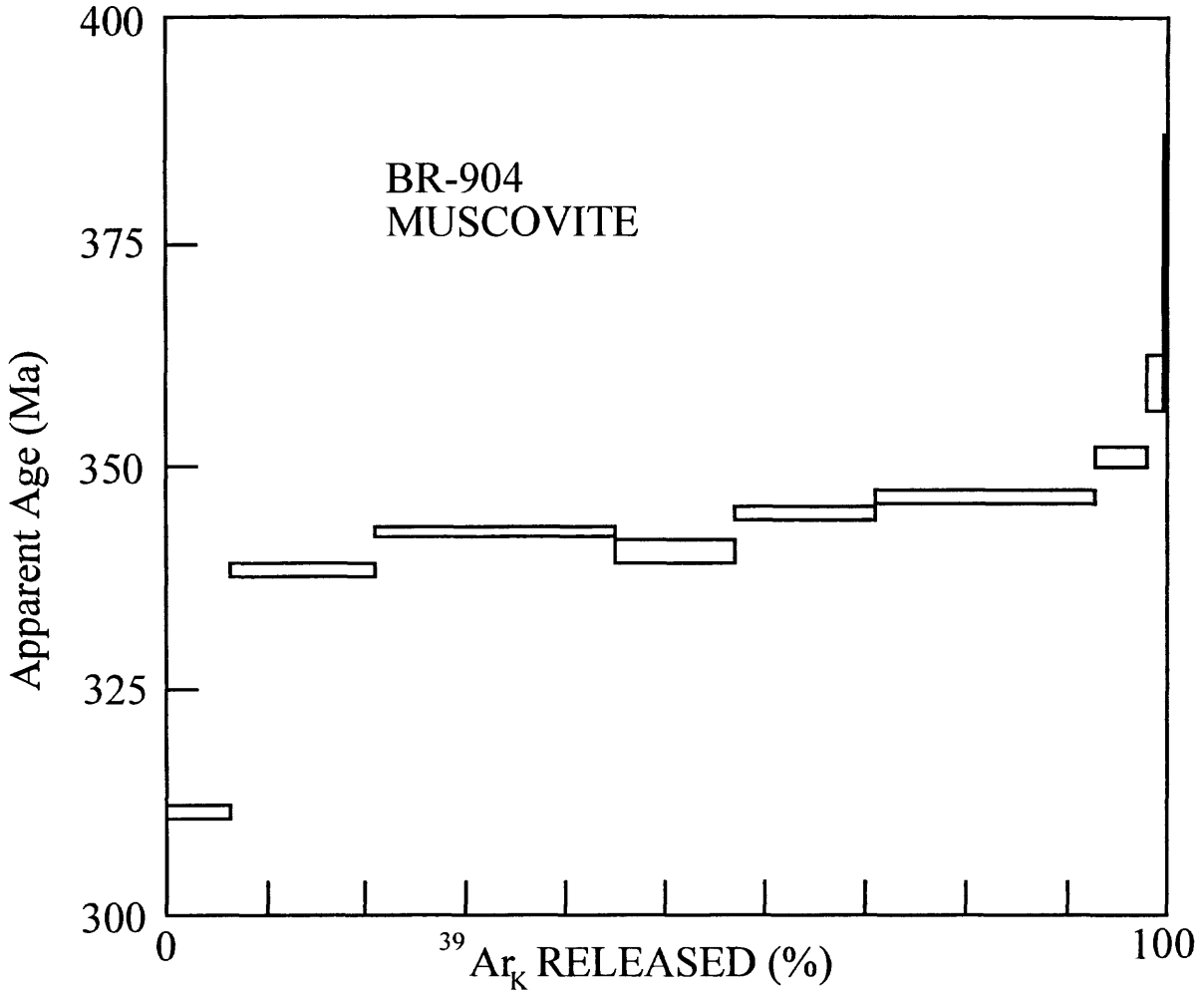


Table 11A. CBR-10-92 MUSCOVITE #28RD93 v 4/17/98 14:28:15 14 Sep 1999

		RAW DATA						
File #	Temperature	^{40}Ar	^{39}Ar	^{38}Ar	^{37}Ar	^{36}Ar	Trap current	Manifold
35749	850	1465766	50666	736	30	170	200	EALL
	±	842	43	11	13	5		
35750	900	3104789	108749	1472	23	161	200	EALL
	±	1205	28	3	7	9		
35751	950	4367695	153545	2044	69	167	200	EALL
	±	1377	34	5	14	5		
35752	1000	3672564	128668	1739	64	215	200	EALL
	±	3045	144	7	11	5		
35753	1050	1727193	59738	826	83	152	200	EALL
	±	700	87	5	10	6		
35754	1100	2233937	77394	1068	60	155	200	EALL
	±	533	31	8	3	6		
35755	1150	1504698	50955	697	128	150	200	EALL
	±	2009	8	17	7	4		

All values are in counts. Measured $^{40}Ar/^{36}Ar = 297.2 \pm 0.5$

Precisions are at the 1 sigma level and are from linear regression statistics.

Trap current factors: 40 = 5.66 100 = 2.62 200 = 1

Manifold factors: All = 1 Split1 = 3.3 Split2 = 10.89

EAll = 2 Esplit1 = 6.6 Esplit2 = 21.78

Sensitivity = 3.604 X 10^{-17} moles/count. Reproducibility limit = .25 %. Detection limit = 40 counts.

Table 11B. CBR-10-92 MUSCOVITE #28RD93 v 4/17/98 14:28:15 14 Sep 1999

			CORRECTIONS							
Temp	^{39}Ar	^{37}Ar	-----	K-derived	----	----	Ca-derivec	----	Cl-derived	initial
(°C)	decay	decay	^{40}Ar	^{38}Ar	^{37}Ar	^{39}Ar	^{38}Ar	^{36}Ar	^{36}Ar	^{38}Ar
850	18	52	288	680	0	0	0	0	0	32
900	39	40	619	1460	0	0	0	0	0	30
950	55	120	874	2061	0	0	0	0	0	31
1000	46	111	732	1727	0	0	0	0	0	40
1050	22	143	340	802	0	0	0	0	0	29
1100	28	103	440	1039	0	0	0	0	0	29
1150	18	222	290	684	0	0	0	0	0	28

All values are in counts and have been corrected for mass discrimination.

Table 11C. CBR-10-92 MUSCOVITE #28RD93 v 4/17/98 14:28:15 14 Sep 1999

	MOLAR VALUES						
Temperature (°C)	$^{40}Ar^*$	$^{39}Ar_K$	$^{38}Ar_{Cl}$	^{37}Ca	$^{36}Ar_i$	Apparent Age (Ma)	Precision (Ma)
850	105.631663	3.658588	0.006465	0.005901	0.012352	338.23 ±	0.36
900	223.748577	7.852693	0.003359	0.004526	0.011653	340.22 ±	0.29
950	314.760471	11.087457	0.001475	0.013677	0.012118	340.35 ±	0.15
1000	264.665622	9.291044	0.004125	0.012682	0.015570	339.52 ±	0.29
1050	124.471576	4.313640	0.003996	0.016292	0.011027	340.72 ±	0.37
1100	160.990411	5.588577	0.004423	0.011775	0.011235	341.97 ±	0.25
1150	108.437735	3.679401	0.003135	0.025347	0.010884	346.21 ±	0.51

All gas quantities are in moles x 10^{-12}.

Ages calculated assuming an initial $^{40}Ar/^{36}Ar = 295.5 \pm 0$.

All precision estimates are at the one sigma level of precision.

Ages of individual steps do not include error in the irradiation parameter J.

Table 11D. CBR-10-92 MUSCOVITE #28RD93 v 4/17/98 14:28:15 14 Sep 1999

Temperature °C	% ^{39}Ar of total	Radiogenic Yield (%)	$^{39}Ar_K$	$^{40}Ar^*/^{39}Ar_K$	Apparent K/Ca	Apparent K/Cl	Apparent Age Ma	Precision Ma
J = 0.007398 ± 0.5%					Sample wt = 0.1017 g			
850	8.0	96.5	3.658588	27.875	322.39	1370	338.23 ±	0.36
900	17.3	98.5	7.852693	28.055	902.18	5658	340.22 ±	0.29
950	24.4	98.9	11.087457	28.066	421.53	18192	340.35 ±	0.15
1000	20.4	98.3	9.291044	27.991	380.97	5451	339.52 ±	0.29
1050	9.5	97.4	4.313640	28.100	137.68	2613	340.72 ±	0.37
1100	12.3	97.9	5.588577	28.213	246.80	3058	341.97 ±	0.25
1150	8.1	97	3.679401	28.597	75.48	2841	346.21 ±	0.51
Total Gas	100.0	98.1	45.471400	28.098	411.87	7490	340.70	

70.13% of gas on plateau in 850 through 1000 steps Plateau Age =339.88 ± 1.73

71.57% of gas on plateau in 900 through 1050 steps Plateau Age =340.20 ± 1.73

Ages calculated assuming an initial $^{40}Ar/^{36}Ar = 295.5 \pm 0$.

All precision estimates are at the one sigma level.

Ages of individual steps do not include error in the irradiation parameter J.

No error is calculated for the total gas age.

$^{39}Ar_K$ gas quantities are in moles x 10^{-12}.

*** Below detection limit.

Figure 11. Age spectrum for CBR-10-92 muscovite.

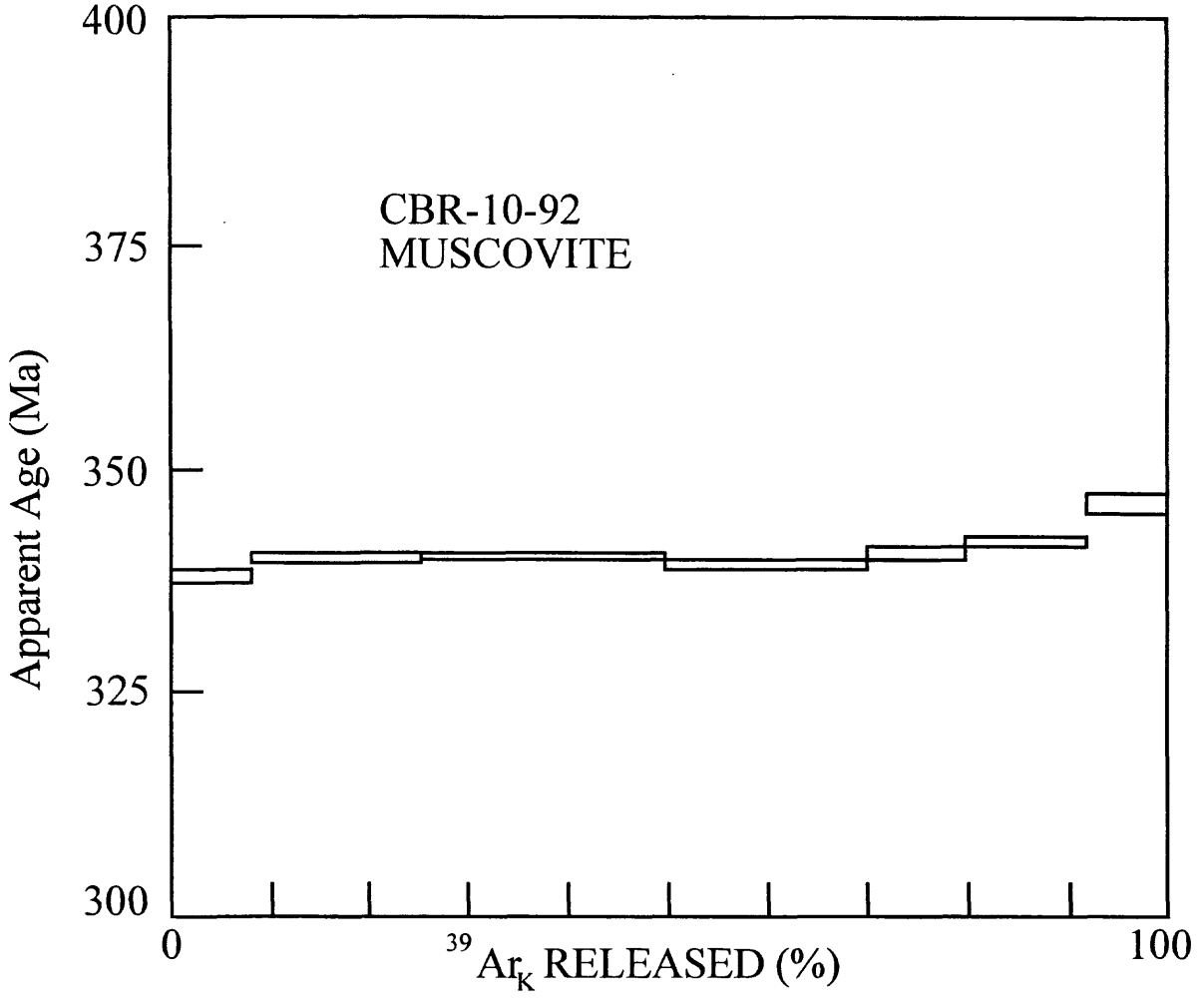


Table 12A. T185B MUSCOVITE #26RD72 MUSCOVITE v 4/17/98 11:46:48 14 Sep 1999

		RAW DATA						
File #	Temperature	^{40}Ar	^{39}Ar	^{38}Ar	^{37}Ar	^{36}Ar	Trap current	Manifold
25174	900	969702	50625	719	0	190	200	ALL
	±	572	21	9	0	10		
25175	950	1109247	58513	727	0	52	200	ALL
	±	217	43	10	0	8		
25176	1000	2805749	141309	1866	0	89	200	ALL
	±	923	67	12	0	2		
25178	1025	4484643	219678	2849	0	87	200	ALL
	±	2182	163	7	0	2		
25180	1050	3671691	181161	2370	0	64	200	ALL
	±	1756	135	15	0	5		
25181	1100	3451949	171990	2244	0	53	200	ALL
	±	2284	160	14	0	5		
25183	1150	3761799	187484	2421	0	47	200	ALL
	±	3374	116	16	0	4		
25185	1250	1709831	83555	962	0	18	200	SPLIT 1
	±	462	42	11	0	2		
25186	1250	3365326	162342	2092	0	37	200	ALL
	±	1555	55	8	0	3		

All values are in counts. Measured $^{40}Ar/^{36}Ar$ = 296.7 ± 0.5

Precisions are at the 1 sigma level and are from linear regression statistics.

Trap current factors: 40 = 3.57 100 = 2.15 200 = 1

Manifold factors: All = 1 Split1 = 4.2 Split2 = 17.65

EAll = 2 Esplit1 = 6.6 Esplit2 = 21.78

Sensitivity = 2.150 X 10^{-17} moles/count. Reproducibility limit = .25 %. Detection limit = 40 counts.

Table 12B. T185B MUSCOVITE #26RD72 MUSCOVITE v 4/17/98 11:46:48 14 Sep 1999

			CORRECTIONS							
Temp	^{39}Ar	^{37}Ar	-----	K-derived	-----	-----	Ca-derivec	-----	Cl-derived	initial
(°C)	decay	decay	^{40}Ar	^{38}Ar	^{37}Ar	^{39}Ar	^{38}Ar	^{36}Ar	^{36}Ar	^{38}Ar
900	49	0	288	680	0	0	0	0	0	36
950	56	0	333	785	0	0	0	0	0	10
1000	136	0	804	1897	0	0	0	0	0	17
1025	211	0	1250	2949	0	0	0	0	0	16
1050	174	0	1031	2432	0	0	0	0	0	12
1100	165	0	979	2309	0	0	0	0	0	10
1150	180	0	1067	2517	0	0	0	0	0	9
1250	80	0	475	1122	0	0	0	0	0	3
1250	156	0	924	2179	0	0	0	0	0	7

All values are in counts and have been corrected for mass discrimination.

Table 12C. T185B MUSCOVITE #26RD72 MUSCOVITE v 4/17/98 11:46:48 14 Sep 1999

	MOLAR VALUES							
Temperature (°C)	$^{40}Ar^*$	$^{39}Ar_K$	$^{38}Ar_{Cl}$	^{37}Ca	$^{36}Ar_i$	Apparent Age (Ma)		Precision (Ma)
900	20.842404	1.090408	0.001631	0.000000	0.004088	297.42	±	0.95
950	23.841661	1.260294	0.000000	0.000000	0.001118	307.27	±	0.62
1000	60.306310	3.043627	0.000000	0.000000	0.001914	321.95	±	0.12
1025	96.392940	4.731616	0.000000	0.000000	0.001888	331.33	±	0.15
1050	78.919194	3.901998	0.000000	0.000000	0.001374	329.34	±	0.19
1100	74.195869	3.704477	0.000000	0.000000	0.001154	326.58	±	0.24
1150	80.855742	4.038189	0.000000	0.000000	0.001023	326.75	±	0.29
1250	154.354803	7.558680	0.000000	0.000000	0.001674	332.84	±	0.12
1250	72.334640	3.496659	0.000000	0.000000	0.000804	336.77	±	0.16

All gas quantities are in moles x 10^{-12}.

Ages calculated assuming an initial $^{40}Ar/^{36}Ar$ = 295.5± 0.

All precision estimates are at the one sigma level of precision.

Ages of individual steps do not include error in the irradiation parameter J.

Table 12D. T185B MUSCOVITE #26RD72 MUSCOVITE v 4/17/98 11:46:48 14 Sep 1999

Temperature °C	% ^{39}Ar of total	Radiogenic Yield (%)	$^{39}Ar_K$	$^{40}Ar^*/^{39}Ar_K$	Apparent K/Ca	Apparent K/Cl	Apparent Age Ma		Precision Ma
J =0.009954 ± 0.25%					Sample wt = 0.1012 g				
900	3.3	94.2	1.090408	18.006	* * *	1617	297.42	±	0.95
950	3.8	98.6	1.260294	18.655	* * *	* * *	307.27	±	0.62
1000	9.3	99.1	3.043627	19.628	* * *	* * *	321.95	±	0.12
1025	14.4	99.4	4.731616	20.254	* * *	* * *	331.33	±	0.15
1050	11.9	99.5	3.901998	20.121	* * *	* * *	329.34	±	0.19
1100	11.3	99.5	3.704477	19.937	* * *	* * *	326.58	±	0.24
1150	12.3	99.6	4.038189	19.948	* * *	* * *	326.75	±	0.29
1250	23.0	99.7	7.558680	20.355	* * *	* * *	332.84	±	0.12
1250	10.7	99.7	3.496659	20.619	* * *	* * *	336.77	±	0.16
Total Gas	100.0	99.3	32.825948	20.033	* * *	54	328.02		

NO PLATEAU

Ages calculated assuming an initial $^{40}Ar/^{36}Ar$ = 295.5± 0.

All precision estimates are at the one sigma level.

Ages of individual steps do not include error in the irradiation parameter J.

No error is calculated for the total gas age.

$^{39}Ar_K$ gas quantities are in moles x 10^{-12}.

*** Below detection limit.

Figure 12. Age spectrum for T185B muscovite.

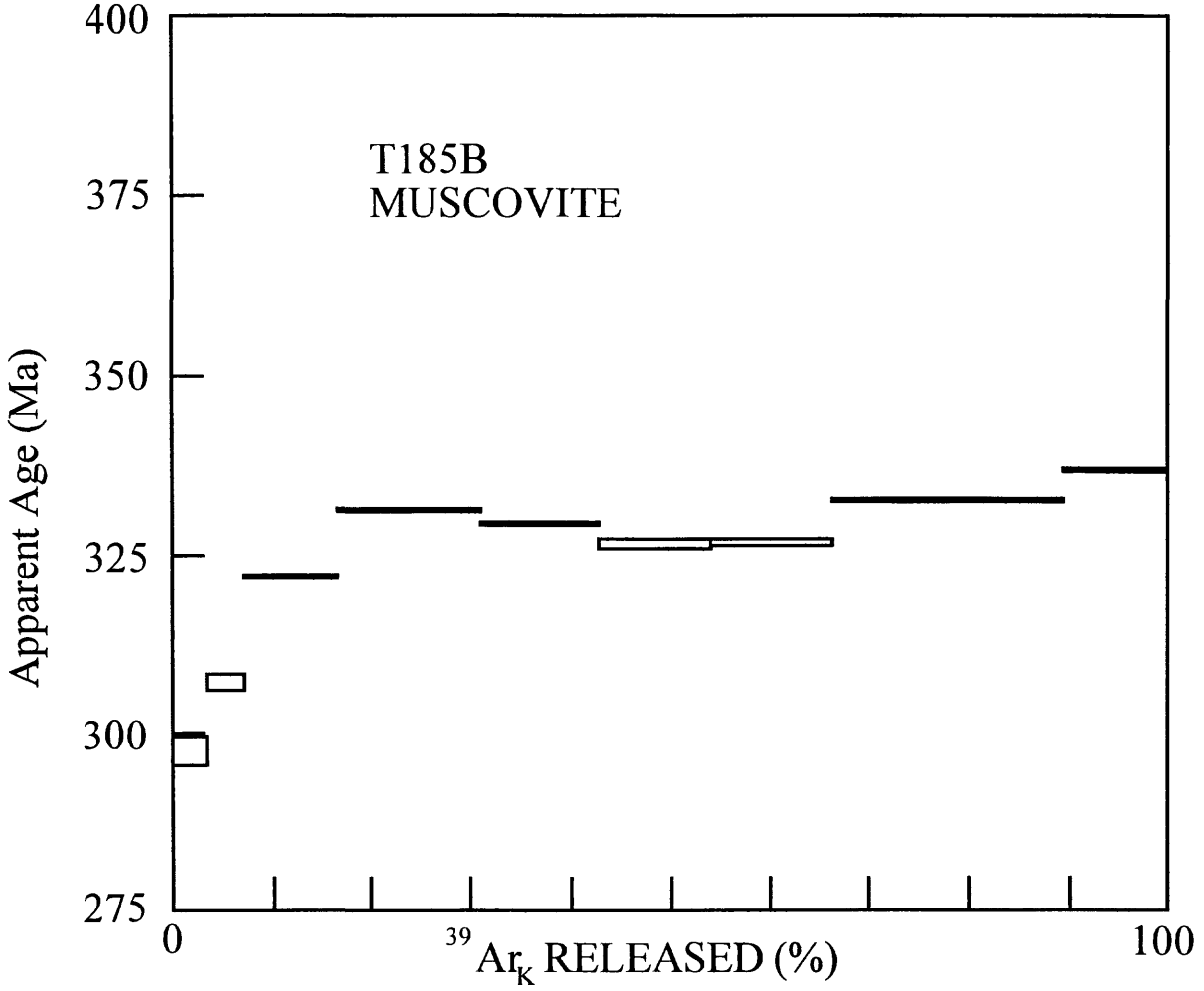


Table 13A. T65 MUSCOVITE #25RD72 v 4/17/98 11:55:39 14 Sep 1999

RAW DATA

File #	Temperature	^{40}Ar	^{39}Ar	^{38}Ar	^{37}Ar	^{36}Ar	Trap current	Manifold
25150	850	1070116	53080	720	0	141	200	ALL
	±	5177	238	12	0	8		
25152	950	4389437	212211	2857	0	559	200	ALL
	±	121	232	6	0	11		
25154	975	612602	29815	359	0	44	200	ALL
	±	152	36	8	0	5		
25156	1025	602018	29434	370	0	30	200	SPLIT 1
	±	390	29	10	0	3		
25158	1050	1025416	50593	611	0	28	200	SPLIT 1
	±	414	42	10	0	3		
25159	1050	3249215	161086	2220	0	152	200	ALL
	±	2845	141	29	0	4		
25161	1100	4190246	211849	2886	0	302	200	ALL
	±	16398	667	6	0	13		
25163	1150	4052638	200503	2644	0	122	200	ALL
	±	3375	198	5	0	4		
25164	1200	4769684	232728	3033	0	111	200	ALL
	±	1059	186	23	0	7		
25165	1250	1807182	86515	1023	0	100	200	ALL
	±	1406	79	19	0	6		

All values are in counts. Measured 40Ar/36Ar = 296.5 ± 0.5

Precisions are at the 1 sigma level and are from linear regression statistics.

Trap current factors: 40 = 3.57 100 = 2.15 200 = 1

Manifold factors: All = 1 Split1 = 3.3 Split2 = 10.89

EAll = 2.26 Esplit1 = 9.49 Esplit2 = 39.87

Sensitivity = 2.150 X 10^{-17} moles/count. Reproducibility limit = .25 %. Detection limit = 40 counts.

Table 13B. T65 MUSCOVITE #25RD72 v 4/17/98 11:55:39 14 Sep 1999

CORRECTIONS

Temp	^{39}Ar	^{37}Ar	----- K-derived -----			---- Ca-derivec ----			Cl-derived	initial
(°C)	decay	decay	^{40}Ar	^{38}Ar	^{37}Ar	^{39}Ar	^{38}Ar	^{36}Ar	^{36}Ar	^{38}Ar
850	50	0	302	713	0	0	0	0	0	26
950	199	0	1208	2849	0	0	0	0	0	105
975	28	0	170	400	0	0	0	0	0	8
1025	28	0	167	395	0	0	0	0	0	6
1050	48	0	288	679	0	0	0	0	0	5
1050	151	0	917	2162	0	0	0	0	0	28
1100	199	0	1205	2844	0	0	0	0	0	57
1150	189	0	1141	2692	0	0	0	0	0	23
1200	219	0	1324	3124	0	0	0	0	0	21
1250	81	0	492	1161	0	0	0	0	0	19

All values are in counts and have been corrected for mass discrimination.

Table 13C. T65 MUSCOVITE #25RD72 v 4/17/98 11:55:39 14 Sep 1999

	MOLAR VALUES							
Temperature (°C)	$^{40}Ar^*$	$^{39}Ar_K$	$^{38}Ar_{Cl}$	^{37}Ca	$^{36}Ar_i$	Apparent Age (Ma)		Precision (Ma)
850	23.001004	1.143256	0.000756	0.000000	0.003032	315.93	±	1.60
950	94.346940	4.570677	0.002536	0.000000	0.012069	323.80	±	0.23
975	13.167293	0.642174	0.000000	0.000000	0.000941	326.93	±	0.68
1025	54.347132	2.662625	0.000000	0.000000	0.002732	327.48	±	0.45
1050	92.569092	4.576665	0.000000	0.000000	0.002547	326.79	±	0.27
1050	69.838419	3.469546	0.001927	0.000000	0.003272	323.64	±	0.29
1100	90.064363	4.562901	0.002221	0.000000	0.006508	315.66	±	1.19
1150	87.107181	4.318517	0.000000	0.000000	0.002634	325.73	±	0.26
1200	102.519740	5.012588	0.000000	0.000000	0.002389	330.51	±	0.15
1250	38.843838	1.863402	0.000000	0.000000	0.002166	333.34	±	0.38

All gas quantities are in moles x 10^{-12}.

Ages calculated assuming an initial $^{40}Ar/^{36}Ar$ = 295.5± 0.

All precision estimates are at the one sigma level of precision.

Ages of individual steps do not include error in the irradiation parameter J.

Table 13D. T65 MUSCOVITE #25RD72 v 4/17/98 11:55:39 14 Sep 1999

Temperature °C	% ^{39}Ar of total	Radiogenic Yield (%)	$^{39}Ar_K$	$^{40}Ar^*/^{39}Ar_K$	Apparent K/Ca	Apparent K/Cl	Apparent Age Ma		Precision Ma
= 0.009899					Sample wt =				
850	3.5	96.1	1.143256	19.335	* * *	3657	315.930	±	1.595
950	13.9	96.2	4.570677	19.861	* * *	4361	323.803	±	0.228
975	2.0	97.9	0.642174	20.071	* * *	* * *	326.931	±	0.684
1025	8.1	98.5	2.662625	20.108	* * *	* * *	327.476	±	0.453
1050	13.9	99.2	4.576665	20.062	* * *	* * *	326.791	±	0.272
1050	10.6	98.6	3.469546	19.850	* * *	4357	323.635	±	0.286
1100	13.9	97.9	4.562901	19.317	* * *	4973	315.658	±	1.188
1150	13.2	99.1	4.318517	19.990	* * *	* * *	325.725	±	0.263
1200	15.3	99.3	5.012588	20.312	* * *	* * *	330.508	±	0.153
1250	5.7	98.4	1.863402	20.502	* * *	* * *	333.339	±	0.382
Total Gas	100.0	98.3	32.822351	19.940	* * *	1886.6	324.980		

Ages calculated assuming an initial $^{40}Ar/^{36}Ar$ = 295.5± 0.

All precision estimates are at the one sigma level.

Ages of individual steps do not include error in the irradiation parameter J.

No error is calculated for the total gas age.

$^{39}Ar_K$ gas quantities are in moles x 10^{-12}.

*** Below detection limit.

Figure 13. Age spectrum for T65 muscovite.

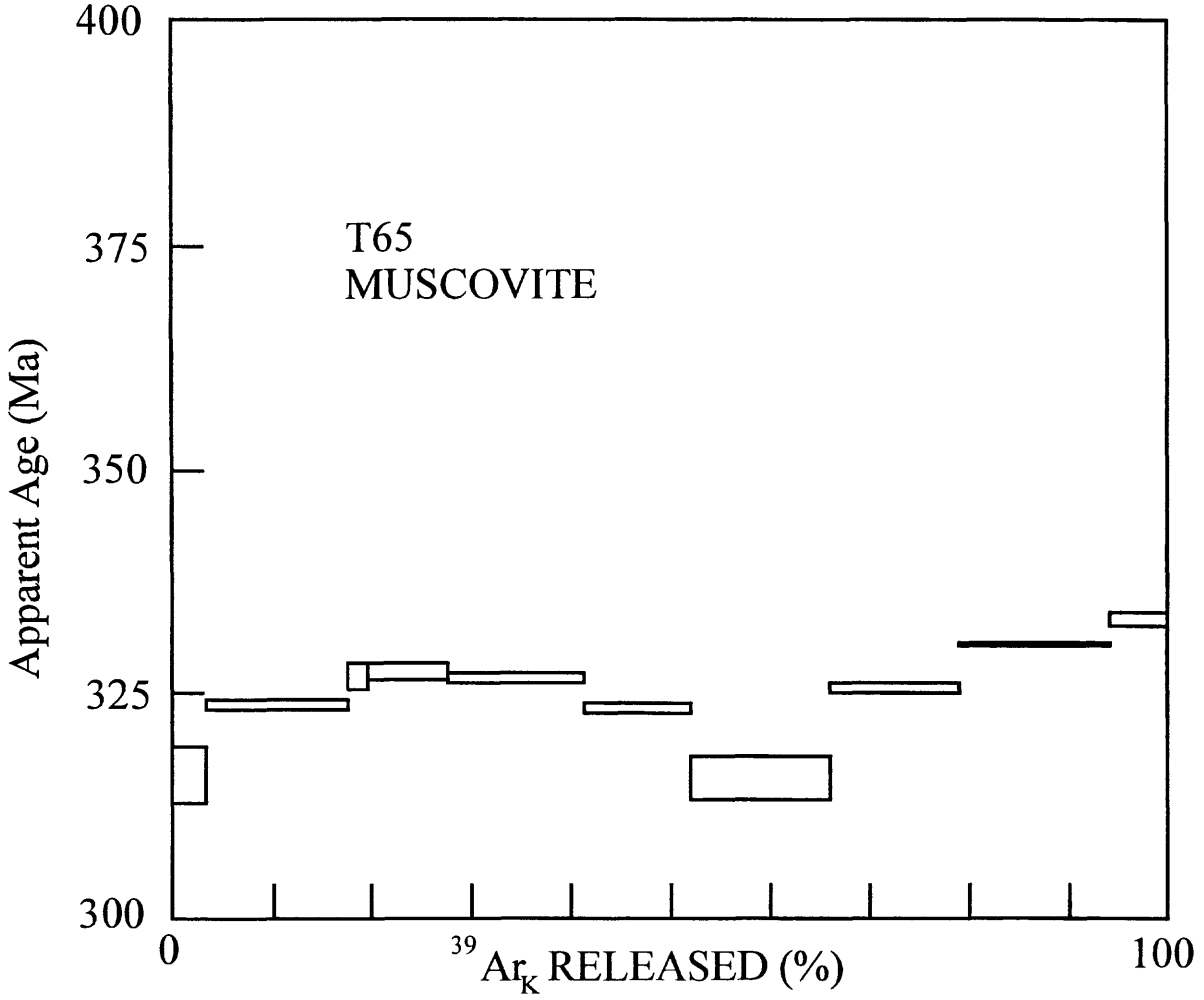


Table 14A. K92-7-11A MUSCOVITE #26RD93 v 4/17/98 14:48:47 14 Sep 1999

RAW DATA

File #	Temperature	^{40}Ar	^{39}Ar	^{38}Ar	^{37}Ar	^{36}Ar	Trap current	Manifold
35737	750	528283	18893	181	12	119	200	EALL
	±	151	12	11	15	3		
35738	850	1503385	56099	699	21	91	200	EALL
	±	910	48	17	10	8		
35739	900	2413496	89612	1164	9	112	200	EALL
	±	2265	62	4	9	2		
35740	950	4153606	153924	1925	0	113	200	EALL
	±	5629	310	22	12	8		
35741	1000	2538511	94060	1224	0	108	200	EALL
	±	1058	19	13	19	8		
35742	1050	1771399	65091	856	0	128	200	EALL
	±	551	29	12	4	10		
35743	1100	1997156	72796	955	0	118	200	EALL
	±	541	38	13	10	4		
35744	1150	1537148	54721	699	0	96	200	EALL
	±	1546	105	7	5	7		

All values are in counts. Measured $^{40}Ar/^{36}Ar = 297.2 \pm 0.5$

Precisions are at the 1 sigma level and are from linear regression statistics.

Trap current factors: 40 = 5.66 100 = 2.62 200 = 1

Manifold factors: All = 1 Split1 = 3.3 Split2 = 10.89

EAll = 2 Esplit1 = 6.6 Esplit2 = 21.78

Sensitivity = 3.604 X 10^{-17} moles/count. Reproducibility limit = .25 %. Detection limit = 40 counts.

Table 14B. K92-7-11A MUSCOVITE #26RD93 v 4/17/98 14:48:47 14 Sep 1999

CORRECTIONS

Temp	^{39}Ar	^{37}Ar	-----	K-derived	-----	-----	Ca-derivec	-----	Cl-derived	initial
(°C)	decay	decay	^{40}Ar	^{38}Ar	^{37}Ar	^{39}Ar	^{38}Ar	^{36}Ar	^{36}Ar	^{38}Ar
750	7	20	108	254	0	0	0	0	0	22
850	20	36	319	753	0	0	0	0	0	17
900	32	16	510	1203	0	0	0	0	0	21
950	55	0	876	2066	0	0	0	0	0	21
1000	34	0	535	1263	0	0	0	0	0	20
1050	23	0	370	874	0	0	0	0	0	24
1100	26	0	414	977	0	0	0	0	0	22
1150	20	0	311	735	0	0	0	0	0	18

All values are in counts and have been corrected for mass discrimination.

Table 14C. K92-7-11A MUSCOVITE #26RD93 v 4/17/98 14:48:47 14 Sep 1999

	MOLAR VALUES						
Temperature (°C)	$^{40}Ar^*$	$^{39}Ar_K$	$^{38}Ar_{Cl}$	^{37}Ca	$^{36}Ar_i$	Apparent Age (Ma)	Precision (Ma)
750	38.070880	1.364261	0.000000	0.002267	0.008601	317.93 ±	0.58
850	108.340970	4.050868	0.000000	0.004117	0.006619	320.38 ±	0.53
900	173.928057	6.470852	0.000000	0.001810	0.008125	323.12 ±	0.29
950	299.328795	11.114807	0.000000	0.000000	0.008191	325.41 ±	0.44
1000	182.937287	6.792001	0.000000	0.000000	0.007808	324.09 ±	0.32
1050	127.655732	4.700170	0.000631	0.000000	0.009306	323.87 ±	0.52
1100	143.925143	5.256551	0.000170	0.000000	0.008568	327.48 ±	0.19
1150	110.775217	3.951401	0.000000	0.000000	0.006940	334.33 ±	0.53

All gas quantities are in moles x 10^{-12}.

Ages calculated assuming an initial $^{40}Ar/^{36}Ar$ = 295.5± 0.

All precision estimates are at the one sigma level of precision.

Ages of individual steps do not include error in the irradiation parameter J.

Table 14D. K92-7-11A MUSCOVITE #26RD93 v 4/17/98 14:48:47 14 Sep 1999

Temperature °C	% ^{39}Ar of total	Radiogenic Yield (%)	$^{39}Ar_K$	$^{40}Ar^*/^{39}Ar_K$	Apparent K/Ca	Apparent K/Cl	Apparent Age Ma	Precision Ma
J = .007400 0.5%					Sample wt =0.0995 g			
750	3.1	93.3	1.364261	26.043	313.0	* * *	317.93 ±	0.58
850	9.3	98.2	4.050868	26.262	511.7	* * *	320.38 ±	0.53
900	14.8	98.6	6.470852	26.508	1859.2	* * *	323.12 ±	0.29
950	25.4	99.2	11.114807	26.713	* * *	* * *	325.41 ±	0.44
1000	15.5	98.7	6.792001	26.595	* * *	* * *	324.09 ±	0.32
1050	10.8	97.8	4.700170	26.575	* * *	18035	323.87 ±	0.52
1100	12.0	98.2	5.256551	26.898	* * *	74801	327.48 ±	0.19
1150	9.0	98.1	3.951401	27.515	* * *	* * *	334.33 ±	0.53
Total Gas	100.0	98.4	43.700911	26.681	332.5	10937	325.06 ±	

Ages calculated assuming an initial $^{40}Ar/^{36}Ar$ = 295.5± 0.

All precision estimates are at the one sigma level.

Ages of individual steps do not include error in the irradiation parameter J.

No error is calculated for the total gas age.

$^{39}Ar_K$ gas quantities are in moles x 10^{-12}.

*** Below detection limit.

Figure 14. Age spectrum for K92-7-11A muscovite.

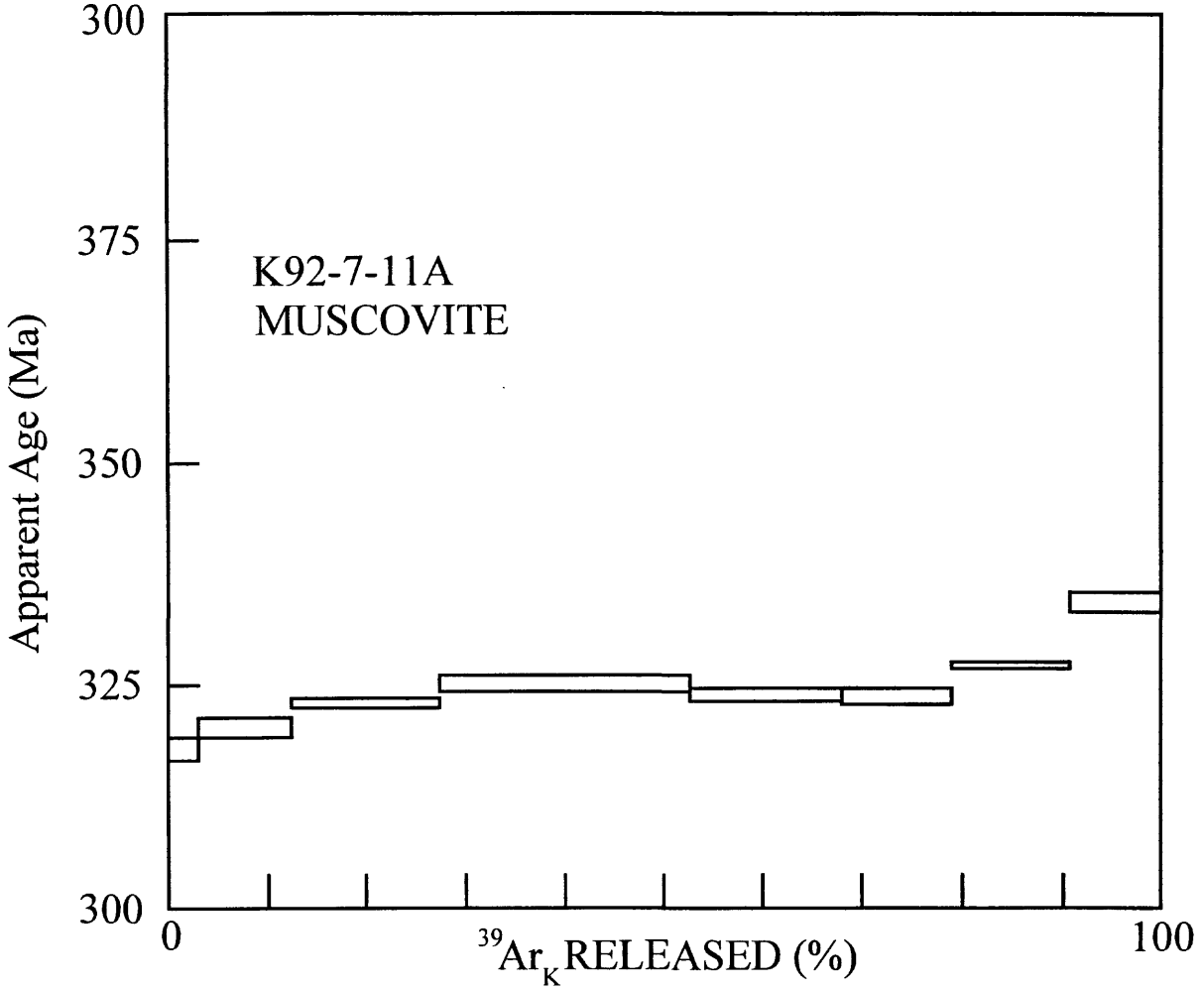


Table 15A. K92-7-11B MUSCOVITE #20RD93 v 4/17/98 14:59:56 14 Sep 1999

		RAW DATA						
File #	Temperature	^{40}AR	^{39}Ar	^{38}Ar	^{37}Ar	^{36}Ar	Trap current	Manifold
35689	650	878102	59313	1091	131	853	200	EALL
	±	483	24	10	5	11		
35690	750	1011981	56029	1020	116	1003	200	EALL
	±	597	42	12	12	5		
35691	850	930298	54137	998	89	1026	200	EALL
	±	305	25	7	7	3		
35692	900	309702	17003	256	13	328	200	EALL
	±	166	18	25	5	6		
35693	950	243744	11510	103	0	158	200	EALL
	±	413	24	12	9	2		
35694	1000	236310	12198	149	21	177	200	EALL
	±	295	30	5	4	6		

All values are in counts. Measured ^{40}Ar/^{36}Ar = 295.7 ± 0.5

Precisions are at the 1 sigma level and are from linear regression statistics.

Trap current factors: 40 = 5.66 100 = 2.62 200 = 1

Manifold factors: All = 1 Split1 = 3.3 Split2 = 10.89

EAll = 2 Esplit1 = 6.6 Esplit2 = 21.78

Sensitivity = 1.647 X 10^{-17} moles/count. Reproducibility limit = .25 %. Detection limit = 40 counts.

Table 15B. K92-7-11B MUSCOVITE #20RD93 v 4/17/98 14:59:56 14 Sep 1999

			CORRECTIONS							
Temp	^{39}Ar	^{37}Ar	-----	K-derived	-----	-----	Ca-derivec	----	Cl-derived	initial
(^{o}C)	decay	decay	^{40}Ar	^{38}Ar	^{37}Ar	^{39}Ar	^{38}Ar	^{36}Ar	^{36}Ar	^{38}Ar
650	21	218	338	796	0	0	0	0	0	160
750	20	192	319	752	0	0	0	0	0	189
850	19	147	308	727	0	0	0	0	0	193
900	6	22	97	228	0	0	0	0	0	62
950	4	0	65	155	0	0	0	0	0	30
1000	4	35	69	164	0	0	0	0	0	33

All values are in counts and have been corrected for mass discrimination.

Table 15C. K92-7-11B MUSCOVITE #20RD93 v 4/17/98 14:59:56 14 Sep 1999

	MOLAR VALUES							
Temperature (°C)	$^{40}Ar^*$	$^{39}Ar_K$	$^{38}Ar_{Cl}$	^{37}Ca	$^{36}Ar_i$	Apparent Age (Ma)		Precision (Ma)
650	63.269274	4.282930	0.033011	0.025266	0.061845	134.99	±	0.68
750	72.920618	4.045769	0.033111	0.022301	0.072694	162.13	±	0.35
850	67.033693	3.909162	0.033646	0.017091	0.074360	147.59	±	0.21
900	22.316326	1.227792	0.006505	0.002598	0.023806	158.86	±	1.36
950	17.564356	0.831154	0.000000	0.000000	0.011480	214.26	±	0.78
1000	17.028254	0.880810	0.001342	0.004054	0.012839	190.10	±	1.64

All gas quantities are in moles x 10^{-12}.

Ages calculated assuming an initial $^{40}Ar/^{36}Ar$ = 295.5± 0.

All precision estimates are at the one sigma level of precision.

Ages of individual steps do not include error in the irradiation parameter J.

Table 15D. K92-7-11B MUSCOVITE #20RD93 v 4/17/98 14:59:56 14 Sep 1999

Temperature °C	% ^{39}Ar of total	Radiogenic Yield (%)	$^{39}Ar_K$	$^{40}Ar^*/^{39}Ar_K$	Apparent K/Ca	Apparent K/Cl	Apparent Age Ma		Precision Ma
J = 0.007396 ± 0.5%					Sample wt = 0.0716 g				
650	28.2	71.1	4.282930	10.505	88.2	314	134.99	±	0.68
750	26.7	70.5	4.045769	12.714	94.3	296	162.13	±	0.35
850	25.8	67.2	3.909162	11.527	118.9	281	147.59	±	0.21
900	8.1	68.5	1.227792	12.447	245.8	457	158.86	±	1.36
950	5.5	80.7	0.831154	17.051	* * *	* * *	214.26	±	0.78
1000	5.8	77.7	0.880810	15.025	113.0	1589	190.10	±	1.64
Total Gas	100.0	70.7	15.177617	12.135	107.1	369	155.05		

Ages calculated assuming an initial $^{40}Ar/^{36}Ar$ = 295.5± 0.

All precision estimates are at the one sigma level.

Ages of individual steps do not include error in the irradiation parameter J.

No error is calculated for the total gas age.

$^{39}Ar_K$ gas quantities are in moles x 10^{-12}.

*** Below detection limit.

Figure 15. Age spectrum for K92-7-11B muscovite.

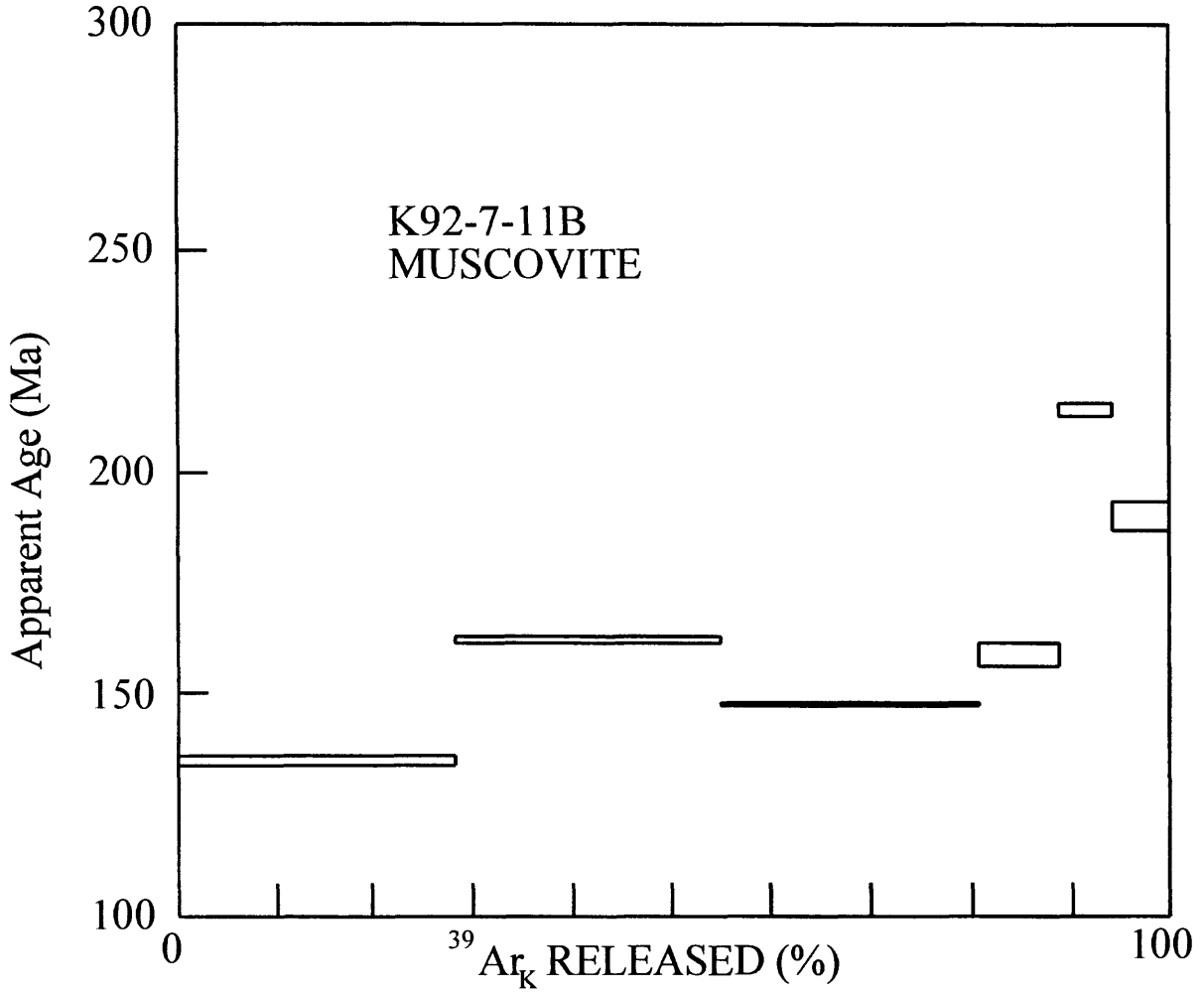


Table 16A. K92-7-11C MUSCOVITE #24RD93 v 4/17/98 15:09:06 14 Sep 1999

RAW DATA

File #	Temperature	^{40}Ar	^{39}Ar	^{38}Ar	^{37}Ar	^{36}Ar	Trap current	Manifold
35700	750	560443	19613	195	5	124	200	EALL
	±	349	15	5	5	6		
35701	850	1482735	54755	725	16	68	200	EALL
	±	1584	57	4	5	3		
35702	900	2735934	100967	1293	7	82	200	EALL
	±	1817	29	11	8	5		
35703	950	4071214	149856	1925	11	80	200	EALL
	±	3127	46	8	15	7		
35704	1000	2317795	85633	1106	16	67	200	EALL
	±	1003	30	5	5	4		
35705	1050	1509911	55658	715	0	72	200	EALL
	±	392	27	6	16	5		
35706	1100	1837454	67188	873	0	60	200	EALL
	±	1106	24	9	10	8		
35707	1150	1660197	59655	760	0	50	200	EALL
	±	1435	31	7	5	12		

All values are in counts. Measured $^{40}Ar/^{36}Ar = 297.2 \pm 0.5$

Precisions are at the 1 sigma level and are from linear regression statistics.

Trap current factors: 40 = 5.66 100 = 2.62 200 = 1

Manifold factors: All = 1 Split1 = 3.3 Split2 = 10.89

EAll = 2 Esplit1 = 6.6 Esplit2 = 21.78

Sensitivity = 3.604 X 10^{-17} moles/count. Reproducibility limit = .25 %. Detection limit = 40 counts.

Table 16B. K92-7-11C MUSCOVITE #24RD93 v 4/17/98 15:09:06 14 Sep 1999

CORRECTIONS

Temp	^{39}Ar	^{37}Ar	-----	K-derived	-----	-----	Ca-derivec	-----	Cl-derived	initial
(°C)	decay	decay	^{40}Ar	^{38}Ar	^{37}Ar	^{39}Ar	^{38}Ar	^{36}Ar	^{36}Ar	^{38}Ar
750	7	9	112	263	0	0	0	0	0	23
850	19	27	312	735	0	0	0	0	0	13
900	36	12	575	1355	0	0	0	0	0	15
950	53	19	853	2012	0	0	0	0	0	15
1000	30	27	487	1150	0	0	0	0	0	13
1050	20	0	317	747	0	0	0	0	0	14
1100	24	0	382	902	0	0	0	0	0	11
1150	21	0	339	801	0	0	0	0	0	9

All values are in counts and have been corrected for mass discrimination.

Table 16C. K92-7-11C MUSCOVITE #24RD93 v 4/17/98 15:09:06 14 Sep 1999

	MOLAR VALUES						
Temperature (°C)	$^{40}Ar^*$	$^{39}Ar_K$	$^{38}Ar_{Cl}$	^{37}Ca	$^{36}Ar_i$	Apparent Age (Ma)	Precision (Ma)
750	40.388657	1.416264	0.000000	0.001013	0.008970	324.51 ±	0.95
850	106.853090	3.953792	0.000374	0.003167	0.004948	324.61 ±	0.38
900	197.164719	7.290739	0.000000	0.001446	0.005931	326.25 ±	0.25
950	293.391636	10.820999	0.000000	0.002216	0.005782	327.95 ±	0.28
1000	167.031542	6.183476	0.000000	0.003081	0.004854	326.00 ±	0.21
1050	108.811556	4.019044	0.000000	0.000000	0.005220	325.00 ±	0.29
1100	132.416140	4.851569	0.000000	0.000000	0.004371	328.75 ±	0.42
1150	119.642533	4.307624	0.000000	0.000000	0.003616	334.29 ±	0.73

All gas quantities are in moles x 10^{-12}.

Ages calculated assuming an initial $^{40}Ar/^{36}Ar$ = 295.5± 0.

All precision estimates are at the one sigma level of precision.

Ages of individual steps do not include error in the irradiation parameter J.

Table 16D. K92-7-11C MUSCOVITE #24RD93 v 4/17/98 15:09:06 14 Sep 1999

Temperature °C	% ^{39}Ar of total	Radiogenic Yield (%)	$^{39}Ar_K$	$^{40}Ar^*/^{39}Ar_K$	Apparent K/Ca	Apparent K/Cl	Apparent Age Ma	Precision Ma
J = 0.007396 ± 0.5%					Sample wt = 0.0999 g			
750	3.3	93.4	1.416264	26.646	727.0	* * *	324.51 ±	0.95
850	9.2	98.6	3.953792	26.656	649.1	25587	324.61 ±	0.38
900	17.0	99.1	7.290739	26.803	2622.2	* * *	326.25 ±	0.25
950	25.3	99.4	10.820999	26.955	2539.5	* * *	327.95 ±	0.28
1000	14.4	99.1	6.183476	26.781	1043.7	* * *	326.00 ±	0.21
1050	9.4	98.6	4.019044	26.690	* * *	* * *	325.00 ±	0.29
1100	11.3	99.0	4.851569	27.027	* * *	* * *	328.75 ±	0.42
1150	10.1	99.1	4.307624	27.527	* * *	* * *	334.29 ±	0.73
Total Gas	100.0	98.9	42.843507	26.907	1322.2	2361	327.41	

NO PLATEAU

Ages calculated assuming an initial $^{40}Ar/^{36}Ar$ = 295.5± 0.

All precision estimates are at the one sigma level.

Ages of individual steps do not include error in the irradiation parameter J.

No error is calculated for the total gas age.

Figure 16. Age spectrum for K92-7-11C muscovite.

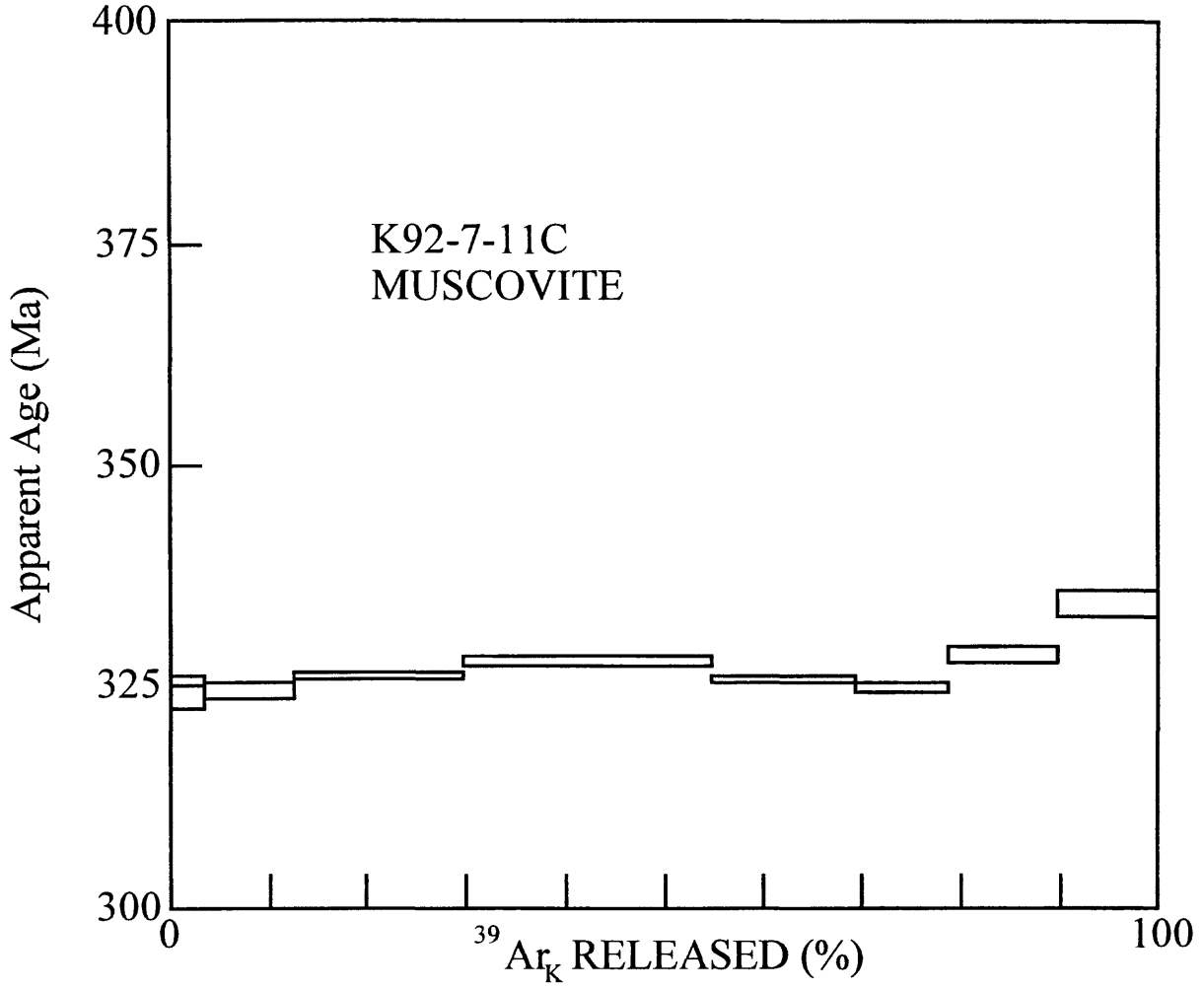


Table 17A. K92-7-29A MUSCOVITE #123RD93 v 4/17/98 15:31:02 14 Sep 1999

RAW DATA

File #	Temperature	^{40}Ar	^{39}Ar	^{38}Ar	^{37}Ar	^{36}Ar	Trap current	Manifold
35810	750	709858	24938	341	2512	76	200	EALL
	±	492	10	8	6	10		
35811	850	2263564	80856	1035	110	55	200	EALL
	±	2074	96	12	19	3		
35812	900	2101729	74738	979	45	45	200	EALL
	±	2080	76	15	10	2		
35813	950	2413193	85556	1105	65	57	200	EALL
	±	859	9	15	15	3		
35814	1000	2223686	78406	1006	42	55	200	EALL
	±	1019	22	8	7	5		
35815	1050	1260102	43751	580	66	58	200	EALL
	±	1942	22	8	15	5		
35816	1100	732360	25183	325	93	56	200	EALL
	±	1734	38	5	6	5		

All values are in counts. Measured $^{40}Ar/^{36}Ar = 295.7 \pm 0.5$

Precisions are at the 1 sigma level and are from linear regression statistics.

Trap current factors: 40 = 5.66 100 = 2.62 200 = 1

Manifold factors: All = 1 Split1 = 3.3 Split2 = 10.89

EAll = 2 Esplit1 = 6.6 Esplit2 = 21.78

Sensitivity = 3.607 X 10^{-17} moles/count. Reproducibility limit = .25 %. Detection limit = 40 counts.

Table 17B. K92-7-29A MUSCOVITE #123RD93 v 4/17/98 15:31:02 14 Sep 1999

CORRECTIONS

Temp (°C)	^{39}Ar decay	^{37}Ar decay	----- K-derived ^{40}Ar	^{38}Ar	----- ^{37}Ar	---- ^{39}Ar	Ca-derivec ^{38}Ar	----- ^{36}Ar	Cl-derived ^{36}Ar	initial ^{38}Ar
750	10	4856	142	335	0	5	0	2	0	14
850	31	213	460	1085	0	0	0	0	0	10
900	29	88	425	1003	0	0	0	0	0	8
950	33	127	487	1149	0	0	0	0	0	11
1000	30	81	446	1053	0	0	0	0	0	10
1050	17	128	249	587	0	0	0	0	0	11
1100	10	180	143	338	0	0	0	0	0	11

All values are in counts and have been corrected for mass discrimination.

Table 17C. K92-7-29A MUSCOVITE #123RD93 v 4/17/98 15:31:02 14 Sep 1999

	MOLAR VALUES						
Temperature (°C)	$^{40}Ar^*$	$^{39}Ar_K$	$^{38}Ar_{Cl}$	^{37}Ca	$^{36}Ar_i$	Apparent Age (Ma)	Precision (Ma)
750	51.156321	1.800458	0.001501	0.533386	0.005392	337.48 ±	1.29
850	163.124550	5.838703	0.000000	0.023410	0.003984	339.82 ±	0.32
900	151.461971	5.396946	0.000000	0.009610	0.003264	341.48 ±	0.33
950	173.907860	6.178106	0.000000	0.013900	0.004093	342.23 ±	0.17
1000	160.251147	5.661847	0.000000	0.008898	0.004012	343.80 ±	0.24
1050	90.810233	3.159299	0.000360	0.014002	0.004190	346.67 ±	0.62
1100	52.778208	1.818496	0.000000	0.019753	0.004080	346.76 ±	0.97

All gas quantities are in moles x 10^{-12}.
Ages calculated assuming an initial $^{40}Ar/^{36}Ar$ = 295.5± 0.
All precision estimates are at the one sigma level of precision.
Ages of individual steps do not include error in the irradiation parameter J.
No error is calculated for the total gas age.

Table 17D. K92-7-29A MUSCOVITE #123RD93 v 4/17/98 15:31:02 14 Sep 1999

Temperature °C	% ^{39}Ar of total	Radiogenic Yield (%)	$^{39}Ar_K$	$^{40}Ar^*/^{39}Ar_K$	Apparent K/Ca	Apparent K/Cl	Apparent Age Ma	Precision Ma
J = 0.007473 ± 0.5%					Sample wt = 0.0852 g			±
750	6.0	96.9	1.800458	27.528	1.8	2903	337.48 ±	1.29
850	19.6	99.3	5.838703	27.737	129.7	* * *	339.82 ±	0.32
900	18.1	99.4	5.396946	27.886	292.0	* * *	341.48 ±	0.33
950	20.7	99.3	6.178106	27.953	231.1	* * *	342.23 ±	0.17
1000	19.0	99.3	5.661847	28.094	330.9	* * *	343.80 ±	0.24
1050	10.6	98.6	3.159299	28.352	117.3	21217	346.67 ±	0.62
1100	6.1	97.7	1.818496	28.360	47.9	* * *	346.76 ±	0.97
Total Gas	100.0	99.0	29.853855	27.967	204.2	2420	342.38	

NO PLATEAU

Ages calculated assuming an initial $^{40}Ar/^{36}Ar$ = 295.5± 0.
All precision estimates are at the one sigma level.
Ages of individual steps do not include error in the irradiation parameter J.
No error is calculated for the total gas age.
$^{39}Ar_K$ gas quantities are in moles x 10^{-12}.
*** Below detection limit.

Figure 17. Age spectrum for K92-7-29A muscovite.

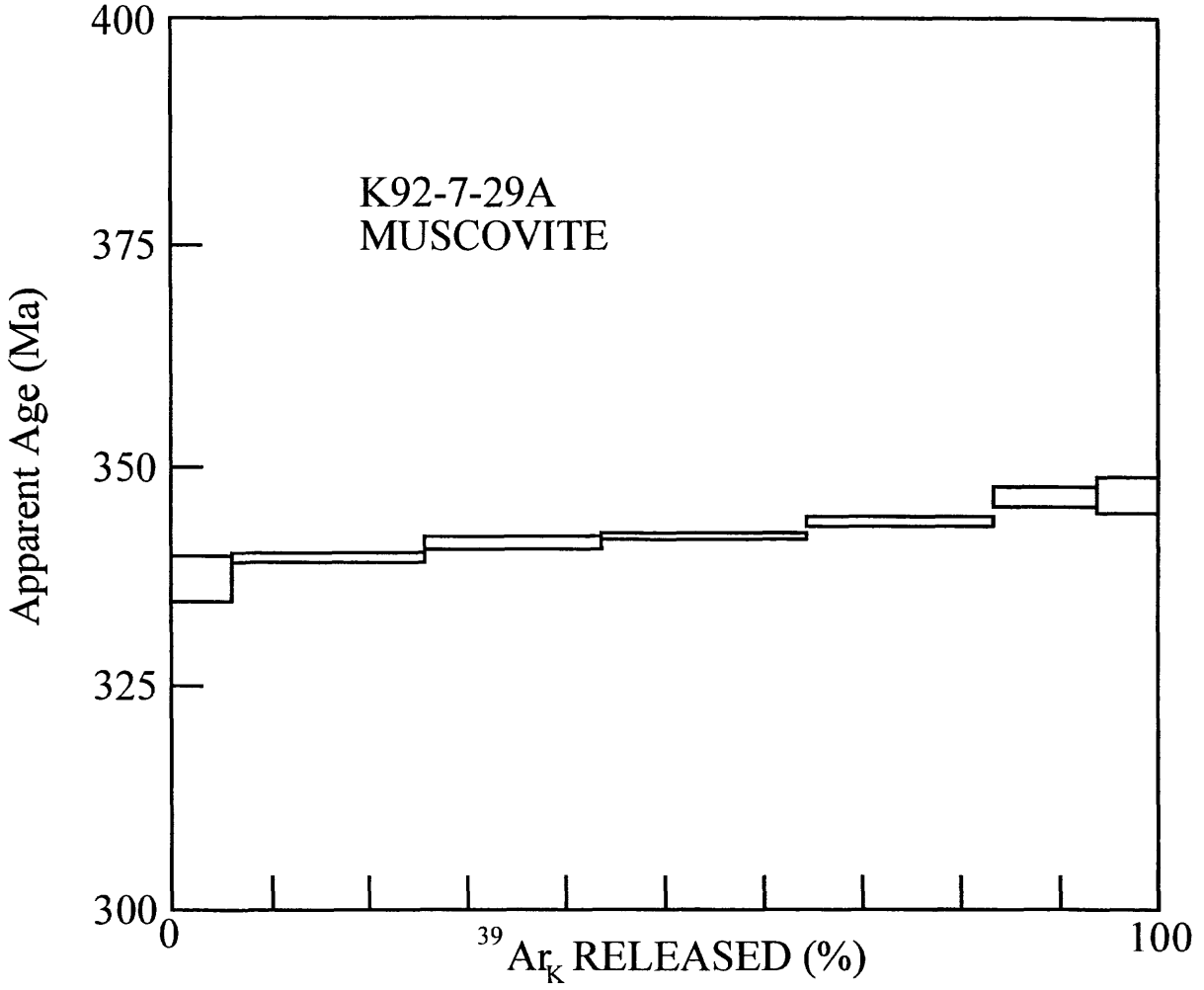


Table 18A. CBR-10-92 BIOTITE #66RD93 v 4/17/98 16:34:09 14 Sep 1999

RAW DATA

File #	Temperature	^{40}Ar	^{39}Ar	^{38}Ar	^{37}Ar	^{36}Ar	Trap current	Manifold
35848	1450	3577800	125698	3510	52	241	100	EALL
	±	1455	232	15	12	3		

All values are in counts. Measured $^{40}Ar/^{36}Ar = 295.7 \pm 0.5$

Precisions are at the 1 sigma level and are from linear regression statistics.

Trap current factors: 40 = 5.66 100 = 2.62 200 = 1

Manifold factors: All = 1 Split1 = 3.3 Split2 = 10.89

EAll = 2 Esplit1 = 6.6 Esplit2 = 21.78

Sensitivity = 1.647 X 10^{-18} moles/count. Reproducibility limit = .25 %. Detection limit = 40 counts.

Table 18B. CBR-10-92 BIOTITE #66RD93 v 4/17/98 16:34:09 14 Sep 1999

CORRECTIONS

Temp (°C)	^{39}Ar decay	^{37}Ar decay	----- ^{40}Ar	K-derived ^{38}Ar	---- ^{37}Ar	---- ^{39}Ar	Ca-derivec ^{38}Ar	---- ^{36}Ar	Cl-derived ^{36}Ar	initial ^{38}Ar
1450	50	105	715	1687	0	0	0	0	0	45

All values are in counts and have been corrected for mass discrimination.

Table 18C. CBR-10-92 BIOTITE #66RD93 v 4/17/98 16:34:09 14 Sep 1999

MOLAR VALUES

Temperature (°C)	$^{40}Ar^*$	$^{39}Ar_K$	$^{38}Ar_{Cl}$	^{37}Ca	$^{36}Ar_i$	Apparent Age (Ma)		Precision (Ma)
1450	675.530932	23.781560	0.354746	0.029738	0.045776	340.06	±	0.16

All gas quantities are in moles x 10^{-12}.

Ages calculated assuming an initial $^{40}Ar/^{36}Ar = 295.5 \pm 0$.

All precision estimates are at the one sigma level of precision.

Ages of individual steps do not include error in the irradiation parameter J.

Table 18D. CBR-10-92 BIOTITE #66RD93 v 4/17/98 16:34:09 14 Sep 1999

MOLAR VALUES

Temperature (°C)	$^{40}Ar^*$	$^{39}Ar_K$	$^{38}Ar_{Cl}$	^{37}Ca	$^{36}Ar_i$	Apparent Age (Ma)		Precision (Ma)
750	51.156321	1.800458	0.001501	0.533386	0.005392	337.48	±	1.29
850	163.124550	5.838703	0.000000	0.023410	0.003984	339.82	±	0.32
900	151.461971	5.396946	0.000000	0.009610	0.003264	341.48	±	0.33
950	173.907860	6.178106	0.000000	0.013900	0.004093	342.23	±	0.17
1000	160.251147	5.661847	0.000000	0.008898	0.004012	343.80	±	0.24
1050	90.810233	3.159299	0.000360	0.014002	0.004190	346.67	±	0.62
1100	52.778208	1.818496	0.000000	0.019753	0.004080	346.76	±	0.97

All gas quantities are in moles x 10^{-12}.

Ages calculated assuming an initial $^{40}Ar/^{36}Ar = 295.5 \pm 0$.

All precision estimates are at the one sigma level of precision.

No error is calculated for the total gas age.

Table 19A. RR89-28 BIOTITE #60RD74 v 4/17/98 12:33:01 14 Sep 1999

		RAW DATA						
File #	Temperature	^{40}Ar	^{39}Ar	^{38}Ar	^{37}Ar	^{36}Ar	Trap current	Manifold
26550	650	375960	20502	488	0	268	200	ALL
	±	186	14	10	0	8		
26551	750	2700909	112384	2662	0	309	200	ALL
	±	1561	103	9	0	7		
26553	950	1765871	67446	1423	0	241	200	SPLIT 1
	±	404	36	15	0	10		
26555	1000	1604252	61394	1278	0	166	200	SPLIT 1
	±	1604	57	12	0	3		
26556	1050	4276601	166799	3915	0	253	200	ALL
	±	2529	138	16	0	5		
26557	1100	1556946	60909	1310	0	72	200	SPLIT 1
	±	985	31	18	0	7		
26559	1150	1443367	56553	1182	0	59	200	SPLIT 1
	±	683	18	10	0	5		
26560	1150	2734542	106953	2477	0	113	200	ALL
	±	1260	68	7	0	5		
26561	1200	1220985	47531	989	0	81	200	ALL
	±	398	42	15	0	6		
26562	1250	361642	13915	294	0	47	200	ALL
	±	158	17	7	0	3		
26563	1450	608564	24230	468	0	53	200	ALL
	±	348	31	16	0	2		

All values are in counts. Measured $^{40}Ar/^{36}Ar = 297.2 \pm 0.5$

Precisions are at the 1 sigma level and are from linear regression statistics.

Trap current factors: 40 = 3.57 100 = 1.4 200 = 1

Manifold factors: All = 1 Split1 = 4.2 Split2 = 17.64

EAll = 2.26 Esplit1 = 9.49 Esplit2 = 39.87

Sensitivity = 1.344 X 10^{-17} moles/count. Reproducibility limit = .25 %. Detection limit = 40 counts.

Table 19B. RR89-28 BIOTITE #60RD74 v 4/17/98 12:33:01 14 Sep 1999

	CORRECTIONS									
Temp	^{39}Ar	^{37}Ar	-----	K-derived	-----	-----	Ca-derivec	-----	Cl-derived	initial
(°C)	decay	decay	^{40}Ar	^{38}Ar	^{37}Ar	^{39}Ar	^{38}Ar	^{36}Ar	^{36}Ar	^{38}Ar
650	24	0	117	275	0	0	0	0	0	50
750	132	0	640	1510	0	0	0	0	0	58
950	79	0	384	906	0	0	0	0	0	45
1000	72	0	350	825	0	0	0	0	0	31
1050	196	0	950	2241	0	0	0	0	1	48
1100	71	0	347	818	0	0	0	0	0	13
1150	66	0	322	760	0	0	0	0	0	11
1150	126	0	609	1437	0	0	0	0	0	21
1200	56	0	271	639	0	0	0	0	0	15
1250	16	0	79	187	0	0	0	0	0	9
1450	28	0	138	326	0	0	0	0	0	10

All values are in counts and have been corrected for mass discrimination.

Table 19C. RR89-28 BIOTITE #60RD74 v 4/17/98 12:33:01 14 Sep 1999

	MOLAR VALUES							
Temperture	$^{40}Ar^*$	$^{39}Ar_K$	$^{38}Ar_{Cl}$	^{37}Ca	$^{36}Ar_i$	Apparent Age		Precision
(°C)						(Ma)		(Ma)
650	5.051331	0.276269	0.003548	0.000000	0.003627	200.99	±	1.53
750	36.291616	1.514389	0.016365	0.000000	0.004166	312.94	±	0.28
950	99.658231	3.817138	0.031941	0.000000	0.013654	336.36	±	0.52
1050	90.537077	3.474629	0.027570	0.000000	0.009403	338.88	±	0.38
1000	57.464751	2.247636	0.023286	0.000000	0.003415	337.18	±	0.22
1100	87.866892	3.447180	0.028730	0.000000	0.004072	337.46	±	0.47
1150	81.457000	3.200634	0.024677	0.000000	0.003362	337.45	±	0.38
1150	36.744054	1.441209	0.014367	0.000000	0.001521	337.98	±	0.22
1200	16.406395	0.640483	0.004957	0.000000	0.001088	337.13	±	0.47
1250	4.859407	0.187510	0.001575	0.000000	0.000640	334.59	±	0.81
1450	8.177242	0.326503	0.002065	0.000000	0.000715	328.34	±	0.41

All gas quantities are in moles x 10^{-12}.

Ages calculated assuming an initial $^{40}Ar/^{36}Ar = 295.5 \pm 0$.

All precision estimates are at the one sigma level of precision.

Ages of individual steps do not include error in the irradiation parameter J.

Table 19D. RR89-28 BIOTITE #60RD74 v 4/17/98 12:33:01 14 Sep 1999

Temperature °C	% ^{39}Ar of total	Radiogenic Yield (%)	$^{39}Ar_K$	$^{40}Ar^*/^{39}Ar_K$	Apparent K/Ca	Apparent K/Cl	Apparent Age Ma		Precision Ma
J = 0.008182 ± 0.5%					Sample wt =0.1013 g				
650	1.3	78.8	0.276269	14.404	***	188	200.99	±	1.53
750	7.4	96.6	1.514389	23.152	***	224	312.94	±	0.28
950	18.6	96.0	3.817138	25.051	***	289	336.36	±	0.52
1050	16.9	96.9	3.474629	25.257	***	305	338.88	±	0.38
1000	10.9	98.2	2.247636	25.118	***	234	337.18	±	0.22
1100	16.8	98.6	3.447180	25.140	***	290	337.46	±	0.47
1150	15.6	98.8	3.200634	25.140	***	314	337.45	±	0.38
1150	7.0	98.8	1.441209	25.184	***	243	337.98	±	0.22
1200	3.1	98.0	0.640483	25.114	***	313	337.13	±	0.47
1250	0.9	96.1	0.187510	24.906	***	288	334.59	±	0.81
1450	1.6	97.4	0.326503	24.397	***	383	328.34	±	0.41
Total Gas	100.0	97.4	20.573580	24.839	***	283	333.76		

70.24% of gas on plateau in 1000 through 1200 steps Plateau Age =337.67 ± 1.72

Ages calculated assuming an initial $^{40}Ar/^{36}Ar$ = 295.5± 0.

All precision estimates are at the one sigma level.

Ages of individual steps do not include error in the irradiation parameter J.

No error is calculated for the total gas age.

$^{39}Ar_K$ gas quantities are in moles x 10^{-12}.

*** Below detection limit.

Figure 19A. Age spectrum for RR89-28 biotite.

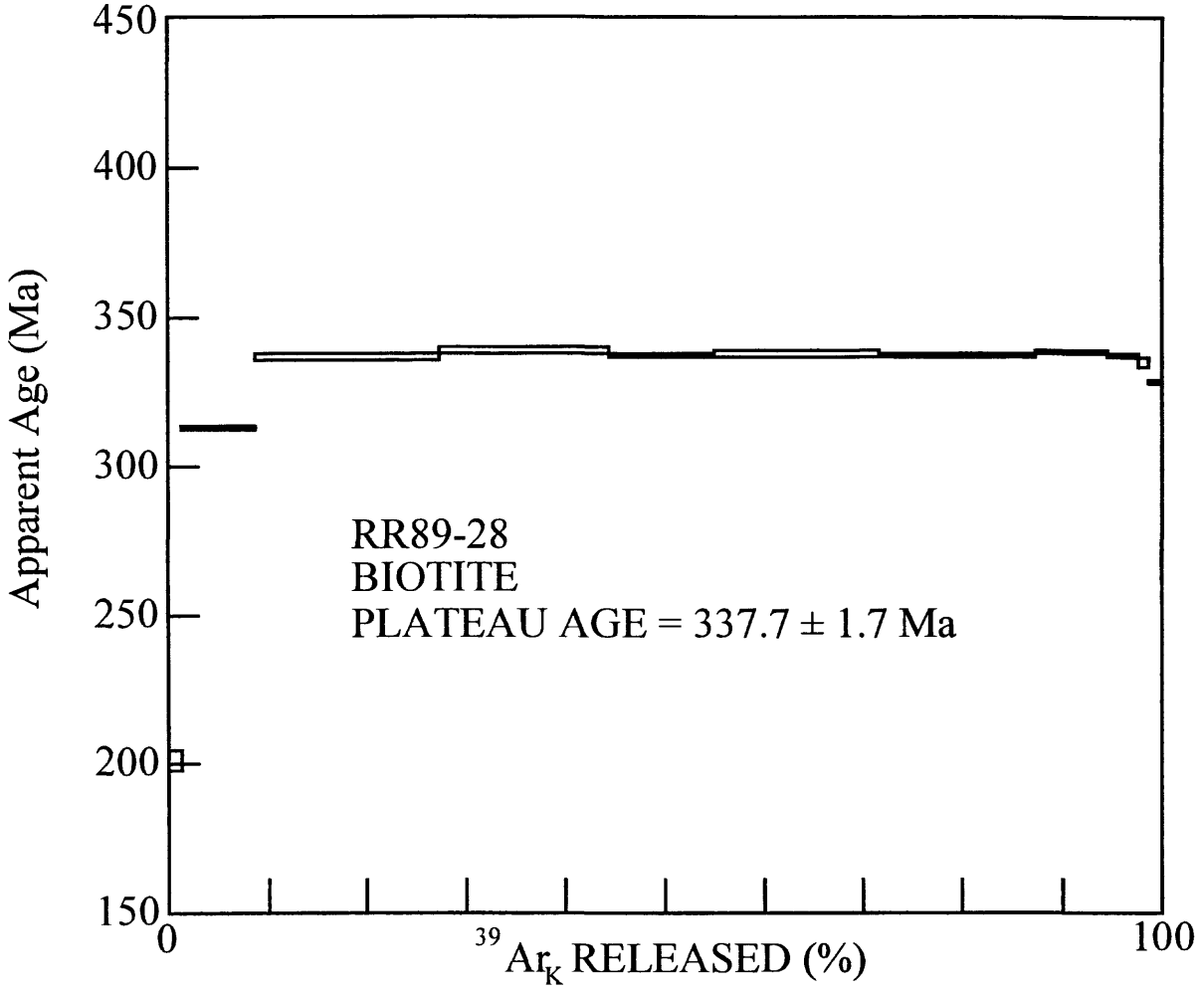


Figure 19B. Inverse isotope correlation diagram for RR89-28 biotite. Points C,D,E,F,G,H,I,and J, which contain 91.3% of the ^{39}Ar released, were regressed. MSWD = 0.328, SUMS = 1.968, initial $^{40}Ar/^{36}Ar$ = 273.84 ± 63.19, and apparent age = 337.7 ± 2.3 Ma.

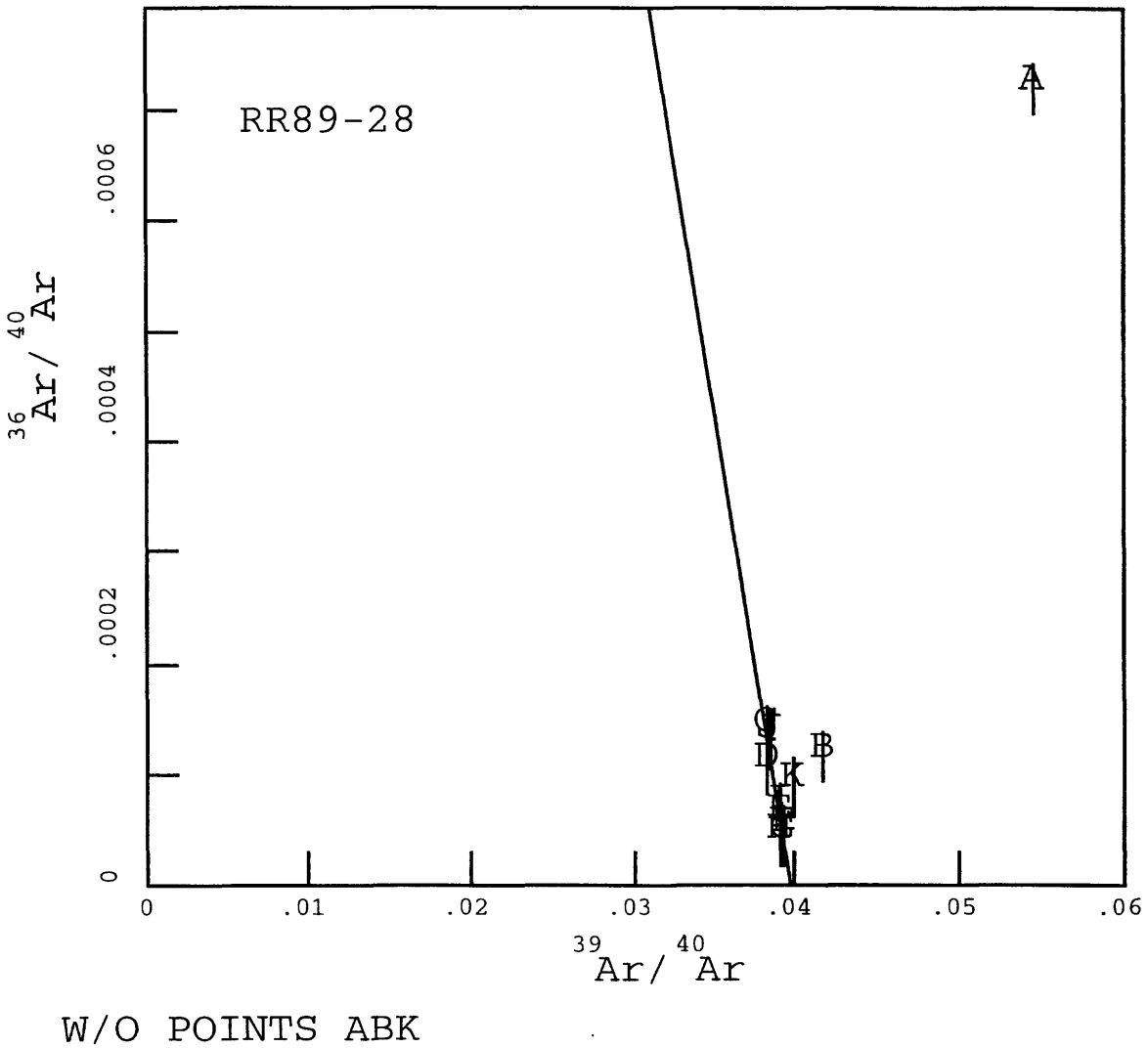


Table 20A. K92-5-16B BIOTITE #56RD93 v 4/17/98 16:36:50 14 Sep 1999

RAW DATA

File #	Temperature	^{40}Ar	^{39}Ar	^{38}Ar	^{37}Ar	^{36}Ar	Trap current	Manifold
35845	1450	3308942	109416	2534	471	1228	100	EALL
	±	1661	72	12	14	3		

All values are in counts. Measured $^{40}Ar/^{36}Ar$ = 295.7 ± 0.5

Precisions are at the 1 sigma level and are from linear regression statistics.

Trap current factors: 40 = 5.66 100 = 2.62 200 = 1

Manifold factors: All = 1 Split1 = 3.3 Split2 = 10.89

EAll = 2 Esplit1 = 6.6 Esplit2 = 21.78

Sensitivity = 3.604 X 10^{-17} moles/count. Reproducibility limit = .25 %. Detection limit = 40 counts.

Table 20B. K92-5-16B BIOTITE #56RD93 v 4/17/98 16:36:50 14 Sep 1999

CORRECTIONS

Temp (°C)	^{39}Ar decay	^{37}Ar decay	----- ^{40}Ar	K-derived ^{38}Ar	----- ^{37}Ar	----- ^{39}Ar	Ca-derivec ^{38}Ar	—— ^{36}Ar	Cl-derived ^{36}Ar	initial ^{38}Ar
1450	43	939	623	1469	0	1	0	0	0	231

All values are in counts and have been corrected for mass discrimination.

Table 20C. K92-5-16B BIOTITE #56RD93 v 4/17/98 16:36:50 14 Sep 1999

MOLAR VALUES

Temperature (°C)	$^{40}Ar^*$	$^{39}Ar_K$	$^{38}Ar_{Cl}$	^{37}Ca	$^{36}Ar_i$	Apparent Age (Ma)		Precision (Ma)
1450	624.774853	20.700844	0.246194	0.267452	0.233137	328.67	±	0.196

All gas quantities are in moles x 10^{-12}.

Ages calculated assuming an initial $^{40}Ar/^{36}Ar$ = 295.5± 0.

All precision estimates are at the one sigma level of precision.

Ages of individual steps do not include error in the irradiation parameter J.

Table 20D. K92-5-16B BIOTITE #56RD93 v 4/17/98 16:36:50 14 Sep 1999

Temperature °C	% ^{39}Ar of total	Radiogenic Yield (%)	$^{39}Ar_K$	$^{40}Ar^*/^{39}Ar_K$	Apparent K/Ca	Apparent K/Cl	Apparent Age Ma		Precision Ma
J = 0.007442 ± 0.5%					Sample wt = 0.0502 g				
1450	100.0	89.0	20.700844	26.853	40.3	203	328.67	±	1.53
Total Gas	100.0	89.0	20.700844	26.853	40.2	203	277.68		

Ages calculated assuming an initial $^{40}Ar/^{36}Ar$ = 295.5± 0.

All precision estimates are at the one sigma level.

No error is calculated for the total gas age.

$^{39}Ar_K$ gas quantities are in moles x 10^{-12}.

*** Below detection limit.

Table 21A. K92-5-17B BIOTITE #58RD93 v 4/17/98 16:39:32 14 Sep 1999

RAW DATA

File #	Temperature	^{40}Ar	^{39}Ar	^{38}Ar	^{37}Ar	^{36}Ar	Trap current	Manifold
35847	850	4160780	121618	3205	2619	489	100	EALL
	±	963	27	7	5	9		

All values are in counts. Measured $^{40}Ar/^{36}Ar$ = 295.7 ± 0.5

Precisions are at the 1 sigma level and are from linear regression statistics.

Trap current factors: 40 = 5.66 100 = 2.62 200 = 1

Manifold factors: All = 1 Split1 = 3.3 Split2 = 10.89

EAll = 2 Esplit1 = 6.6 Esplit2 = 21.78

Sensitivity = 1.647 X 10^{-18} moles/count. Reproducibility limit = .25 %. Detection limit = 40 counts.

Table 21B. K92-5-17B BIOTITE #58RD93 v 4/17/98 16:39:32 14 Sep 1999

CORRECTIONS

Temp	^{39}Ar	^{37}Ar	----- K-derived -----			-----	Ca-derivec -----		Cl-derived	initial
(°C)	decay	decay	^{40}Ar	^{38}Ar	^{37}Ar	^{39}Ar	^{38}Ar	^{36}Ar	^{36}Ar	^{38}Ar
850	48	5229	692	1633	0	5	0	2	0	91

All values are in counts and have been corrected for mass discrimination.

Table 21C. K92-5-17B BIOTITE #58RD93 v 4/17/98 16:39:32 14 Sep 1999

MOLAR VALUES

Temperture	$^{40}Ar^*$	$^{39}Ar_K$	$^{38}Ar_{Cl}$	^{37}Ca	$^{36}Ar_i$	Apparent Age		Precision
(°C)						(Ma)		(Ma)
850	785.630995	23.008713	0.315863	1.488484	0.092379	396.10	±	0.256

All gas quantities are in moles x 10^{-12}.

Ages calculated assuming an initial $^{40}Ar/^{36}Ar$ = 295.5± 0.

All precision estimates are at the one sigma level of precision.

Ages of individual steps do not include error in the irradiation parameter J.

Table 21D. K92-5-17B BIOTITE #58RD93 v 4/17/98 16:39:32 14 Sep 1999

Temperature	% ^{39}Ar	Radiogenic	$^{39}Ar_K$	$^{40}Ar^*/^{39}Ar_K$	Apparent	Apparent	Apparent Age		Precision
°C	of total	Yield (%)			K/Ca	K/Cl	Ma		Ma
J = 0.007450 ± 0.5%					Sample wt = 0.0516 g				
850	100.0	96.5	23.008713	32.959	8.0	176	396.10	±	1.80
Total Gas	100.0	96.5	23.008713	32.959	8.0	176	277.68		

Ages calculated assuming an initial $^{40}Ar/^{36}Ar$ = 295.5± 0.

All precision estimates are at the one sigma level.

No error is calculated for the total gas age.

$^{39}Ar_K$ gas quantities are in moles x 10^{-12}.

*** Below detection limit.

Table 22A. K92-5-17C BIOTITE #60RD93 v 4/17/98 16:46:44 14 Sep 1999

RAW DATA

File #	Temperature	^{40}AR	^{39}Ar	^{38}Ar	^{37}Ar	^{36}Ar	Trap current	Manifold
35846	650	4123907	123975	3560	1026	597	100	EALL
	±	2354	59	15	16	9		

All values are in counts. Measured $^{40}Ar/^{36}Ar$ = 295.7 ± 0.5

Precisions are at the 1 sigma level and are from linear regression statistics.

Trap current factors: 40 = 5.66 100 = 2.62 200 = 1

Manifold factors: All = 1 Split1 = 3.3 Split2 = 10.89

EAll = 2 Esplit1 = 6.6 Esplit2 = 21.78

Sensitivity = $3.604E^{-17}$ moles/count. Reproducibility limit = .25 %. Detection limit = 40 counts.

Table 22B. K92-5-17C BIOTITE #60RD93 v 4/17/98 16:46:44 14 Sep 1999

CORRECTIONS

Temp (°C)	^{39}Ar decay	^{37}Ar decay	----- ^{40}Ar	K-derived ^{38}Ar	----- ^{37}Ar	----- ^{39}Ar	Ca-derivec ^{38}Ar	----- ^{36}Ar	Cl-derived ^{36}Ar	initial ^{38}Ar
650	49	2046	705	1664	0	2	0	1	0	112

All values are in counts and have been corrected for mass discrimination.

Table 22C. K92-5-17C BIOTITE #60RD93 v 4/17/98 16:46:44 14 Sep 1999

MOLAR VALUES

Temperature (°C)	^{40}Ar*	$^{39}Ar_K$	$^{38}Ar_{Cl}$	^{37}Ca	$^{36}Ar_i$	Apparent Age (Ma)		Precision (Ma)
650	778.665047	23.455266	0.381046	0.582748	0.113260	382.87	±	0.321

All gas quantities are in moles x 10^{-12}.

Ages calculated assuming an initial $^{40}Ar/^{36}Ar$ = 295.5± 0.

All precision estimates are at the one sigma level of precision.

Ages of individual steps do not include error in the irradiation parameter J.

Table 22D. K92-5-17C BIOTITE #60RD93 v 4/17/98 16:46:44 14 Sep 1999

Temperature °C	% ^{39}Ar of total	Radiogenic Yield %	$^{39}Ar_K$	$^{40}Ar^*/^{39}Ar_K$	Apparent K/Ca	Apparent K/Clp	Apparent Age Ma		Precision Ma
J = 0.007442 ± 0.5%					Sample wt = 0.0505 g				
650	100.0	95.7	23.455266	31.771	20.93	149	382.87	±	1.76
Total Gas	100.0	95.7	23.455266	31.771	20.93	149	277.68		

Ages calculated assuming an initial $^{40}Ar/^{36}Ar$ = 295.5± 0.

All precision estimates are at the one sigma level.

No error is calculated for the total gas age.

$^{39}Ar_K$ gas quantities are in moles x 10^{-12}.

*** Below detection limit.

Table 22A. K92-8-4B BIOTITE #62RD93 v 4/17/98 16:51:03 14 Sep 1999

RAW DATA

File #	Temperature	^{40}Ar	^{39}Ar	^{38}Ar	^{37}Ar	^{36}Ar	Trap current	Manifold
35819	1450	4061026	128432	1758	395	404	100	EALL
	±	169	107	11	3	9		

All values are in counts. Measured $^{40}Ar/^{36}Ar$ = 297.2 ± 0.5

Precisions are at the 1 sigma level and are from linear regression statistics.

Trap current factors: 40 = 5.66 100 = 2.62 200 = 1

Manifold factors: All = 1 Split1 = 3.3 Split2 = 10.89

EAll = 2 Esplit1 = 6.6 Esplit2 = 21.78

Sensitivity = 3.604 X 10^{-17} moles/count. Reproducibility limit = .25 %. Detection limit = 40 counts.

Table 23B. K92-8-4B BIOTITE #62RD93 v 4/17/98 16:51:03 14 Sep 1999

CORRECTIONS

Temp	^{39}Ar	^{37}Ar	-----	K-derived	-----	-----	Ca-derivec	-----	Cl-derived	initial
(°C)	decay	decay	^{40}Ar	^{38}Ar	^{37}Ar	^{39}Ar	^{38}Ar	^{36}Ar	^{36}Ar	^{38}Ar
1450	50	767	731	1724	0	1	0	0	0	76

All values are in counts and have been corrected for mass discrimination.

Table 23C. K92-8-4B BIOTITE #62RD93 v 4/17/98 16:51:03 14 Sep 1999

MOLAR VALUES

Temperature	$^{40}Ar^*$	$^{39}Ar_K$	$^{38}Ar_{Cl}$	^{37}Ca	$^{36}Ar_i$	Apparent Age		Precision
(°C)						(Ma)		(Ma)
1450	766.785083	24.298536	0.021691	0.220314	0.076769	370.41	±	0.23

All gas quantities are in moles x 10^{-12}.

Ages calculated assuming an initial $^{40}Ar/^{36}Ar$ = 295.5± 0.

All precision estimates are at the one sigma level of precision.

Ages of individual steps do not include error in the irradiation parameter J.

Table 23D. K92-8-4B BIOTITE #62RD93 v 4/17/98 16:51:03 14 Sep 1999

Temperature	% ^{39}Ar	Radiogenic	$^{39}Ar_K$	$^{40}Ar^*/^{39}Ar_K$	Apparent	Apparent	Apparent Age		Precision
°C	of total	Yield (%)			K/Ca	K/Cl	Ma		Ma
J = 0.007443 ± 0.5%					Sample wt = 0.0497 g				
1450	100.0	97	24.298536	30.623	57.35	2711	370.41	±	1.70
Total Gas	100.0	97	24.298536	30.623	57.35	2711	277.68		

Ages calculated assuming an initial $^{40}Ar/^{36}Ar$ = 295.5± 0.

All precision estimates are at the one sigma level.

No error is calculated for the total gas age.

$^{39}Ar_K$ gas quantities are in moles x 10^{-12}.

*** Below detection limit.

Table 24A. K92-8-4D BIOTITE #64RD93 v 4/17/98 16:53:34 14 Sep 1999

RAW DATA

File #	Temperature	^{40}Ar	^{39}Ar	^{38}Ar	^{37}Ar	^{36}Ar	Trap current	Manifold
35821	1450	4165277	131576	1759	266	159	100	EALL
	±	406	12	8	9	4		

All values are in counts. Measured $^{40}Ar/^{36}Ar$ = 297.2 ± 0.5

Precisions are at the 1 sigma level and are from linear regression statistics.

Trap current factors: 40 = 5.66 100 = 2.62 200 = 1

Manifold factors: All = 1 Split1 = 3.3 Split2 = 10.89

EAll = 2 Esplit1 = 6.6 Esplit2 = 21.78

Sensitivity = 3.604 X 10^{-18} moles/count. Reproducibility limit = .25 %. Detection limit = 40 counts.

Table 24B. K92-8-4D BIOTITE #64RD93 v 4/17/98 16:53:34 14 Sep 1999

CORRECTIONS

Temp (°C)	^{39}Ar decay	^{37}Ar decay	----- ^{40}Ar	K-derived ^{38}Ar	---- ^{37}Ar	---- ^{39}Ar	Ca-derivec ^{38}Ar	----- ^{36}Ar	Cl-derived ^{36}Ar	initial ^{38}Ar
1450	51	517	749	1766	0	1	0	0	0	30

All values are in counts and have been corrected for mass discrimination.

Table 24C. K92-8-4D BIOTITE #64RD93 v 4/17/98 16:53:34 14 Sep 1999

MOLAR VALUES

Temperature (°C)	$^{40}Ar^*$	$^{39}Ar_K$	$^{38}Ar_{Cl}$	^{37}Ca	$^{36}Ar_i$	Apparent Age (Ma)		Precision (Ma)
1450	786.469422	24.893492	0.005281	0.148535	0.030177	377.23	±	0.12

All gas quantities are in moles x 10^{-12}.

Ages calculated assuming an initial $^{40}Ar/^{36}Ar$ = 295.5± 0.

All precision estimates are at the one sigma level of precision.

Ages of individual steps do not include error in the irradiation parameter J.

Table 24D. K92-8-4D BIOTITE #64RD93 v 4/17/98 16:53:34 14 Sep 1999

Temperature °C	% ^{39}Ar of total	Radiogenic Yield (%)	$^{39}Ar_K$	$^{40}Ar^*/^{39}Ar_K$	Apparent K/Ca	Apparent K/Cl	Apparent Age Ma		Precision Ma
J = 0.007446 ± 0.5%					Sample wt = 0.0491 g				
1450	100.0	98.9	24.893492	31.235	87.15	11407	377.23	±	1.71
Total Gas	100.0	98.9	24.893492	31.235	87.15	11407	277.68		

Ages calculated assuming an initial $^{40}Ar/^{36}Ar$ = 295.5± 0.

All precision estimates are at the one sigma level.

No error is calculated for the total gas age.

$^{39}Ar_K$ gas quantities are in moles x 10^{-12}.

*** Below detection limit.

Table 25A. CBR-10-92 KSPAR #18KD93 v 4/17/98 15:40:55 14 Sep 1999

		RAW DATA						
File #	Temperature	^{40}Ar	^{39}Ar	^{38}Ar	^{37}Ar	^{36}Ar	Trap current	Manifold
35784	650	740692	23559	400	15	106	200	EALL
	±	263	10	11	3	7		
35785	750	1456965	57547	840	0	145	200	EALL
	±	1198	17	16	17	10		
35786	800	1415005	80579	1062	0	80	200	EALL
	±	2122	86	6	7	6		
35787	850	1242170	75876	982	0	71	200	EALL
	±	124	27	10	9	6		
35788	900	1197633	67986	905	9	69	200	EALL
	±	1402	168	16	3	3		
35789	950	1005709	54483	725	0	75	200	EALL
	±	240	29	7	19	6		
35790	1000	833804	43459	590	2	75	200	EALL
	±	899	51	12	6	6		
35791	1050	813346	39902	562	21	57	200	EALL
	±	611	28	3	12	5		
35792	1100	900699	39129	525	17	75	200	EALL
	±	162	16	10	5	7		
35793	1150	868473	34738	487	27	63	200	EALL
	±	275	60	14	7	3		
35794	1175	653760	22172	324	7	54	200	EALL
	±	211	31	12	12	12		
35795	1200	721143	18569	224	0	72	200	EALL
	±	553	16	4	20	6		
35796	1225	1311526	24800	461	13	81	200	EALL
	±	269	21	8	8	5		
35797	1250	2685136	42071	849	0	130	200	EALL
	±	1395	93	11	5	5		
35798	1275	4388423	67343	1365	6	191	200	EALL
	±	1742	37	11	7	7		
35799	1300	1529631	24330	484	0	59	200	ESPLIT 1
	±	341	34	8	7	8		
35800	1350	1662794	27840	534	13	68	200	ESPLIT 1
	±	151	40	10	7	7		

All values are in counts. Measured $^{40}Ar/^{36}Ar = 297.2 \pm 0.5$

Precisions are at the 1 sigma level and are from linear regression statistics.

Trap current factors: 40 = 5.66 100 = 2.62 200 = 1

Manifold factors: All = 1 Split1 = 3.3 Split2 = 10.89

EAll = 2 Esplit1 = 6.6 Esplit2 = 21.78

Sensitivity = 3.604 X 10^{-17} moles/count. Reproducibility limit = .25 %. Detection limit = 40 counts.

Table 25B. CBR-10-92 KSPAR #18KD93 v 4/17/98 15:40:55 14 Sep 1999

			CORRECTIONS							
Temp	^{39}Ar	^{37}Ar	-----	K-derived	-----	----	Ca-derivec	----	Cl-derived	initial
(°C)	decay	decay	^{40}Ar	^{38}Ar	^{37}Ar	^{39}Ar	^{38}Ar	^{36}Ar	^{36}Ar	^{38}Ar
650	9	28	134	316	0	0	0	0	0	20
750	22	0	327	773	0	0	0	0	0	27
800	31	0	459	1082	0	0	0	0	0	15
850	29	0	432	1019	0	0	0	0	0	13
900	26	17	387	913	0	0	0	0	0	13
950	21	0	310	731	0	0	0	0	0	14
1000	17	4	247	583	0	0	0	0	0	14
1050	15	41	227	536	0	0	0	0	0	11
1100	15	33	223	525	0	0	0	0	0	14
1150	13	52	198	466	0	0	0	0	0	12
1175	9	13	126	298	0	0	0	0	0	10
1200	7	0	106	249	0	0	0	0	0	14
1225	10	26	141	333	0	0	0	0	0	15
1250	16	0	239	565	0	0	0	0	0	24
1275	26	11	383	904	0	0	0	0	0	36
1300	9	0	138	327	0	0	0	0	0	11
1350	11	25	158	374	0	0	0	0	0	13

All values are in counts and have been corrected for mass discrimination.

Table 25C. CBR-10-92 KSPAR #18KD93 v 4/17/98 15:40:55 14 Sep 1999

			MOLAR VALUES					
Temperature	$^{40}Ar^*$	$^{39}Ar_K$	$^{38}Ar_{Cl}$	^{37}Ca	$^{36}Ar_i$	Apparent Age		Precision
(°C)						(Ma)		(Ma)
650	53.379404	1.701200	0.007555	0.003051	0.007678	360.48	±	0.92
750	104.994430	4.155575	0.007024	0.000000	0.010518	299.36	±	0.60
800	101.960542	5.818754	0.000000	0.000000	0.005814	215.41	±	0.41
850	89.504476	5.479122	0.000000	0.000000	0.005167	201.56	±	0.26
900	86.297495	4.909369	0.000573	0.001924	0.005035	215.97	±	0.29
950	72.469126	3.934299	0.000691	0.000000	0.005428	224.64	±	0.37
1000	60.082780	3.138209	0.001621	0.000488	0.005419	231.93	±	0.57
1050	58.609615	2.881409	0.002767	0.004517	0.004165	246.79	±	0.46
1100	64.906330	2.825533	0.001087	0.003650	0.005414	275.43	±	0.60
1150	62.585269	2.508504	0.002428	0.005690	0.004530	298.20	±	0.31
1175	47.113927	1.601090	0.002719	0.001441	0.003945	345.78	±	1.71
1200	51.972371	1.340863	0.000000	0.000000	0.005222	440.94	±	1.07
1225	94.524647	1.790868	0.010411	0.002830	0.005837	582.98	±	0.57
1250	193.527352	3.038044	0.022430	0.000000	0.009402	685.46	±	0.43
1275	316.289919	4.862944	0.036134	0.001173	0.013856	698.24	±	0.36
1300	363.811238	5.797700	0.040415	0.000000	0.014062	678.61	±	0.93
1350	395.481183	6.634170	0.041630	0.009045	0.016225	649.72	±	0.69

All gas quantities are in moles x 10^{-12}.

Ages calculated assuming an initial $^{40}Ar/^{36}Ar$ = 295.5± 0.

All precision estimates are at the one sigma level of precision.

Ages of individual steps do not include error in the irradiation parameter J.

Table 25D. CBR-10-92 KSPAR #18KD93 v 4/17/98 15:40:55 14 Sep 1999

Temperature °C	% ^{39}Ar of total	Radiogenic Yield (%)	$^{39}Ar_K$	$^{40}Ar^*/^{39}Ar_K$	Apparent K/Ca	Apparent K/Cl	Apparent Age Ma		Precision Ma
J = 0.007362± 0.5%					Sample wt = 0.1021 g				
650	2.7	95.7	1.701200	30.044	289.92	545	360.48	±	0.92
750	6.7	97	4.155575	24.518	***	1432	299.36	±	0.60
800	9.3	98.3	5.818754	17.228	***	***	215.41	±	0.41
850	8.8	98.3	5.479122	16.057	***	***	201.56	±	0.26
900	7.9	98.3	4.909369	17.275	1326.94	20742	215.97	±	0.29
950	6.3	97.8	3.934299	18.012	0.00	13771	224.64	±	0.37
1000	5.0	97.3	3.138209	18.635	3344.18	4684	231.93	±	0.57
1050	4.6	97.9	2.881409	19.913	331.72	2520	246.79	±	0.46
1100	4.5	97.5	2.825533	22.405	402.56	6288	275.43	±	0.60
1150	4.0	97.9	2.508504	24.416	229.25	2500	298.20	±	0.31
1175	2.6	97.5	1.601090	28.698	577.86	1425	345.78	±	1.71
1200	2.1	97	1.340863	37.610	***	***	440.94	±	1.07
1225	2.9	98.2	1.790868	51.818	329.11	416	582.98	±	0.57
1250	4.9	98.6	3.038044	62.787	***	328	685.46	±	0.43
1275	7.8	98.7	4.862944	64.199	2155.96	326	698.24	±	0.36
1300	9.3	98.9	5.797700	62.034	***	347	678.61	±	0.93
1350	10.6	98.8	6.634170	58.890	381.41	386	649.72	±	0.69
Total Gas	100.0	98.1	62.417653	58.890	555.93	3510	412.77		

NO PLATEAU

Ages calculated assuming an initial $^{40}Ar/^{36}Ar$ = 295.5± 0.

All precision estimates are at the one sigma level.

Ages of individual steps do not include error in the irradiation parameter J.

No error is calculated for the total gas age.

$^{39}Ar_K$ gas quantities are in moles x 10^{-12}.

*** Below detection limit.

Figure 25. Age spectrum for CBR-10-92 Kspar.

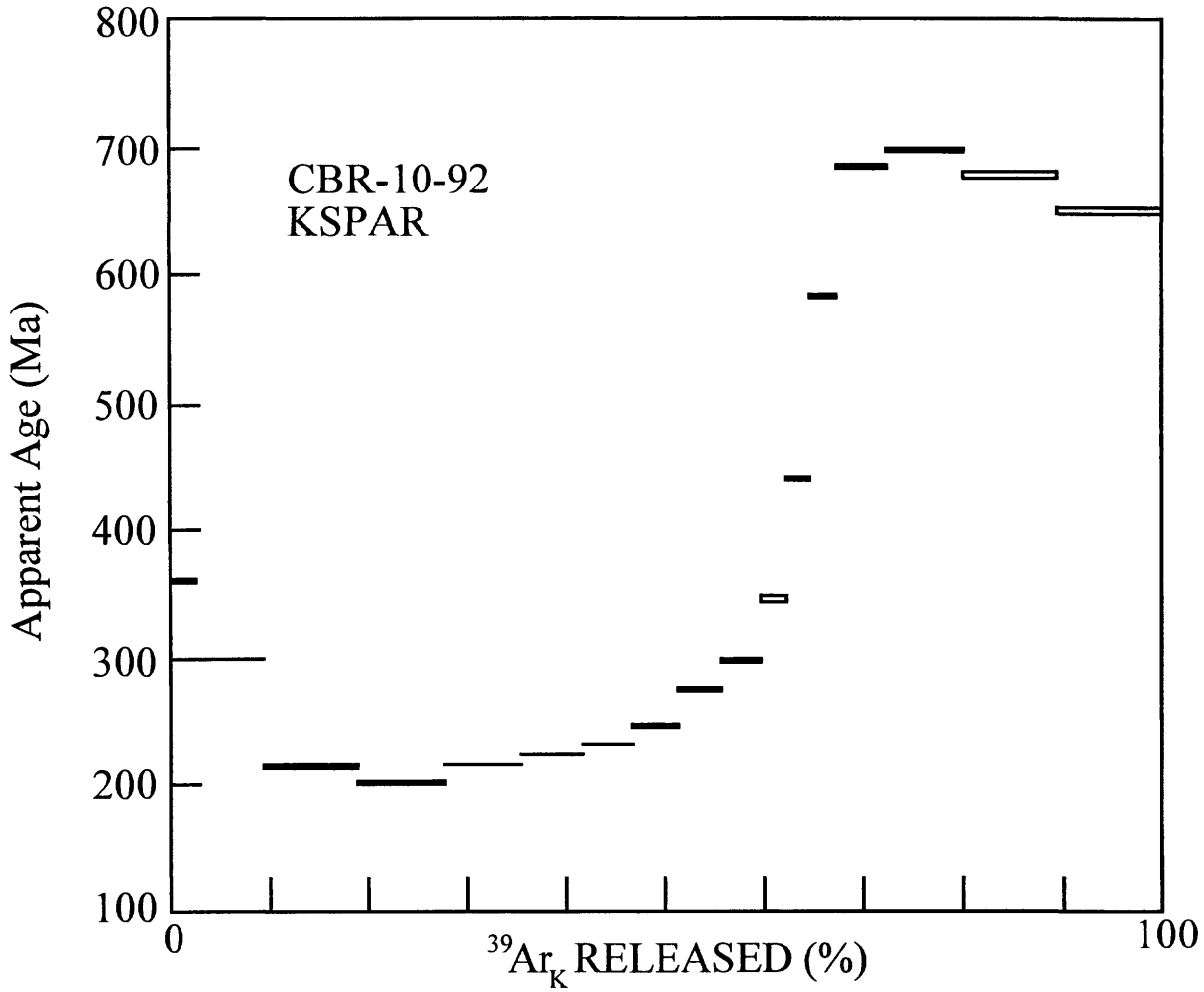


Table 22A. RRNB-400 Kspar #62 RD74 v.9/21/99 14:34:58 16 Sep 1999

		RAW DATA						
File #	Temperature	^{40}Ar	^{39}Ar	^{38}Ar	^{37}Ar	^{36}Ar	Trap current	Manifold
26565	650	208197	10503	158	3	44	200	EALL
	±	87	13	8	6	6		
26566	750	1112543	70834	843	14	70	200	EALL
	±	1081	48	18	10	2		
26567	850	1502536	94452	902	0	33	200	ESPLIT 1
	±	1132	66	12	9	5		
26568	900	4477779	268590	3444	9	53	200	EALL
	±	3925	93	9	14	5		
26569	950	3583746	207054	2674	0	52	200	EALL
	±	1110	124	14	6	7		
26570	1000	2784576	157074	2051	15	50	200	EALL
	±	2681	105	9	6	8		
26571	1050	2764626	150928	1932	32	53	200	EALL
	±	870	105	10	13	7		
26572	1100	2557946	135856	1779	0	54	200	EALL
	±	418	61	6	3	7		
26573	1150	1987445	103146	1342	28	54	200	EALL
	±	850	50	3	16	7		
26574	1200	2181771	109817	1457	0	66	200	EALL
	±	1309	61	11	7	9		
26575	1250	2847551	137707	1838	20	84	200	EALL
	±	1773	64	14	9	3		
26576	1275	2376662	111184	1494	11	67	200	EALL
	±	1295	87	4	6	3		
26577	1300	2973724	134865	1806	0	87	200	EALL
	±	319	109	16	12	9		
26578	1325	2740335	120667	1635	0	106	200	EALL
	±	949	75	4	13	3		
26579	1350	2964560	126150	1695	0	111	200	EALL
	±	748	37	12	13	5		
26580	1375	3591871	146605	2050	9	128	200	EALL
	±	2210	118	26	8	7		
26581	1400	4275428	169008	2308	0	119	200	EALL
	±	3551	94	9	11	5		
26582	1425	2050580	81151	898	0	55	200	EALL
	±	339	13	7	16	9		
26583	1450	293849	12936	135	0	18	200	EALL
	±	148	16	4	5	2		
26584	1550	262206	12782	139	0	17	200	EALL
	±	207	8	9	10	2		
26585	1650	1664204	70818	764	0	56	200	EALL
	±	1176	3	20	4	6		
26586	1750	1274581	54249	590	2	51	200	EALL
	±	1005	49	23	4	4		

All values are in counts. Measured $^{40}Ar/^{36}Ar = 297.2 \pm 0.5$

Precisions are at the 1 sigma level and are from linear regression statistics.

Trap current factors: 40 = 3.57 100 = 1.4 200 = 1

Manifold factors: All = 1 Split1 = 4.2 Split2 = 17.64 EALL=2. Esplit1 = 9.49 Esplit2 = 39.87

Sensitivity = 1.344 X 10^{-17} moles/count. Reproducibility limit = .25 %. Detection limit = 40 counts.

Table 26B. RRNB-400 Kspar #62 RD74 v.9/21/99 14:34:58 16 Sep 1999

			CORRECTIONS							
Temp	^{39}Ar	^{37}Ar	-----	K-derived	-----	----	Ca-derivec	-----	Cl-derived	initial
(°C)	decay	decay	^{40}Ar	^{38}Ar	^{37}Ar	^{39}Ar	^{38}Ar	^{36}Ar	^{36}Ar	^{38}Ar
650	12	64	60	141	0	0	0	0	0	8
750	84	325	403	952	0	0	0	0	0	13
850	111	0	538	1269	0	0	0	0	0	6
900	317	207	1530	3609	0	0	0	0	0	10
950	244	0	1179	2782	0	0	0	0	0	10
1000	185	368	895	2110	0	0	0	0	0	9
1050	178	766	860	2028	0	1	0	0	0	10
1100	160	0	774	1825	0	0	0	0	0	10
1150	122	679	587	1386	0	0	0	0	0	10
1200	130	0	625	1475	0	0	0	0	0	12
1250	163	466	784	1850	0	0	0	0	0	16
1275	131	253	633	1494	0	0	0	0	0	13
1300	159	0	768	1812	0	0	0	0	0	16
1325	142	0	687	1621	0	0	0	0	0	20
1350	149	0	718	1695	0	0	0	0	0	21
1375	173	205	835	1970	0	0	0	0	0	24
1400	200	0	962	2271	0	0	0	0	0	22
1425	96	0	462	1090	0	0	0	0	0	10
1450	15	0	74	174	0	0	0	0	0	3
1550	15	0	73	172	0	0	0	0	0	3
1650	84	0	403	951	0	0	0	0	0	11
1750	64	45	309	729	0	0	0	0	0	10

All values are in counts and have been corrected for mass discrimination.

Table 26C. RRNB-400 Kspar #62 RD74 v.9/21/99 14:34:58 16 Sep 1999

	MOLAR VALUES							
Temperature (°C)	$^{40}Ar^*$	$^{39}Ar_K$	$^{38}Ar_{Cl}$	^{37}Ca	$^{36}Ar_i$	Apparent Age (Ma)		Precision (Ma)
650	6.322046	0.319866	0.00078	0.002043	0.001353	254.082	±	2.22
750	33.780559	2.157173	0.000000	0.010327	0.002149	213.31	±	0.24
850	191.573224	12.078506	0.000000	0.000000	0.004193	218.45	±	0.26
900	135.963378	8.179619	0.000000	0.006570	0.001608	228.94	±	0.21
950	108.818315	6.305611	0.000000	0.000000	0.001604	236.95	±	0.14
1000	84.552655	4.783508	0.000000	0.011695	0.001527	242.10	±	0.30
1050	83.947738	4.596346	0.000000	0.024357	0.001625	249.53	±	0.18
1100	77.672561	4.137345	0.000000	0.000000	0.001654	255.89	±	0.20
1150	60.349604	3.141185	0.000000	0.021573	0.001643	261.02	±	0.28
1200	66.250991	3.344362	0.000000	0.000000	0.002031	268.31	±	0.33
1250	86.468832	4.193711	0.000280	0.014825	0.002547	278.55	±	0.19
1275	72.170444	3.385998	0.000509	0.008040	0.002046	287.33	±	0.17
1300	90.301768	4.107172	0.000480	0.000000	0.002644	295.61	±	0.25
1325	83.215146	3.674802	0.001177	0.000000	0.003244	302.95	±	0.14
1350	90.024923	3.841777	0.000776	0.000000	0.003387	312.75	±	0.15
1375	109.075577	4.464720	0.003361	0.006528	0.003906	325.09	±	0.25
1400	129.834312	5.146973	0.002020	0.000000	0.003644	335.45	±	0.28
1425	62.271089	2.471368	0.000000	0.000000	0.001693	335.18	±	0.39
1450	8.923236	0.393957	0.000000	0.000000	0.000540	301.22	±	0.70
1550	7.962126	0.389251	0.000000	0.000000	0.000504	273.91	±	0.57
1650	50.536933	2.156705	0.000000	0.000000	0.001710	313.06	±	0.39
1750	38.705258	1.652105	0.000000	0.001445	0.001557	312.46	±	0.34

All gas quantities are in moles x 10^{-12}.

Ages calculated assuming an initial $^{40}Ar/^{36}Ar = 295.5 \pm 0$.

All precision estimates are at the one sigma level of precision.

Ages of individual steps do not include error in the irradiation parameter J.

Table 26D. RRNB-400 Kspar #62 RD74 v.9/21/99 14:34:58 16 Sep 1999

Temperature °C	% ^{39}Ar of total	Radiogenic Yield (%)	$^{39}Ar_K$	$^{40}Ar^*/^{39}Ar_K$	Apparent K/Ca	Apparent K/Cl	Apparent Age Ma		Precision Ma
J = 0.008169 ± 0.5					Sample wt = 0.2498 g				
650	0.4	93.7	0.319866	***	81.4	993	254.08	±	2.22
750	2.5	98.1	2.157173	15.365	108.6	***	213.31	±	0.24
850	14.2	99.4	12.078506	15.758	***	***	218.45	±	0.26
900	9.6	99.7	8.179619	16.564	647.4	***	228.94	±	0.21
950	7.4	99.6	6.305611	17.182	***	***	236.95	±	0.14
1000	5.6	99.5	4.783508	17.582	212.7	***	242.10	±	0.30
1050	5.4	99.4	4.596346	18.160	98.1	***	249.53	±	0.18
1100	4.9	99.4	4.137345	18.655	***	***	255.89	±	0.20
1150	3.7	99.2	3.141185	19.058	75.7	***	261.02	±	0.28
1200	3.9	99.1	3.344362	19.630	***	***	268.31	±	0.33
1250	4.9	99.1	4.193711	20.439	147.1	36301	278.55	±	0.19
1275	4.0	99.2	3.385998	21.136	219.0	16111	287.33	±	0.17
1300	4.8	99.1	4.107172	21.796	***	20718	295.61	±	0.25
1325	4.3	98.8	3.674802	22.384	***	7558	302.95	±	0.14
1350	4.5	98.9	3.841777	23.173	***	11977	312.75	±	0.15
1375	5.3	98.9	4.464720	24.172	355.6	3215	325.09	±	0.25
1400	6.1	99.2	5.146973	25.016	0.0	6167	335.45	±	0.28
1425	2.9	99.2	2.471368	24.995	0.0	***	335.18	±	0.39
1450	0.5	98.2	0.393957	22.246	0.0	***	301.22	±	0.70
1550	0.5	98.1	0.389251	20.072	0.0	***	273.91	±	0.57
1650	2.5	99.0	2.156705	23.198	0.0	***	313.06	±	0.39
1750	1.9	98.8	1.652105	23.149	594.5	***	312.46	±	0.34
Total Gas	100.0	99.2	84.922060	19.605	131.8	4852	267.99		

Ages calculated assuming an initial $^{40}Ar/^{36}Ar$ = 295.5± 0.

All precision estimates are at the one sigma level.

Ages of individual steps do not include error in the irradiation parameter J.

No error is calculated for the total gas age.

$^{39}Ar_K$ gas quantities are in moles x 10^{-12}.

*** Below detection limit.

Figure 26. Age spectrum for RRNB-400 Kspar.

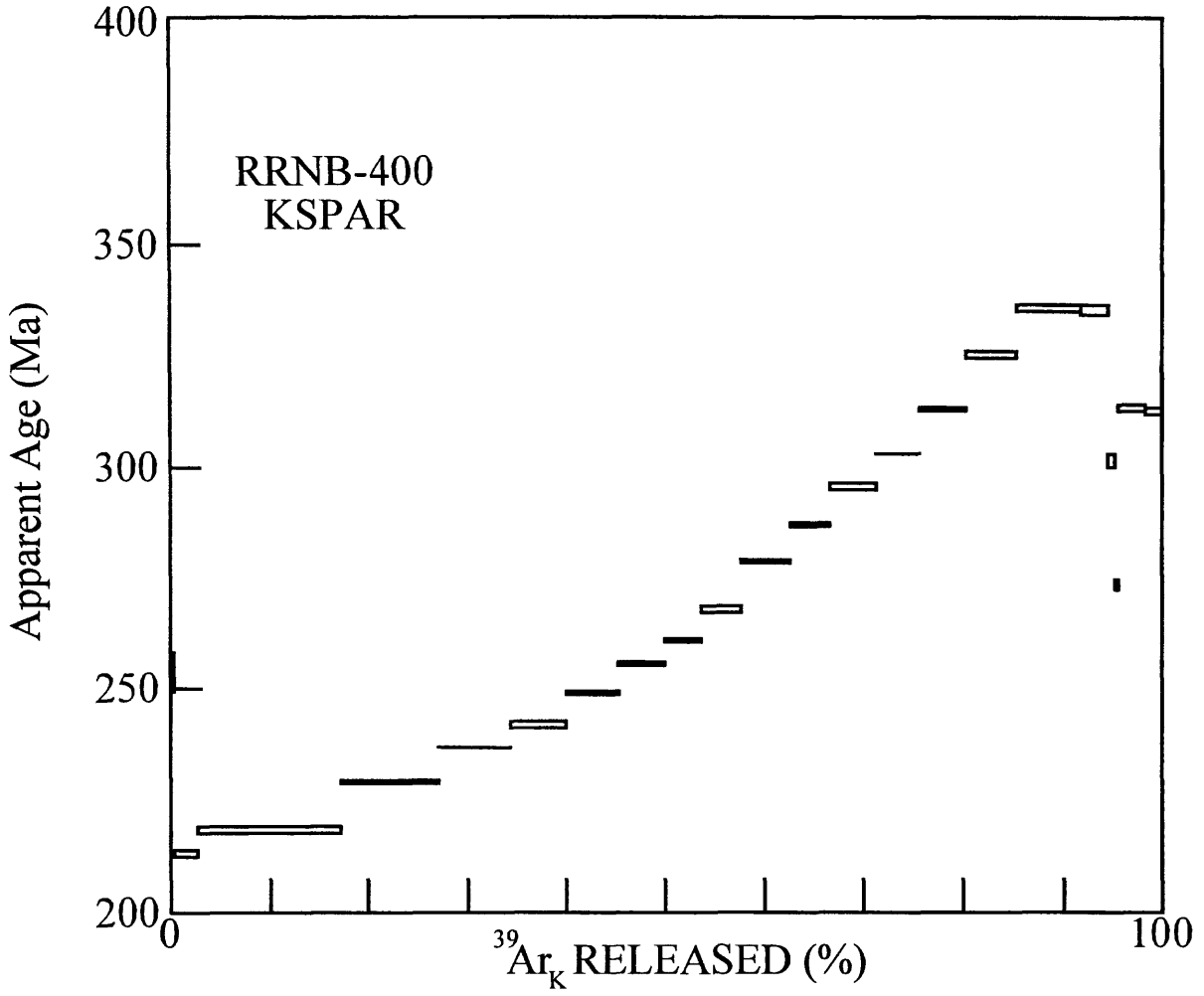


Table 27A. RR89-28 KSPAR #61RD74 v 4/17/98 11:00:53 14 Sep 1999

		RAW DATA						
File #	Temperature	^{40}Ar	^{39}Ar	^{38}Ar	^{37}Ar	^{36}Ar	Trap current	Manifold
26598	750	1956232	66002	889	32	106	200	EALL
	±	458	34	23	10	4		
26599	800	1557145	111781	1479	40	54	200	EALL
	±	1201	79	17	7	6		
26600	850	1701082	129013	1682	0	43	200	EALL
	±	1248	27	7	9	5		
26601	900	1678586	128296	1674	0	34	200	EALL
	±	1011	98	11	5	4		
26602	950	1726825	131169	1688	14	38	200	EALL
	±	816	97	11	4	4		
26603	1000	1729734	130130	1680	3	41	200	EALL
	±	1009	109	4	9	3		
26604	1050	1824004	132953	1733	15	44	200	EALL
	±	1320	110	8	11	3		
26605	1100	2102774	147180	1910	8	58	200	EALL
	±	1791	88	15	14	4		
26606	1150	2677594	179341	2345	19	89	200	EALL
	±	640	95	11	7	9		
26607	1200	4409213	274572	3636	20	130	200	EALL
	±	3681	128	7	10	4		
26608	1250	1354794	77363	847	23	41	200	ESPLIT 1
	±	442	12	36	17	4		
26609	1275	3457146	184150	2495	22	104	200	EALL
	±	2731	173	10	16	6		
26610	1300	2744431	137191	1862	4	90	200	EALL
	±	2657	70	14	9	7		
26611	1325	2802218	127958	1768	0	93	200	EALL
	±	1550	114	14	8	1		
26612	1350	2611793	109645	1532	1	79	200	EALL
	±	211	82	11	10	8		
26613	1375	3593223	140115	1960	0	96	200	EALL
	±	801	108	12	9	7		
26614	1400	3010737	115039	1649	0	85	200	EALL
	±	820	71	10	12	11		
26615	1425	843836	34376	384	0	33	200	EALL
	±	313	28	10	2	8		

All values are in counts. Measured $^{40}Ar/^{36}Ar = 297.2 \pm 0.5$

Precisions are at the 1 sigma level and are from linear regression statistics.

Trap current factors: 40 = 3.57 100 = 1.4 200 = 1

Manifold factors: All = 1 Split1 = 4.2 Split2 = 17.64

EAll = 2.26 Esplit1 = 9.49 Esplit2 = 39.87

Sensitivity = 1.344 X 10^{-17} moles/count. Reproducibility limit = .25 %. Detection limit = 40 counts.

Table 27B. RR89-28 KSPAR #61RD74 v 4/17/98 11:00:53 14 Sep 1999

			CORRECTIONS							
Temp	^{39}Ar	^{37}Ar	-----	K-derived	-----	-----	Ca-derivec	-----	Cl-derived	initial
(°C)	decay	decay	^{40}Ar	^{38}Ar	^{37}Ar	^{39}Ar	^{38}Ar	^{36}Ar	^{36}Ar	^{38}Ar
750	79	800	376	887	0	1	0	0	0	20
800	134	1010	637	1502	0	1	0	0	0	10
850	155	0	735	1733	0	0	0	0	0	8
900	154	0	731	1724	0	0	0	0	0	6
950	158	364	747	1762	0	0	0	0	0	7
1000	156	75	741	1748	0	0	0	0	0	8
1050	160	371	757	1786	0	0	0	0	0	8
1100	177	195	838	1977	0	0	0	0	0	11
1150	216	477	1021	2410	0	0	0	0	0	17
1200	330	513	1564	3689	0	0	0	0	0	24
1250	93	583	441	1039	0	0	0	0	0	8
1275	222	553	1049	2474	0	0	0	0	0	20
1300	165	93	781	1843	0	0	0	0	0	17
1325	154	0	729	1719	0	0	0	0	0	17
1350	132	26	624	1473	0	0	0	0	0	15
1375	169	0	798	1883	0	0	0	0	0	18
1400	138	0	655	1546	0	0	0	0	0	16
1425	41	0	196	462	0	0	0	0	0	6

All values are in counts and have been corrected for mass discrimination.

Table 27C. RR89-28 KSPAR #61RD74 v 4/17/98 11:00:53 14 Sep 1999

	MOLAR VALUES							
Temperature (°C)	$^{40}Ar^*$	$^{39}Ar_K$	$^{38}Ar_{Cl}$	^{37}Ca	$^{36}Ar_i$	Apparent Age (Ma)		Precision (Ma)
750	59.407952	2.010037	0.000756	0.025375	0.003222	387.49	±	0.26
800	47.278010	3.404224	0.000000	0.032039	0.001637	193.55	±	0.25
850	51.647016	3.929039	0.000000	0.000000	0.001327	184.16	±	0.19
900	50.963841	3.907203	0.000000	0.000000	0.001030	183.10	±	0.16
950	52.428575	3.994712	0.000000	0.011536	0.001155	184.08	±	0.14
1000	52.517119	3.963066	0.000000	0.002382	0.001265	185.67	±	0.14
1050	55.380041	4.049041	0.000000	0.011759	0.001354	191.31	±	0.16
1100	63.845049	4.482327	0.000000	0.006195	0.001777	198.62	±	0.20
1150	81.299288	5.461762	0.000000	0.015138	0.002711	206.75	±	0.20
1200	133.879711	8.361989	0.000000	0.016251	0.003978	221.68	±	0.18
1250	172.741797	9.893353	0.000000	0.077674	0.005211	240.44	±	0.19
1275	104.976892	5.608214	0.001434	0.017547	0.003177	256.58	±	0.23
1300	83.336700	4.178103	0.001245	0.002948	0.002751	271.99	±	0.32
1325	85.093557	3.896922	0.002172	0.000000	0.002827	295.74	±	0.16
1350	79.312676	3.339202	0.002371	0.000814	0.002403	319.78	±	0.27
1375	109.117767	4.267162	0.003080	0.000000	0.002923	342.41	±	0.20
1400	91.429445	3.503472	0.003782	0.000000	0.002602	348.65	±	0.37
1425	25.625070	1.046926	0.000000	0.000000	0.000997	327.92	±	0.83

All gas quantities are in moles x 10^{-12}.

Ages calculated assuming an initial $^{40}Ar/^{36}Ar = 295.5 \pm 0$.

All precision estimates are at the one sigma level of precision.

Ages of individual steps do not include error in the irradiation parameter J.

Table 27D. RR89-28 KSPAR #61RD74 v 4/17/98 11:00:53 14 Sep 1999

Temperature °C	% ^{39}Ar of total	Radiogenic Yield (%)	$^{39}Ar_K$	$^{40}Ar^*/^{39}Ar_K$	Apparent K/Ca	Apparent K/Cl	Apparent Age Ma		Precision Ma
J = 0.008239 ± 0.5%					Sample wt = 0.2519 g				
750	2.5	98.4	2.010037	29.082	41.19	6433	387.49	±	0.26
800	4.3	99.0	3.404224	13.746	55.25	***	193.55	±	0.25
850	5.0	99.2	3.929039	13.045	***	***	184.16	±	0.19
900	4.9	99.4	3.907203	12.966	***	***	183.10	±	0.16
950	5.0	99.3	3.994712	13.039	180.06	***	184.08	±	0.14
1000	5.0	99.3	3.963066	13.157	865.08	***	185.67	±	0.14
1050	5.1	99.3	4.049041	13.579	179.06	***	191.31	±	0.16
1100	5.7	99.2	4.482327	14.127	376.23	***	198.62	±	0.20
1150	6.9	99.0	5.461762	14.738	187.62	***	206.75	±	0.20
1200	10.5	99.1	8.361989	15.870	267.57	***	221.68	±	0.18
1250	12.5	99.1	9.893353	17.305	66.23	***	240.44	±	0.19
1275	7.1	99.1	5.608214	18.551	166.20	9467	256.58	±	0.23
1300	5.3	99.0	4.178103	19.751	736.96	8122	271.99	±	0.32
1325	4.9	99.0	3.896922	21.622	***	4342	295.74	±	0.16
1350	4.2	99.1	3.339202	23.539	2133.95	3409	319.78	±	0.27
1375	5.4	99.2	4.267162	25.369	***	3353	342.41	±	0.20
1400	4.4	99.2	3.503472	25.877	***	2242	348.65	±	0.37
1425	1.3	98.9	1.046926	24.195	***	***	327.92	±	0.83
Total Gas	100.0	99.1	79.296754	17.501	275.98	1897	242.99		

NO PLATEAU

Ages calculated assuming an initial $^{40}Ar/^{36}Ar$ = 295.5± 0.

All precision estimates are at the one sigma level.

Ages of individual steps do not include error in the irradiation parameter J.

No error is calculated for the total gas age.

$^{39}Ar_K$ gas quantities are in moles x 10^{-12}.

*** Below detection limit.

Figure 27. Age spectrum for RR89-28 Kspar.

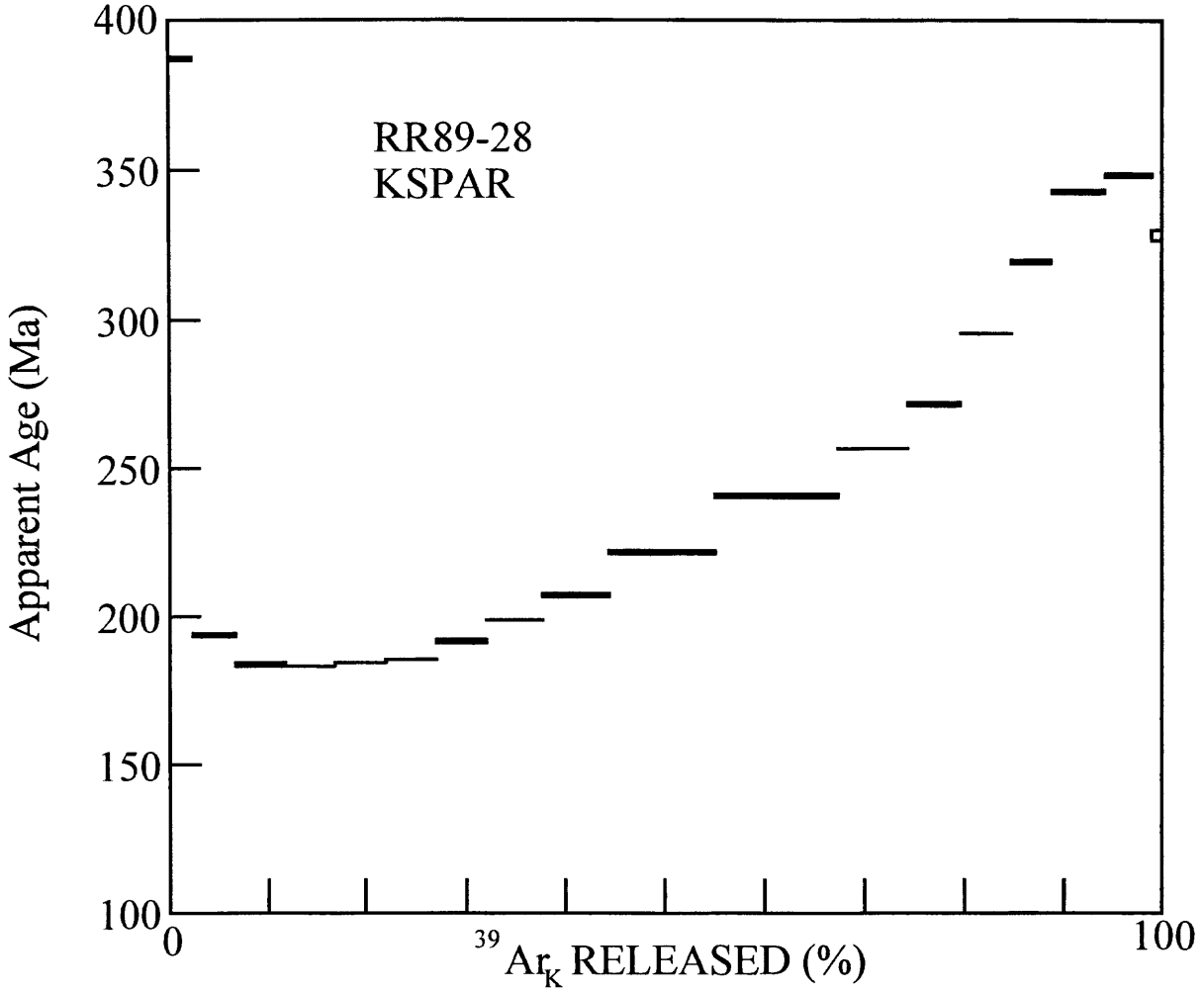


Table 28A. K92-5-16A KSPAR #10RD93 v 4/17/98 15:48:59 14 Sep 1999

		RAW DATA						
File #	Temperature	^{40}Ar	^{39}Ar	^{38}Ar	^{37}Ar	^{36}Ar	Trap current	Manifold
35668	850	2992365	57186	980	78	170	200	EALL
	±	2629	42	24	15	6		
35669	800	890161	46763	622	85	43	200	EALL
	±	1551	116	14	16	4		
35670	850	732720	38973	521	105	40	200	EALL
	±	332	19	13	5	12		
35671	900	725732	38563	509	185	36	200	EALL
	±	93	13	9	8	9		
35672	950	659474	34018	442	149	37	200	EALL
	±	453	18	4	7	9		
35673	1000	685822	33056	431	153	40	200	EALL
	±	452	42	4	3	4		
35674	1050	802908	36084	494	159	47	200	EALL
	±	124	14	11	14	3		
35675	1100	1207971	47309	656	166	37	200	EALL
	±	1097	18	20	20	7		
35676	1150	1799485	63976	907	179	63	200	EALL
	±	446	48	7	7	9		
35677	1200	3751527	123693	1753	289	106	200	EALL
	±	2600	29	14	7	8		
35678	1250	1956724	57476	850	101	61	200	ESPLIT 1
	±	2060	34	7	10	3		
35679	1300	4424591	110457	1698	75	160	200	EALL
	±	7270	104	15	16	8		

All values are in counts. Measured $^{40}Ar/^{36}Ar = 297.2 \pm 0.5$

Precisions are at the 1 sigma level and are from linear regression statistics.

Trap current factors: 40 = 5.66 100 = 2.62 200 = 1

Manifold factors: All = 1 Split1 = 3.3 Split2 = 10.89

EAll = 2 Esplit1 = 6.6 Esplit2 = 21.78

Sensitivity = 3.604 X 10^{-17} moles/count. Reproducibility limit = .25 %. Detection limit = 40 counts.

Table 28B. K92-5-16A KSPAR #10RD93 v 4/17/98 15:48:59 14 Sep 1999

			CORRECTIONS							
Temp	^{39}Ar	^{37}Ar	-----	K-derived	----	----	Ca-derivec	----	Cl-derived	initial
(°C)	decay	decay	^{40}Ar	^{38}Ar	^{37}Ar	^{39}Ar	^{38}Ar	^{36}Ar	^{36}Ar	^{38}Ar
850	20	127	325	768	0	0	0	0	0	32
800	16	138	266	628	0	0	0	0	0	8
850	14	171	222	523	0	0	0	0	0	8
900	13	301	219	518	0	0	0	0	0	7
950	12	243	194	457	0	0	0	0	0	7
1000	11	249	188	444	0	0	0	0	0	8
1050	13	260	205	484	0	0	0	0	0	9
1100	16	271	269	635	0	0	0	0	0	7
1150	22	292	364	859	0	0	0	0	0	12
1200	43	472	704	1660	0	1	0	0	0	20
1250	20	166	327	772	0	0	0	0	0	12
1300	38	123	629	1483	0	0	0	0	0	30

All values are in counts and have been corrected for mass discrimination.

Table 28C. K92-5-16A KSPAR #10RD93 v 4/17/98 15:48:59 14 Sep 1999

			MOLAR VALUES					
Temperature	$^{40}Ar^*$	$^{39}Ar_K$	$^{38}Ar_{Cl}$	^{37}Ca	$^{36}Ar_i$	Apparent Age		Precision
(°C)						(Ma)		(Ma)
850	215.666228	4.129321	0.017828	0.014787	0.012287	573.75	±	0.54
800	64.143610	3.376704	0.000327	0.016168	0.003089	230.90	±	0.49
850	52.798466	2.814183	0.000462	0.019942	0.002913	227.78	±	1.03
900	52.294966	2.784580	0.000000	0.035168	0.002594	228.35	±	0.78
950	47.520919	2.456413	0.000000	0.028415	0.002695	234.32	±	0.95
1000	49.420473	2.386902	0.000000	0.029111	0.002902	249.56	±	0.41
1050	57.858843	2.605595	0.001418	0.030311	0.003398	266.37	±	0.30
1100	87.051175	3.416101	0.002138	0.031587	0.002689	304.88	±	0.53
1150	129.680664	4.619572	0.004542	0.034048	0.004559	332.77	±	0.47
1200	270.359339	8.931658	0.008503	0.055062	0.007700	357.06	±	0.31
1250	465.356356	13.695769	0.022052	0.063904	0.014667	395.99	±	0.42
1300	318.879202	7.975968	0.018012	0.014289	0.011611	457.13	±	0.71

All gas quantities are in moles x 10^{-12}.

Ages calculated assuming an initial $^{40}Ar/^{36}Ar = 295.5 \pm 0$.

All precision estimates are at the one sigma level of precision.

Ages of individual steps do not include error in the irradiation parameter J.

Table 28D. K92-5-16A KSPAR #10RD93 v 4/17/98 15:48:59 14 Sep 1999

Temperature °C	% ^{39}Ar of total	Radiogenic Yield (%)	$^{39}Ar_K$	$^{40}Ar^*/^{39}Ar_K$	Apparent K/Ca	Apparent K/Cl	Apparent Age Ma		Precision Ma
J = 0.007292 ± 0.5%					Sample wt = 1.0999 g				
850	7.0	98.3	4.129321	51.349	145.21	561	573.75	±	0.54
800	5.7	98.6	3.376704	18.726	108.60	25009	230.90	±	0.49
850	4.8	98.4	2.814183	18.456	73.38	14727	227.78	±	1.03
900	4.7	98.5	2.784580	18.505	41.17	***	228.35	±	0.78
950	4.1	98.3	2.456413	19.021	44.95	***	234.32	±	0.95
1000	4.0	98.3	2.386902	20.346	42.64	***	249.56	±	0.41
1050	4.4	98.3	2.605595	21.820	44.70	4445	266.37	±	0.30
1100	5.8	99.1	3.416101	25.250	56.24	3866	304.88	±	0.53
1150	7.8	99.0	4.619572	27.780	70.55	2461	332.77	±	0.47
1200	15.1	99.2	8.931658	30.015	84.35	2542	357.06	±	0.31
1250	23.1	99.1	13.695769	33.662	111.45	1503	395.99	±	0.42
1300	13.5	98.9	7.975968	39.550	290.25	1072	457.13	±	0.71
Total Gas	100.0	98.8	59.192766	30.241	113.68	3653	359.49		

NO PLATEAU

Ages calculated assuming an initial $^{40}Ar/^{36}Ar$ = 295.5± 0.

All precision estimates are at the one sigma level.

Ages of individual steps do not include error in the irradiation parameter J.

No error is calculated for the total gas age.

$^{39}Ar_K$ gas quantities are in moles x 10^{-12}.

*** Below detection limit.

Figure 28. Age spectrum for K92-5-16A Kspar.

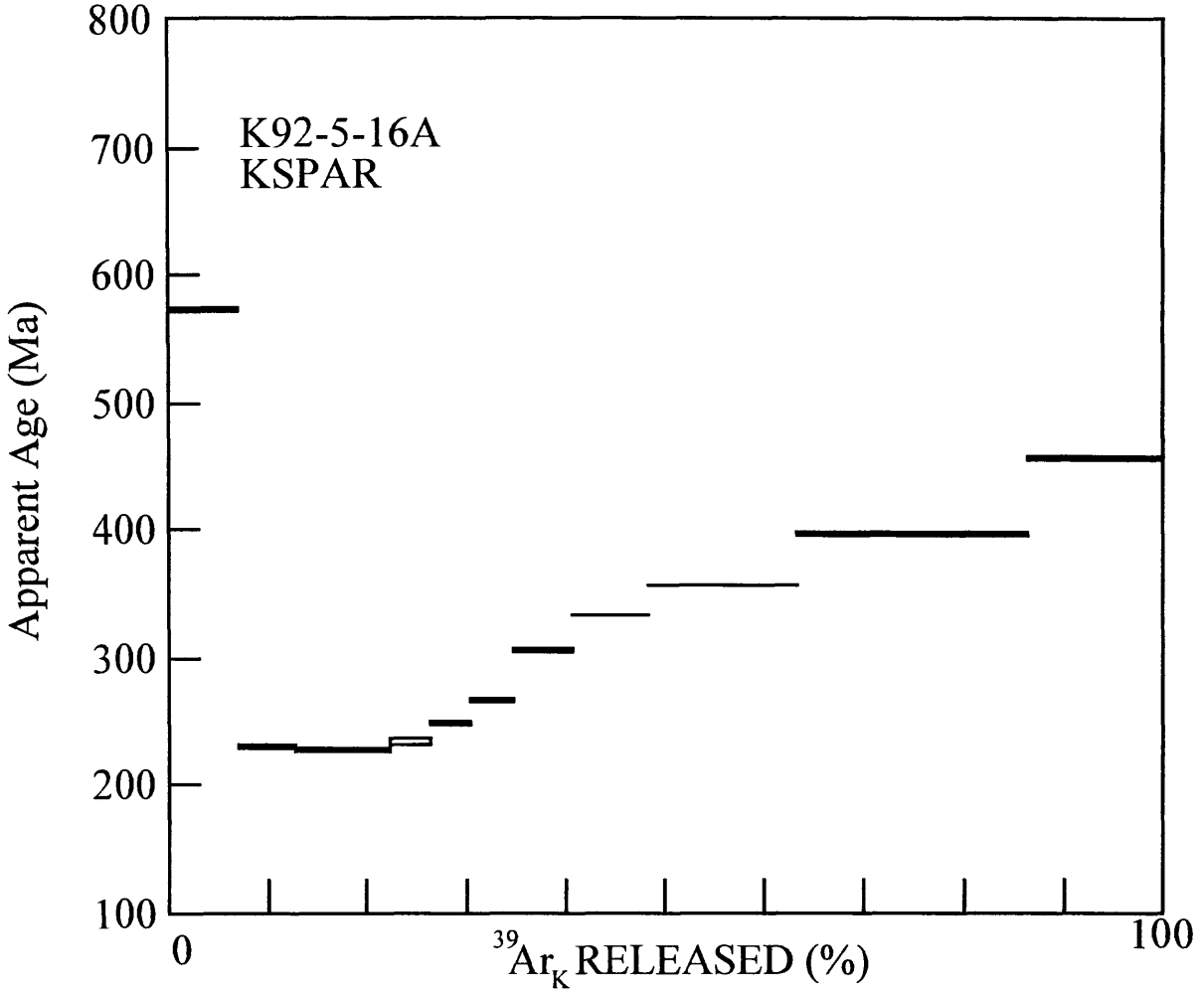


Table 29A. K92-5-16B KSPAR #14RD93 v 4/17/98 16:19:57 14 Sep 1999

		RAW DATA						
File #	Temperature	^{40}Ar	^{39}Ar	^{38}Ar	^{37}Ar	^{36}Ar	Trap current	Manifold
35758	750	1885685	54428	859	43	282	200	EALL
	±	829	11	12	17	2		
35759	800	783513	40370	556	14	171	200	EALL
	±	108	6	12	10	4		
35760	850	698835	36361	509	0	155	200	EALL
	±	456	24	5	16	5		
35761	900	790753	38760	541	28	139	200	EALL
	±	517	80	11	5	3		
35762	950	803437	38780	520	32	155	200	EALL
	±	362	20	9	7	8		
35763	1000	906661	42444	583	38	156	200	EALL
	±	192	15	13	7	7		
35764	1050	997946	44522	634	57	173	200	EALL
	±	259	19	24	8	7		
35765	1100	1239204	49024	708	56	190	200	EALL
	±	1170	18	10	5	8		
35766	1150	1771922	62091	906	40	210	200	EALL
	±	418	68	6	9	5		
35767	1175	1344016	44418	653	38	198	200	EALL
	±	1173	81	10	8	7		
35768	1200	1549964	47334	733	30	226	200	EALL
	±	889	25	9	7	4		
35769	1225	2139255	59736	951	28	283	200	EALL
	±	1505	18	6	11	10		
35770	1250	3971917	100551	1552	20	418	200	EALL
	±	8797	49	19	17	9		
35771	1275	1607493	36950	596	22	158	200	ESPLIT 1
	±	1527	60	6	10	5		
35772	1300	3943280	81450	1323	0	411	200	EALL
	±	1803	23	7	5	3		

All values are in counts. Measured $^{40}Ar/^{36}Ar$ = 297.2 ± 0.5

Precisions are at the 1 sigma level and are from linear regression statistics.

Trap current factors: 40 = 5.66 100 = 2.62 200 = 1

Manifold factors: All = 1 Split1 = 3.3 Split2 = 10.89

EAll = 2 Esplit1 = 6.6 Esplit2 = 21.78

Sensitivity = 3.604 X 10^{-17} moles/count. Reproducibility limit = .25 %. Detection limit = 40 counts.

Table 29B. K92-5-16B KSPAR #14RD93 v 4/17/98 16:19:57 14 Sep 1999

			CORRECTIONS							
Temp	^{39}Ar	^{37}Ar	-----	K-derived	-----	-----	Ca-derivec	-----	Cl-derived	initial
(°C)	decay	decay	^{40}Ar	^{38}Ar	^{37}Ar	^{39}Ar	^{38}Ar	^{36}Ar	^{36}Ar	^{38}Ar
750	20	74	310	731	0	0	0	0	0	53
800	15	24	230	542	0	0	0	0	0	32
850	13	0	207	488	0	0	0	0	0	29
900	14	48	221	520	0	0	0	0	0	26
950	14	55	221	521	0	0	0	0	0	29
1000	15	65	242	570	0	0	0	0	0	29
1050	16	99	253	598	0	0	0	0	0	33
1100	18	97	279	658	0	0	0	0	0	36
1150	23	70	353	834	0	0	0	0	0	39
1175	16	66	253	596	0	0	0	0	0	37
1200	17	53	269	635	0	0	0	0	0	42
1225	22	49	340	802	0	0	0	0	0	53
1250	37	36	572	1350	0	0	0	0	0	79
1275	13	39	210	496	0	0	0	0	0	30
1300	30	0	463	1093	0	0	0	0	0	77

All values are in counts and have been corrected for mass discrimination.

Table 29C. K92-5-16B KSPAR #14RD93 v 4/17/98 16:19:57 14 Sep 1999

			MOLAR VALUES					
Temperature	$^{40}Ar^*$	$^{39}Ar_K$	$^{38}Ar_{Cl}$	^{37}Ca	$^{36}Ar_i$	Apparent Age		Precision
(°C)						(Ma)		(Ma)
750	135.897828	3.930216	0.013267	0.008422	0.020417	392.61	±	0.21
800	56.459070	2.915075	0.003450	0.002690	0.012386	225.70	±	0.31
850	50.357083	2.625600	0.003705	0.000000	0.011231	223.39	±	0.46
900	56.981580	2.798870	0.003463	0.005515	0.010099	239.47	±	0.32
950	57.895810	2.800287	0.002148	0.006286	0.011230	241.76	±	0.75
1000	65.334737	3.064840	0.003208	0.007461	0.011293	250.31	±	0.58
1050	71.913662	3.214950	0.005104	0.011241	0.012562	261.66	±	0.57
1100	89.301685	3.540002	0.006345	0.011069	0.013771	294.24	±	0.60
1150	127.694640	4.483582	0.008280	0.007924	0.015230	332.17	±	0.29
1175	96.858431	3.207419	0.006918	0.007570	0.014358	347.55	±	0.61
1200	111.701980	3.417979	0.010253	0.006012	0.016346	373.55	±	0.35
1225	154.173022	4.313532	0.014814	0.005528	0.020521	406.36	±	0.61
1250	286.254542	7.260742	0.020567	0.004044	0.030286	446.77	±	0.94
1275	382.314702	8.804903	0.031339	0.014458	0.037813	487.34	±	0.60
1300	284.198228	5.881516	0.022400	0.000000	0.029800	534.06	±	0.24

All gas quantities are in moles x 10^{-12}.

Ages calculated assuming an initial $^{40}Ar/^{36}Ar = 295.5 \pm 0$.

All precision estimates are at the one sigma level of precision.

Ages of individual steps do not include error in the irradiation parameter J.

Table 29D. K92-5-16B KSPAR #14RD93 v 4/17/98 16:19:57 14 Sep 1999

Temperature °C	% ^{39}Ar of total	Radiogenic Yield (%)	$^{39}Ar_K$	$^{40}Ar^*/^{39}Ar_K$	Apparent K/Ca	Apparent K/Cl	Apparent Age Ma		Precision Ma
J = 0.007358 ± 0.5%					Sample wt = 0.1004 g				
750	6.3	95.6	3.930216	33.043	242.68	717	392.61	±	0.21
800	4.7	93.5	2.915075	18.112	563.50	2045	225.70	±	0.31
850	4.2	93.4	2.625600	17.915	***	1715	223.39	±	0.46
900	4.5	94.8	2.798870	19.293	263.91	1956	239.47	±	0.32
950	4.5	94.3	2.800287	19.490	231.65	3154	241.76	±	0.75
1000	4.9	94.9	3.064840	20.229	213.62	2312	250.31	±	0.58
1050	5.2	94.8	3.214950	21.214	148.72	1524	261.66	±	0.57
1100	5.7	95.4	3.540002	24.077	166.30	1350	294.24	±	0.60
1150	7.2	96.5	4.483582	27.477	294.23	1310	332.17	±	0.29
1175	5.2	95.6	3.207419	28.875	220.32	1122	347.55	±	0.61
1200	5.5	95.7	3.417979	31.267	295.65	807	373.55	±	0.35
1225	6.9	96.1	4.313532	34.336	405.75	705	406.36	±	0.61
1250	11.7	96.9	7.260742	38.192	933.63	854	446.77	±	0.94
1275	14.1	97.1	8.804903	42.152	316.68	680	487.34	±	0.60
1300	9.4	96.9	5.881516	46.823	***	635	534.06	±	0.24
Total Gas	100.0	95.8	62.259513	31.294	322.19	1214	373.84		

NO PLATEAU

Ages calculated assuming an initial $^{40}Ar/^{36}Ar = 295.5 \pm 0$.

All precision estimates are at the one sigma level.

Ages of individual steps do not include error in the irradiation parameter J.

No error is calculated for the total gas age.

$^{39}Ar_K$ gas quantities are in moles x 10^{-12}.

*** Below detection limit.

Figure 29. Age spectrum for K92-5-16B Kspar.

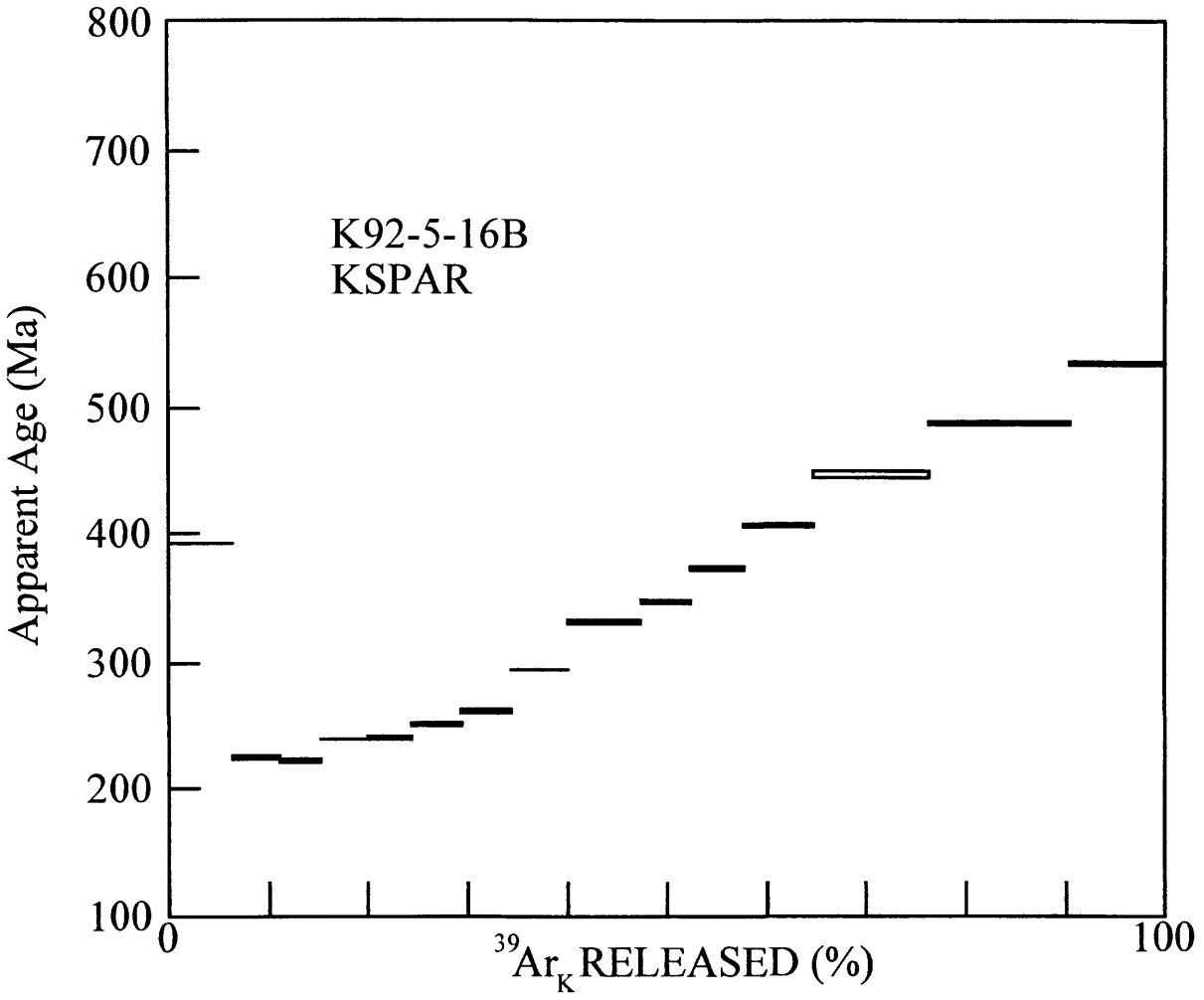


Table 30A. K92-5-17C KSPAR #12RD93 v 4/17/98 16:27:33 14 Sep 1999

		RAW DATA						
File #	Temperature	^{40}Ar	^{39}Ar	^{38}Ar	^{37}Ar	^{36}Ar	Trap current	Manifold
35710	650	623437	13432	168	12	115	200	EALL
	±	840	11	7	3	5		
35711	750	1185696	78230	1037	163	138	200	EALL
	±	358	33	16	21	10		
35712	800	1536235	92703	1211	37	98	200	EALL
	±	1062	46	7	8	8		
35713	850	1386789	81401	1054	30	84	200	EALL
	±	973	110	8	14	2		
35714	900	1160990	65358	861	74	65	200	EALL
	±	648	19	17	8	7		
35715	950	1165041	61877	804	66	74	200	EALL
	±	470	17	13	12	5		
35716	1000	1294415	65049	841	81	89	200	EALL
	±	163	36	15	9	4		
35717	1050	1380830	65726	879	106	87	200	EALL
	±	461	11	17	11	16		
35718	1100	1546485	68494	914	78	106	200	EALL
	±	1659	37	4	10	6		
35719	1150	1820406	73481	979	55	109	200	EALL
	±	1841	67	18	6	4		
35720	1175	1156975	43427	596	14	91	200	EALL
	±	228	10	13	12	8		
35721	1200	878070	30174	432	16	81	200	EALL
	±	214	70	12	12	7		
35722	1225	877712	26586	384	0	88	200	EALL
	±	401	11	17	17	8		
35723	1250	1112029	29110	437	8	99	200	EALL
	±	2164	64	6	8	5		
35724	1275	1529468	32390	510	0	114	200	EALL
	±	423	14	5	11	5		
35725	1300	974858	18430	169	0	97	200	EALL
	±	396	39	39	7	3		

All values are in counts. Measured $^{40}Ar/^{36}Ar$ = 297.2 ± 0.5

Precisions are at the 1 sigma level and are from linear regression statistics.

Trap current factors: 40 = 5.66 100 = 2.62 200 = 1

Manifold factors: All = 1 Split1 = 3.3 Split2 = 10.89

EAll = 2 Esplit1 = 6.6 Esplit2 = 21.78

Sensitivity = 3.604 X 10^{-17} moles/count. Reproducibility limit = .25 %. Detection limit = 40 counts.

Table 30B. K92-5-17C KSPAR #12RD93 v 4/17/98 16:27:33 14 Sep 1999

			CORRECTIONS							
Temp	^{39}Ar	^{37}Ar	-----	K-derived	-----	-----	Ca-derivec	-----	Cl-derived	initial
(°C)	decay	decay	^{40}Ar	^{38}Ar	^{37}Ar	^{39}Ar	^{38}Ar	^{36}Ar	^{36}Ar	^{38}Ar
650	5	20	76	180	0	0	0	0	0	22
750	28	274	445	1050	0	0	0	0	0	26
800	33	63	527	1244	0	0	0	0	0	18
850	29	50	463	1093	0	0	0	0	0	16
900	23	124	372	877	0	0	0	0	0	12
950	22	112	352	831	0	0	0	0	0	14
1000	23	137	370	873	0	0	0	0	0	17
1050	23	179	374	882	0	0	0	0	0	16
1100	24	133	390	919	0	0	0	0	0	20
1150	26	94	418	986	0	0	0	0	0	20
1175	15	23	247	583	0	0	0	0	0	17
1200	11	28	172	405	0	0	0	0	0	15
1225	9	0	151	357	0	0	0	0	0	17
1250	10	14	166	391	0	0	0	0	0	19
1275	12	0	184	435	0	0	0	0	0	21
1300	7	0	105	247	0	0	0	0	0	18

All values are in counts and have been corrected for mass discrimination.

Table 30C. K92-5-17C KSPAR #12RD93 v 4/17/98 16:27:33 14 Sep 1999

			CORRECTIONS							
Temp	^{39}Ar	^{37}Ar	-----	K-derived	-----	-----	Ca-derivec	-----	Cl-derived	initial
(°C)	decay	decay	^{40}Ar	^{38}Ar	^{37}Ar	^{39}Ar	^{38}Ar	^{36}Ar	^{36}Ar	^{38}Ar
650	5	20	76	180	0	0	0	0	0	22
750	28	274	445	1050	0	0	0	0	0	26
800	33	63	527	1244	0	0	0	0	0	18
850	29	50	463	1093	0	0	0	0	0	16
900	23	124	372	877	0	0	0	0	0	12
950	22	112	352	831	0	0	0	0	0	14
1000	23	137	370	873	0	0	0	0	0	17
1050	23	179	374	882	0	0	0	0	0	16
1100	24	133	390	919	0	0	0	0	0	20
1150	26	94	418	986	0	0	0	0	0	20
1175	15	23	247	583	0	0	0	0	0	17
1200	11	28	172	405	0	0	0	0	0	15
1225	9	0	151	357	0	0	0	0	0	17
1250	10	14	166	391	0	0	0	0	0	19
1275	12	0	184	435	0	0	0	0	0	21
1300	7	0	105	247	0	0	0	0	0	18

All values are in counts and have been corrected for mass discrimination.

Table 30D. K92-5-17C KSPAR #12RD93 v 4/17/98 16:27:33 14 Sep 1999

Temperature °C	% ^{39}Ar of total	Radiogenic Yield (%)	$^{39}Ar_K$	$^{40}Ar^*/^{39}Ar_K$	Apparent K/Ca	Apparent K/Cl	Apparent Age Ma		Precision Ma
J = 0.007356 ±0.5%					Sample wt = 1.1019 g				
650	1.6	94.5	0.969882	43.777	220.01	3303	503.61	±	1.32
750	9.2	96.5	5.648896	14.599	92.99	11823	184.03	±	0.47
800	11.0	98.1	6.694006	16.224	479.17	***	203.39	±	0.33
850	9.6	98.2	5.877912	16.692	532.89	***	208.93	±	0.16
900	7.7	98.3	4.719418	17.432	171.07	***	217.66	±	0.40
950	7.3	98.1	4.468074	18.437	179.81	***	229.43	±	0.29
1000	7.7	98.0	4.697114	19.453	155.02	***	241.27	±	0.23
1050	7.8	98.1	4.746036	20.574	119.40	10107	254.24	±	0.86
1100	8.1	98.0	4.945911	22.075	168.42	9985	271.45	±	0.41
1150	8.7	98.2	5.306011	24.284	255.62	10938	296.50	±	0.34
1175	5.1	97.7	3.135811	25.967	604.04	3333	315.35	±	0.60
1200	3.6	97.3	2.178866	28.249	355.02	1679	340.60	±	0.75
1225	3.1	97.0	1.919739	31.964	***	1434	380.96	±	0.93
1250	3.4	97.4	2.102004	37.122	695.92	1070	435.54	±	0.95
1275	3.8	97.8	2.338833	46.084	***	802	526.63	±	0.48
1300	2.2	97.0	1.330826	51.230	***	***	576.91	±	0.57
Total Gas	100.0	97.8	61.079339	22.621	266.93	4034	277.68		

NO PLATEAU

Ages calculated assuming an initial $^{40}Ar/^{36}Ar$ = 295.5± 0.

All precision estimates are at the one sigma level.

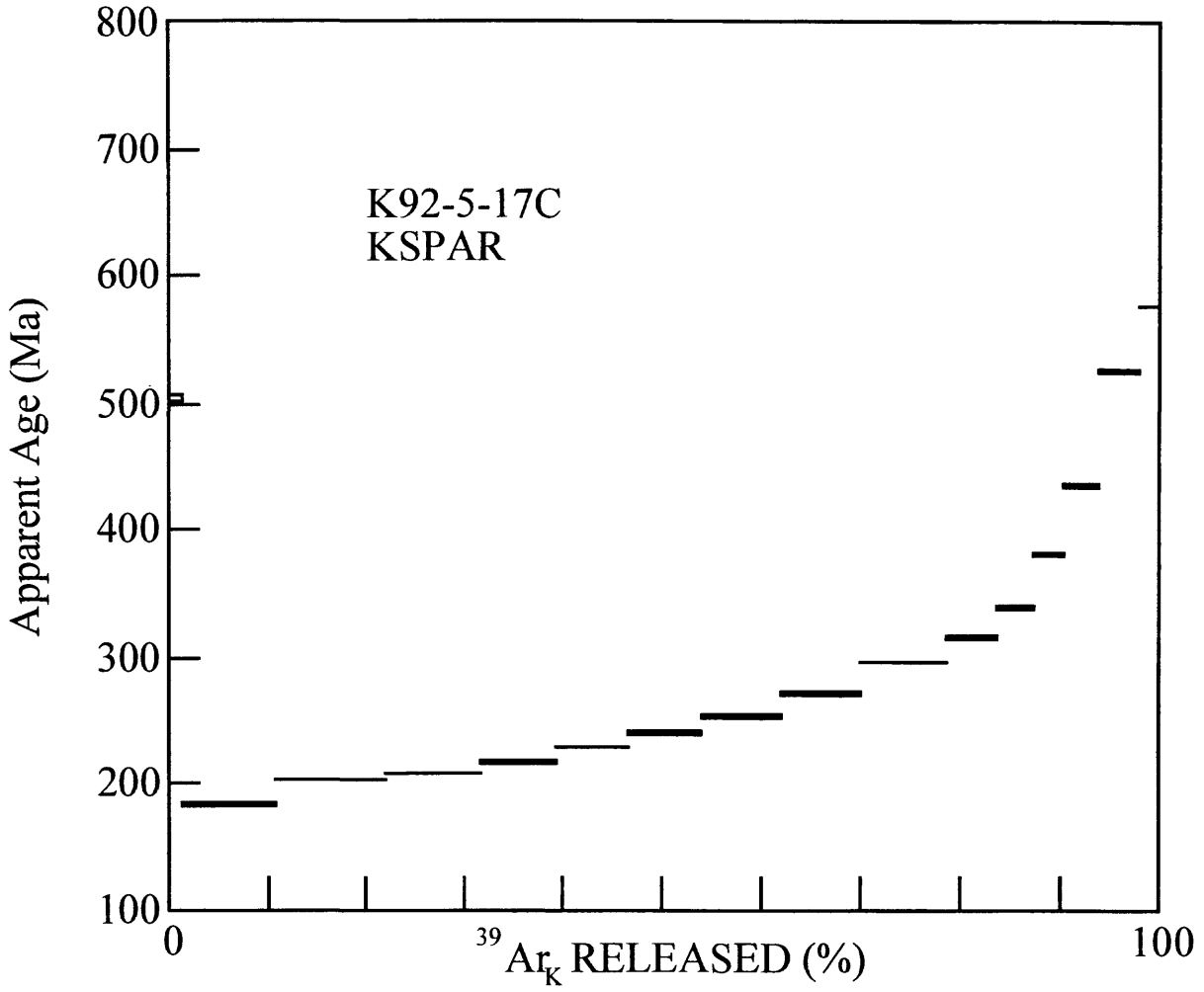
Ages of individual steps do not include error in the irradiation parameter J.

No error is calculated for the total gas age.

$^{39}Ar_K$ gas quantities are in moles x 10^{-12}.

*** Below detection limit.

Figure 30. Age spectrum for K92-5-17C Kspar.



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