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$^{40}Ar/^{39}Ar$ Age-Spectrum Data of Neogene and Younger Basalts in West Central Colorado

by

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INTRODUCTION

This publication contains reduced $^{40}Ar/^{39}Ar$ data of basalts and a xenocrystic sanidine mineral separate from a basalt collected in west-central Colorado, 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. 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 this data into a geological context.

METHODS

Sample Preparation

All of the samples were crushed, ground, and sized using 250, 180, and 150 µm sieves. For basalt samples we used the 250-180 µm size fraction. Phenocrysts of plagioclase and olivine when present were separated from the sample using heavy liquids, and the samples were treated with 10% HCl to remove secondary calcite. Sanidine mineral separates were produced using magnetic separation, heavy liquid separation, and hand picking to a purity >99%. 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.

The samples were irradiated in three separate packages (KD4, DD53 and DD57). Approximately 200 mg of basalt was packaged in aluminum capsules and sealed under vacuum in quartz tubes for KD-4. Approximately 250 mg of basalt and 120 mg of sanidine was packaged in aluminum capsules and sealed under vacuum in quartz tubes for irradiation packages DD53 and DD57. The samples were then irradiated in the central thimble facility at the TRIGA reactor (GSTR) at the U.S. Geological Survey, Denver, Colorado. The monitor mineral used in KD4 was FCT-3 sanidine (Kunk and others, 1985, Cebula and others, 1986) with an age of 27.79 when compared to MMHB-1 hornblende at an age of 519.4 ± 2.5 Ma (Alexander et al.,1978; and Dalrymple et al., 1981) The monitor mineral used in DD53 and DD57 was MMHB-1 with an age of 519.4 ± 2.5 Ma (Alexander et al.,1978; and Dalrymple et al., 1981). The type of container, and the geometry of samples and standards is similar to that described by Snee et al. (1988).

Sample Analysis

The samples irradiated in package KD-4 were analyzed on a VG Isotopes, Ltd, Model 1200 B Mass Spectrometer fitted with an electron multiplier. The samples irradiated in DD53 and DD57 were analyzed on a MAP 215 Mass Spectrometer fitted with a Faraday cup collector. All analyses were made at the U.S. Geological Survey, Denver, CO, using the $^{40}Ar/^{39}Ar$ step heating method of dating. Heating of all samples was done in a small volume, molybdenum-lined "low

blank" tantalum furnace similar to that described by Staudacher (1978). Temperature was monitored by a W_5Re-$W_{26}Re$ thermocouple and controlled by a proportional, programmable controller.

For samples from package KD4, run on the MM1200b mass spectrometer, heating for 10 minutes (KD-4) per step followed a schedule of 4-9 steps per sample. The number and temperature of heating steps was selected to limit the percentage of gas released to less than 25%/step for most samples. 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 St-707 getter operated at room temperature and a hot filament. The gas was equilibrated with the front manifold with a cold finger (in the rear manifold) chilled to liquid nitrogen temperature. After equilibration was completed, the gas was cleaned using a Ti getter operated at 350^0 C to remove hydrogen and a SAES ST101 getter operated at 400^{o}C to remove other reactive gases.

An activated charcoal finger submerged in a constant boiling mixture of dry ice and acetone in the front manifold 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 gas was further purified in the mass spectrometer by a second SAES ST101 active gas getter operated at room temperature. Argon isotopes with masses 40 through 36 were analyzed as a function of time in five analysis cycles. Masses ^{40}Ar, ^{39} Ar, and ^{36} Ar and their baselines, were measured for four, five second integrations in each of the five cycles and the results normalized to a five second integration. The ^{38}Ar and ^{37} Ar peaks and their baselines were measured a single five second integration each cycle. After the analysis the mass spectrometer was evacuated. All phases of the sample heating, cleanup, equilibration and sample analysis were preformed under computer control.

For samples from irradiation packages DD53 and DD57 which were run on the MAP 215 mass spectrometer, heating for 20 minutes per step followed a schedule of 7-14 steps per sample. The number and temperature of heating steps was selected to limit the percentage of gas released to less than 20%/step for most samples. The gas to be analyzed was purified in the rear manifold by a SAES St-707 getter operated at room temperature and molecular sieve desiccant. Liquid N_2 was placed on a charcoal finger in the front manifold to quantitatively trap argon and affect a transfer of the gas through a valve between the two manifolds. After the transfer was completed, the valve between the manifolds was closed, the liquid N_2 was removed, and the gas was allowed to expand throughout the front manifold where it was further cleaned by a Ti getter operated at 350^0 C to remove hydrogen, a SAES ST101 getter operated at 400^{o}C and a SAES AP-10, ST101 operating at room temperature to remove other reactive gasses.

After admission to the mass spectrometer the argon-rich gas was

further purified in the mass spectrometer by a second SAES ST101 active gas getter operated at room temperature. ^{40}Ar, ^{39}Ar, ^{38}Ar, and ^{37}Ar and their adjacent baselines, were measured for five 1.28 second integrations in each of the six cycles and the results normalized to a 1.28 second integration. The ^{36}Ar peak was measured for twenty 1.28 second integrations and the results were normalized to a 1.28 second integration. After the analysis the mass spectrometers was evacuated. Only the mass spectrometer analysis was done 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 or six cycle analysis had baseline values subtracted and then were regressed, to time zero (the time at which the gas was inlet to the mass spectrometer), using standard linear regression techniques. The resulting regressed values and associated statistical estimates of analytical uncertainties of the time zero peak values were used in the data reduction. For samples from irradiation package DD53 and DD57 system blank in all cases was atmospheric in composition, was less than 1%of the signal, and was not subtracted. For samples from KD4 blanks were measured before the analyses and then subtracted from the analytical results. Error estimates of the blanks were quadratically combined with the analytical errors and propagated through the error equations.

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 included 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 age of the monitor (Haugerud and Kunk, 1988).

The tables and figures below include the identification of individual step ages, plateau ages, and total gas ages. 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. Plateau ages are identified when three or more contiguous steps in an age spectrum agree in age, within the limits of analytical precision, and contain more than 50% of the ^{39}Ar released from the sample. 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. For further information see Haugerud and Kunk, 1988.

SAMPLE LOCATIONS

Table 1. Location of samples included in this report, all are in Colorado.

Sample Number	7½' Quadrangle	North Latitude	West Longitude
DT-R3	Dotsero	39°39'34"	107°30'29"
L-1	Leon	39°27'47"	107°06'37"
KH-95-26	Cottonwood Pass	39°34'48"	107°04'34"
CP-86	Cottonwood Pass	39°30'40"	107°06'55"
SH-267	Shoshone	39°31'01"	107°08'22"
CCLA-5	Cattle Creek	39°29'05"	107°16'54"
CP-89	Cottonwood Pass	39°39'52"	107°04'08"
CP-8	Cottonwood Pass	39°34'24"	107°06'20"
KH-95-32	Cottonwood Pass	39°35'03"	107°05'48"
CC-132	Cattle Creek	39°28'58"	107°17'17"
CD-6	Carbondale	39°25'18"	107°09'04"
GS96-1	Glenwood Springs	39°32'07"	107°15'35"
KH-95-24	Cattle Creek	39°24'59"	107°21'38"
CD-53D	Carbondale	39°25'59"	107°12'02"
CC-140	Cattle Creek	39°24'48"	107°21'50"
PEC96-1	Palisade	39°07'03"	108°16'17"
C69B	Center Mountain	39°24'58"	107°27'32"
CD-152	Carbondale	39°22'58"	107°09'57"
GL-100	Glenwood Springs	39°30'35"	107°16'12"
DT-R2	Dotsero	39°39'52"	107°39'52"
L6844	Fulford	39°37'42"	106°44'08"
L6681B	Wolcott	39°39'45"	106°44'26"

RESULTS

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

The $^{40}Ar/^{39}Ar$ data is presented below in the same order as that used in the section on sample locations.

The individual data sets include a series of four tables, as well as three graphical representations of some of the age spectrum data.

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. For samples from DD53 and DD57 no corrections have been made to the peak values, these are raw numbers. For samples from KD4, blanks have been subtracted from the ^{40}Ar and^{36} Ar peaks. The size of the blanks subtracted as well as their analytical uncertainties is listed in the footnote of the table. Also included as footnotes for all samples are: (1) the trap current at which the samples were run in micro amps of current; (2) the manifold splitting option used; (3) the sensitivity of the mass spectrometer at the time of the analysis for samples measured as All or Eall at a trap current of 200 or 150 μA; (4) 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.

Signals for samples from irradiation packages DD53 and DD57 were measured in volts. These voltage measurements were multiplied by 10^6 for ease in reducing the data with ArAr*, and are variously called volts or counts in the data sets.

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. The measured atmospheric argon value used is listed in the footnotes of table 1. 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. The occurrence of asterisk indicates that the signal measured was lower than the detection limit of the mass spectrometer 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 forth 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".The J-value and its precision estimate, and sample weight are listed near the top of this table.

The figures with each age spectrum data set includes three graphs in two separate figures. In the first figure for each data set, 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 with each data set is an inverse isotope correlation diagram for the age spectrum data. Included in the figure caption is the apparent age, the calculated initial $^{40}Ar/^{36}Ar$, and the MSWD of the line fitted through the points used in the isochron calculation.

For additional information on the sample data sets see Haugerud and Kunk(1988).

Table 2A. DT-R3 BASALT #86KD2 14:00:50 15 Apr 199 v 4/07/98.

RAW DATA								
File	Temp	^{40}Ar	^{39}Ar	^{38}Ar	^{37}Ar	^{36}Ar	Trap	Manifold
43617	550	237031	164982	2552	92029	784	200	EALL
	±	743	217	16	84	23		
43618	650	3142	4713	64	1662	4	200	EALL
	±	402	30	15	26	7		
43619	750	43944	115073	1547	39436	130	200	EALL
	±	402	229	30	92	15		
43620	850	360073	850314	11090	238641	1076	200	EALL
	±	670	1026	32	476	14		
43621	950	92429	323929	4453	199164	277	200	EALL
	±	438	570	21	45	9		
43622	1050	77484	94250	1520	155487	255	200	EALL
	±	414	100	34	259	15		
43623	1450	939521	102613	2283	1091319	859	200	EALL
	±	982	160	17	2183	28		

All values are in counts. Measured $^{40}Ar/^{36}Ar$ = 298.9 ± 0.33%
40Ar blank = 35192 ± 400 36Ar blank = 147 ± 4.2
Precisions are at the 1 sigma level, and are from linear regression statistics.
Trap current factors: 40 = 9.3 100 = 4.56 200 = 1
Manifold factors: All = 1, Split1 = 3.3, Split2 = 10.89, Split 3 = 35.937
Eall = 2, Esplit1 = 6.6, Esplit2 = 21.78
Sensitivity = 1.00 x 10^{-17} moles/count. Reproducibility limit = 0.25%. Detection limit = 40 counts.

Table 2B. DT-R3 BASALT #86KD2 14:00:50 15 Apr 199 v 4/07/98.

CORRECTIONS										
Temp	^{39}Ar	^{37}Ar	-----	K-derived	-----	-----	Ca-derived	-----	Cl-derived	initial
(°C)	decay	decay	^{40}Ar	^{38}Ar	^{37}Ar	^{39}Ar	^{38}Ar	^{36}Ar	^{36}Ar	38Ar
550	20	38455	931	2195	0	86	4	34	0	136
650	1	696	27	63	0	2	0	1	0	1
750	14	16538	649	1531	0	37	2	14	0	21
850	102	100262	4797	11317	0	224	11	88	0	179
950	39	83832	1827	4310	0	187	9	73	0	37
1050	11	65565	531	1253	0	146	7	57	0	36
1450	12	461014	573	1352	0	1024	48	402	0	81

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

Table 2C. DT-R3 BASALT #86KD2 14:00:50 15 Apr 199 v 4/07/98.

MOLAR VALUES							
Temp (°C)	$^{40}Ar^*$	$^{39}Ar_K$	$^{38}Ar_{Cl}$	^{37}Ca	$^{36}Ar_i$	Apparent Age and Precision (Ka)	
550	4.722007	3.276535	0.009107	2.558024	0.014586	0.531	0.173
650	0.062318	0.093614	0.000017	0.046230	0.000067	1.921	1.971
750	0.865899	2.285798	0.000290	1.097321	0.002242	0.376	0.161
850	7.105523	16.891617	***	6.643877	0.019192	0.359	0.021
950	1.812036	6.432877	0.002243	5.547872	0.003921	0.429	0.034
1050	1.539058	1.869870	0.005514	4.333532	0.003822	0.925	0.196
1450	18.778953	2.018483	0.018665	30.432015	0.008689	33.603	0.335

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.
Ages of individual steps do not include error in the irradiation parameter J.
*** Below detection limit.

Table 2D. DT-R3 BASALT #86KD2 14:00:50 15 Apr 199 v 4/07/98.

Temp °C	Percent ^{39}Ar of Total	Radiogenic yield (%)	$^{39}Ar_K$ (x10^{-12} moles)	$^{40}Ar_R/^{39}Ar_K$	Apparent K/Ca	Apparent K/Cl	Apparent Age and Precision (1 σ)	
J = 0.002341 ± 0.5%			Basalt			Sample Wt. = 0.1998 g		
550	10.0	8.7	3.276535	0.126	0.67	871	0.531	0.173
650	0.3	68.4	0.093614	0.455	1.05	13724	1.921	1.971
750	7.0	23.5	2.285798	0.089	1.08	19078	0.376	0.161
850	51.4	20.2	16.891617	0.085	1.32	***	0.359	0.021
950	19.6	36.1	6.432877	0.102	0.60	6941	0.429	0.034
1050	5.7	26.6	1.869870	0.219	0.22	821	0.925	0.196
1450	6.1	86.3	2.018483	8.031	0.03	262	33.603	0.335
Total Gas	100	26.9	32.868794	0.589	0.96	2873	2.487	
88.17% of gas on plateau in 550 through 950 steps Plateau Age = 380 ± 10 Ka								

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

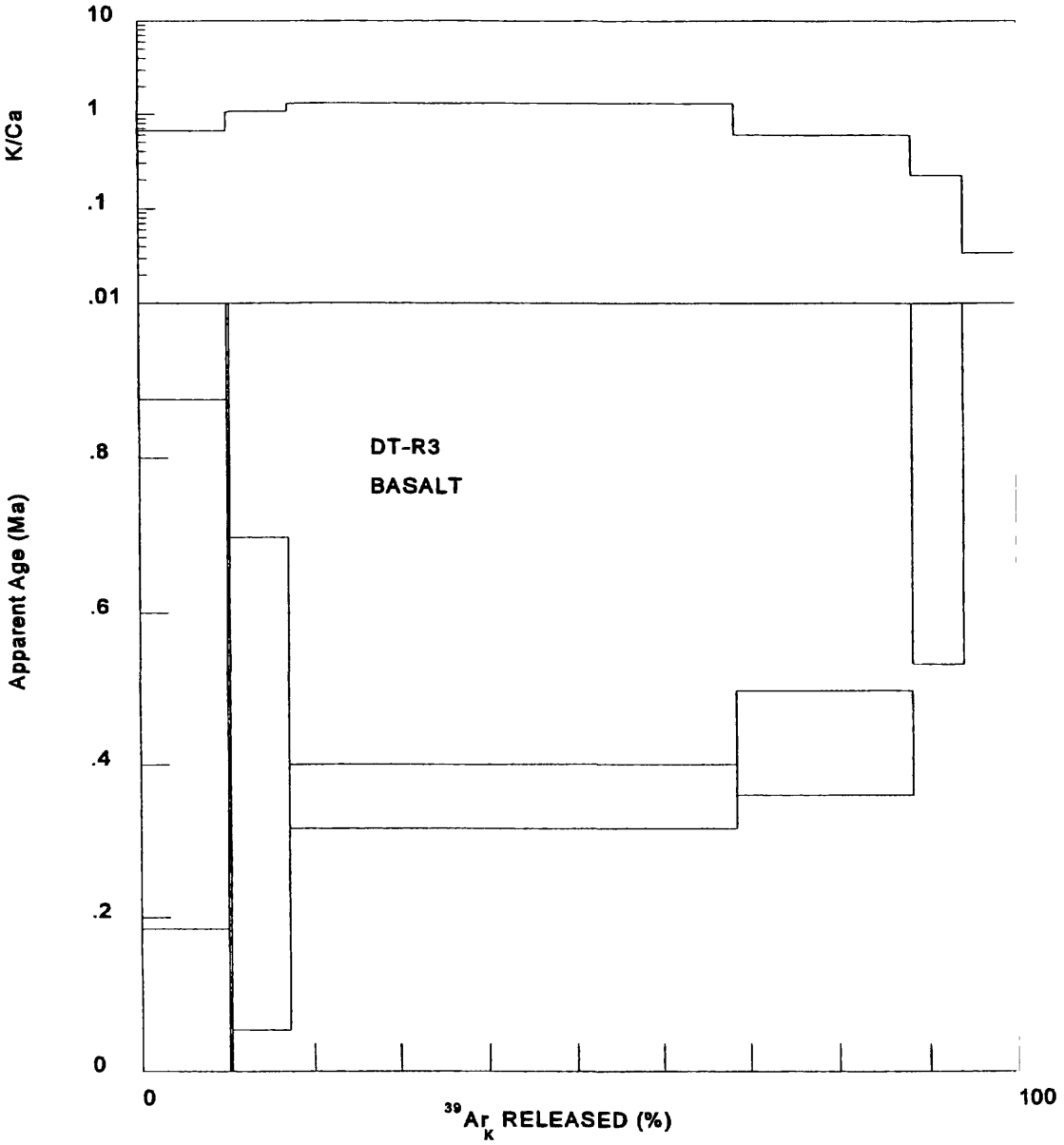

Figure 1. Age spectrum and K/Ca diagram for DT-R3 basalt.

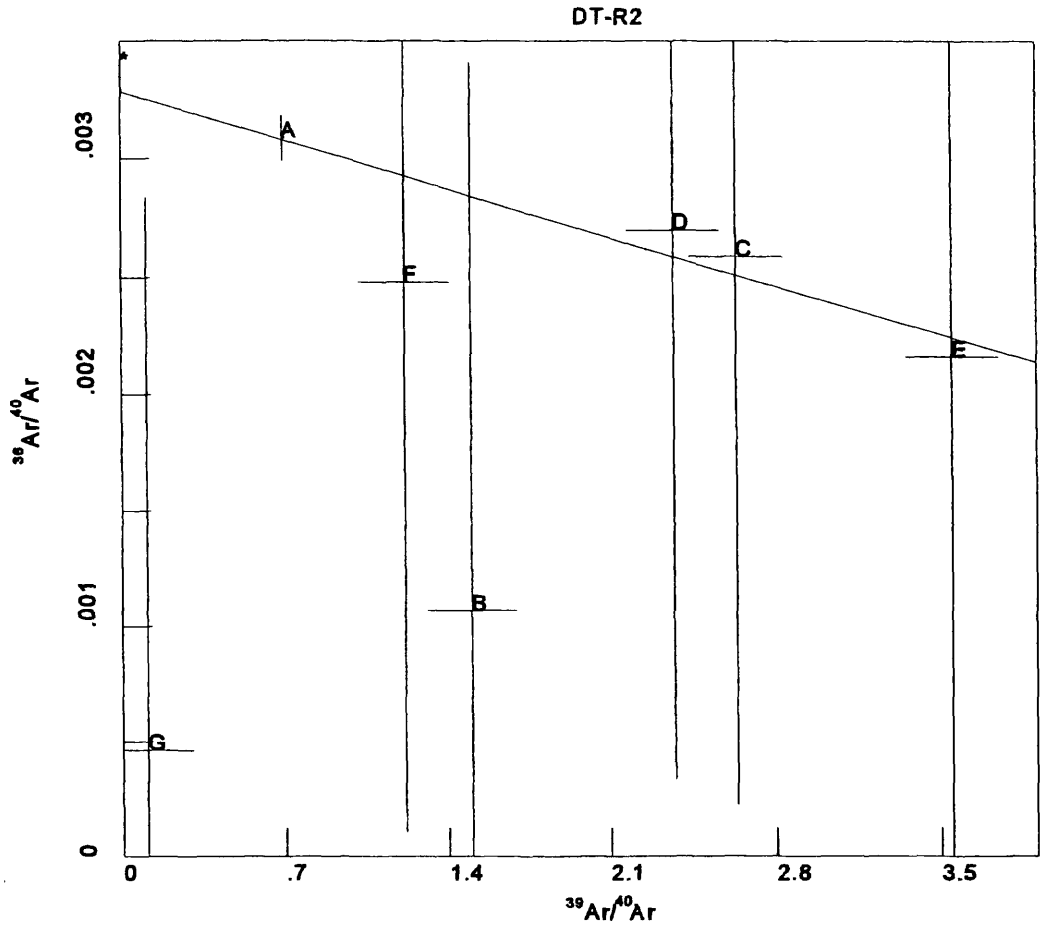

Figure 2. Inverse isotope correlation diagram for DT-R2 basalt. Regressing all points which contain 100% of the ^{39}Ar released, MSWD = 0.399, initial $^{40}Ar/^{36}Ar = 304.5 \pm 39.8$, and apparent age = 380 ± 710 Ka.

Table 3A. L-1 BASALT #68KD2 12:21:11 15 Apr 1998 v 4/07/98.

RAW DATA								
File	Temp	^{40}Ar	^{39}Ar	^{38}Ar	^{37}Ar	^{36}Ar	Trap	Manifold
43551	650	455714	85323	6328	20957	1480	200	EALL
	±	1285	105	21	15	10		
43552	750	471678	240857	5658	81927	1178	200	EALL
	±	925	498	39	56	32		
43553	800	671563	421609	7064	124858	1405	200	EALL
	±	1198	670	32	190	14		
43554	850	494372	489072	7323	136520	664	200	EALL
	±	1268	576	40	257	26		
43555	900	366445	393356	5965	121970	456	200	EALL
	±	1155	102	19	245	12		
43556	950	278853	295900	4487	116187	402	200	EALL
	±	994	237	27	23	11		
43557	1050	293355	182444	3509	106949	746	200	EALL
	±	997	415	31	154	13		
43558	1150	320488	66515	1892	116765	1133	200	EALL
	±	964	81	19	102	12		
43559	1350	175630	36198	1171	479945	790	200	EALL
	±	923	81	37	437	8		

All values are in counts. Measured $^{40}Ar/^{36}Ar$ =287.7 ± 1%

40Ar blank = 33223 ± 920 36Ar blank = 27 ± 5.3

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

Trap current factors: 40 = 9.3 100 = 4.56 200 = 1

Manifold factors: All = 1, Split1 = 3.3, Split2 = 10.89, Split 3 = 35.937

EAll = 2, Esplit1 = 6.6, Esplit2 = 21.78

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

Table 3B. L-1 BASALT #68KD2 12:21:11 15 Apr 1998 v 4/07/98.

			CORRECTIONS							
Temp	^{39}Ar	^{37}Ar	-----	K-derived	-----	-----	Ca-derived	-----	Cl-derived	initial
(°C)	decay	decay	^{40}Ar	^{38}Ar	^{37}Ar	^{39}Ar	^{38}Ar	^{36}Ar	^{36}Ar	^{38}Ar
650	8	6945	481	1136	0	18	1	7	0	268
750	23	27202	1359	3206	0	72	3	28	0	209
800	41	41534	2379	5611	0	110	5	43	0	248
850	47	45513	2759	6509	0	120	6	47	0	112
900	38	40749	2219	5235	0	107	5	42	0	75
950	29	38901	1669	3938	0	102	5	40	0	66
1050	18	35886	1029	2428	0	94	4	37	0	129
1150	6	39263	375	884	0	103	5	40	0	199
1350	4	161727	202	476	0	423	20	166	0	113

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

Table 3C. L-1 BASALT #68KD2 12:21:11 15 Apr 1998 v 4/07/98.

		MOLAR VALUES					
Temp (°C)	$^{40}Ar^*$	$^{39}Ar_K$	$^{38}Ar_{Cl}$	^{37}Ca	$^{36}Ar_i$	Apparent Age and Precision (Ma)	
650	9.104662	1.694993	0.107528	0.547003	0.028669	1.600	0.166
750	9.406394	4.784371	0.051666	2.139385	0.022375	2.501	0.166
800	13.383683	8.375144	0.032040	3.261951	0.026496	2.839	0.044
850	9.832257	9.715437	0.016459	3.568594	0.011991	2.771	0.067
900	7.284511	7.813808	0.014420	3.189958	0.008037	2.690	0.041
950	5.543676	5.877475	0.011017	3.040354	0.007022	2.527	0.047
1050	5.846519	3.623269	0.023186	2.800145	0.013786	2.095	0.092
1150	6.402257	1.319585	0.023529	3.058769	0.021255	0.394	0.237
1350	3.508560	0.710779	0.015438	12.579389	0.012062	-0.336	0.315

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.

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

Table 3D. L-1 BASALT #68KD2 12:21:11 15 Apr 1998 v 4/07/98.

Temp °C	Percent ^{39}Ar of Total	Radiogenic yield (%)	$^{39}Ar_K$ ($x10^{-12}$ moles)	$^{40}Ar_R/^{39}Ar_K$	Apparent K/Ca	Apparent K/Cl	Apparent Age and Precision (Ma)	
J = 0.002375 ± 0.5%			Basalt			Sample Wt. = 0.1991 g		
650	3.9	7.0	1.694993	0.373	1.61	38	1.600	0.166
750	10.9	29.7	4.784371	0.584	1.16	224	2.501	0.166
800	19.1	41.5	8.375144	0.663	1.34	633	2.839	0.044
850	22.1	64.0	9.715437	0.647	1.42	1428	2.771	0.067
900	17.8	67.4	7.813808	0.628	1.27	1311	2.690	0.041
950	13.4	62.6	5.877475	0.590	1.01	1291	2.527	0.047
1050	8.3	30.3	3.623269	0.489	0.67	378	2.095	0.092
1150	3.0	1.9	1.319585	0.092	0.22	136	0.394	0.237
1350	1.6	-1.6	0.710779	-0.078	0.03	111	-0.336	0.315
Total Gas	100	48.5	43.914861	0.580	1.181	905	2.485	

NO PLATEAU

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

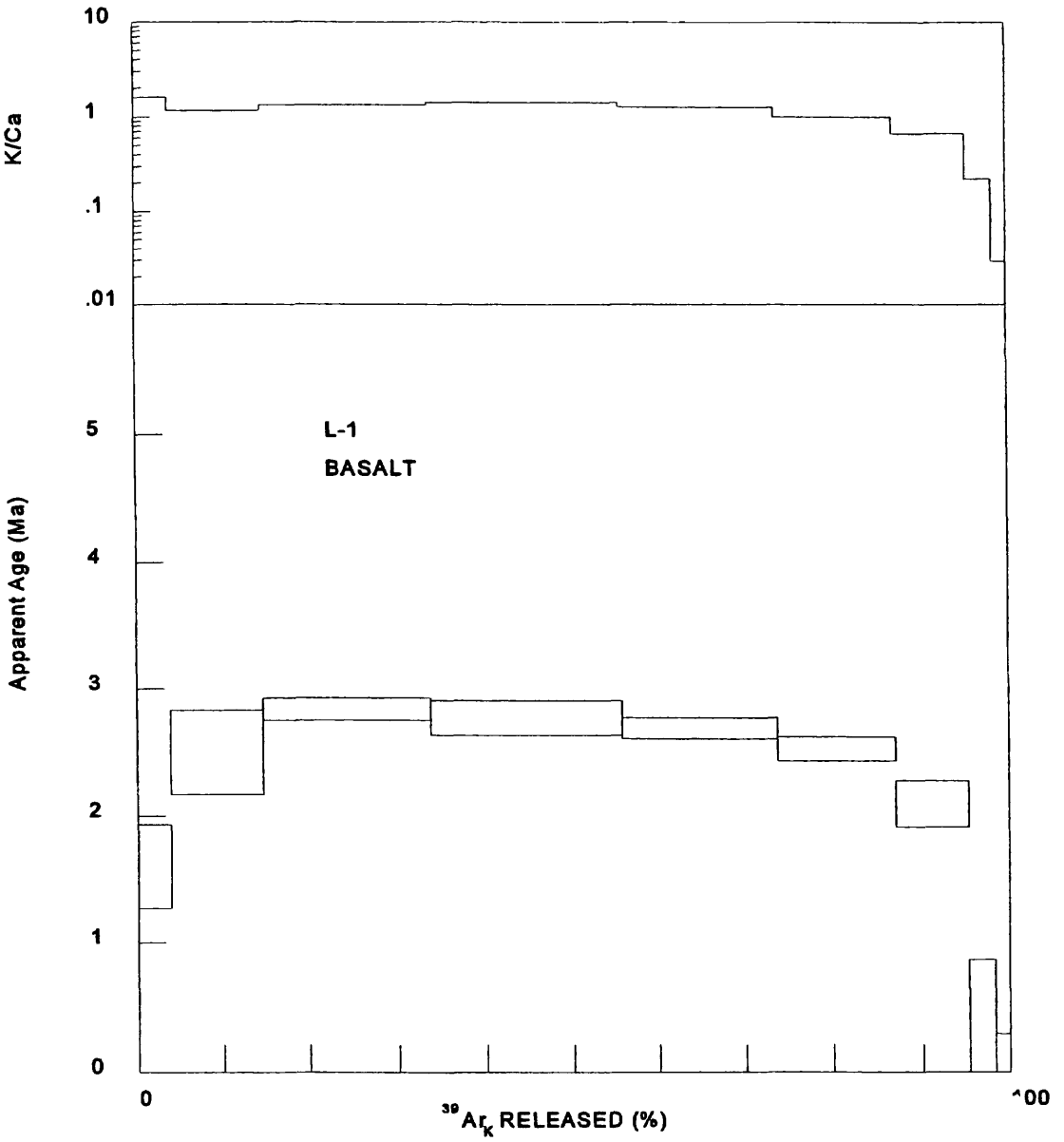

Figure 3. Age spectrum and K/Ca diagram for L-1 basalt.

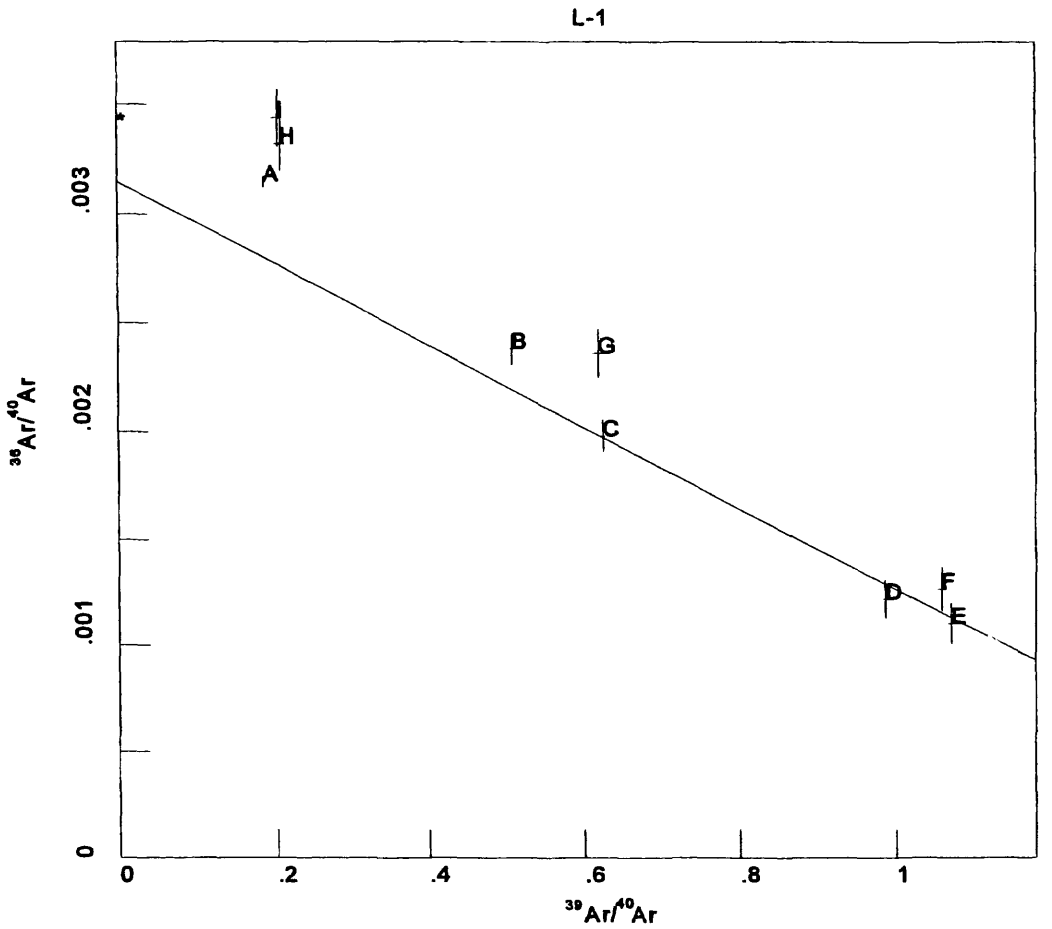

Figure 4. Inverse isotope correlation for L-1 basalt. Regressing points C, D, E, and F which contain 72.4% of the ^{39}Ar released, MSWD = 0.923, initial $^{40}Ar/^{36}Ar = 317.4 \pm 20.5$ and apparent age = 2.56 ± 0.15 Ma.

Table 4A. KH-95-26 BASALT #104KD2 14:10:42 15 Apr 1998 v 4/07/98.

RAW DATA								
File	Temp	^{40}Ar	^{39}Ar	^{38}Ar	^{37}Ar	^{36}Ar	Trap	Manifold
43588	850	377877	468366	6203	123315	182	200	EALL
	±	977	1072	13	200	6		
43589	900	477398	620522	8351	133334	198	200	EALL
	±	787	1378	38	146	14		
43590	950	349873	439557	6349	92781	154	200	EALL
	±	856	1883	27	19	11		
43591	1050	211667	220555	3986	51454	201	200	EALL
	±	740	229	23	213	16		
43592	1150	77910	28573	1628	56446	229	200	EALL
	±	714	11	34	71	11		
43593	1350	121658	20627	1961	549456	523	200	EALL
	±	801	50	34	686	16		

All values are in counts. Measured $^{40}Ar/^{36}Ar$ = 287.7 ± 1%

^{40}Ar blank = 35979 ± 709 36Ar blank = 145 ± 2.6

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

Trap current factors: 40 = 9.3 100 = 4.56 200 = 1

Manifold factors: All = 1, Split1 = 3.3, Split2 = 10.89, Split 3 = 35.937

EAll = 2, Esplit1 = 6.6, Esplit2 = 21.78

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

Table 4B. KH-95-26 BASALT #104KD2 14:10:42 15 Apr 1998 v 4/07/98.

CORRECTIONS										
Temp	^{39}Ar	^{37}Ar	-----	K-derived	-----	-----	Ca-derived	-----	Cl-derived	initial
(°C)	decay	decay	^{40}Ar	^{38}Ar	^{37}Ar	^{39}Ar	^{38}Ar	^{36}Ar	^{36}Ar	38Ar
850	52	47555	2642	6234	0	113	5	44	0	25
900	69	51505	3501	8259	0	122	6	48	0	27
950	49	35900	2480	5851	0	85	4	33	0	22
1050	25	19943	1244	2936	0	47	2	18	0	33
1150	3	21915	161	380	0	52	2	20	0	38
1350	2	213680	114	268	0	503	24	197	0	58

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

Table 4C. KH-95-26 BASALT #104KD2 14:10:42 15 Apr 1998 v 4/07/98.

	MOLAR VALUES						
Temp (°C)	$^{40}Ar^*$	$^{39}Ar_K$	$^{38}Ar_{Cl}$	^{37}Ca	$^{36}Ar_i$	Apparent Age and Precision (Ma)	
850	7.50469	9.304285	***	3.349755	0.002656	3.088	0.018
900	9.477942	12.327482	0.000047	3.623605	0.002900	2.990	0.029
950	6.947856	8.732408	0.008642	2.522671	0.002337	3.064	0.032
1050	4.208447	4.381539	0.020566	1.399672	0.003549	3.083	0.092
1150	1.554987	0.566720	0.025254	1.536189	0.004044	2.716	0.493
1350	2.430883	0.399803	0.034034	14.960561	0.006241	6.269	1.009

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.
Ages of individual steps do not include error in the irradiation parameter J.
*** Below detection limit.

Table 4D. KH-95-26 BASALT #104KD2 14:10:42 15 Apr 1998 v 4/07/98.

Temp °C	Percent ^{39}Ar of Total	Radiogenic yield (%)	$^{39}Ar_K$ (x10^{-12} moles)	$^{40}Ar_R/^{39}Ar_K$	Apparent K/Ca	Apparent K/Cl	Apparent Age and Precision (1a)	
J = 0.002372 ± 0.5%			Basalt			Sample Wt. = 0.1994 g		
850	26.1	89.5	9.304285	0.722	1.44	***	3.088	0.018
900	34.5	91.0	12.327482	0.699	1.77	638875	2.990	0.029
950	24.5	90.1	8.732408	0.717	1.80	2445	3.064	0.032
1050	12.3	75.1	4.381539	0.721	1.63	516	3.083	0.092
1150	1.6	23.2	0.566720	0.635	0.19	54	2.716	0.493
1350	1.1	24.1	0.399803	1.468	0.01	28	6.269	1.009
Total Gas	100	86.6	35.712237	0.720	1.63	221195	3.077	

72.83% of gas on plateau in 900 through 1150 steps Plateau Age = 3.03 ± 0 .02 Ma

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

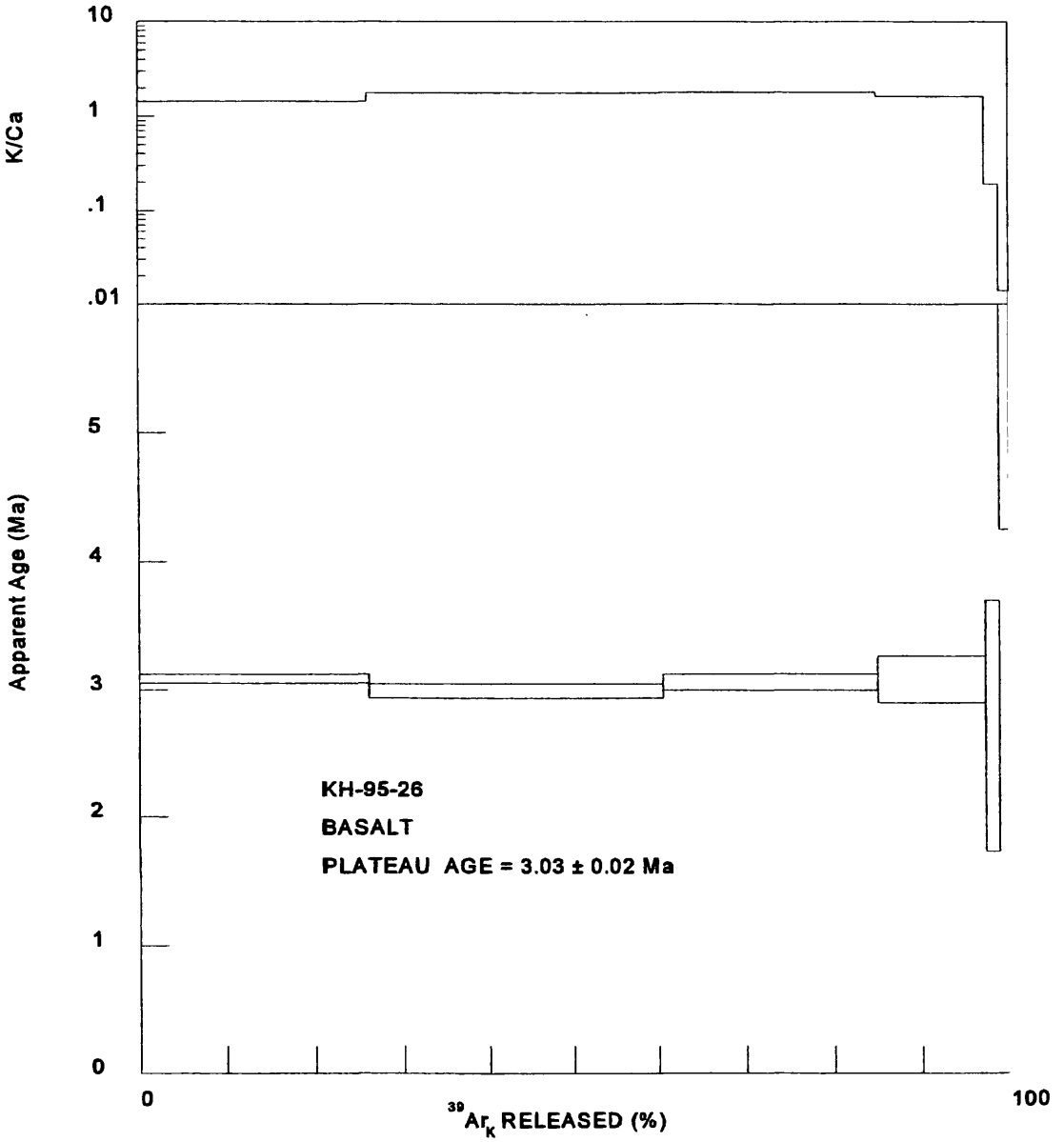

Figure 5. Age spectrum and K/Ca diagrams for KH-95-26 basalt.

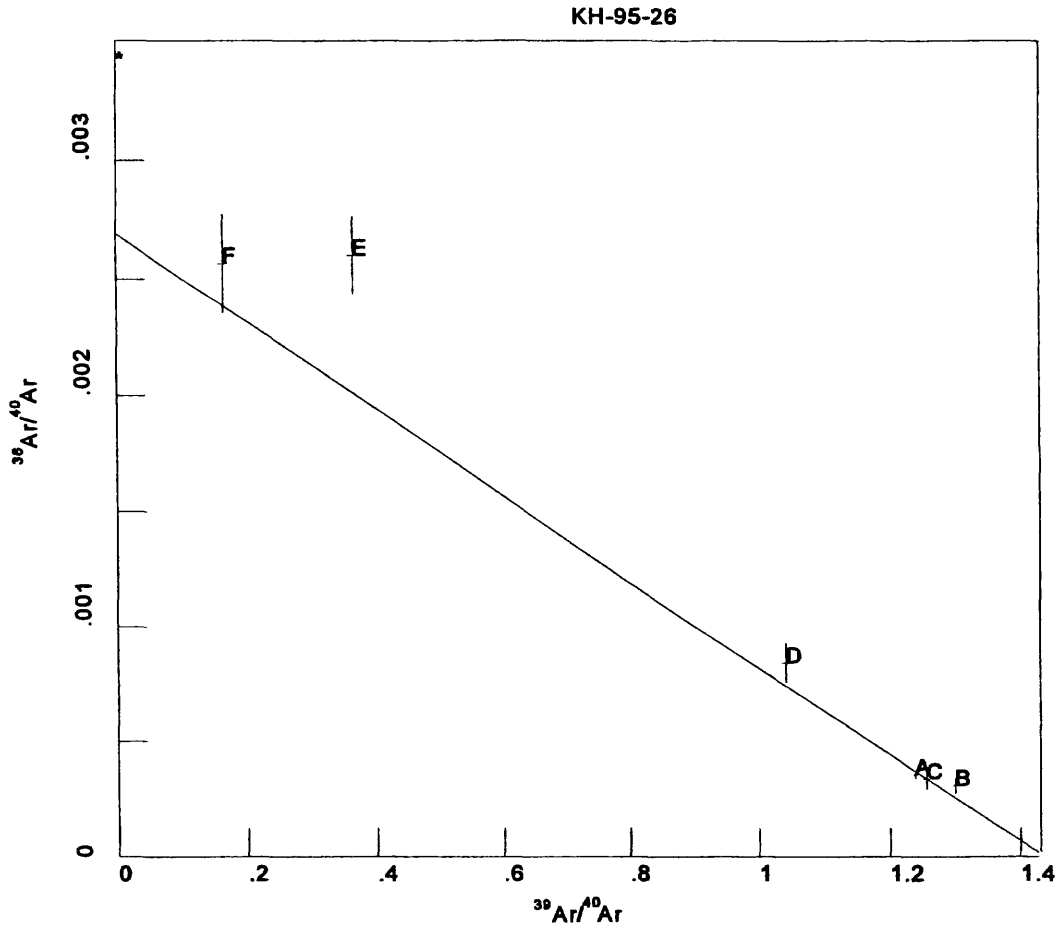

Figure 6. Inverse isotope correlation diagram for KH-95-26 basalt. Regressing points A, B, C, and D which contain 97.3% of the ^{39}Ar released, MSWD = 2.23, initial $^{40}Ar/^{36}Ar = 370.9 \pm 60.0$, and apparent age = 2.98 ± 0.08 Ma.

Table 5A. CP-86 BASALT #149KD2 11:51:58 15 Apr 1998 v 4/07/98.

RAW DATA								
File	Temp	^{40}Ar	^{39}Ar	^{38}Ar	^{37}Ar	^{36}Ar	Trap	Manifold
43512	650	83035	18612	649	9806	210	200	EALL
	±	202	30	11	20	4		
43513	750	118980	113241	1526	45163	135	200	EALL
	±	293	148	13	94	6		
43514	850	410811	364069	4809	94934	505	200	EALL
	±	585	441	22	165	9		
43515	950	266175	302426	4080	113340	163	200	EALL
	±	174	556	20	256	4		
43516	1050	100414	95453	1551	59577	114	200	EALL
	±	135	166	16	89	5		
43517	1150	94740	78410	1866	79098	155	200	EALL
	±	133	35	17	106	4		
43518	1250	40587	18706	682	135883	131	200	EALL
	±	136	36	9	3	4		
43519	1350	61147	28245	1026	172659	195	200	EALL
	±	131	76	20	34	6		

All values are in counts. Measured $^{40}Ar/^{36}Ar$ =287.7± 1%

^{40}Ar blank = 12234 ± 131 36Ar blank = 51 ± 1

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

Trap current factors: 40 = 9.3 100 = 4.56 200 = 1

Manifold factors: All = 1, Split1 = 3.3, Split2 = 10.89, Split 3 = 35.937

EAll = 2, Esplit1 = 6.6, Esplit2 = 21.78

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

Table 5B. CP-86 BASALT #149KD2 11:51:58 15 Apr 1998 v 4/07/98.

			CORRECTIONS							
Temp	^{39}Ar	^{37}Ar	-----	K-derived	-----	-----	Ca-derived	-----	Cl-derived	initial
(^{o}C)	decay	decay	^{40}Ar	^{38}Ar	^{37}Ar	^{39}Ar	^{38}Ar	^{36}Ar	^{36}Ar	^{38}Ar
650	2	2942	105	248	0	8	0	3	0	38
750	10	13578	639	1507	0	39	2	15	0	22
850	32	28598	2054	4846	0	81	4	32	0	86
950	26	34214	1706	4025	0	97	5	38	0	22
1050	8	18020	538	1270	0	51	2	20	0	17
1150	7	23973	442	1043	0	68	3	27	0	23
1250	2	41268	105	247	0	117	6	46	0	15
1350	2	52543	159	374	0	149	7	58	0	25

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

Table 5C. CP-86 BASALT #149KD2 11:51:58 15 Apr 1998 v 4/07/98.

	MOLAR VALUES						
Temp (^{o}C)	$^{40}Ar^{*}$	$^{39}Ar_{K}$	$^{38}Ar_{Cl}$	^{37}Ca	$^{36}Ar_{i}$	Apparent Age and Precision (Ma)	
650	1.658598	0.369651	0.008604	0.249921	0.004016	5.326	0.283
750	2.366815	2.249297	0.000377	1.151557	0.002330	3.115	0.065
850	8.175137	7.232324	***	2.421728	0.009188	3.151	0.031
950	5.289387	6.007186	0.000378	2.892654	0.002404	3.182	0.018
1050	1.997518	1.895600	0.005503	1.521221	0.001827	3.210	0.061
1150	1.885956	1.556625	0.016372	2.020620	0.002486	3.088	0.060
1250	0.809648	0.369341	0.008714	3.472879	0.001640	3.674	0.269
1350	1.219768	0.558243	0.013111	4.41486	0.002627	3.316	0.272

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.

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

*** Below detection limit.

Table 5D. CP-86 BASALT #149KD2 11:51:58 15 Apr 1998 v 4/07/98.

Temp °C	Percent ^{39}Ar of Total	Radiogenic yield (%)	$^{39}Ar_K$ ($x10^{-12}$ moles)	$^{40}Ar_R/^{39}Ar_K$	Apparent K/Ca	Apparent K/Cl	Apparent Age and Precision (Ma)	
J = 0.002316 ± 0.5%			Basalt			Sample Wt. = 0.2500 g		
650	1.8	28.5	0.369651	1.277	0.77	104	5.326	0.293
750	11.1	70.9	2.249297	0.746	1.02	14439	3.115	0.085
850	35.7	66.8	7.232324	0.755	1.55	***	3.151	0.031
950	29.7	86.6	6.007186	0.762	1.08	38434	3.182	0.018
1050	9.4	73.0	1.895600	0.769	0.65	834	3.210	0.051
1150	7.7	61.1	1.556625	0.740	0.40	230	3.088	0.080
1250	1.8	40.2	0.369341	0.880	0.06	103	3.674	0.289
1350	2.8	36.4	0.558243	0.794	0.07	103	3.316	0.272
Total Gas	100	71.2	20.238267	0.769	1.097	13115	3.211	

93.59% of gas on plateau in 750 through 1150 steps Plateau Age = 3.17 ± 0 .02 Ma

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

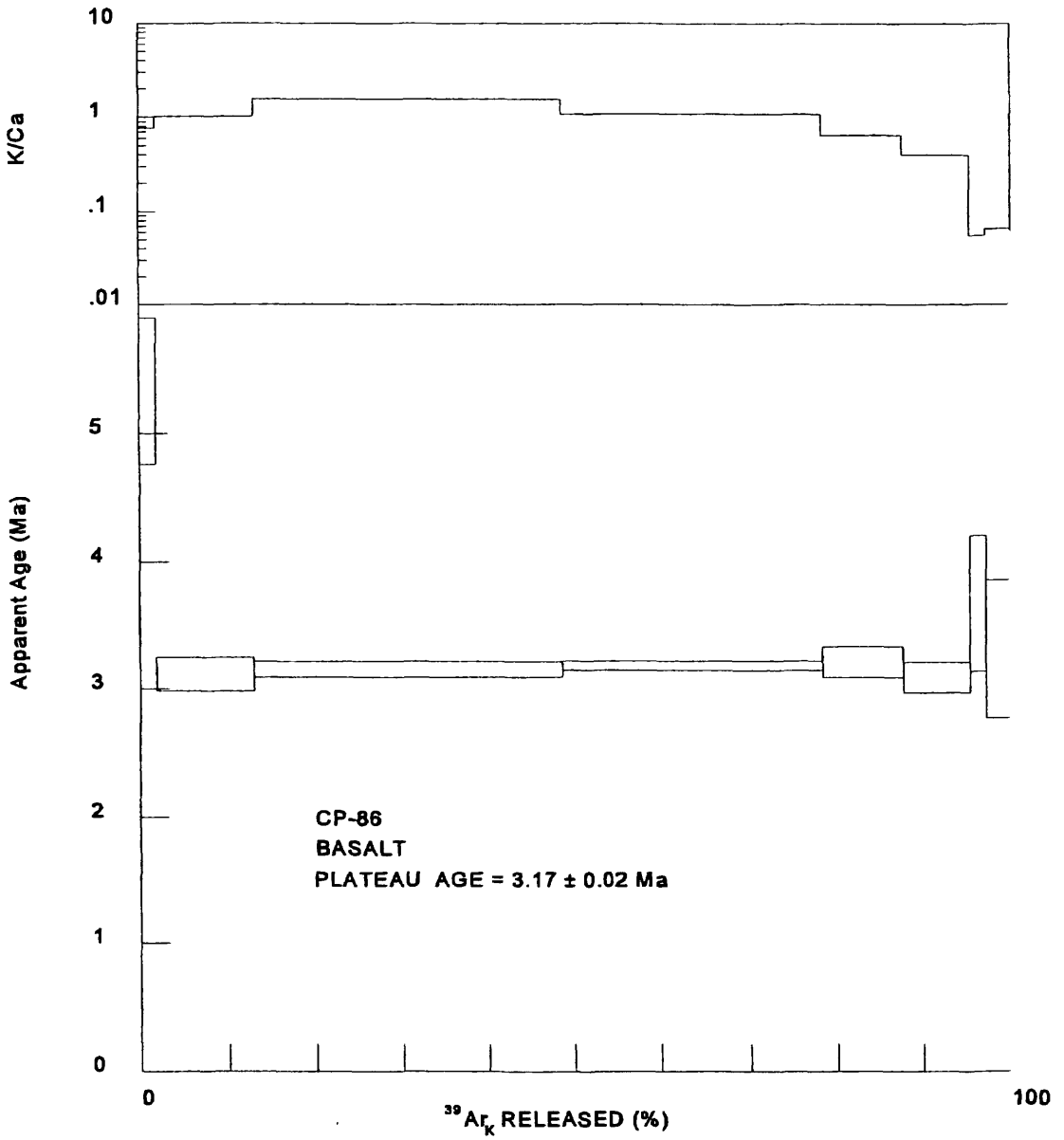

Figure 7. Age spectrum and K/Ca diagrams for CP-86 basalt.

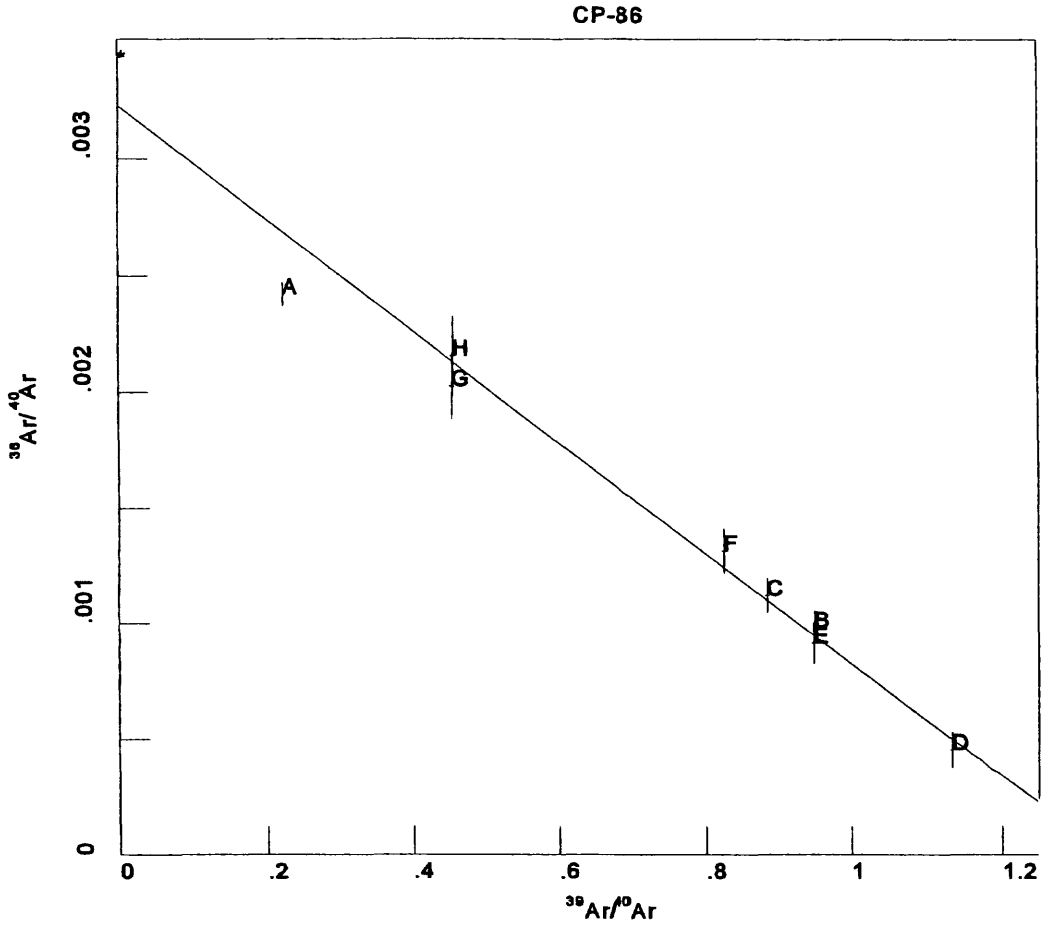

Figure 8. Inverse isotope correlation diagram for CP-86 basalt. Regressing points B, C, D, E, F, and G which contain 95.4% of the ^{39}Ar released, MSWD = 0.50, initial $^{40}Ar/^{36}Ar = 310.1 \pm 20.1$, and apparent age = 3.1 ± 0.1 Ma.

Table 6A. SH-267 SANIDINE #26DD53 12:40:49 12 Apr 1998 v 4/07/98

RAW DATA								
File	Temp	^{40}Ar	^{39}Ar	^{38}Ar	^{37}Ar	^{36}Ar	Trap	Manifold
951143	700	243132	85103	1597	1171	656	200	ALL
	±	210	25	14	14	3		
951144	800	442576	224762	3398	1907	1170	200	ALL
	±	84	197	21	14	6		
951145	900	340664	813104	10890	4450	187	200	ALL
	±	216	719	28	15	20		
951146	950	406187	1045432	13968	3975	192	200	ALL
	±	1315	2323	59	5	7		
951147	1000	469947	1146812	15189	3327	312	200	ALL
	±	99	229	34	7	17		
951148	1050	522439	1445821	19119	3434	129	200	ALL
	±	474	151	59	9	3		
951149	1100	909754	2528408	33825	5255	175	200	ALL
	±	1295	5639	5	31	22		
951150	1150	780739	2198364	29457	4407	147	200	ALL
	±	1009	2188	74	15	9		
951151	1200	978015	2681920	36389	5615	195	200	ALL
	±	382	3405	99	25	5		
951152	1250	1111014	2931188	39434	5977	348	200	ALL
	±	827	742	83	51	12		
951153	1300	1216049	3186970	42090	5668	284	200	ALL
	±	1353	1813	98	34	19		
951154	1350	353844	864518	11215	1806	197	200	ALL
	±	336	798	35	30	6		
951155	1450	93765	166831	2262	756	136	200	ALL
	±	166	137	21	10	8		

All values are in volts x 10^{-6}. Measured $^{40}Ar/^{36}Ar$ = 298.9 ± 0.33%

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

Trap current factors: 40 = 9.3 100 = 4.56 200 = 1

Manifold factors: All = 1, Split1 = 3.3, Split2 = 10.89, Split 3 = 35.937

EAll = 2, Esplit1 = 6.6, Esplit2 = 21.78

Sensitivity =1.25x10^{-17} moles/count. Reproducibility limit = .25 %. Detection limit = 40 counts.

Table 6B. SH-267 SANIDINE #26DD53 12:40:49 12 Apr 1998 v 4/07/98

			CORRECTIONS							
Temp	^{39}Ar	^{37}Ar	-----	K-derived	-----	-----	Ca-derived	-----	Cl-derived	initial
(°C)	decay	decay	^{40}Ar	^{38}Ar	^{37}Ar	^{39}Ar	^{38}Ar	^{36}Ar	^{36}Ar	^{38}Ar
700	51	4907	485	1144	0	4	0	2	0	124
800	135	7993	1281	3022	0	7	0	3	0	221
900	488	18664	4634	10933	0	16	1	6	0	34
950	628	16684	5959	14057	0	14	1	6	0	35
1000	689	13979	6536	15421	0	12	1	5	0	58
1050	869	14438	8241	19441	0	12	1	5	0	24
1100	1521	22113	14411	33998	0	19	1	7	0	32
1150	1323	18555	12530	29560	0	16	1	6	0	27
1200	1614	23657	15286	36063	0	20	1	8	0	35
1250	1764	25197	16707	39414	0	21	1	8	0	64
1300	1919	23911	18165	42854	0	20	1	8	0	52
1350	521	7625	4928	11625	0	6	0	3	0	37
1450	101	3194	951	2243	0	3	0	1	0	25

All values are in volts x 10^{-6} and have been corrected for mass discrimination.

Table 6C. SH-267 SANIDINE #26DD53 12:40:49 12 Apr 1998 v 4/07/98

	MOLAR VALUES						
Temp (^{0}C)	$^{40}Ar^*$	$^{39}Ar_K$	$^{38}Ar_{Cl}$	^{37}Ca	$^{36}Ar_i$	Apparent Age and Precision (Ma)	
700	3.033086	1.067433	0.007316	0.076631	0.008276	6.598	0.11
800	5.516192	2.819208	0.007692	0.124809	0.014756	4.916	0.093
900	4.200367	10.198959	0.000653	0.291419	0.002282	4.147	0.089
950	5.002858	13.113187	0.000322	0.260474	0.002365	3.937	0.027
1000	5.792635	14.384877	***	0.218186	0.003883	3.874	0.051
1050	6.427483	18.135489	***	0.225319	0.001578	3.943	0.009
1100	11.191785	31.714841	0.000656	0.345063	0.002119	3.996	0.031
1150	9.602610	27.574975	0.001155	0.289494	0.001788	3.948	0.016
1200	12.034115	33.640412	0.007124	0.369055	0.002362	4.042	0.007
1250	13.678844	36.767103	0.003873	0.393040	0.004294	4.049	0.015
1300	14.97355	39.975518	***	0.372923	0.003495	4.183	0.022
1350	4.361456	10.844011	***	0.118912	0.002464	4.019	0.026
1450	1.160172	2.092618	0.000718	0.049800	0.001702	3.767	0.166

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.

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

*** Below detection limit.

Table 6D. SH-267 SANIDINE #26DD53 12:40:49 12 Apr 1998 v 4/07/98

Temp °C	Percent ^{39}Ar of Total	Radiogenic yield (%)	$^{39}Ar_K$ ($x10^{-12}$ moles)	$^{40}Ar_R/^{39}Ar_K$	Apparent K/Ca	Apparent K/Cl	Apparent Age and Precision (Ma)	
J = 0.006657 ± 0.25%			Sanidine			Sample Wt. = 0.1220 g		
700	0.4	19.4	1.067433	0.550	7.24	353	6.598	0.110
800	1.2	21.0	2.819208	0.410	11.75	887	4.916	0.093
900	4.2	83.9	10.198959	0.346	18.20	37779	4.147	0.089
950	5.4	86.0	13.113187	0.328	26.18	98634	3.937	0.027
1000	5.9	80.2	14.384877	0.323	34.28	***	3.874	0.051
1050	7.5	92.7	18.135489	0.329	41.85	***	3.943	0.009
1100	13.1	94.4	31.714841	0.333	47.79	116911	3.996	0.031
1150	11.4	94.5	27.574975	0.329	49.53	57774	3.948	0.016
1200	13.9	94.2	33.640412	0.337	47.40	11427	4.042	0.007
1250	15.2	90.7	36.767103	0.338	48.64	22972	4.049	0.015
1300	16.5	93.1	39.975518	0.349	55.74	***	4.183	0.022
1350	4.5	83.3	10.844011	0.335	47.42	***	4.019	0.026
1450	0.9	56.6	2.092618	0.314	21.85	7054	3.767	0.166
Total Gas	100	89.7	242.32863	0.338	44.88	33947	4.049	

NO PLATEAU

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

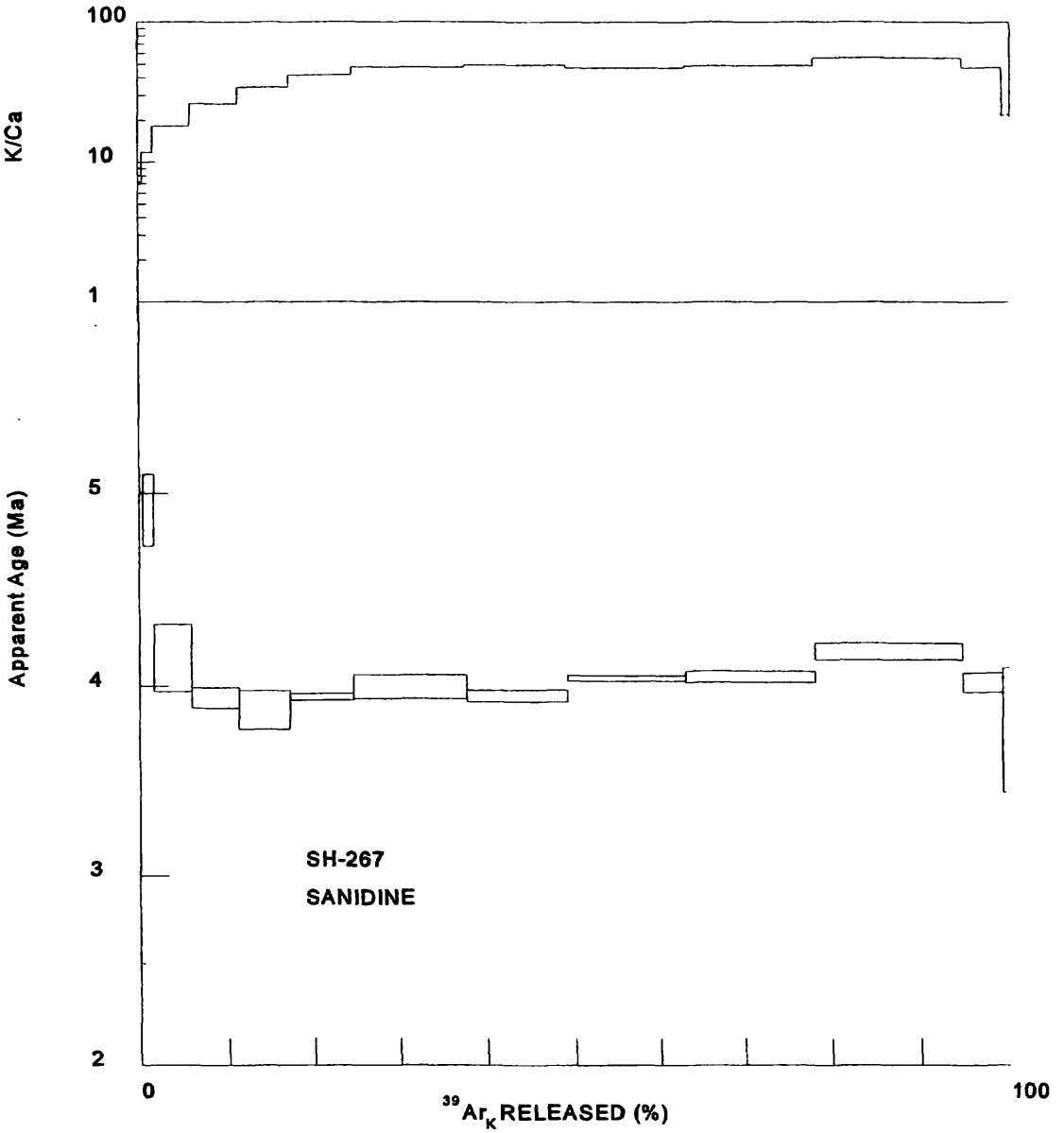

Figure 9. Age spectrum and K/Ca diagrams for SH-267 sanidine.

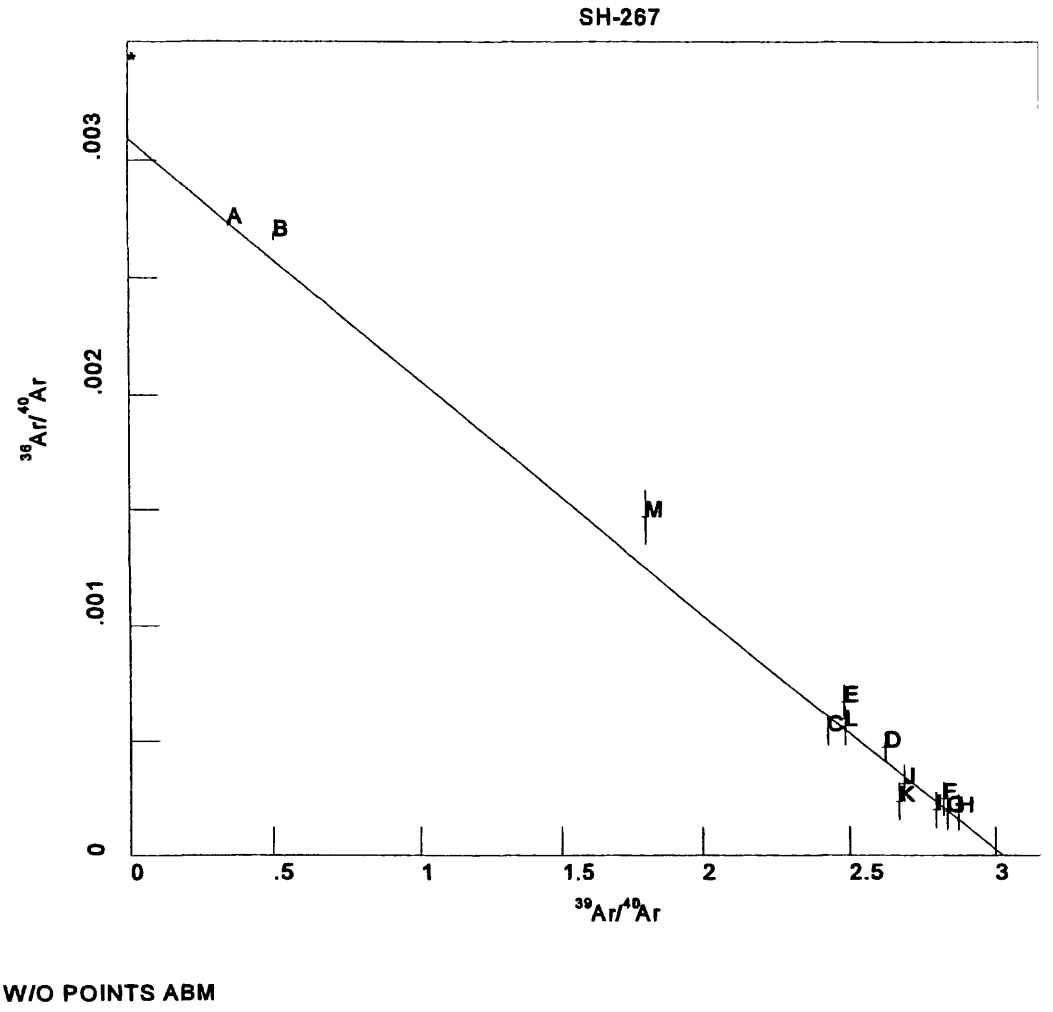

Figure 10. Inverse isotope correlation diagram for SH-267 sanidine. Regressing points C, D, E, F, G, H, I, J, K, and L which contain 97.5% of the ^{39}Ar released, MSWD = 0.948, initial $^{40}Ar/^{36}Ar$ = 323.3 ± 42.5, and apparent age = 3.97 ± 0.08 Ma.

Table 7A. CCLA-5 BASALT #32KD2 11:12:15 15 Apr 1998 v 4/07/98.

RAW DATA								
File	Temp	^{40}Ar	^{39}Ar	^{38}Ar	^{37}Ar	^{36}Ar	Trap	Manifold
43752	750	374704	75651	3323	44441	807	200	EALL
	±	3038	76	21	38	19		
43753	850	752206	258831	5873	145416	966	200	EALL
	±	2917	518	36	137	21		
43754	950	1114181	556235	8051	212168	469	200	EALL
	±	3039	494	25	425	21		
43755	1050	733023	362328	5343	114058	338	200	EALL
	±	3808	147	32	80	21		
43756	1450	572113	131788	2881	517773	1393	200	EALL
	±	2929	157	24	406	23		

All values are in counts. Measured $^{40}Ar/^{36}Ar$ = 287.7 ± 1%

^{40}Ar blank = 36463 ± 2911 ^{36}Ar blank = 153.7 ± 13.5

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

Trap current factors: 40 = 9.3 100 = 4.56 200 = 1

Manifold factors: All = 1, Split1 = 3.3, Split2 = 10.89, Split 3 = 35.937

EAll = 2, Esplit1 = 6.6, Esplit2 = 21.78

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

Table 7B. CCLA-5 BASALT #32KD2 11:12:15 15 Apr 1998 v 4/07/98.

CORRECTIONS										
Temp	^{39}Ar	^{37}Ar	-----	K-derived	-----	-----	Ca-derived	-----	Cl-derived	initial
(°C)	decay	decay	^{40}Ar	^{38}Ar	^{37}Ar	^{39}Ar	^{38}Ar	^{36}Ar	^{36}Ar	^{38}Ar
750	14	29615	427	1007	0	49	2	19	0	143
850	46	97020	1460	3444	0	160	8	63	0	164
950	100	141722	3138	7403	0	233	11	92	0	68
1050	65	76276	2044	4822	0	126	6	49	0	52
1450	24	346674	741	1747	0	570	27	224	0	212

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

Table 7C. CCLA-5 BASALT #32KD2 11:12:15 15 Apr 1998 v 4/07/98.

	MOLAR VALUES						
Temp (°C)	$^{40}Ar^*$	$^{39}Ar_K$	$^{38}Ar_{Cl}$	^{37}Ca	$^{36}Ar_i$	Apparent Age and Precision (Ma)	
750	7.485545	1.502318	0.048266	1.451793	0.015324	8.375	0.357
850	15.014923	5.140193	0.050171	4.752719	0.017554	8.135	0.109
950	22.220872	11.048605	0.011994	6.937685	0.007309	7.727	0.053
1050	14.619584	7.197525	0.009934	3.731332	0.005591	7.667	0.086
1450	11.427443	2.607424	0.025617	16.946665	0.022651	7.726	0.236

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

Table 7D. CCLA-5 BASALT #32KD2 11:12:15 15 Apr 1998 v 4/07/98.

Temp °C	Percent ^{39}Ar of Total	Radiogenic yield (%)	$^{39}Ar_K$ (x10^{-12} moles)	$^{40}Ar_R/^{39}Ar_K$	Apparent K/Ca	Apparent K/Cl	Apparent Age and Precision (Ma)	
J = 0.002364 ± 0.5%			Basalt			Sample Wt. = 0.1998 g		
750	5.5	39.5	1.502318	1.968	0.54	75	8.375	0.357
850	18.7	65.5	5.140193	1.912	0.56	248	8.135	0.109
950	40.2	90.3	11.048605	1.816	0.83	2229	7.727	0.053
1050	26.2	88.7	7.197525	1.802	1.00	1753	7.667	0.086
1450	9.5	41.4	2.607424	1.816	0.08	246	7.726	0.236
Total Gas	100	77.8	27.496070	1.838	0.74	1428	7.823	

75.84% of gas on plateau in 950 through 1450 steps Plateau Age = 7.71 ± 0.04 Ma

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

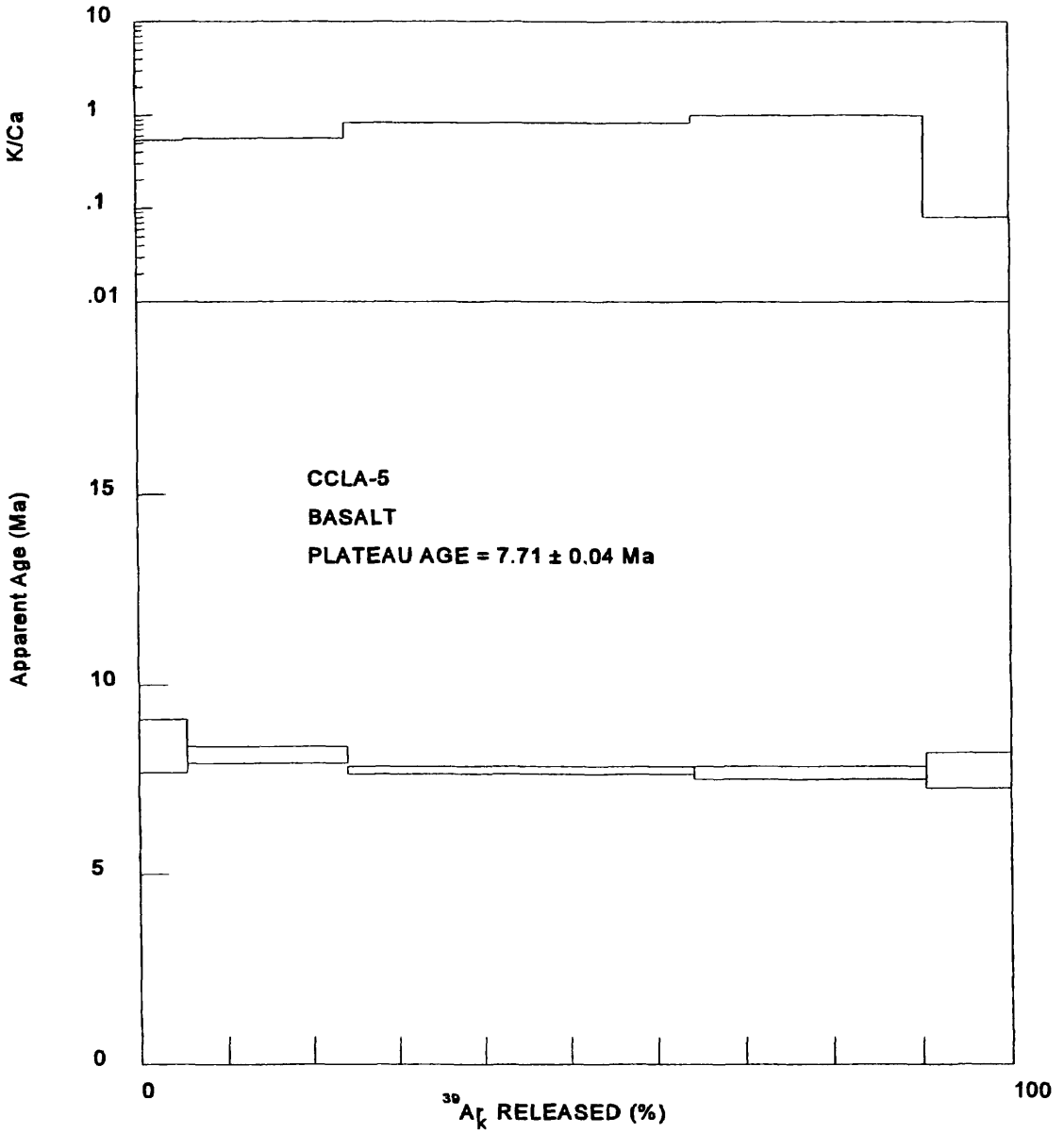

Figure 11. Age spectrum and K/Ca diagrams for CCLA-5 basalt.

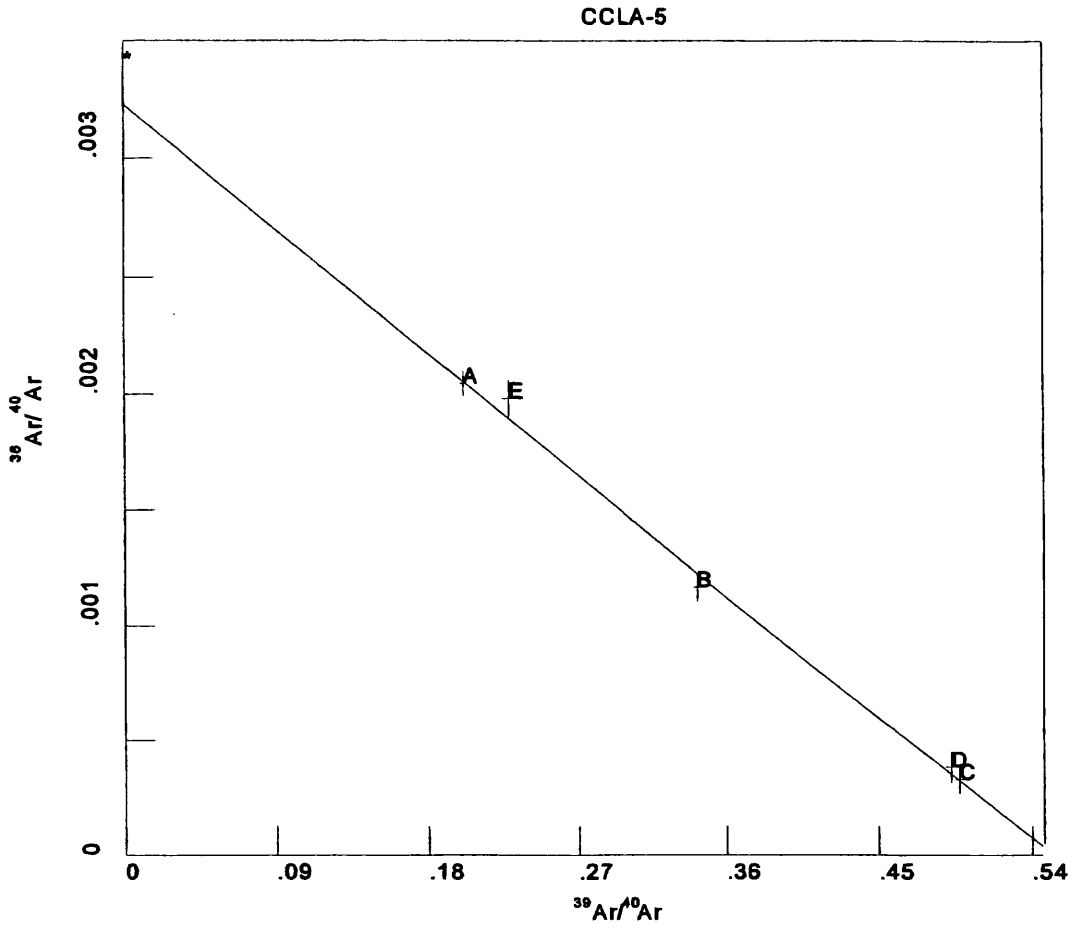

Figure 12. Inverse correlation diagram for CCLA-5 Basalt. Regressing all points containing 100% of the ^{39}Ar released, MSWD = 0.74, initial $^{40}Ar/^{36}Ar = 309.7 \pm 27.1$ and apparent age = 7.70 ± 0.14 Ma.

Table 8A. CP-89 BASALT #50KD2 12:12:32 15 Apr 1998 v 4/07/98.

RAW DATA								
File	Temp	^{40}Ar	^{39}Ar	^{38}Ar	^{37}Ar	^{36}Ar	Trap	Manifold
43765	750	131318	64563	955	35037	73	200	EALL
	±	1569	156	4	57	11		
43766	850	898029	378949	5224	128992	800	200	EALL
	±	3871	891	62	410	20		
43767	950	891672	467069	6316	129691	255	200	EALL
	±	1673	423	32	250	14		
43768	1050	326982	155000	2408	65607	210	200	EALL
	±	1637	227	29	162	15		
43769	1450	1544033	485192	10143	901064	2641	200	EALL
	±	1722	761	26	995	30		

All values are in counts. Measured $^{40}Ar/^{36}Ar$ = 287.7 ± 1%

^{40}Ar blank = 38798 ± 1556 ^{36}Ar blank = 159 ± 8.08

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

Trap current factors: 40 = 9.3 100 = 4.56 200 = 1

Manifold factors: All = 1, Split1 = 3.3, Split2 = 10.89, Split 3 = 35.937

EAll = 2, Esplit1 = 6.6, Esplit2 = 21.78

Sensitivity =1.00x10^{-17} moles/count. Reproducibility limit = .25 %. Detection limit = 40 counts.

Table 8B. CP-89 BASALT #50KD2 12:12:32 15 Apr 1998 v 4/07/98.

CORRECTIONS										
Temp	^{39}Ar	^{37}Ar	-----	K-derived	-----	-----	Ca-derived	-----	Cl-derived	initial
(°C)	decay	decay	^{40}Ar	^{38}Ar	^{37}Ar	^{39}Ar	^{38}Ar	^{36}Ar	^{36}Ar	^{38}Ar
750	12	23714	364	859	0	39	2	15	0	10
850	69	87405	2138	5043	0	143	7	56	0	135
950	85	87984	2635	6217	0	144	7	56	0	36
1050	28	44560	874	2063	0	73	3	29	0	33
1450	88	612701	2733	6446	0	999	47	392	0	407

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

Table 8C. CP-89 BASALT #50KD2 12:12:32 15 Apr 1998 v 4/07/98.

MOLAR VALUES							
Temp (°C)	$^{40}Ar^*$	$^{39}Ar_K$	$^{38}Ar_{Cl}$	^{37}Ca	$^{36}Ar_i$	Apparent Age and Precision (Ma)	
750	2.619071	1.282205	0.001834	1.151765	0.001122	7.666	0.230
850	17.917824	7.527476	0.004797	4.242260	0.014453	7.790	0.078
950	17.780747	9.278545	0.000900	4.267309	0.003829	7.710	0.040
1050	6.522161	3.078649	0.006866	2.159718	0.003518	7.652	0.130
1450	30.826018	9.621592	0.078462	29.675938	0.043589	8.014	0.079

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

Table 8D. CP-89 BASALT #50KD2 12:12:32 15 Apr 1998 v 4/07/98.

Temp °C	Percent ^{39}Ar of Total	Radiogenic yield (%)	$^{39}Ar_K$ (x10^{-12} moles)	$^{40}Ar_R/^{39}Ar_K$	Apparent K/Ca	Apparent K/Cl	Apparent Age and Precision (Ma)	
J = 0.002387 ± 0.5%			Basalt			Sample Wt. = 0.1998 g		
750	4.2	87.3	1.282205	1.784	0.58	1692	7.666	0.230
850	24.4	76.2	7.527476	1.813	0.92	3797	7.790	0.078
950	30.1	93.6	9.278545	1.794	1.13	24953	7.710	0.040
1050	100.0	84.1	3.078649	1.781	0.74	1085	7.652	0.130
1450	31.3	58.2	9.621592	1.865	0.17	297	8.014	0.079
Total Gas	100	77.1	30.788467	1.819	0.72	8719	7.817	

68.75% of gas on plateau in 750 through 1050 steps Plateau Age = 7.72 ± 0.04 Ma

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

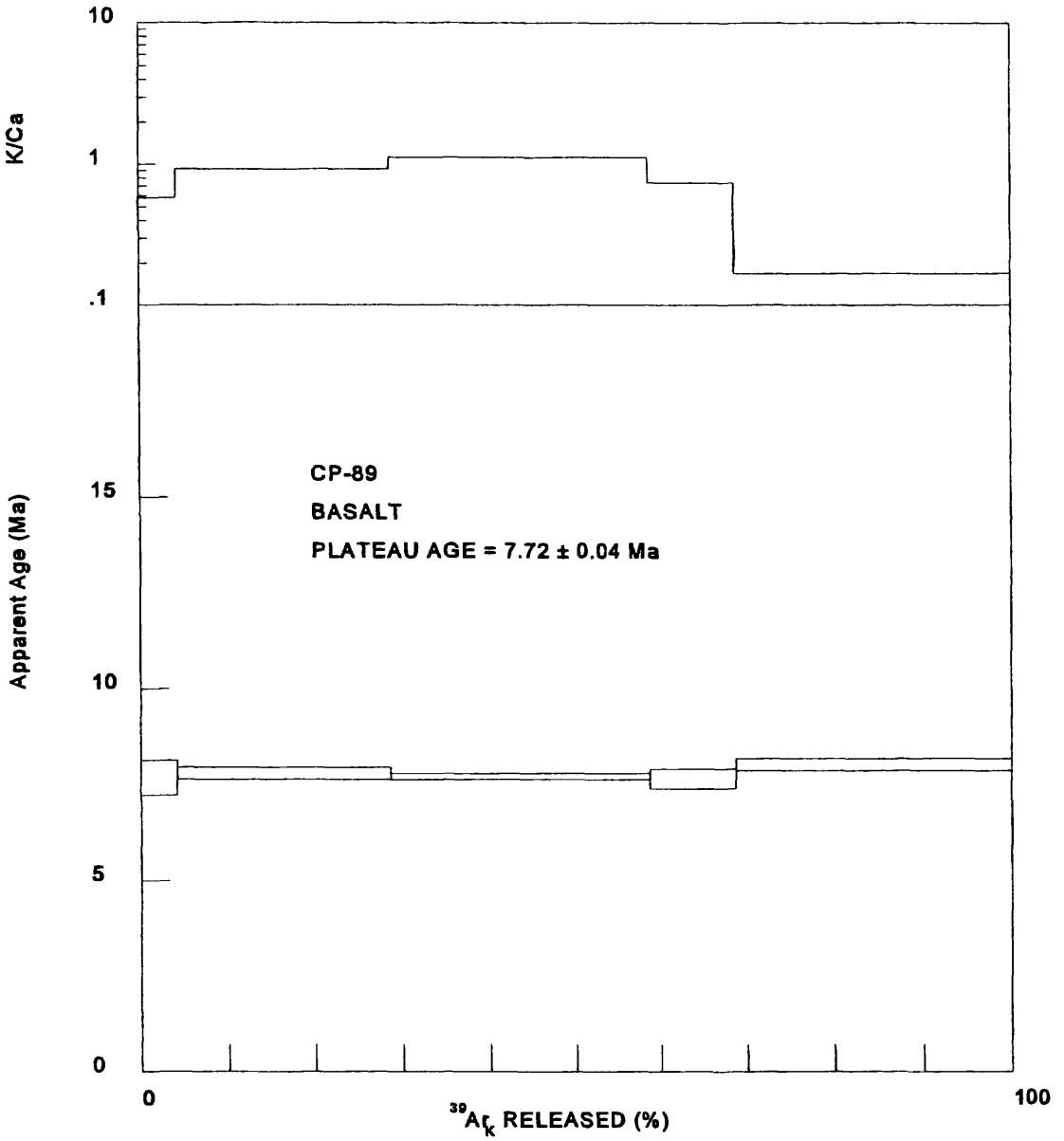

Figure 13. Age spectrum and K/Ca diagrams for CP-89 basalt.

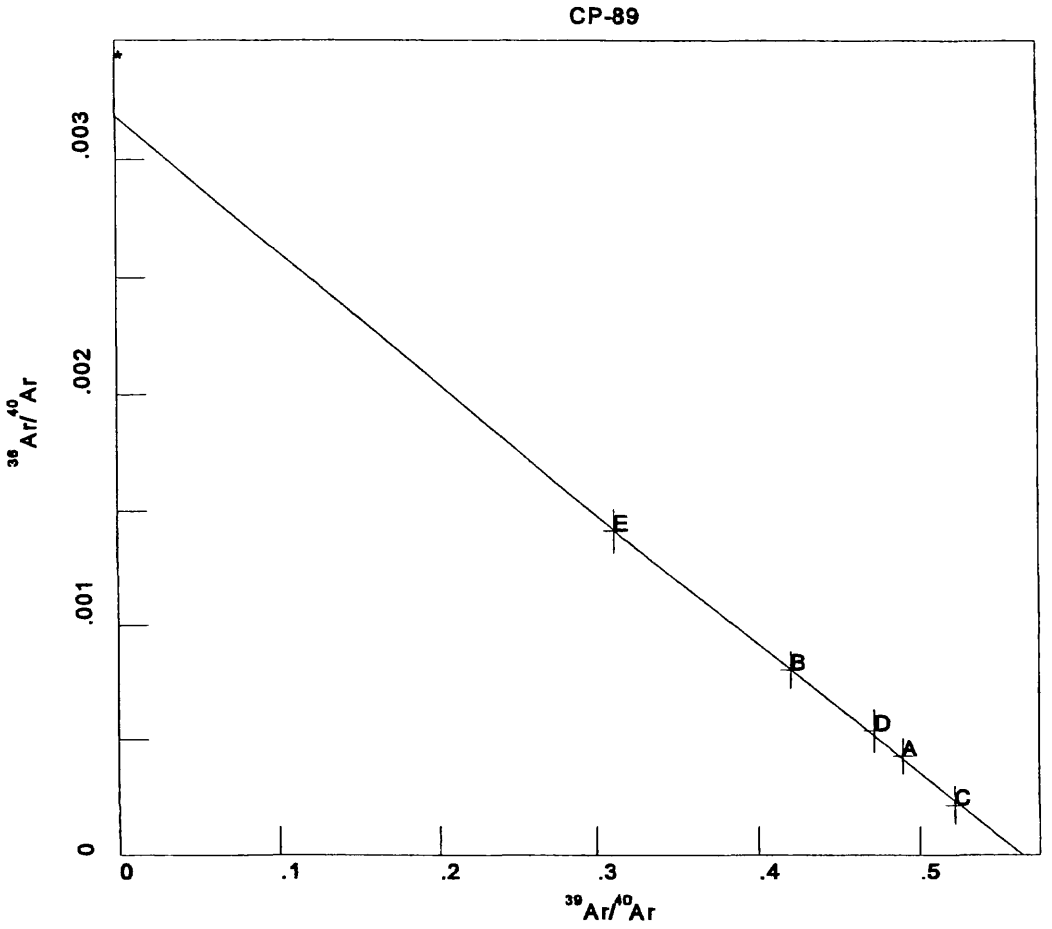

Figure 14. Inverse Isotope correlation diagram for CP-89 basalt. Regressing all points containing 100% of the ^{39}Ar released, MSWD = 0.04, initial $^{40}Ar/^{36}Ar$ = 314.3 ± 27.1 and apparent age = 7.62 ± 0.20 Ma.

Table 9A. CP-8 BASALT #111DD57 12:12:09 17 Apr 1998 V 1/10/95.

RAW DATA								
File	Temp	^{40}Ar	^{39}Ar	^{38}Ar	^{37}Ar	^{36}Ar	Trap	Manifold
961097	800	3173431	948129	86808	24827	8988	150	ALL
	±	2284	611	51	4	25		
961098	900	1774380	1151963	41946	97364	3806	150	ALL
	±	1581	1319	68	101	23		
961099	1000	2837472	2963508	43928	245243	4031	150	ALL
	±	1110	1658	45	84	9		
961100	1050	1293594	1715126	23724	103265	1130	150	ALL
	±	735	330	24	157	4		
961101	1100	1256662	1643932	22856	92911	1124	150	ALL
	±	487	1480	44	60	3		
961102	1150	654722	766795	11203	44651	752	150	ALL
	±	140	524	12	39	3		
961103	1200	409362	383166	6374	27500	638	150	ALL
	±	120	294	16	42	17		
961104	1300	433950	345779	6910	33034	874	150	ALL
	±	210	306	4	17	8		
961105	1400	346721	233316	5001	75227	923	150	ALL
	±	242	85	17	157	9		
961106	1600	376380	120791	3008	449536	2206	150	ALL
	±	83	78	5	418	18		

All values are in volts x 10^{-6}. Measured $^{40}Ar/^{36}Ar$ = 298.9 ± 0.33%

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

Trap current factors: 40 = 9.3 100 = 4.56 150 = 1

Manifold factors: All = 1, Split1 = 3.3, Split2 = 10.89, Split 3 = 35.937

EAll = 2, Esplit1 = 6.6, Esplit2 = 21.78

Sensitivity =1.46 x10^{-17} moles/count. Reproducibility limit = .25 %. Detection limit = 40 counts.

Table 9B. CP-8 BASALT #111DD57 12:12:09 17 Apr 1998 V 1/10/95.

			CORRECTIONS							
Temp	^{39}Ar	^{37}Ar	-----	K-derived	-----	-----	Ca-derived	-----	Cl-derived	initial
(°C)	decay	decay	^{40}Ar	^{38}Ar	^{37}Ar	^{39}Ar	^{38}Ar	^{36}Ar	^{36}Ar	^{38}Ar
800	834	250261	5405	12750	0	187	9	73	18	1683
900	1014	981893	6564	15485	0	733	35	287	6	665
1000	2609	2474509	16886	39836	0	1846	87	724	1	627
1050	1510	1042552	9774	23059	0	778	37	305	0	157
1100	1448	938596	9369	22102	0	700	33	275	0	161
1150	675	451273	4370	10309	0	337	16	132	0	117
1200	338	278105	2183	5151	0	207	10	81	0	105
1300	305	334209	1970	4648	0	249	12	98	1	147
1400	206	761538	1327	3131	0	568	27	223	0	133
1600	106	4553047	669	1579	0	3396	160	1332	0	168

All values are in volts x 10^{-6} and have been corrected for mass discrimination.

Table 9C. CP-8 BASALT #111DD57 12:12:09 17 Apr 1998 V 1/10/95.

	MOLAR VALUES						
Temp (°C)	$^{40}Ar^*$	$^{39}Ar_K$	$^{38}Ar_{Cl}$	^{37}Ca	$^{36}Ar_i$	Apparent Age and Precision (Ma)	
800	33.291671	9.999045	0.801152	2.915749	0.094579	6.885	0.105
900	18.577353	12.143383	0.287254	11.439406	0.037368	7.992	0.078
1000	29.640543	31.240129	0.051333	28.827547	0.035223	7.929	0.013
1050	13.491214	18.083242	0.009683	12.144895	0.008804	7.756	0.010
1100	13.107361	17.333092	0.010656	10.933292	0.009056	7.751	0.008
1150	6.834323	8.084733	0.011138	5.256460	0.006604	7.779	0.015
1200	4.278893	4.039521	0.014246	3.239214	0.005918	8.067	0.167
1300	4.539528	3.644711	0.025617	3.892529	0.008257	7.420	0.094
1400	3.629627	2.455091	0.021071	8.869149	0.007467	7.466	0.156
1600	3.948209	1.238438	0.015283	53.024031	0.009452	11.999	0.583

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.

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

Table 9D. CP-8 BASALT #111DD57 12:12:09 17 Apr 1998 V 1/10/95.

Temp °C	Percent ^{39}Ar of Total	Radiogenic yield (%)	$^{39}Ar_K$ ($x10^{-12}$ moles)	$^{40}Ar_R/^{39}Ar_K$	Apparent K/Ca	Apparent K/Cl	Apparent Age and Precision (Ma)	
J = 0.007155 ± 0.25%			Basalt			Sample Wt. = 0.2970 g		
800	9.2	16.1	9.999045	0.534	1.78	30	6.885	0.105
900	11.2	40.6	12.143383	0.621	0.55	102	7.992	0.078
1000	28.9	64.9	31.240129	0.616	0.56	1473	7.929	0.013
1050	16.7	80.7	18.083242	0.602	0.77	4520	7.756	0.010
1100	16.0	79.6	17.333092	0.602	0.82	3936	7.751	0.008
1150	7.5	71.4	8.084733	0.604	0.80	1757	7.779	0.015
1200	3.7	59.1	4.039521	0.626	0.65	686	8.067	0.167
1300	3.4	46.3	3.644711	0.576	0.49	344	7.420	0.094
1400	2.3	39.2	2.455091	0.580	0.14	282	7.466	0.156
1600	1.1	29.3	1.238438	0.933	0.01	196	11.999	0.593
Total Gas	100	61.3	108.26138	0.605	0.75	2001	7.795	

NO PLATEAU

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

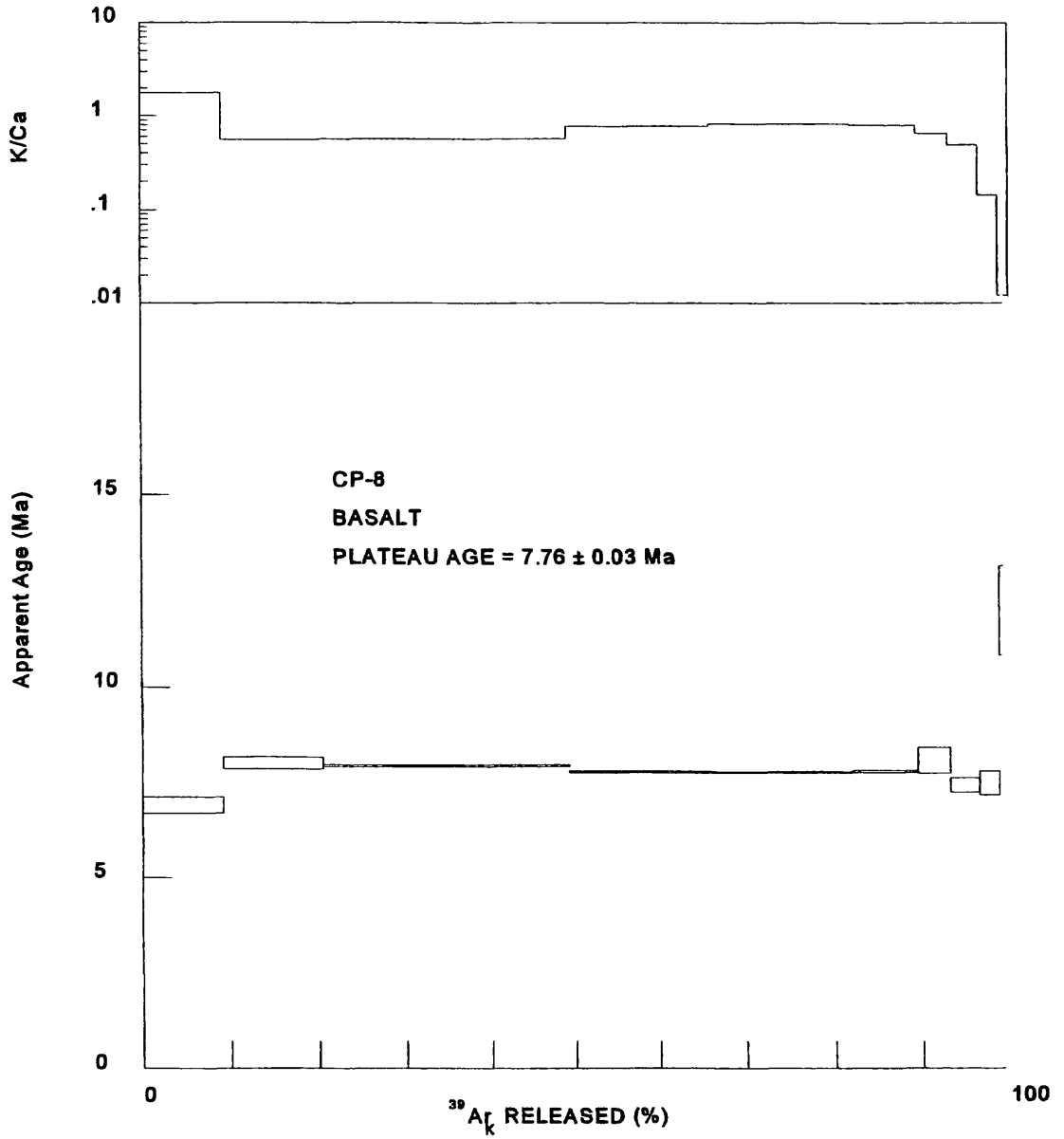

Figure 15. Age spectrum and K/Ca diagrams for CP-8 basalt.

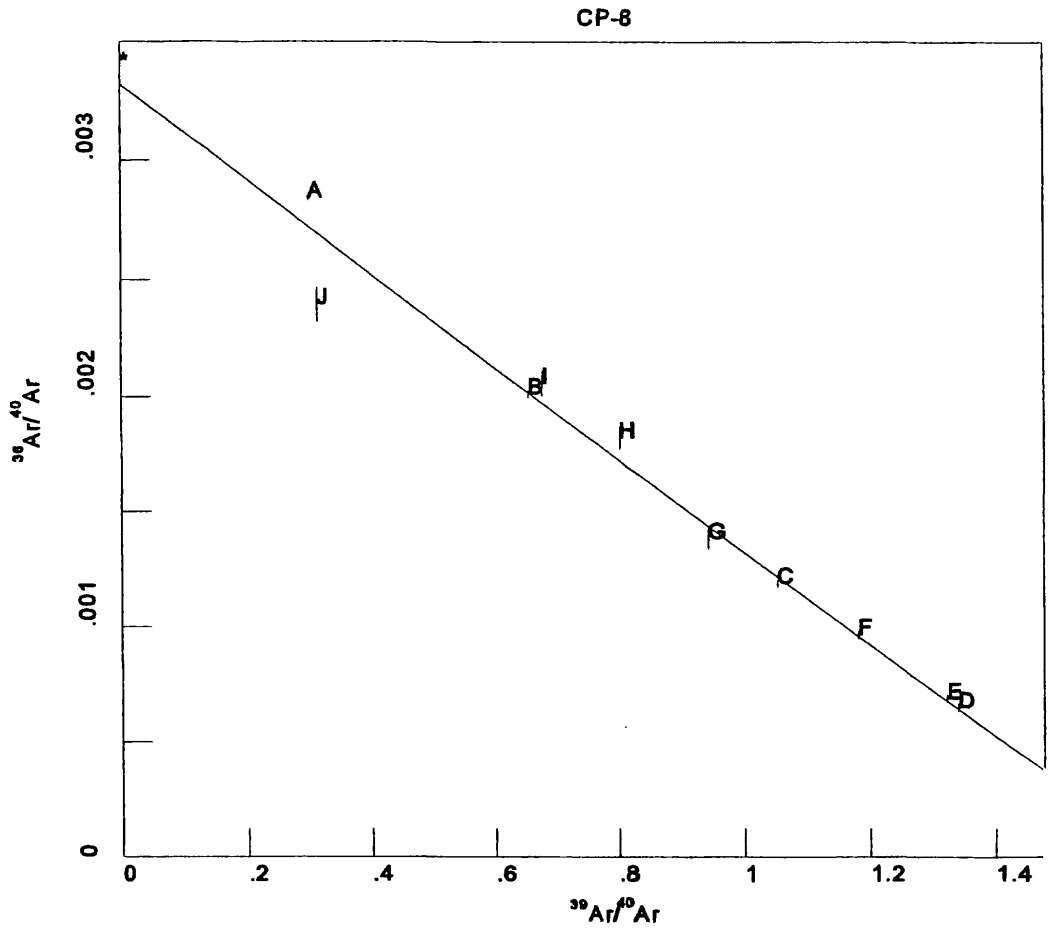

Figure 16. Inverse Isotope correlation diagram for CP-89 basalt. Regressing points C, D, E, F, G, H and I, containing 78.4% of the ^{39}Ar released, MSWD = 2.37, initial $^{40}Ar/^{36}Ar$ = 301.0 ± 5.5, and apparent age = 7.74 ± 0.06 Ma.

Table 10A. KH-95-32 BASALT #113KD2 11:21:35 15 Apr 1998 v 4/07/98.

RAW DATA								
File	Temp	^{40}Ar	^{39}Ar	^{38}Ar	^{37}Ar	^{36}Ar	Trap	Manifold
43568	650	206502	25820	1677	22184	548	200	EALL
	±	101	46	11	33	10		
43569	750	368046	150489	3084	118575	353	200	EALL
	±	351	301	26	111	16		
43570	800	696996	212309	3920	151904	1140	200	EALL
	±	2189	285	17	175	32		
43571	850	611322	315202	4670	176784	225	200	EALL
	±	325	342	24	301	16		
43572	900	471885	246609	3775	104619	134	200	EALL
	±	1008	487	18	30	8		
43573	950	371541	189980	3099	73869	125	200	EALL
	±	325	157	39	159	6		
43574	1050	418498	190228	3742	86489	283	200	EALL
	±	127	215	21	161	8		
43575	1150	267400	113514	2349	184496	303	200	EALL
	±	552	140	33	275	10		

All values are in counts. Measured $^{40}Ar/^{36}Ar = 287.7 \pm 1\%$

^{40}Ar blank = 44412 ± 84 ^{36}Ar blank = 180.3 ± 4.9

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

Trap current factors: 40 = 9.3 100 = 4.56 200 = 1

Manifold factors: All = 1, Split1 = 3.3, Split2 = 10.89, Split 3 = 35.937

EAll = 2, Esplit1 = 6.6, Esplit2 = 21.78

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

Table 10B. KH-95-32 BASALT #113KD2 11:21:35 15 Apr 1998 v 4/07/98.

			CORRECTIONS							
Temp (°C)	^{39}Ar decay	^{37}Ar decay	----- ^{40}Ar	K-derived ^{38}Ar	----- ^{37}Ar	----- ^{39}Ar	Ca-derived ^{38}Ar	----- ^{36}Ar	Cl-derived ^{36}Ar	initial ^{38}Ar
650	3	7847	146	343	0	20	1	8	0	98
750	15	42022	849	2002	0	106	5	42	0	57
800	22	53930	1197	2825	0	136	6	53	0	197
850	32	62874	1778	4194	0	158	7	62	0	29
900	25	37277	1391	3282	0	94	4	37	0	18
950	20	26367	1072	2528	0	66	3	26	0	18
1050	20	30926	1073	2531	0	77	4	30	0	46
1150	12	66091	640	1509	0	165	8	65	0	43

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

Table 10C. KH-95-32 BASALT #113KD2 11:21:35 15 Apr 1998 v 4/07/98.

	MOLAR VALUES						
Temp (°C)	$^{40}Ar^*$	$^{39}Ar_K$	$^{38}Ar_{Cl}$	^{37}Ca	$^{36}Ar_i$	Apparent Age and Precision (Ma)	
650	4.127125	0.51265	0.028180	0.588734	0.010517	8.545	0.489
750	7.343957	2.988097	0.021865	3.148356	0.006046	7.994	0.134
800	13.915981	4.215868	0.024697	4.035184	0.021126	7.824	0.195
850	12.190881	6.259921	0.008728	4.698271	0.003142	7.734	0.063
900	9.409883	4.898274	0.009120	2.781734	0.001876	7.772	0.043
950	7.409383	3.773598	0.010886	1.965028	0.001919	7.794	0.043
1050	8.348492	3.778287	0.024075	2.301807	0.004910	7.848	0.053
1150	5.335210	2.252235	0.016875	4.912522	0.004596	7.591	0.110

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.

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

Table 10D. KH-95-32 BASALT #113KD2 11:21:35 15 Apr 1998 v 4/07/98.

Temp °C	Percent ^{39}Ar of Total	Radiogenic yield (%)	$^{39}Ar_K$ ($x10^{-12}$ moles)	$^{40}Ar_R/^{39}Ar_K$	Apparent K/Ca	Apparent K/Cl	Apparent Age and Precision (Ma)	
J = 0.002388 ± 0.5%			Basalt			Sample Wt. = 0.2000 g		
650	1.8	24.7	0.512650	1.988	0.45	44	8.545	0.489
750	10.4	75.7	2.988097	1.860	0.49	331	7.994	0.134
800	14.7	55.1	4.215868	1.820	0.54	413	7.824	0.195
850	21.8	92.4	6.259921	1.799	0.69	1736	7.734	0.063
900	17.1	94.1	4.898274	1.808	0.92	1300	7.772	0.043
950	13.2	92.3	3.773598	1.813	1.00	839	7.794	0.043
1050	13.2	82.6	3.778287	1.826	0.85	380	7.848	0.053
1150	7.9	74.5	2.252235	1.766	0.24	323	7.591	0.110
Total Gas	100	81.6	28.67893	1.816	0.71	882	7.807	

92.15% of gas on plateau in 650 through 1050 steps Plateau Age = 7.80 ± 0.04 Ma

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

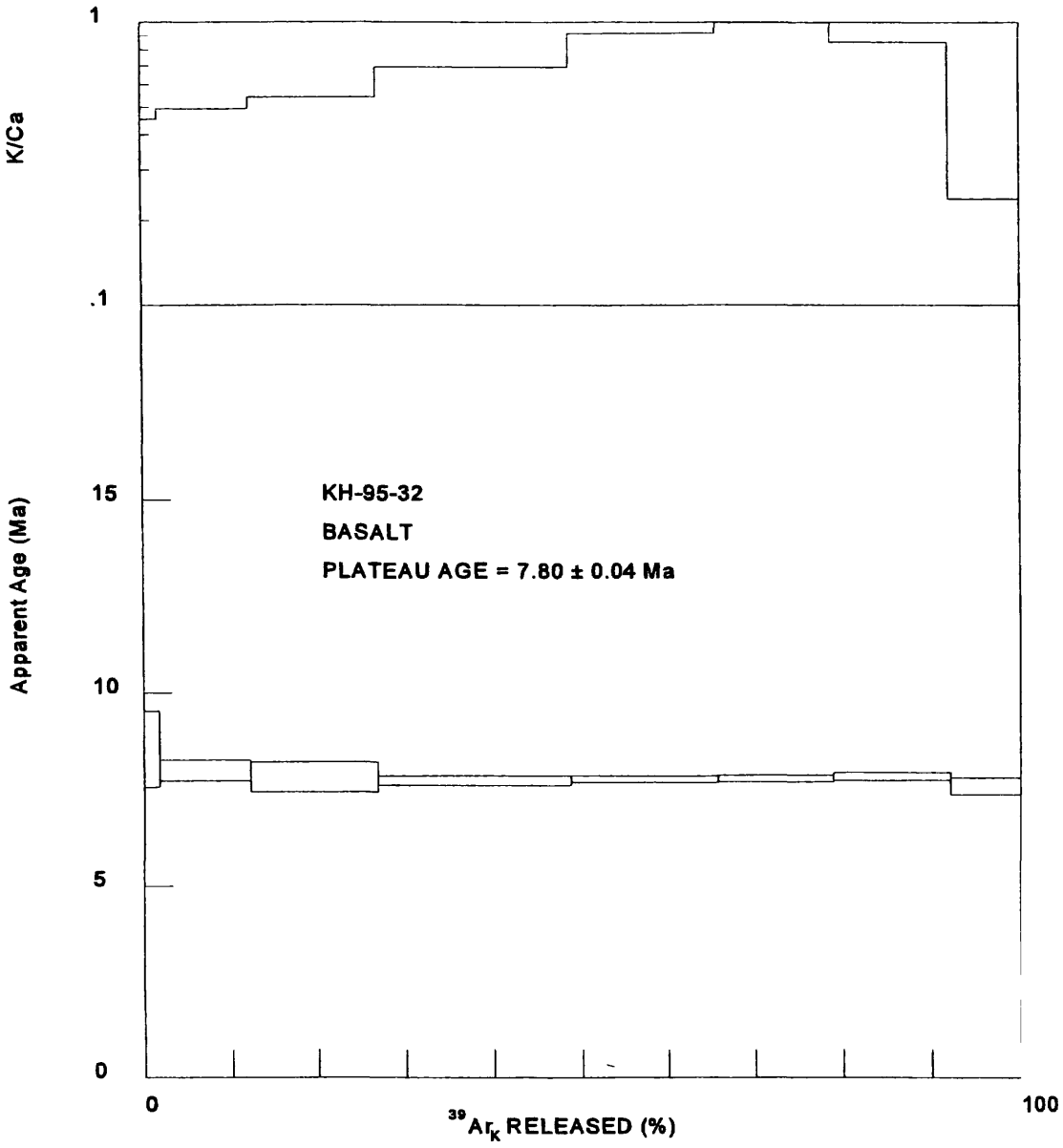

Figure 17. Age spectrum and K/Ca diagrams for KH-95-32 basalt.

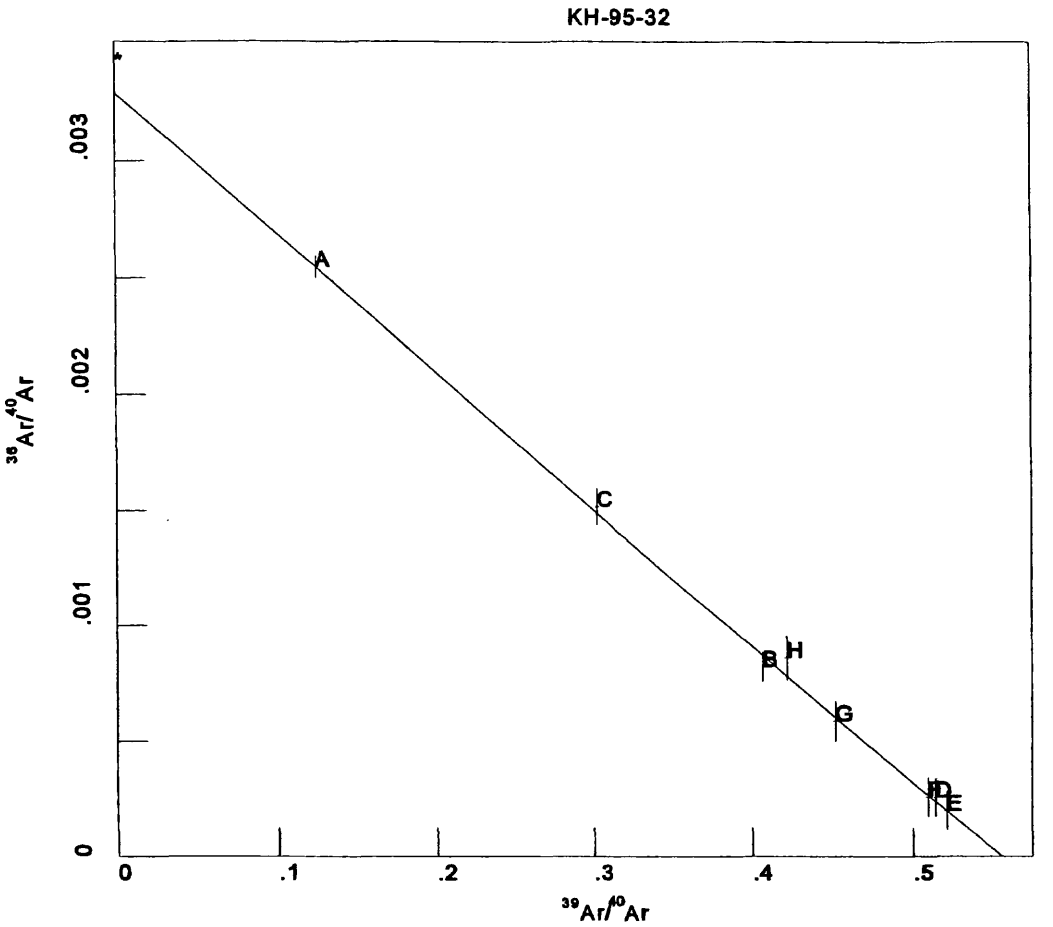

Figure 18. Inverse Isotope correlation diagram for KH-95-32 basalt. Regressing all points containing 100% of the ^{39}Ar released, MSWD = 0.25, initial $^{40}Ar/^{36}Ar$ = 304.2 ± 5.9, and apparent age = 7.76 ± 0.11 Ma.

Table 11A. CC-132 BASALT #106DD57 11:58:27 17 Apr 1998 v 4/07/98.

RAW DATA								
File	Temp	^{40}Ar	^{39}Ar	^{38}Ar	^{37}Ar	^{36}Ar	Trap	Manifold
961108	700	970043	115774	6130	2243	2964	150	ALL
	±	910	112	4	7	12		
961109	800	736531	254063	9335	5779	1864	150	ALL
	±	625	227	24	9	4		
961110	850	413099	237246	7562	9883	846	150	ALL
	±	532	269	24	2	18		
961111	900	352524	235169	6450	16647	643	150	ALL
	±	195	126	5	48	22		
961112	950	425084	307561	6566	34880	749	150	ALL
	±	108	220	16	20	13		
961113	1000	957384	401062	7027	66284	2341	150	ALL
	±	223	41	13	10	8		
961114	1050	532335	438312	6301	84891	879	150	ALL
	±	95	823	10	179	7		
961115	1100	456113	365549	4954	63623	787	150	ALL
	±	693	79	21	316	3		
961116	1150	407210	365830	4954	48124	584	150	ALL
	±	136	312	19	85	6		
961117	1250	760058	743461	10499	100216	946	150	ALL
	±	84	617	9	120	6		
961118	1350	515641	449763	7080	79756	830	150	ALL
	±	313	84	16	99	11		
961119	1450	486199	445509	7503	118946	846	150	ALL
	±	126	76	22	10	5		
961120	1600	251558	154830	3181	310603	1358	150	ALL
	±	61	86	7	94	12		

All values are in volts x 10^{-6}. Measured $^{40}Ar/^{36}Ar$ = 298.9 ± 0.33%

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

Trap current factors: 40 = 9.3 100 = 4.56 150 = 1

Manifold factors: All = 1, Split1 = 3.3, Split2 = 10.89, Split 3 = 35.937

EAll = 2, Esplit1 = 6.6, Esplit2 = 21.78

Sensitivity =1.46x10^{-17} moles/count. Reproducibility limit = .25 %. Detection limit = 40 counts.

Table 11B. CC-132 BASALT #106DD57 11:58:27 17 Apr 1998 v 4/07/98.

			CORRECTIONS							
Temp	^{39}Ar	^{37}Ar	-----	K-derived	-----	-----	Ca-derived	-----	Cl-derived	initial
(^{o}C)	decay	decay	^{40}Ar	^{38}Ar	^{37}Ar	^{39}Ar	^{38}Ar	^{36}Ar	^{36}Ar	^{38}Ar
700	103	23029	660	1557	0	17	1	7	1	559
800	225	59378	1448	3417	0	44	2	17	1	349
850	210	101604	1352	3190	0	76	4	30	1	154
900	209	171230	1340	3161	0	128	6	50	1	112
950	273	358948	1752	4133	0	267	13	105	1	122
1000	356	682471	2284	5388	0	508	24	199	0	405
1050	389	874499	2495	5887	0	651	31	255	0	118
1100	324	655736	2081	4910	0	488	23	192	0	113
1150	325	496256	2084	4916	0	370	17	145	0	83
1250	660	1033988	4234	9990	0	770	36	302	0	122
1350	399	823403	2561	6041	0	613	29	240	0	112
1450	396	1228546	2535	5980	0	915	43	359	0	93
1600	138	3209646	869	2051	0	2390	113	937	0	81

All values are in volts x 10^{-6} and have been corrected for mass discrimination.

Table 11C. CC-132 BASALT #106DD57 11:58:27 17 Apr 1998 v 4/07/98.

	MOLAR VALUES						
Temp (°C)	$^{40}Ar^*$	$^{39}Ar_K$	$^{38}Ar_{Cl}$	^{37}Ca	$^{36}Ar_i$	Apparent Age and Precision (Ma)	
700	8.565712	1.026706	0.045656	0.225230	0.026419	9.512	0.407
800	6.495373	2.253025	0.055839	0.580706	0.016497	9.257	0.066
850	3.638300	2.103588	0.040351	0.993623	0.007286	9.088	0.284
900	3.103148	2.084707	0.030325	1.674459	0.005298	9.491	0.360
950	3.740665	2.725558	0.022797	3.509991	0.005762	9.621	0.167
1000	8.439504	3.552743	0.018218	6.673280	0.019162	10.057	0.074
1050	4.681799	3.881870	0.004760	8.550560	0.005598	10.035	0.063
1100	4.011938	3.237934	0.001433	6.411284	0.005339	9.673	0.043
1150	3.579796	3.241474	0.001176	4.851788	0.003939	9.590	0.068
1250	6.678644	6.587352	0.005793	10.108598	0.005789	9.704	0.033
1350	4.533706	3.983767	0.010270	8.049410	0.005291	9.594	0.097
1450	4.273773	3.943374	0.014281	12.009516	0.004391	9.711	0.041
1600	2.215150	1.352154	0.009874	31.374225	0.003850	10.252	0.299

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.

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

Table 11D. CC-132 BASALT #106DD57 11:58:27 17 Apr 1998 v 4/07/98.

Temp °C	Percent ^{39}Ar of Total	Radiogenic yield (%)	$^{39}Ar_K$ ($x10^{-12}$ moles)	$^{40}Ar_R/^{39}Ar_K$	Apparent K/Ca	Apparent K/Cl	Apparent Age and Precision (Ma)	
J = 0.007152 ± 0.25%			Basalt			Sample Wt. = 0.2790 g		
700	2.6	8.9	1.026706	0.739	2.37	54	9.512	0.407
800	5.6	24.9	2.253025	0.719	2.02	98	9.257	0.096
850	5.3	40.8	2.103588	0.706	1.10	126	9.088	0.284
900	5.2	49.5	2.084707	0.738	0.65	166	9.491	0.360
950	6.8	54.5	2.725558	0.748	0.40	289	9.621	0.167
1000	8.9	32.9	3.552743	0.782	0.28	472	10.057	0.074
1050	9.7	64.7	3.881870	0.780	0.24	1973	10.035	0.083
1100	8.1	60.7	3.237934	0.752	0.26	5467	9.673	0.043
1150	8.1	67.5	3.241474	0.745	0.35	6670	9.590	0.068
1250	16.5	74.4	6.587352	0.754	0.34	2752	9.704	0.033
1350	10.0	65.5	3.983767	0.746	0.26	939	9.594	0.097
1450	9.9	69.6	3.943374	0.755	0.17	668	9.711	0.041
1600	3.4	48.6	1.352154	0.797	0.02	331	10.252	0.299
Total Gas	100	57	39.974252	0.753	0.49	18831	9.685	

52.52% of gas on plateau in 1100 through 1450 steps Plateau Age = 9.68 ± 0.03 Ma

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

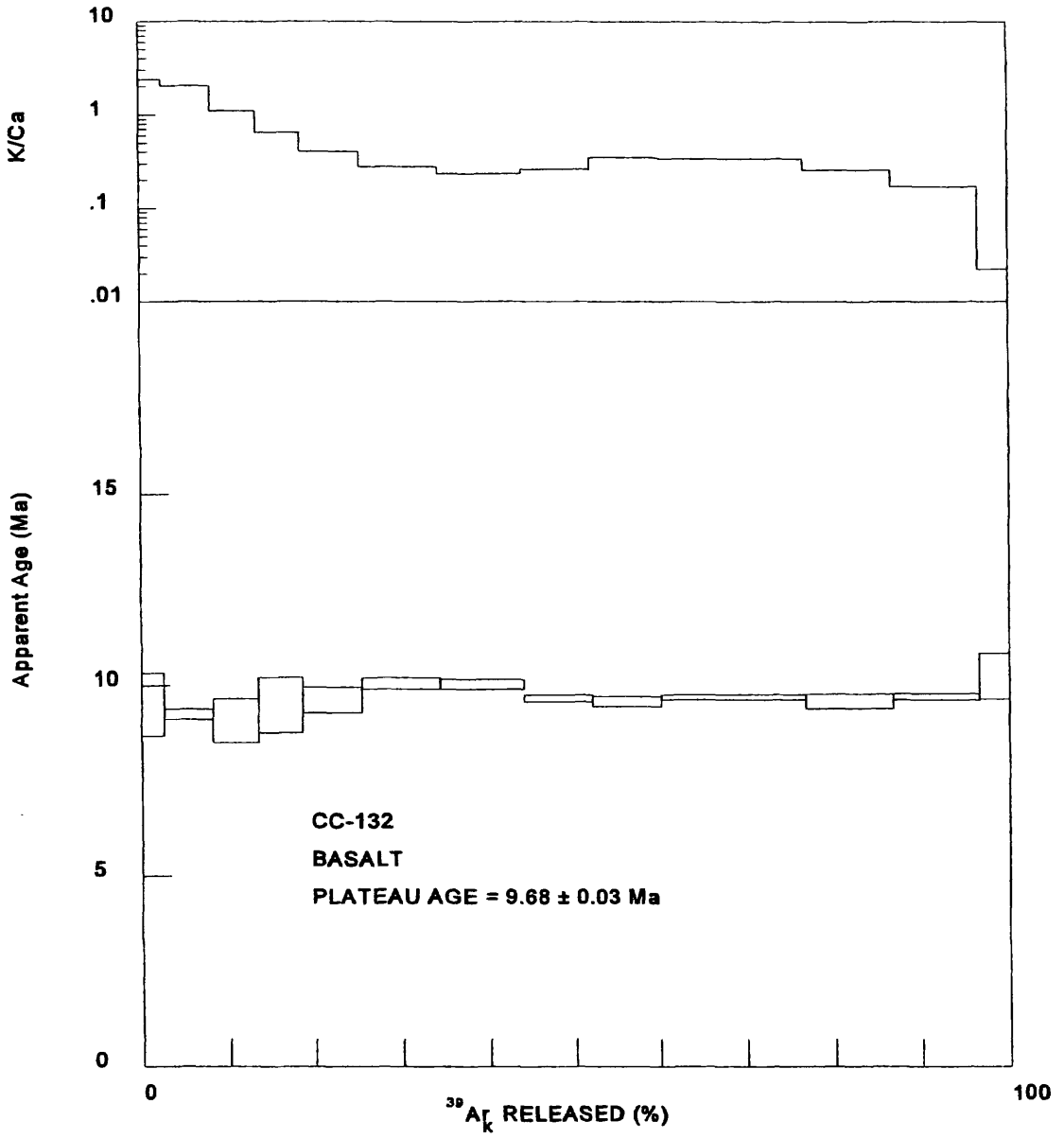

Figure 19. Age spectrum and K/Ca diagrams for CC-132 basalt.

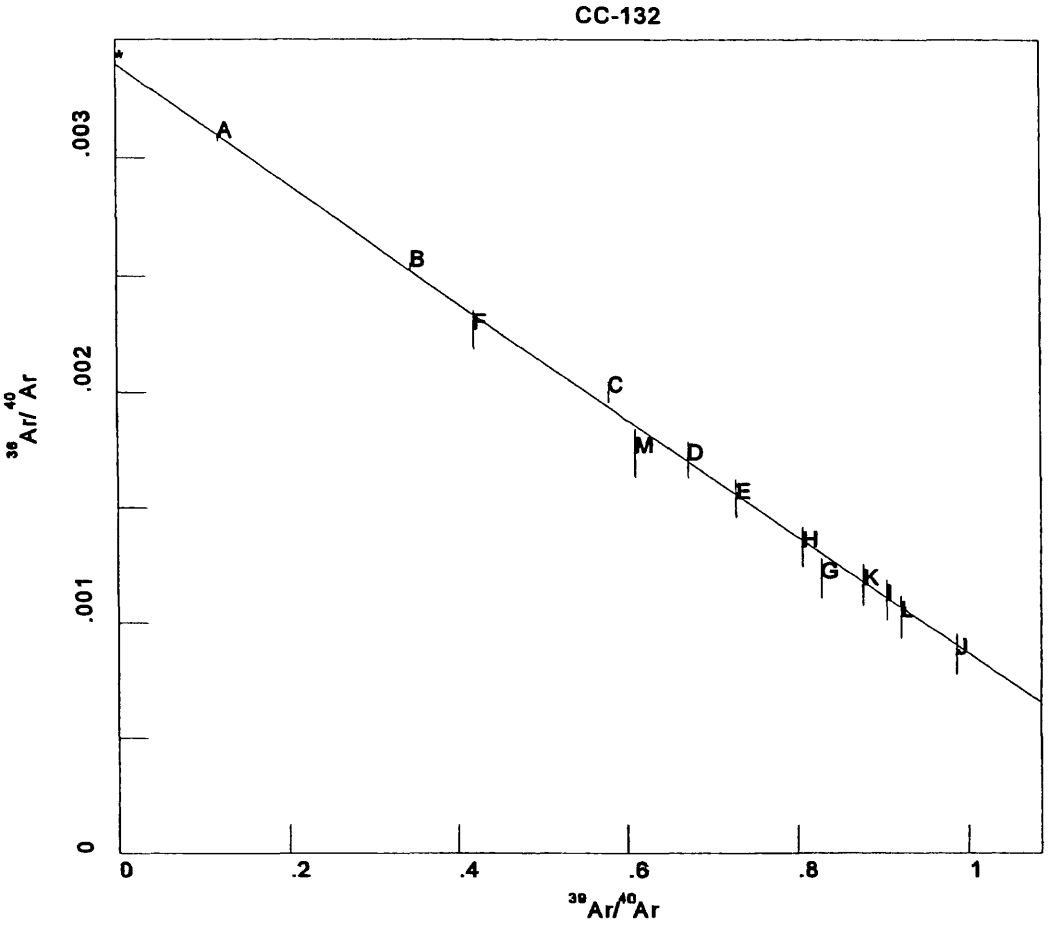

Figure 20. Inverse isotope correlation diagram for CC-132 basalt. Regressing all points which include 100% of the ^{39}Ar released, MSWD = 0.762, initial $^{40}Ar/^{36}Ar = 294.4 \pm 1.3$, and apparent age = 9.55 ± 0.13 Ma.

Table 12A. CD-6 BASALT #77KD2 13:52:39 15 Apr 1998 v 4/07/98.

RAW DATA								
File	Temp	^{40}Ar	^{39}Ar	^{38}Ar	^{37}Ar	^{36}Ar	Trap	Manifold
43631	650	577088	42299	3771	12102	1638	200	EALL
	±	1020	89	15	3	16		
43632	750	829894	100756	5600	78000	2048	200	EALL
	±	1525	270	17	39	35		
43633	850	1114732	178021	5277	254057	2466	200	EALL
	±	801	109	28	148	28		
43634	950	668152	186979	3660	333235	975	200	EALL
	±	1688	286	22	491	16		
43635	1050	432945	118733	2583	177082	649	200	EALL
	±	1167	104	19	269	28		
43636	1450	682670	154492	5074	686481	1432	200	EALL
	±	3298	78	0	994	26		

All values are in counts. Measured $^{40}Ar/^{36}Ar$ = 287.7 ± 1%
^{40}Ar blank = 36095 ± 157 ^{36}Ar blank = 147.7 ± 10.1
Precisions are at the 1 sigma level, and are from linear regression statistics.
Trap current factors: 40 = 9.3 100 = 4.56 200 = 1
Manifold factors: All = 1, Split1 = 3.3, Split2 = 10.89, Split 3 = 35.937
EAll = 2, Esplit1 = 6.6, Esplit2 = 21.78
Sensitivity =1.00x10^{-17} moles/count. Reproducibility limit = .25 %. Detection limit = 40 counts.

Table 12B. CD-6 BASALT #77KD2 13:52:39 15 Apr 1998 v 4/07/98.

CORRECTIONS										
Temp	^{39}Ar	^{37}Ar	-----	K-derived	-----	-----	Ca-derived	-----	Cl-derived	initial
(°C)	decay	decay	^{40}Ar	^{38}Ar	^{37}Ar	^{39}Ar	^{38}Ar	^{36}Ar	^{36}Ar	^{38}Ar
650	6	5979	239	563	0	12	1	5	0	297
750	14	38590	568	1340	0	77	4	30	0	367
850	25	125869	1003	2367	0	251	12	98	0	430
950	26	165336	1053	2485	0	329	15	129	0	153
1050	17	87984	669	1578	0	175	8	69	0	105
1450	22	341560	868	2048	0	678	32	266	0	211

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

Table 12C. CD-6 BASALT #77KD2 13:52:39 15 Apr 1998 v 4/07/98.

	MOLAR VALUES						
Temp (°C)	$^{40}Ar^*$	$^{39}Ar_K$	$^{38}Ar_{Cl}$	^{37}Ca	$^{36}Ar_i$	Apparent Age and Precision (Ma)	
650	11.536981	0.840281	0.069097	0.35445	0.031799	10.803	0.465
750	16.586516	2.000567	0.090993	2.285646	0.039264	10.566	0.432
850	22.274569	3.532411	0.065179	7.448090	0.046053	10.406	0.191
950	13.341964	3.708850	0.025295	9.774019	0.016410	9.715	0.111
1050	8.645526	2.355814	0.021346	5.196360	0.011262	9.577	0.291
1450	13.636046	3.056320	0.062762	20.153766	0.022565	9.672	0.228

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

Table 12D. CD-6 BASALT #77KD2 13:52:39 15 Apr 1998 v 4/07/98.

Temp °C	Percent ^{39}Ar of Total	Radiogenic yield (%)	$^{39}Ar_K$ ($x10^{-12}$ moles)	$^{40}Ar_R/^{39}Ar_K$	Apparent K/Ca	Apparent K/Cl	Apparent Age and Precision (Ma)	
J = 0.002358 ± 0.5%			Basalt			Sample Wt. = 0.1995 g		
650	5.4	18.6	0.840281	2.547	1.23	29	10.803	0.465
750	12.9	30.0	2.000567	2.491	0.46	53	10.566	0.432
850	22.8	38.9	3.532411	2.453	0.25	131	10.406	0.191
950	23.9	63.7	3.708850	2.290	0.20	355	9.715	0.111
1050	15.2	61.5	2.355814	2.257	0.24	267	9.577	0.291
1450	19.7	51.1	3.056320	2.280	0.08	118	9.672	0.228
Total Gas	100	48.4	15.494240	2.360	0.28	187	10.012	

58.87% of gas on plateau in 950 through 1450 steps Plateau Age = 9.69 ± 0.07 Ma

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

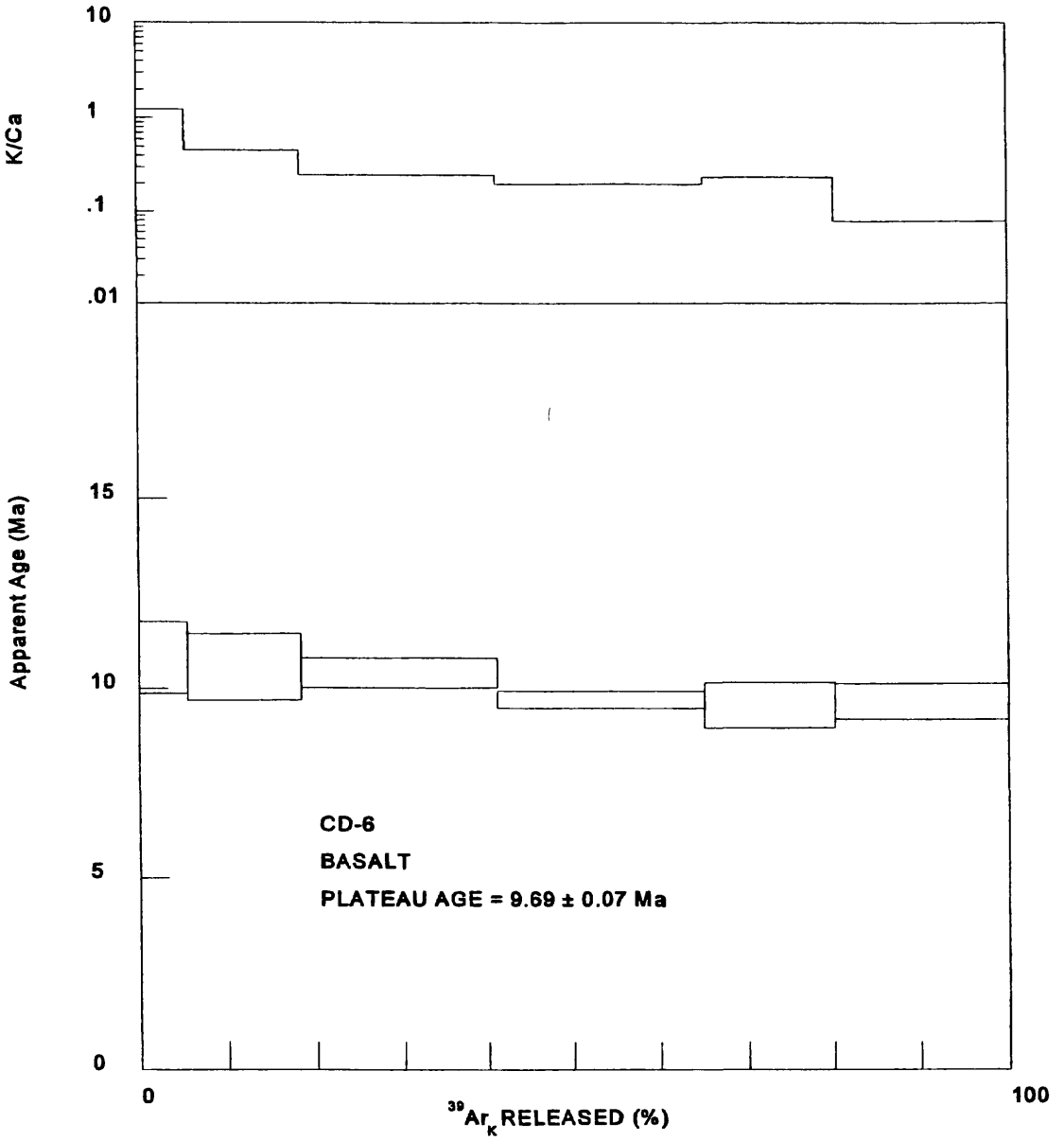

Figure 21. Age spectrum and K/Ca diagrams for CD-6 basalt.

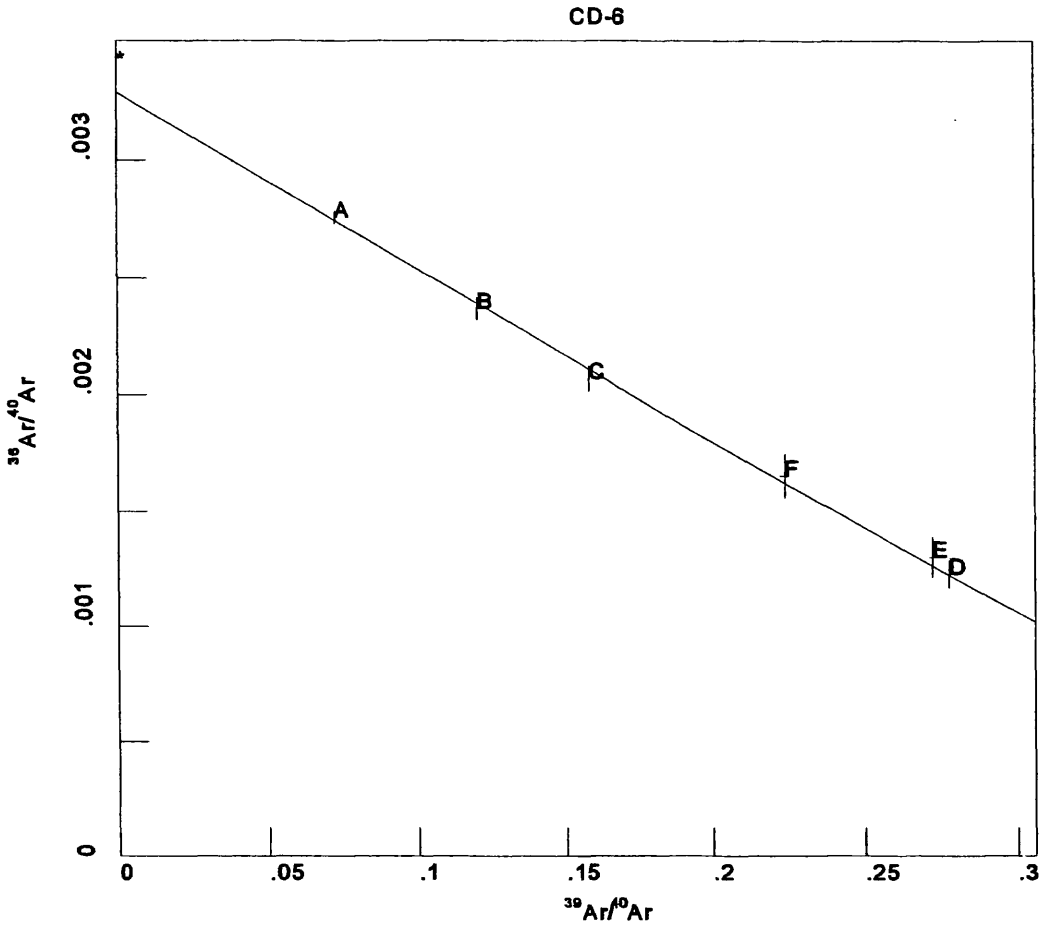

Figure 22. Inverse isotope correlation diagram for CD-6 basalt. Regression of all points which includes 100% of the ^{39}Ar released, MSWD = 0.319, initial $^{40}Ar/^{36}Ar = 304.4 \pm 3.6$, and apparent age = 9.57 ± 0.25 Ma.

Table 13A. GS96-1 BASALT #41KD2 13:32:52 15 Apr 1998 v 4/07/98.

RAW DATA								
File	Temp	^{40}Ar	^{39}Ar	^{38}Ar	^{37}Ar	^{36}Ar	Trap	Manifold
43675	650	229892	22688	1211	1831	613	200	EALL
	±	386	27	27	24	19		
43676	750	140926	42118	1632	4714	163	200	EALL
	±	375	46	27	30	10		
43677	850	182046	65472	2523	14570	118	200	EALL
	±	379	115	26	24	8		
43678	950	273180	99432	3279	46551	186	200	EALL
	±	512	161	26	30	8		
43679	1050	568013	123518	3129	136674	1028	200	EALL
	±	506	90	8	320	21		
43680	1450	1081978	406826	6205	489819	743	200	EALL
	±	921	846	3	988	18		
43681	1650	199549	73345	1230	133880	201	200	EALL
	±	516	94	22	98	11		

All values are in counts. Measured $^{40}Ar/^{36}Ar = 287.7 \pm 1\%$

^{40}Ar blank = 35802 ± 356 ^{36}Ar blank = 145.7 ± 5.9

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

Trap current factors: 40 = 9.3 100 = 4.56 200 = 1

Manifold factors: All = 1, Split1 = 3.3, Split2 = 10.89, Split 3 = 35.937

EAll = 2, Esplit1 = 6.6, Esplit2 = 21.78

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

Table 13B. GS96-1 BASALT #41KD2 13:32:52 15 Apr 1998 v 4/07/98.

			CORRECTIONS							
Temp (°C)	^{39}Ar decay	^{37}Ar decay	----- ^{40}Ar	K-derived ^{38}Ar	----- ^{37}Ar	----- ^{39}Ar	Ca-derived ^{38}Ar	----- ^{36}Ar	Cl-derived ^{36}Ar	initial ^{38}Ar
650	3	1005	128	302	0	2	0	1	0	111
750	6	2589	238	561	0	5	0	2	0	29
850	10	8013	369	871	0	15	1	6	0	20
950	15	25637	561	1323	0	48	2	19	0	30
1050	19	75369	696	1643	0	140	7	55	0	177
1450	62	270465	2293	5410	0	502	24	197	0	98
1650	11	74024	413	975	0	137	6	54	0	26

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

Table 13C. GS96-1 BASALT #41KD2 13:32:52 15 Apr 1998 v 4/07/98.

	MOLAR VALUES						
Temp (°C)	$^{40}Ar^*$	$^{39}Ar_K$	$^{38}Ar_{Cl}$	^{37}Ca	$^{36}Ar_i$	Apparent Age and Precision (Ma)	
650	4.595277	0.450789	0.020078	0.055598	0.011912	10.132	1.017
750	2.813768	0.836823	0.021587	0.143174	0.003136	9.579	0.301
850	3.633526	1.300706	0.032749	0.442716	0.002181	9.762	0.155
950	5.452373	1.974873	0.038817	1.415186	0.003243	9.666	0.100
1050	11.346330	2.451633	0.032308	4.156912	0.018924	9.969	0.213
1450	21.593700	8.074024	0.015769	14.904651	0.010534	9.723	0.057
1650	3.982716	1.454690	0.005178	4.075763	0.002835	9.185	0.184

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.

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

Table 13D. GS96-1 BASALT #41KD2 13:32:52 15 Apr 1998 v 4/07/98.

Temp °C	Percent ^{39}Ar of Total	Radiogenic yield (%)	$^{39}Ar_K$ ($x10^{-12}$ moles)	$^{40}Ar_R/^{39}Ar_K$	Apparent K/Ca	Apparent K/Cl	Apparent Age and Precision (1σ)	
J = 0.002361 ± 0.5%			Basalt			Sample Wt. = 0.1995 g		
650	2.7	23.4	0.450789	2.385	4.22	54	10.132	1.017
750	5.1	67.1	0.836823	2.255	3.04	94	9.579	0.301
850	7.9	82.3	1.300706	2.298	1.53	96	9.762	0.155
950	11.9	82.4	1.974873	2.276	0.73	123	9.666	0.100
1050	14.8	50.7	2.451633	2.347	0.31	184	9.969	0.213
1450	48.8	85.6	8.074024	2.289	0.28	1239	9.723	0.057
1650	8.8	79.0	1.454690	2.162	0.19	680	9.185	0.184
Total Gas	100	76.6	16.543538	2.286	0.67	720	9.712	

91.21% of gas on plateau in 650 through 1450 steps Plateau Age = 9.72 ± 0.05 Ma

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

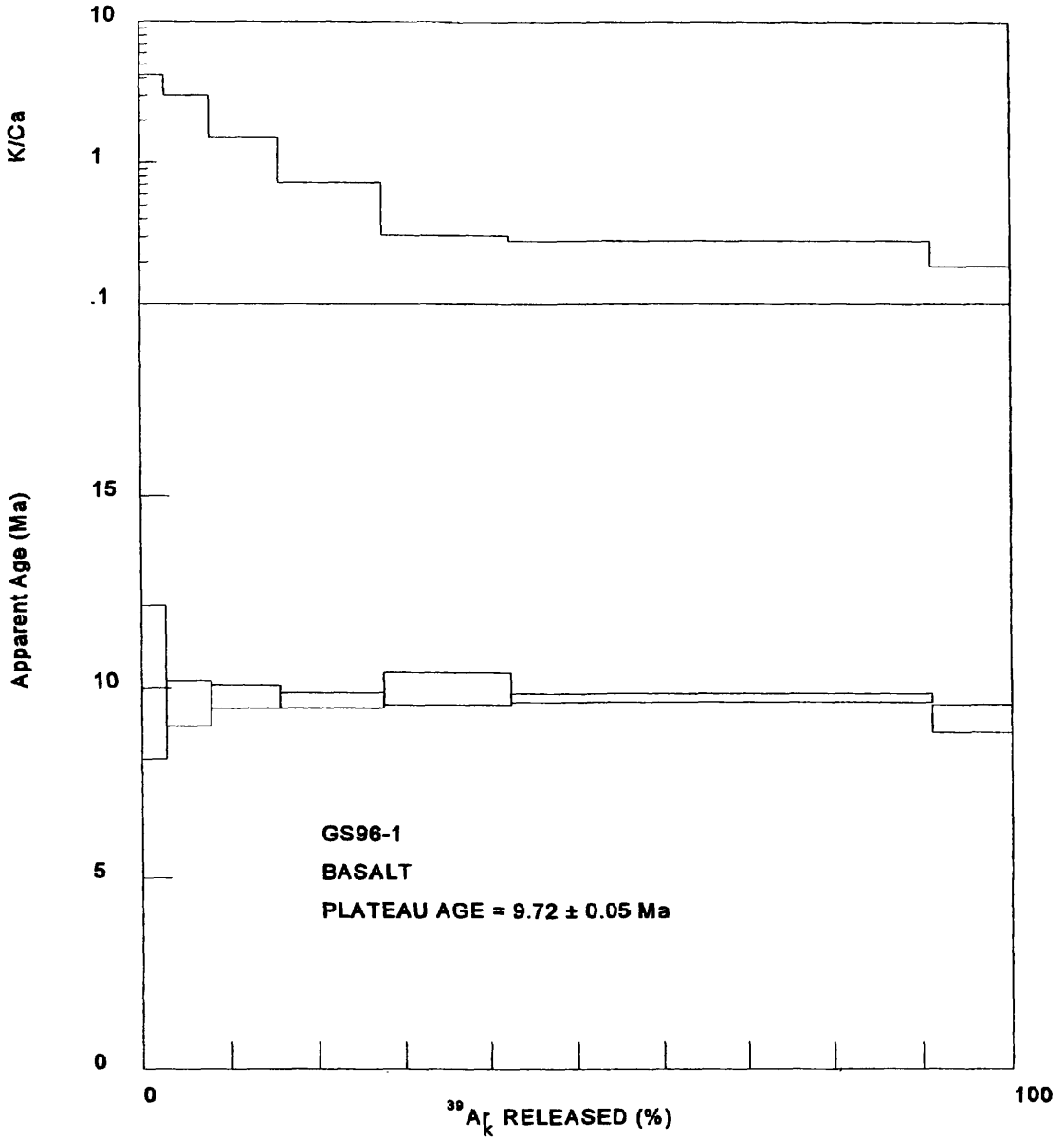

Figure 23. Age spectrum and K/Ca diagrams for GS96-1 basalt.

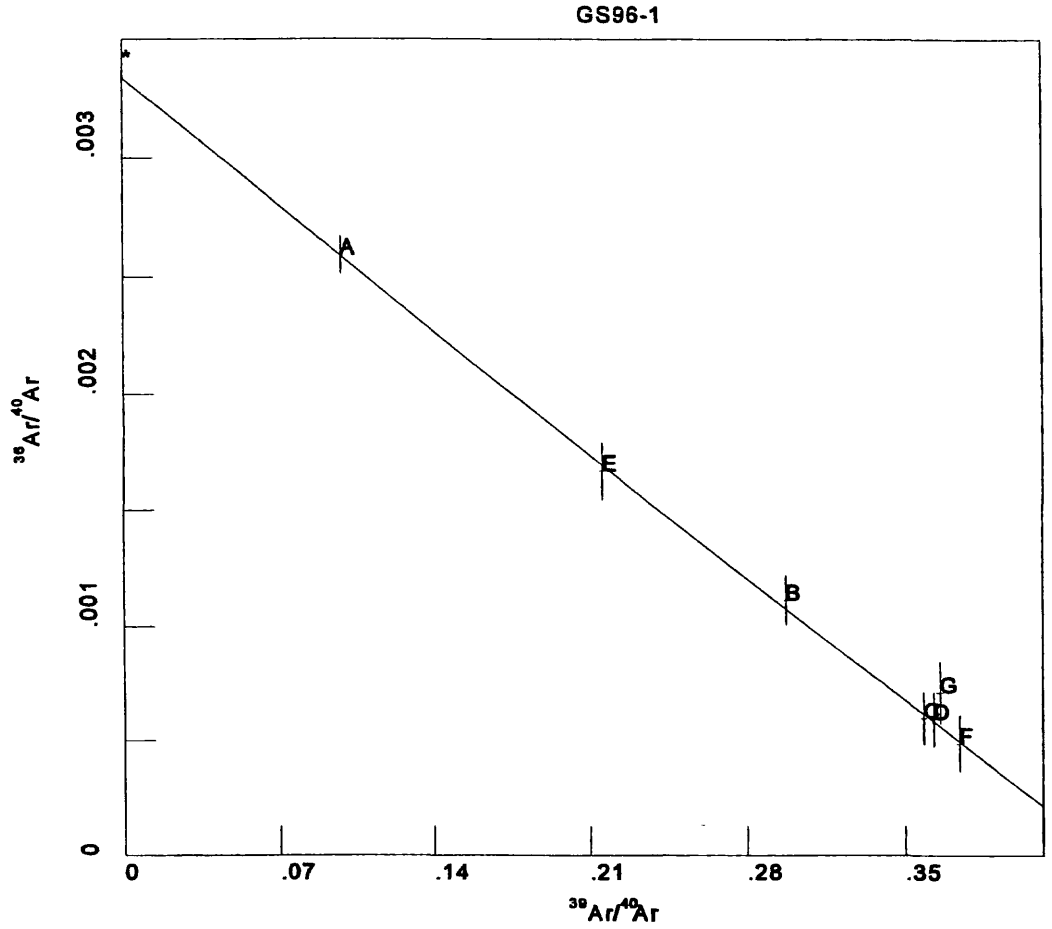

Figure 24. Inverse isotope correlation diagram for GS96-1 basalt. Regressing points A, B, C, D, E, and F which contain 91.2% of the ^{39}Ar released, MSWD = 0.05, initial $^{40}Ar/^{36}Ar = 299.9 \pm 9.7$, and apparent age = 9.66 ± 0.25.

Table 14A. KH-95-24 BASALT #59KD2 13:18:55 15 Apr 1998 v 4/07/98.

RAW DATA								
File	Temp	^{40}Ar	^{39}Ar	^{38}Ar	^{37}Ar	^{36}Ar	Trap	Manifold
43527	550	243825	20433	1005	2587	707	200	EALL
	±	457	3	4	20	4		
43528	650	356408	36570	1303	7040	963	200	EALL
	±	584	59	14	18	5		
43529	750	565997	64746	2197	32249	1464	200	EALL
	±	568	119	24	94	9		
43530	800	369325	42006	1305	49664	937	200	EALL
	±	434	26	17	32	6		
43531	850	164269	31967	746	63724	315	200	EALL
	±	465	78	11	122	5		
43532	900	85285	24137	397	72096	125	200	EALL
	±	479	59	7	159	6		
43533	950	53936	17462	263	71235	77	200	EALL
	±	420	28	10	103	3		

All values are in counts. Measured $^{40}Ar/^{36}Ar$ = 287.7 ± 1%
^{40}Ar blank = 11820 ± 420 ^{36}Ar blank = 45.3 ± 2
Precisions are at the 1 sigma level, and are from linear regression statistics.
Trap current factors: 40 = 9.3 100 = 4.56 200 = 1
Manifold factors: All = 1, Split1 = 3.3, Split2 = 10.89, Split 3 = 35.937
EAll = 2, Esplit1 = 6.6, Esplit2 = 21.78
Sensitivity =1.00×10^{-17} moles/count. Reproducibility limit = .25 %. Detection limit = 40 counts.

Table 14B. KH-95-24 BASALT #59KD2 13:18:55 15 Apr 1998 v 4/07/98.

CORRECTIONS										
Temp	^{39}Ar	^{37}Ar	-----	K-derived	-----	-----	Ca-derived	-----	Cl-derived	initial
(°C)	decay	decay	^{40}Ar	^{38}Ar	^{37}Ar	^{39}Ar	^{38}Ar	^{36}Ar	^{36}Ar	^{38}Ar
550	2	801	115	272	0	2	0	1	0	128
650	3	2183	206	487	0	6	0	2	0	175
750	6	10021	365	862	0	28	1	11	0	264
800	4	15464	237	559	0	43	2	17	0	167
850	3	19880	180	425	0	55	3	22	0	53
900	2	22537	136	320	0	62	3	24	0	18
950	2	22312	98	232	0	62	3	24	0	9

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

Table 14C. KH-95-24 BASALT #59KD2 13:18:55 15 Apr 1998 v 4/07/98.

MOLAR VALUES							
Temp (°C)	$^{40}Ar^*$	$^{39}Ar_K$	$^{38}Ar_{Cl}$	^{37}Ca	$^{36}Ar_i$	Apparent Age and Precision (Ma)	
550	4.874199	0.405946	0.016953	0.066422	0.013745	8.571	0.263
650	7.124026	0.726526	0.019469	0.180810	0.018695	9.425	0.184
750	11.312641	1.285929	0.031390	0.828675	0.028288	9.830	0.177
800	7.381773	0.833792	0.017898	1.276775	0.017918	10.711	0.188
850	3.281773	0.634068	0.007241	1.638980	0.005702	10.775	0.203
900	1.702977	0.478348	0.001727	1.855190	0.001939	10.109	0.311
950	1.076765	0.345730	0.000681	1.833895	0.001007	9.648	0.251

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

Table 14D. KH-95-24 BASALT #59KD2 13:18:55 15 Apr 1998 v 4/07/98.

Temp °C	Percent ^{39}Ar of Total	Radiogenic yield (%)	$^{39}Ar_K$ (x10^{-12} moles)	$^{40}Ar_R/^{39}Ar_K$	Apparent K/Ca	Apparent K/Cl	Apparent Age and Precision (Ma)	
J = 0.002379 ± 0.5%			Basalt			Sample Wt. = 0.1994 g		
550	8.6	16.7	0.405946	2.002	3.18	58	8.571	0.263
650	15.4	22.5	0.726526	2.202	2.09	90	9.425	0.184
750	27.3	26.1	1.285929	2.297	0.81	99	9.830	0.177
800	17.7	28.3	0.833792	2.503	0.34	113	10.711	0.188
850	13.5	48.7	0.634068	2.518	0.20	212	10.775	0.203
900	10.2	66.4	0.478348	2.362	0.13	670	10.109	0.311
950	7.3	72.4	0.345730	2.254	0.10	1228	9.648	0.251
Total Gas	100	35.6	4.710339	2.327	0.92	253	9.957	

NO PLATEAU

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

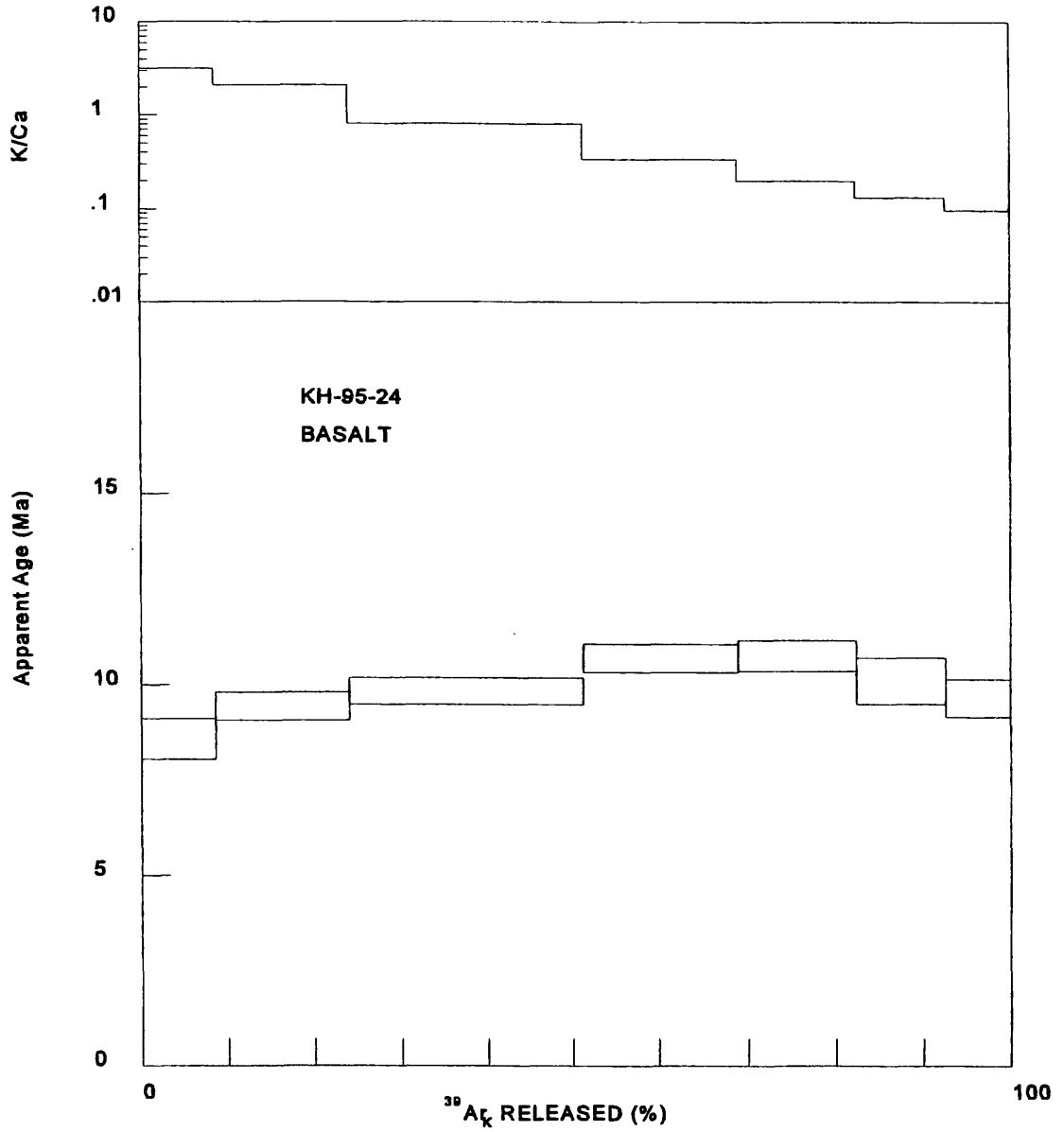

Figure 25. Age spectrum and K/Ca diagrams for KH-95-24 basalt.

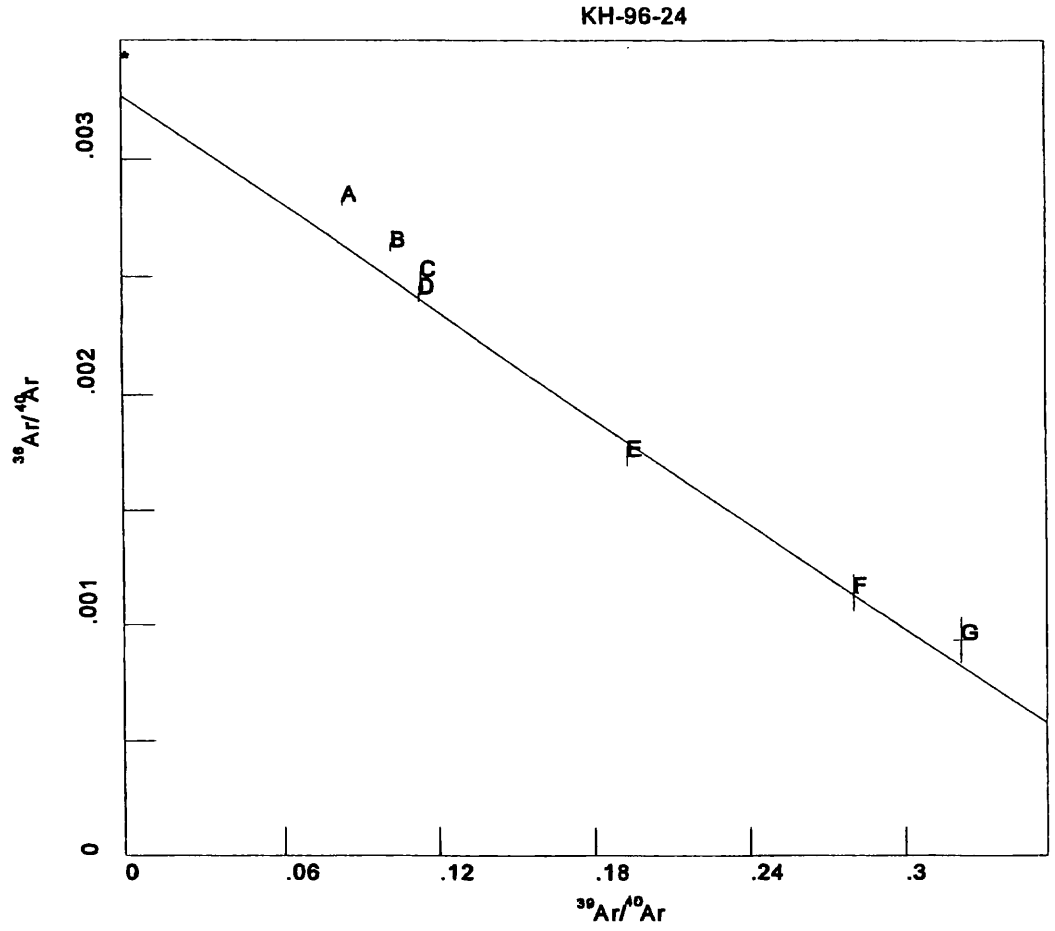

Figure 26. Inverse isotope correlation diagram for KH-95-26 basalt. Regressing points D, E, F, and G which contain 48.7% of the ^{39}Ar released, MSWD = 1.6, initial $^{40}Ar/^{36}Ar = 305.9 \pm 6.1$, and apparent age = 9.97 ± 0.31 Ma.

Table 15A. CD-53D BASALT #23KD2 13:44:40 15 Apr 1998 v 4/07/98.

RAW DATA								
File	Temp	^{40}Ar	^{39}Ar	^{38}Ar	^{37}Ar	^{36}Ar	Trap	Manifold
43653	750	131536	15008	2226	3249	362	200	EALL
	±	651	52	34	29	37		
43654	850	1581065	265832	24983	271287	3404	200	EALL
	±	3289	1242	235	1395	47		
43655	950	738542	211240	7150	392607	1028	200	EALL
	±	660	309	28	364	46		
43656	1050	379530	95123	3080	213761	656	200	EALL
	±	821	177	2	498	38		
43657	1450	511954	67916	3758	669093	1531	200	EALL
	±	670	237	14	1898	50		

All values are in counts. Measured $^{40}Ar/^{36}Ar$ = 287.7 ± 1%
^{40}Ar blank = 34442 ± 610 ^{36}Ar blank = 138 ± 36.1
Precisions are at the 1 sigma level, and are from linear regression statistics.
Trap current factors: 40 = 9.3 100 = 4.56 200 = 1
Manifold factors: All = 1, Split1 = 3.3, Split2 = 10.89, Split 3 = 35.937
EAll = 2, Esplit1 = 6.6, Esplit2 = 21.78
Sensitivity =1.00x10^{-17} moles/count. Reproducibility limit = .25 %. Detection limit = 40 counts.

Table 15B. CD-53D BASALT #23KD2 13:44:40 15 Apr 1998 v 4/07/98

CORRECTIONS										
Temp	^{39}Ar	^{37}Ar	-----	K-derived	-----	-----	Ca-derived	-----	Cl-derived	initial
(°C)	decay	decay	^{40}Ar	^{38}Ar	^{37}Ar	^{39}Ar	^{38}Ar	^{36}Ar	^{36}Ar	^{38}Ar
750	2	1705	85	200	0	3	0	1	0	66
850	39	142555	1499	3535	0	273	13	107	1	599
950	31	206585	1190	2807	0	395	19	155	0	158
1050	14	112635	536	1264	0	215	10	84	0	104
1450	10	353035	379	895	0	674	32	264	0	229

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

Table 15C. CD-53D BASALT #23KD2 13:44:40 15 Apr 1998 v 4/07/98

	MOLAR VALUES						
Temp (°C)	$^{40}Ar^*$	$^{39}Ar_K$	$^{38}Ar_{Cl}$	^{37}Ca	$^{36}Ar_i$	Apparent Age and Precision (Ma)	
750	2.629035	0.298159	0.041242	0.097103	0.007016	7.938	3.058
850	31.591332	5.276865	0.434085	8.112975	0.064119	10.199	0.223
950	14.747034	4.189623	0.087760	11.746585	0.016922	9.902	0.268
1050	7.579883	1.885877	0.037381	6.398695	0.011078	9.720	0.490
1450	10.231487	1.336068	0.060205	20.037845	0.024516	9.517	0.913

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

Table 15D. CD-53D BASALT #23KD2 13:44:40 15 Apr 1998 v 4/07/98

Temp °C	Percent ^{39}Ar of Total	Radiogenic yield (%)	$^{39}Ar_K$ (x10^{-12} moles)	$^{40}Ar_R/^{39}Ar_K$	Apparent K/Ca	Apparent K/Cl	Apparent Age and Precision (Ma)	
J = 0.002366 ± 0.5%			Basalt			Sample Wt. = 0.1994 g		
750	2.3	21.1	0.298159	1.864	1.60	17	7.938	3.058
850	40.6	40.0	5.276865	2.396	0.34	29	10.199	0.223
950	32.3	66.1	4.189623	2.326	0.19	116	9.902	0.268
1050	14.5	56.8	1.885877	2.283	0.15	122	9.720	0.490
1450	10.3	29.2	1.336068	2.236	0.03	54	9.517	0.913
Total Gas	100	49.3	12.586590	2.329	0.26	73	9.912	

100% of gas on plateau in 750 through 1450 steps Plateau Age = 10.01 ± 0.1 Ma

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

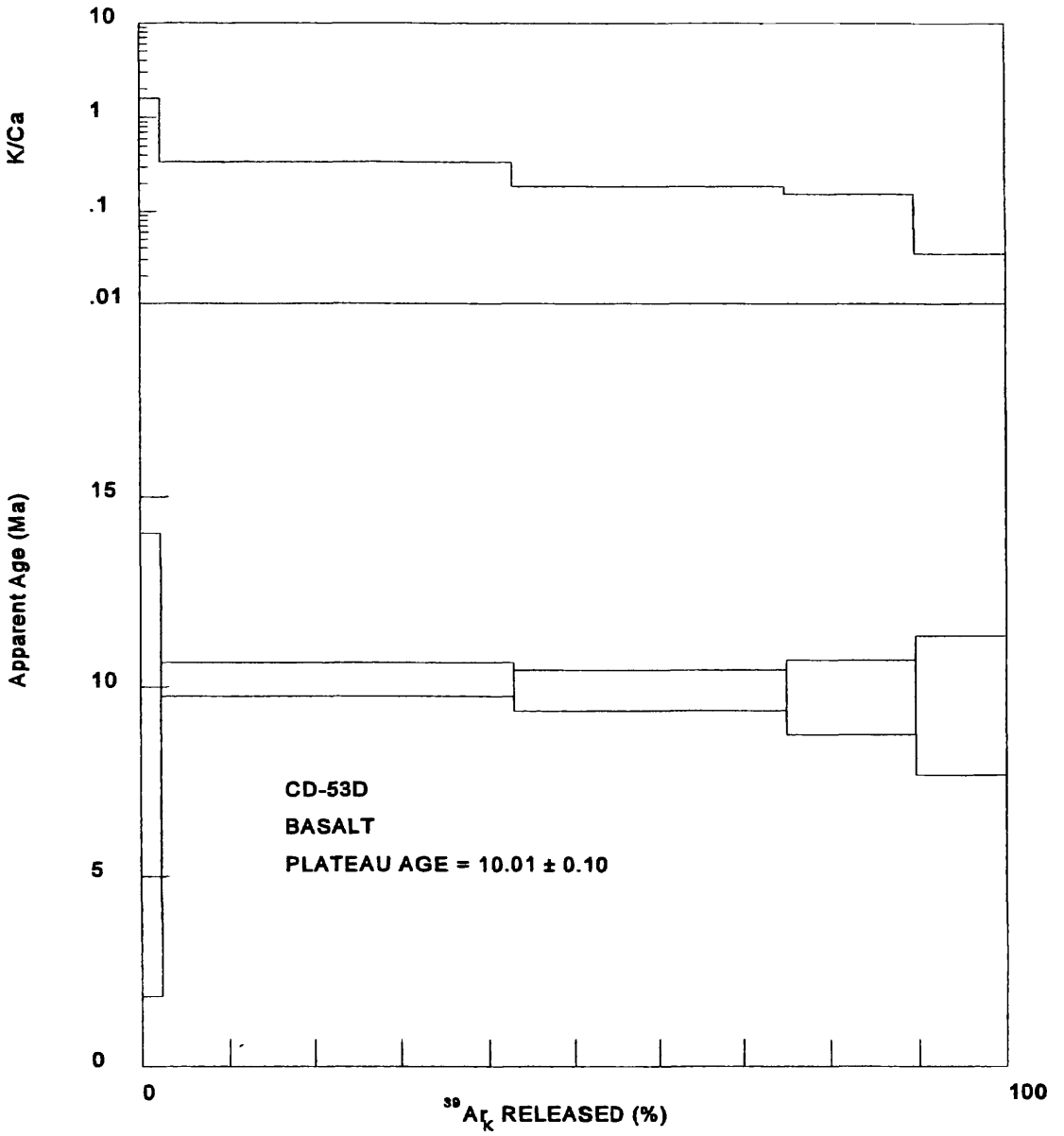

Figure 27. Age spectrum and K/Ca diagrams for CD-53D basalt.

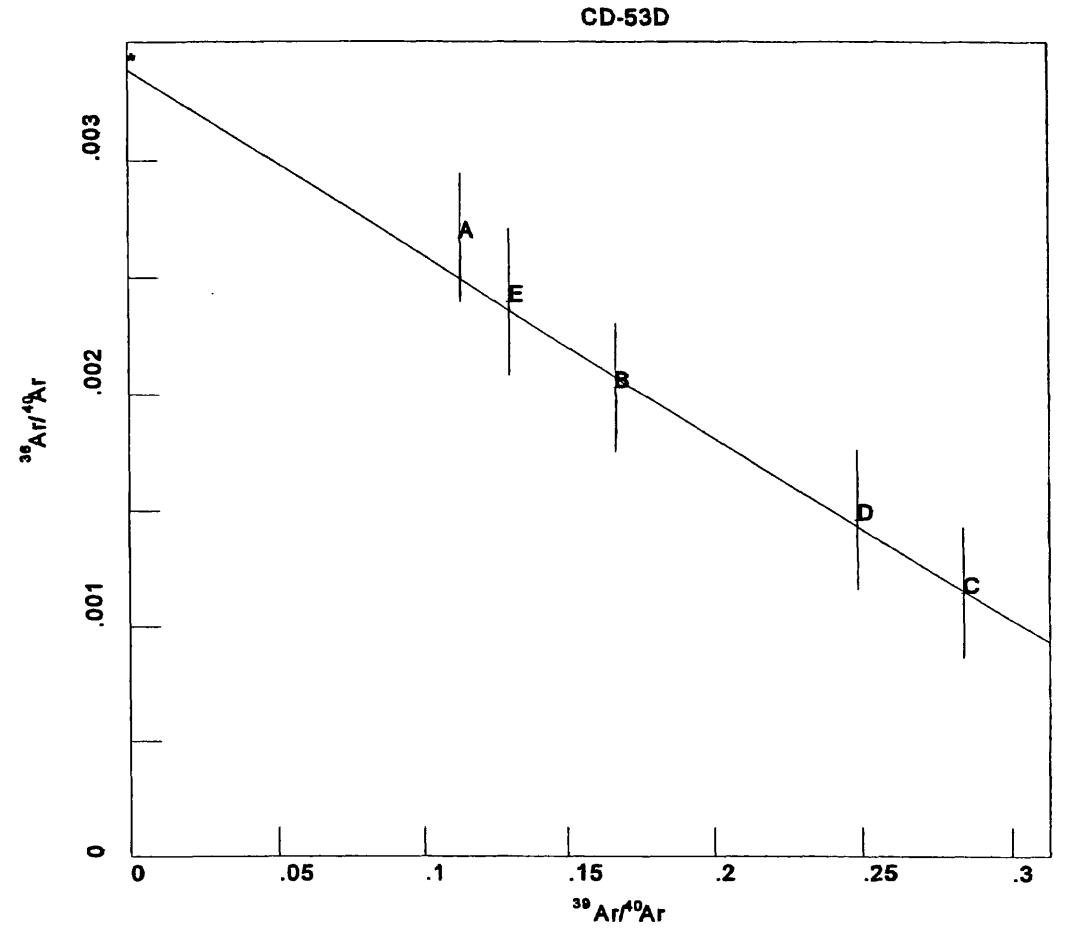

Figure 28. Inverse isotope correlation diagram for CD-53D basalt. Regressing points B, C, D, and E which contain 97.7% of the ^{39}Ar released, MSWD = 0.03, initial $^{40}Ar/^{36}Ar = 295.5 \pm 46.0$, and Apparent age = 9.86 ± 1.61 Ma.

Table 16A. CC-140 BASALT #108D57 12:02:45 17 Apr 1998 v 4/07/98.

RAW DATA								
File	Temp	^{40}Ar	^{39}Ar	^{38}Ar	^{37}Ar	^{36}Ar	Trap	Manifold
961231	650	141262	27370	1488	644	433	150	ALL
	±	142	10	9	14	12		
961232	750	894330	242694	9347	3347	2489	150	ALL
	±	853	203	22	6	14		
961233	800	872927	270380	9832	3996	2395	150	ALL
	±	54	242	16	12	18		
961234	850	1235582	423719	15156	8805	3210	150	ALL
	±	1019	417	29	13	6		
961235	900	1418269	550372	18819	19271	3511	150	ALL
	±	695	299	4	7	8		
961236	950	1149709	508224	16161	29728	2691	150	ALL
	±	990	471	8	43	15		
961237	1000	2009377	904988	23365	102110	4700	150	ALL
	±	1115	759	22	105	9		
961238	1050	776034	558284	10804	76459	1404	150	ALL
	±	585	269	8	10	1		
961239	1100	806162	769070	11841	113927	1119	150	ALL
	±	285	877	8	78	10		
961240	1150	642071	658687	9270	92264	784	150	ALL
	±	342	1031	18	120	7		
961241	1250	619517	620201	8900	77921	769	150	ALL
	±	1037	1334	32	123	0		
961242	1350	453389	387082	6062	39625	706	150	ALL
	±	467	382	18	51	13		
961243	1450	354730	271535	4577	53872	727	150	ALL
	±	133	115	8	56	15		
961244	1600	181626	100420	2028	250123	1399	150	ALL
	±	61	52	11	364	12		

All values are in volts x 10^{-6}. Measured $^{40}Ar/^{36}Ar$ = 298.9 ± 0.33%

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

Trap current factors: 40 = 9.3 100 = 4.56 150 = 1

Manifold factors: All = 1, Split1 = 3.3, Split2 = 10.89, Split 3 = 35.937

EAll = 2, Esplit1 = 6.6, Esplit2 = 21.78

Sensitivity =1.46x10^{-17} moles/count. Reproducibility limit = .25 %. Detection limit = 40 counts.

Table 16B. CC-140 BASALT #108D57 12:02:45 17 Apr 1998 v 4/07/98.

			CORRECTIONS							
Temp	^{39}Ar	^{37}Ar	-----	K-derived	----	----	Ca-derived	-----	Cl-derived	initial
(°C)	decay	decay	^{40}Ar	^{38}Ar	^{37}Ar	^{39}Ar	^{38}Ar	^{36}Ar	^{36}Ar	^{38}Ar
650	27	9320	156	368	0	7	0	3	0	81
750	244	48460	1384	3264	0	35	2	14	2	468
800	272	57897	1541	3637	0	42	2	16	2	450
850	426	127630	2416	5699	0	93	4	36	3	600
900	553	279492	3137	7401	0	203	10	80	3	649
950	511	431441	2896	6832	0	313	15	123	3	485
1000	910	1482634	5154	12160	0	1076	51	422	3	809
1050	561	1110796	3179	7499	0	806	38	316	1	206
1100	773	1655863	4378	10329	0	1201	57	471	0	123
1150	662	1341605	3750	8848	0	973	46	382	0	77
1250	624	1133822	3532	8332	0	823	39	323	0	85
1350	389	576834	2205	5201	0	418	20	164	0	103
1450	273	784673	1545	3645	0	569	27	223	0	96
1600	101	3644821	558	1315	0	2644	125	1037	0	71

All values are in volts x 10^{-6} and have been corrected for mass discrimination.

Table 16C. CC-140 BASALT #108D57 12:02:45 17 Apr 1998 v 4/07/98.

MOLAR VALUES							
Temp (°C)	$^{40}Ar^*$	$^{39}Ar_K$	$^{38}Ar_{Cl}$	^{37}Ca	$^{36}Ar_i$	Apparent Age and Precision (Ma)	
650	1.550585	0.301859	0.013295	0.110441	0.004777	6.014	1.679
750	9.812400	2.676885	0.072567	0.574209	0.027496	8.228	0.229
800	9.575472	2.982227	0.073627	0.686002	0.026425	7.735	0.259
850	13.551003	4.673222	0.111434	1.512189	0.035250	8.754	0.061
900	15.550581	6.069182	0.133697	3.311373	0.038120	9.216	0.059
950	12.602085	5.603018	0.108713	5.111424	0.028533	9.712	0.114
1000	22.023981	9.971533	0.132961	17.564691	0.047564	10.425	0.041
1050	8.492740	6.149837	0.038849	13.159076	0.012117	10.419	0.015
1100	8.810629	8.470776	0.018092	19.615678	0.007252	10.268	0.052
1150	7.014368	7.255593	0.005571	15.892453	0.004516	10.212	0.041
1250	6.768934	6.832700	0.007310	13.430487	0.005002	10.102	0.022
1350	4.957968	4.265489	0.010748	6.832591	0.006036	9.710	0.135
1450	3.881070	2.989175	0.011292	9.294111	0.005619	9.693	0.210
1600	1.989722	1.078731	0.007363	43.170063	0.004155	9.216	0.462

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.

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

Table 16D. CC-140 BASALT #108D57 12:02:45 17 Apr 1998 v 4/07/98.

Temp °C	Percent ^{39}Ar of Total	Radiogenic yield (%)	$^{39}Ar_K$ ($x10^{-12}$ moles)	$^{40}Ar_R/^{39}Ar_K$	Apparent K/Ca	Apparent K/Cl	Apparent Age and Precision (Ma)	
J = 0.007252 ± 0.5%			Basalt			Sample Wt. = 0.2830 g		
650	0.4	9.0	0.301859	0.460	1.42	55	6.014	4.679
750	3.9	17.2	2.676885	0.630	2.42	89	8.228	0.229
800	4.3	18.5	2.982227	0.593	2.26	98	7.735	0.259
850	6.7	23.1	4.673222	0.671	1.61	101	8.754	0.061
900	8.8	27.6	6.069182	0.706	0.95	110	9.216	0.059
950	8.1	33.1	5.603018	0.744	0.57	125	9.712	0.114
1000	14.4	36.2	9.971533	0.799	0.30	181	10.425	0.041
1050	8.9	57.8	6.149837	0.799	0.24	383	10.419	0.015
1100	12.2	75.7	8.470776	0.787	0.22	1133	10.268	0.052
1150	10.5	81.0	7.255593	0.783	0.24	3152	10.212	0.041
1250	9.9	78.2	6.832700	0.774	0.26	2262	10.102	0.022
1350	6.2	64.0	4.265489	0.744	0.32	960	9.710	0.135
1450	4.3	57.2	2.989175	0.743	0.17	641	9.693	0.210
1600	1.6	38.3	1.078731	0.706	0.01	355	9.216	0.462
Total Gas	100	50.9	69.320227	0.748	0.61	878	9.761	

NO PLATEAU

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

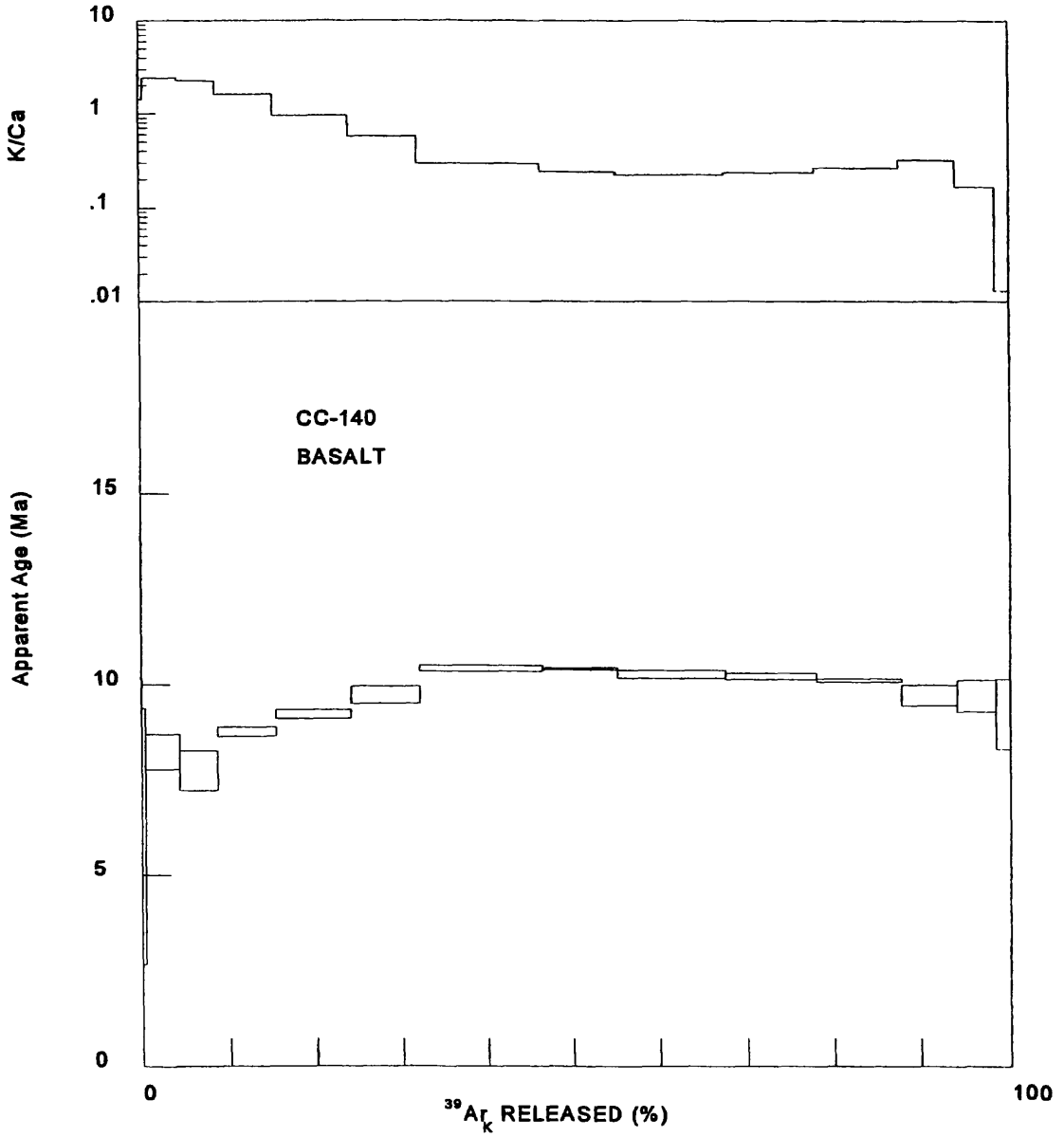

Figure 29. Age spectrum and K/Ca diagrams for CC-140 basalt.

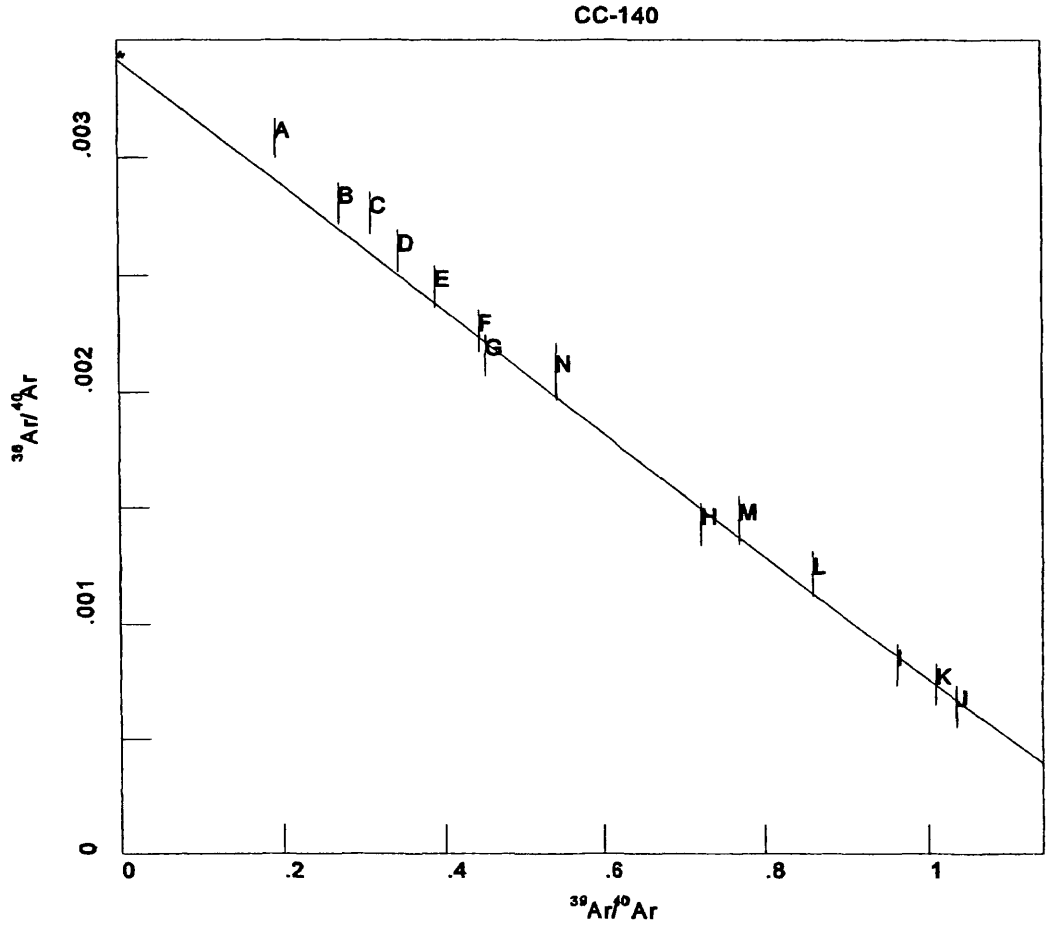

Figure 30. Inverse isotope correlation diagram for CC-140 basalt. Regressing points G, H, I, J, K, L, M, and N which contain 67.8% of the ^{39}Ar released, MSWD = 0.55, initial $^{40}Ar/^{36}Ar$ = 292.6 ±12.0, and apparent age = 10.14 ± 0.26 Ma.

Table 17A. PEC96-1 BASALT #95KD2 13:08:48 15 Apr 1998 v 4/07/98.

RAW DATA								
File	Temp	^{40}Ar	^{39}Ar	^{38}Ar	^{37}Ar	^{36}Ar	Trap	Manifold
43738	650	522769	155894	6920	16996	566	200	EALL
	±	889	37	31	15	12		
43739	750	480618	189497	7569	43453	139	200	EALL
	±	899	173	22	17	7		
43740	850	749077	250545	7810	165990	616	200	EALL
	±	839	551	37	134	14		
43741	950	616121	242498	3859	236526	248	200	EALL
	±	1069	340	28	27	12		
43742	1050	295880	109836	1618	116911	194	200	EALL
	±	829	122	36	259	11		

All values are in counts. Measured $^{40}Ar/^{36}Ar = 287.7 \pm 1\%$

^{40}Ar blank = 32349 ± 719 ^{36}Ar blank = 133.33 ± 6.35

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

Trap current factors: 40 = 9.3 100 = 4.56 200 = 1

Manifold factors: All = 1, Split1 = 3.3, Split2 = 10.89, Split 3 = 35.937

EAll = 2, Esplit1 = 6.6, Esplit2 = 21.78

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

Table 17B. PEC96-1 BASALT #95KD2 13:08:48 15 Apr 1998 v 4/07/98.

CORRECTIONS										
Temp	^{39}Ar	^{37}Ar	-----	K-derived	-----	-----	Ca-derived	-----	Cl-derived	initial
(°C)	decay	decay	^{40}Ar	^{38}Ar	^{37}Ar	^{39}Ar	^{38}Ar	^{36}Ar	^{36}Ar	^{38}Ar
650	28	11135	880	2075	0	19	1	7	0	102
750	34	28500	1069	2522	0	47	2	19	0	22
850	44	109003	1413	3333	0	181	9	71	0	99
950	43	155505	1367	3225	0	259	12	101	0	26
1050	19	76954	619	1461	0	128	6	50	0	26

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

Table 17C. PEC96-1 BASALT #95KD2 13:08:48 15 Apr 1998 v 4/07/98.

MOLAR VALUES							
Temp (°C)	$^{40}Ar^*$	$^{39}Ar_K$	$^{38}Ar_{Cl}$	^{37}Ca	$^{36}Ar_i$	Apparent Age and Precision (Ma)	
650	10.437796	3.097481	0.097087	0.551485	0.010867	10.019	0.098
750	9.590985	3.764654	0.099328	1.410583	0.002332	10.154	0.048
850	14.953280	4.975094	0.089285	5.390977	0.010570	10.210	0.069
950	12.295087	4.813629	0.011938	7.685396	0.002793	10.231	0.062
1050	5.905219	2.180048	0.003109	3.800534	0.002767	10.022	0.134

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

Table 17D. PEC96-1 BASALT #95KD2 13:08:48 15 Apr 1998 v 4/07/98.

Temp °C	Percent ^{39}Ar of Total	Radiogenic yield (%)	$^{39}Ar_K$ (x10^{-12} moles)	$^{40}Ar_R/^{39}Ar_K$	Apparent K/Ca	Apparent K/Cl	Apparent Age and Precision (Ma)	
J = 0.002387 ± 0.5%			Basalt			Sample Wt. = 0.1993 g		
650	16.4	69.2	3.097481	2.333	2.92	77	10.019	0.098
750	20.0	92.8	3.764654	2.365	1.39	92	10.154	0.048
850	26.4	79.1	4.975094	2.378	0.48	135	10.210	0.069
950	25.6	93.3	4.813629	2.383	0.33	976	10.231	0.062
1050	11.6	86.2	2.180048	2.334	0.30	1697	10.022	0.134
Total Gas	100	84.7	18.830906	2.364	1.002	512	10.151	

100% of gas on plateau in 650 through 1050 steps Plateau Age = 10.16 ± 0.06 Ma

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

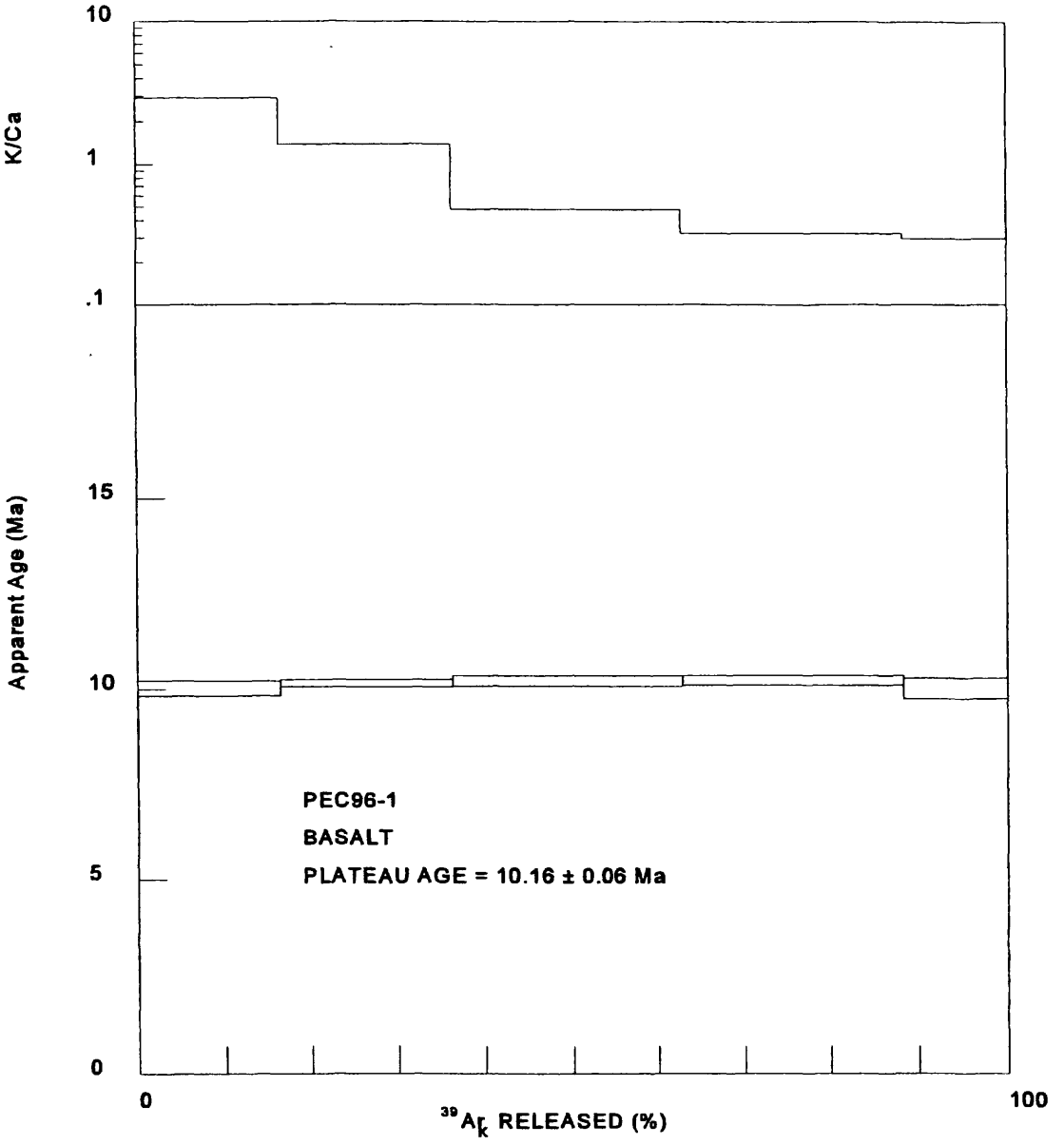

Figure 31. Age spectrum and K/Ca diagrams for PEC96-1 basalt.

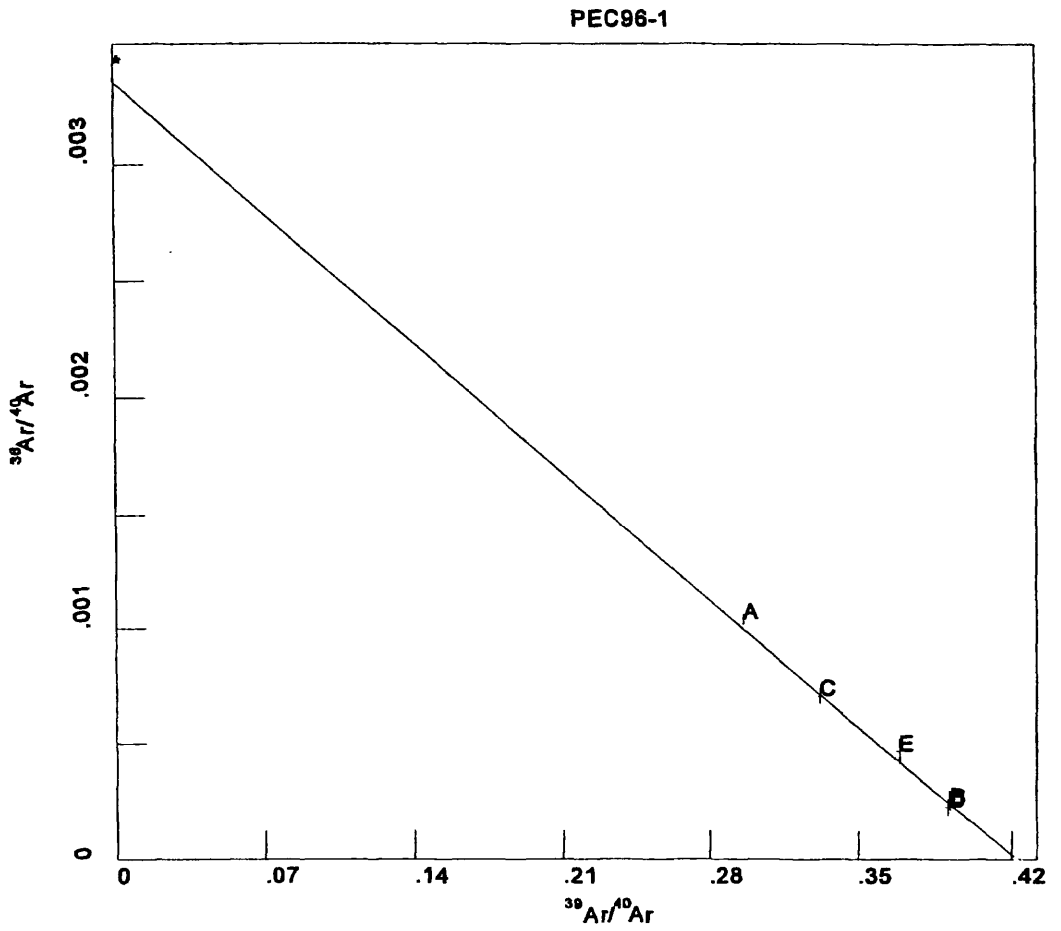

Figure 32. Inverse isotope correlation diagram for PEC96-1 basalt. Regressing points B, C, D, and E which contains 86.3% of the ^{39}Ar released, MSWD = 0.5, initial $^{40}Ar/^{36}Ar = 298.8 \pm 22.0$, and apparent age = 10.16 ± 0.12 Ma.

Table 18A. CC69B BASALT #104DD57 12:06:24 17 Apr 1998 v 4/07/98.

RAW DATA								
File	Temp	^{40}Ar	^{39}Ar	^{38}Ar	^{37}Ar	^{36}Ar	Trap	Manifold
961135	700	2292895	833418	33638	8106	5845	150	ALL
	±	2126	732	98	32	2		
961136	800	1475024	637040	24739	7991	3484	150	ALL
	±	1300	676	48	23	6		
961137	850	1406381	660892	24488	14211	3181	150	ALL
	±	1123	775	47	12	10		
961138	900	1189483	599119	19602	25150	2517	150	ALL
	±	834	924	57	22	9		
961139	950	667544	386330	10553	26346	1324	150	ALL
	±	1174	891	26	15	18		
961140	1000	1757212	977172	18359	119808	3598	150	ALL
	±	1745	819	24	102	10		
961141	1050	997103	885914	12960	117729	1353	150	ALL
	±	646	670	17	63	11		
961142	1100	1000987	991117	13505	147495	1275	150	ALL
	±	594	664	13	146	16		
961143	1150	565181	541479	7554	91790	805	150	ALL
	±	154	338	14	48	11		
961144	1250	509889	419840	6328	79008	880	150	ALL
	±	146	300	22	31	6		
961145	1350	484149	308024	5445	42673	1003	150	ALL
	±	150	133	18	33	1		
961146	1450	260490	130949	2660	109943	932	150	ALL
	±	216	156	10	43	7		
961147	1600	251941	54527	1355	399841	1915	150	ALL
	±	54	11	3	421	15		

All values are in volts x 10^{-6}. Measured $^{40}Ar/^{36}Ar$ = 298.9 ± 0.33%

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

Trap current factors: 40 = 9.3 100 = 4.56 150 = 1

Manifold factors: All = 1, Split1 = 3.3, Split2 = 10.89, Split 3 = 35.937

EAll = 2, Esplit1 = 6.6, Esplit2 = 21.78

Sensitivity =1.46x10^{-17} moles/count. Reproducibility limit = .25 %. Detection limit = 40 counts.

Table 18B. CC69B BASALT #104DD57 12:06:24 17 Apr 1998 v 4/07/98.

			CORRECTIONS							
Temp (°C)	^{39}Ar decay	^{37}Ar decay	----- ^{40}Ar	K-derived ^{38}Ar	----- ^{37}Ar	----- ^{39}Ar	Ca-derived ^{38}Ar	----- ^{36}Ar	Cl-derived ^{36}Ar	initial ^{38}Ar
700	764	91071	4751	11209	0	67	3	26	6	1099
800	584	89863	3632	8568	0	66	3	26	4	653
850	606	159884	3767	8888	0	118	6	46	4	592
900	550	283128	3415	8056	0	209	10	82	3	460
950	355	296750	2201	5194	0	219	10	86	1	234
1000	897	1350255	5566	13130	0	998	47	391	1	607
1050	813	1327457	5046	11903	0	981	46	385	0	184
1100	910	1663936	5644	13315	0	1230	58	482	0	151
1150	497	1036157	3083	7273	0	766	36	300	0	96
1250	386	892252	2390	5638	0	659	31	259	0	118
1350	283	482165	1754	4138	0	356	17	140	0	164
1450	120	1242985	741	1749	0	918	43	360	0	109
1600	50	4522825	292	689	0	3342	157	1311	0	117

All values are in volts x 10^{-6} and have been corrected for mass discrimination.

Table 18C. CC69B BASALT #104DD57 12:06:24 17 Apr 1998 v 4/07/98.

	MOLAR VALUES						
Temp (°C)	$^{40}Ar^*$	$^{39}Ar_K$	$^{38}Ar_{Cl}$	^{37}Ca	$^{36}Ar_i$	Apparent Age and Precision (Ma)	
700	24.992954	9.137090	0.259096	1.092634	0.064224	8.882	0.036
800	16.071732	6.983952	0.185308	1.078070	0.038162	9.263	0.049
850	15.320482	7.244917	0.178363	1.918015	0.034598	9.491	0.068
900	12.955200	6.566624	0.132274	3.396323	0.026875	10.298	0.063
950	7.267410	4.233432	0.061652	3.559576	0.013675	10.280	0.189
1000	19.132899	10.703087	0.064383	16.195779	0.035465	10.903	0.048
1050	10.836053	9.702699	0.013860	15.921703	0.010738	10.651	0.051
1100	10.871937	10.853463	0.003939	19.956657	0.008819	10.272	0.064
1150	6.139689	5.928565	0.004195	12.426657	0.005612	10.196	0.083
1250	5.543319	4.596042	0.008879	10.700429	0.006901	10.284	0.061
1350	5.269109	3.373374	0.016222	5.782176	0.009555	9.780	0.021
1450	2.837185	1.425735	0.010832	14.905306	0.006355	9.078	0.218
1600	2.748711	0.561352	0.006925	54.233336	0.006837	17.468	1.207

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.

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

Table 18D. CC69B BASALT #104DD57 12:06:24 17 Apr 1998 v 4/07/98.

Temp °C	Percent ^{39}Ar of Total	Radiogenic yield (%)	$^{39}Ar_K$ ($x10^{-12}$ moles)	$^{40}Ar_R/^{39}Ar_K$	Apparent K/Ca	Apparent K/Cl	Apparent Age and Precision (Ma)	
J = 0.007498 ± 0.25%			Basalt			Sample Wt. = 0.2800 g		
700	11.2	24.1	9.137090	0.658	4.35	85	8.882	0.036
800	8.6	29.8	6.983952	0.687	3.37	91	9.263	0.049
850	8.9	33.3	7.244917	0.704	1.96	98	9.491	0.068
900	8.1	38.7	6.566624	0.763	1.01	120	10.298	0.063
950	5.2	44.4	4.233432	0.762	0.62	166	10.280	0.189
1000	13.2	45.2	10.703087	0.808	0.34	402	10.903	0.048
1050	11.9	70.7	9.702699	0.790	0.32	1694	10.651	0.051
1100	13.3	76.0	10.853463	0.762	0.28	6667	10.272	0.064
1150	7.3	73.0	5.928565	0.756	0.25	3420	10.196	0.083
1250	5.7	63.2	4.596042	0.762	0.22	1253	10.284	0.061
1350	4.1	46.4	3.373374	0.725	0.30	503	9.780	0.021
1450	1.8	33.8	1.425735	0.673	0.05	319	9.078	0.218
1600	0.7	26.5	0.561352	1.298	0.01	196	17.468	1.207
Total Gas	100	49.8	81.310332	0.748	1.23	1538	10.094	

NO PLATEAU

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

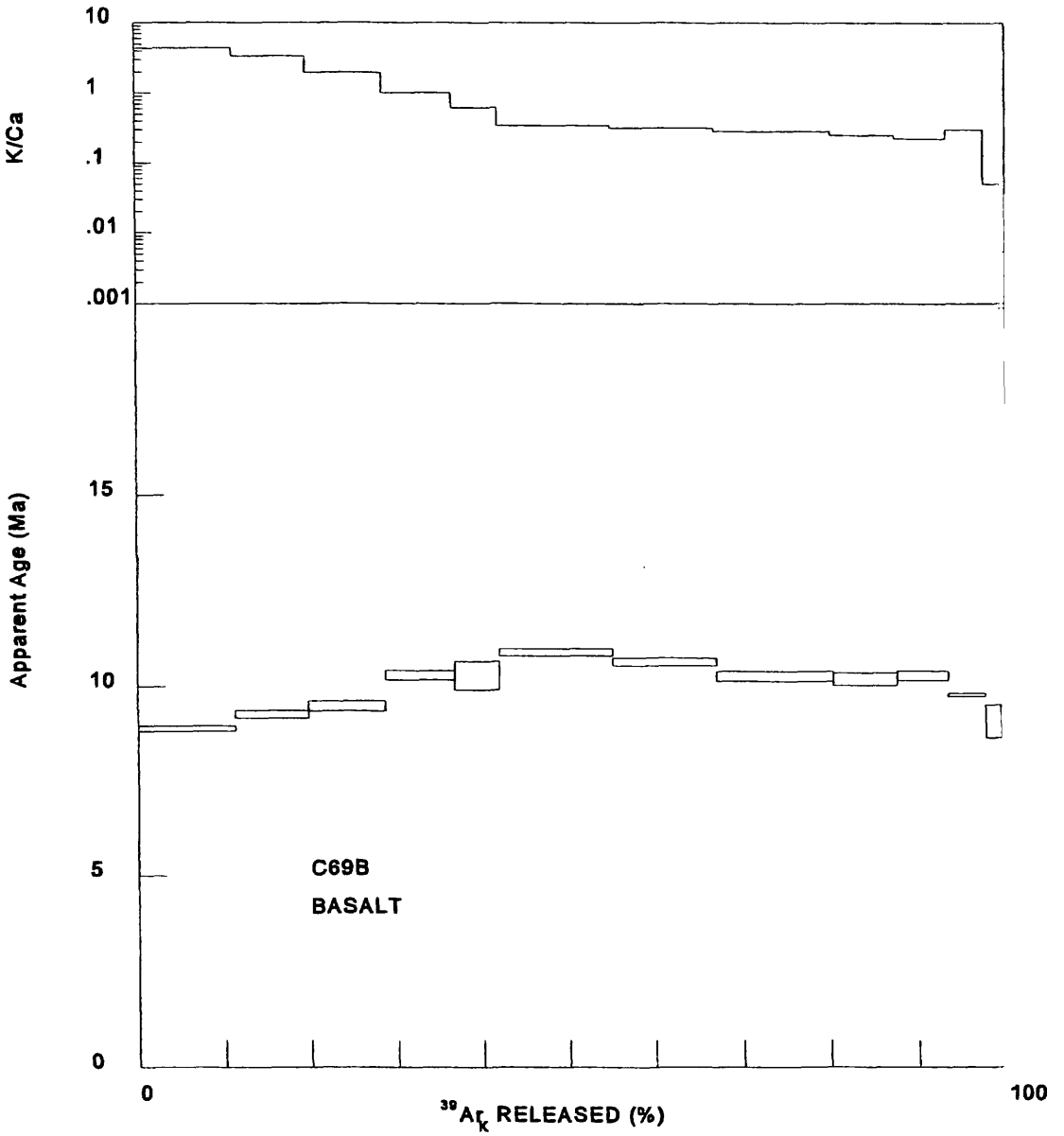

Figure 33. Age spectrum and K/Ca diagrams for C69B basalt.

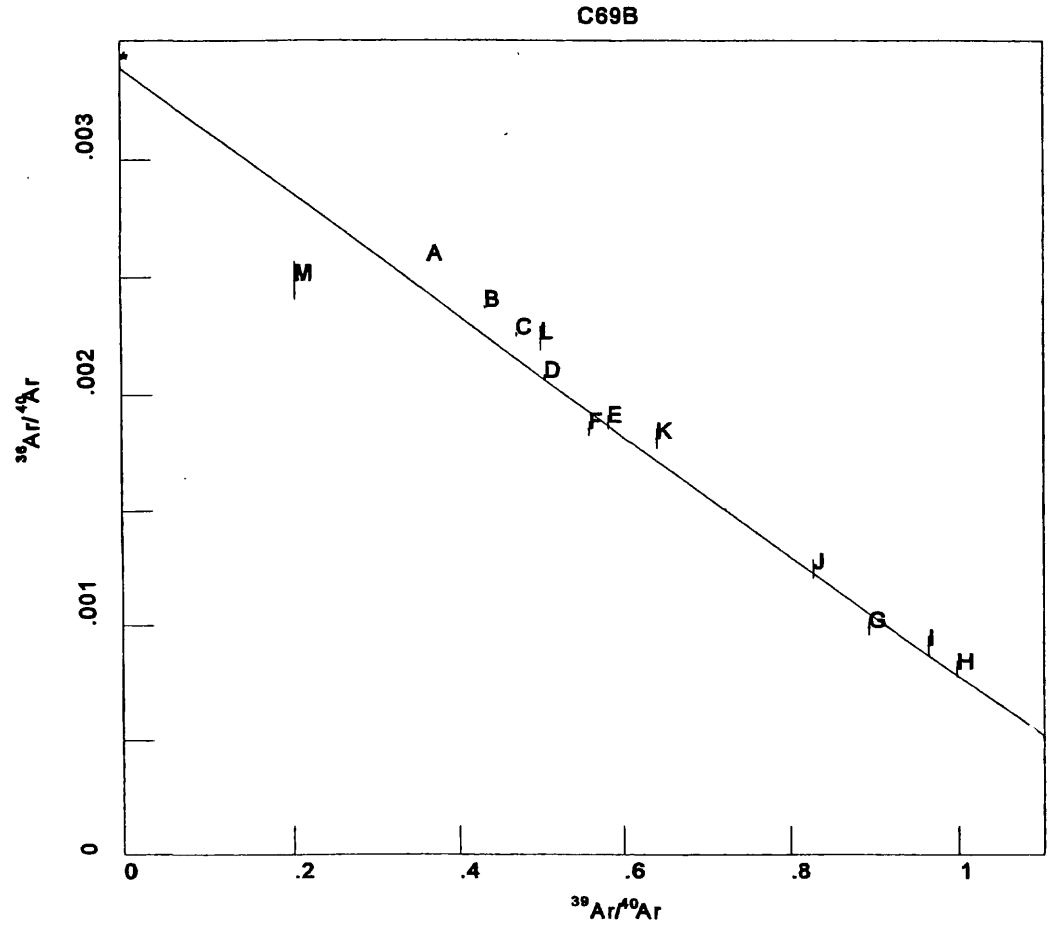

Figure 34. Inverse isotope correlation diagram for C69B basalt. Regressing points D, E, F, G, H, I, and J which contain 64.7% of the 39Ar released, MSWD = 2.4, initial 40Ar/36Ar = 295.4 ± 3.0, and apparent age = 10.38 ± 0.12 Ma.

Table 19A. CD-152 BASALT #14KD2 11:43:07 15 Apr 1998 v 4/07/98.

RAW DATA								
File	Temp	^{40}Ar	^{39}Ar	^{38}Ar	^{37}Ar	^{36}Ar	Trap	Manifold
43663	650	213085	20942	1010	5550	558	200	EALL
	±	778	39	8	5	8		
43664	750	317052	70260	1954	34287	291	200	EALL
	±	972	68	23	60	12		
43665	850	1171383	248157	4323	115314	1171	200	EALL
	±	2605	572	12	189	28		
43666	950	1961703	574532	8663	208158	453	200	EALL
	±	1464	853	4	454	9		
43667	1050	1861048	555231	8488	182060	538	200	EALL
	±	2031	124	26	69	17		
43668	1450	2329103	553236	12011	755904	2168	200	EALL
	±	1487	454	32	890	18		
43669	1650	210740	49837	1224	85307	194	200	EALL
	±	614	54	20	211	13		

All values are in counts. Measured $^{40}Ar/^{36}Ar$ = 287.7 ± 1%
^{40}Ar blank = 34442 ± 610 ^{36}Ar blank = 147 ± 7.2
Precisions are at the 1 sigma level, and are from linear regression statistics.
Trap current factors: 40 = 9.3 100 = 4.56 200 = 1
Manifold factors: All = 1, Split1 = 3.3, Split2 = 10.89, Split 3 = 35.937
EAll = 2, Esplit1 = 6.6, Esplit2 = 21.78
Sensitivity =1.00x10^{-17} moles/count. Reproducibility limit = .25 %. Detection limit = 40 counts.

Table 19B. CD-152 BASALT #14KD2 11:43:07 15 Apr 1998 v 4/07/98..

CORRECTIONS										
Temp	^{39}Ar	^{37}Ar	-----	K-derived	-----	-----	Ca-derived	-----	Cl-derived	initial
(°C)	decay	decay	^{40}Ar	^{38}Ar	^{37}Ar	^{39}Ar	^{38}Ar	^{36}Ar	^{36}Ar	^{38}Ar
650	3	2976	118	279	0	6	0	2	0	101
750	10	18410	396	935	0	35	2	14	0	50
850	37	61997	1400	3302	0	117	6	46	0	204
950	86	112067	3241	7646	0	211	10	83	0	67
1050	83	98147	3132	7390	0	185	9	73	0	84
1450	83	408045	3118	7355	0	768	36	301	0	338
1650	7	46112	281	662	0	87	4	34	0	29

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

Table 19C. CD-152 BASALT #14KD2 11:43:07 15 Apr 1998 v 4/07/98.

	MOLAR VALUES						
Temp (°C)	$^{40}Ar^*$	$^{39}Ar_K$	$^{38}Ar_{Cl}$	^{37}Ca	$^{36}Ar_i$	Apparent Age and Precision (Ma)	
650	4.259346	0.416028	0.016367	0.167155	0.010814	10.855	0.507
750	6.333110	1.395447	0.020838	1.033073	0.005393	14.402	0.217
850	23.39966	4.928791	0.023245	3.476020	0.021875	14.570	0.144
950	39.169234	11.412286	0.019187	6.277709	0.007170	13.769	0.023
1050	37.158308	11.029286	0.021243	5.493188	0.009025	13.265	0.041
1450	46.519698	10.978002	0.095996	22.818127	0.036185	13.841	0.041
1650	4.209178	0.988577	0.011400	2.576346	0.003095	14.134	0.312

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

Table 19D. CD-152 BASALT #14KD2 11:43:07 15 Apr 1998 v 4/07/98.

Temp °C	Percent ^{39}Ar of Total	Radiogenic yield (%)	$^{39}Ar_K$ (x10^{-12} moles)	$^{40}Ar_R/^{39}Ar_K$	Apparent K/Ca	Apparent K/Cl	Apparent Age and Precision (Ma)	
J = 0.002360 ± 0.5%			Basalt			Sample Wt. = 0.1998 g		
650	1.0	25.0	0.416028	2.557	1.29	62	10.855	0.507
750	3.4	74.8	1.395447	3.396	0.70	162	14.402	0.217
850	12.0	72.4	4.928791	3.436	0.74	513	14.570	0.144
950	27.7	94.6	11.412286	3.247	0.95	1439	13.769	0.023
1050	26.8	92.8	11.029286	3.127	1.04	1256	13.265	0.041
1450	26.7	77.0	10.978002	3.264	0.25	277	13.841	0.041
1650	2.4	78.3	0.988577	3.333	0.20	210	14.134	0.312
Total Gas	100	85.0	41.148417	3.242	0.74	882	13.750	

NO PLATEAU

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

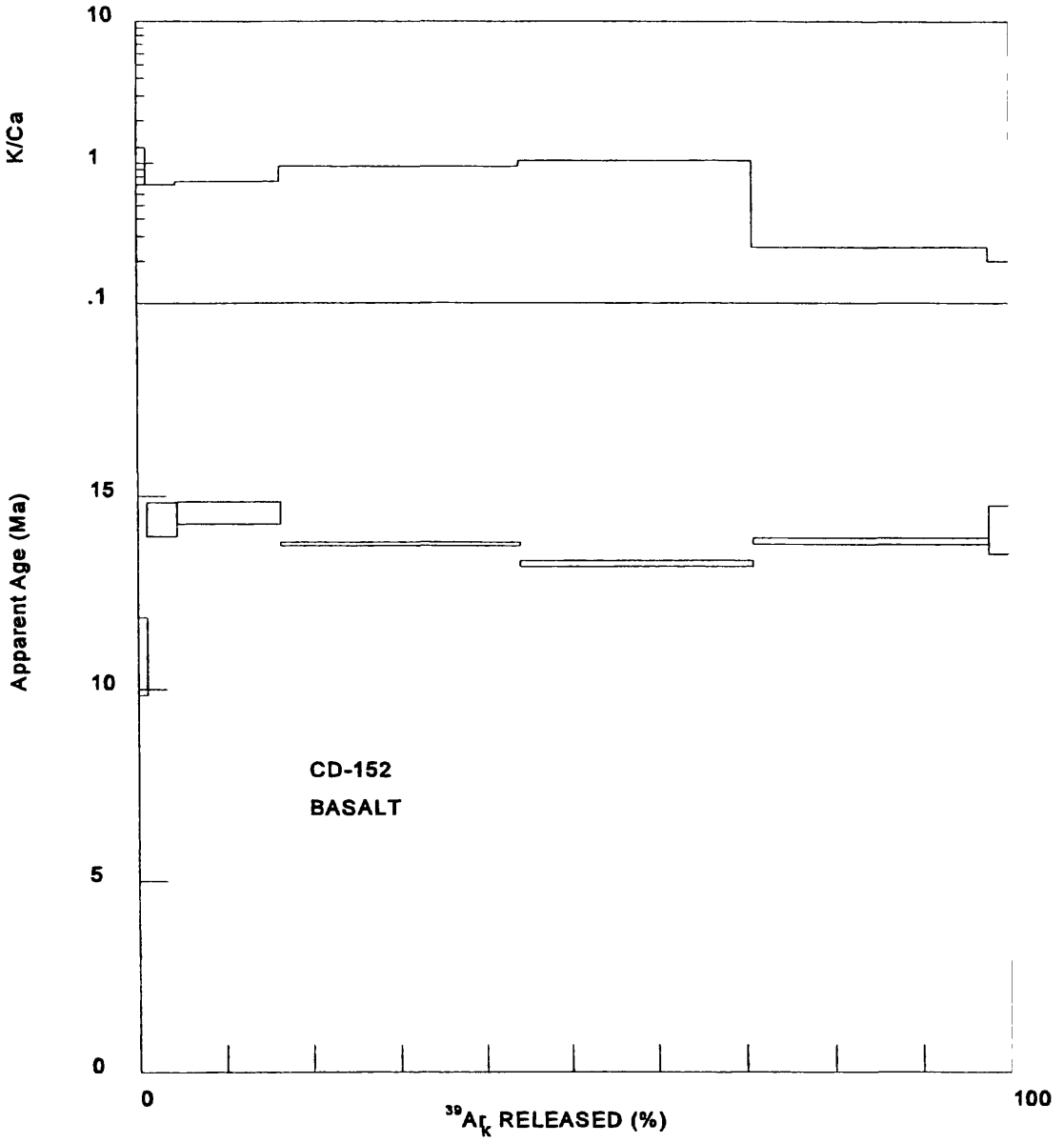

Figure 35. Age spectrum and K/Ca diagrams for CD-152 basalt.

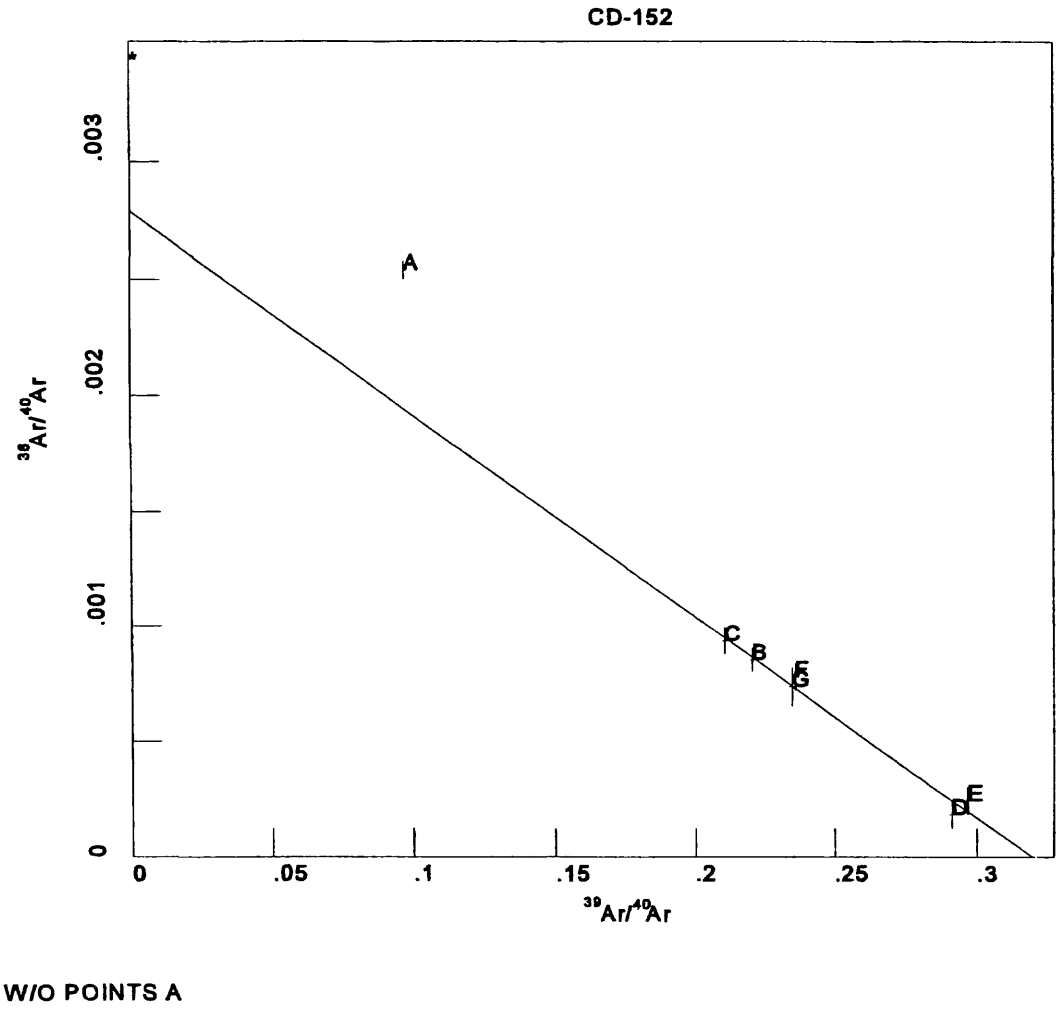

Figure 36. Inverse isotope correlation diagram for CD-152 basalt. Regressing points B, C, D, E, F, and G which contain 99. % of the 39Ar, MSWD = 0.62, Initial 40Ar/36Ar = 358.2 ± 23.2, and apparent age = 13.29 ± 0.28 Ma.

Table 20A. GL-100 BASALT #27DD53 10:18:19 15 Apr 1998 v 4/07/98.

RAW DATA								
File	Temp	^{40}Ar	^{39}Ar	^{38}Ar	^{37}Ar	^{36}Ar	Trap	Manifold
951156	600	173345	26222	2188	6079	391	200	ALL
	±	61	11	36	26	8		
951157	700	182985	64345	3015	17374	201	200	ALL
	±	182	65	24	47	3		
951158	800	530116	231587	5188	76256	269	200	ALL
	±	193	101	12	182	1		
951159	950	6807486	3130655	44992	970877	3553	200	ALL
	±	1514	1181	11	958	4		
951160	1100	3931381	1895850	31090	278602	1201	200	ALL
	±	1897	1198	28	390	7		
951161	1250	2008000	950024	28083	1264232	2375	200	ALL
	±	2282	1229	28	3609	8		
951162	1450	352444	157207	4928	613504	1137	200	ALL
	±	171	138	11	712	4		

All values are in volts x 10^{-6}. Measured $^{40}Ar/^{36}Ar$ = 298.9 ± .33%
Precisions are at the 1 sigma level, and are from linear regression statistics.
Trap current factors: 40 = 9.3 100 = 4.56 200 = 1
Manifold factors: All = 1, Split1 = 3.3, Split2 = 10.89, Split 3 = 35.937
EAll = 2, Esplit1 = 6.6, Esplit2 = 21.78
Sensitivity =1.25x10^{-17} moles/count. Reproducibility limit = .25 %. Detection limit = 40 counts.

Table 20B. GL-100 BASALT #27DD53 10:18:19 15 Apr 1998 v 4/07/98.

CORRECTIONS										
Temp	^{39}Ar	^{37}Ar	-----	K-derived	-----	-----	Ca-derived	-----	Cl-derived	initial
(°C)	decay	decay	^{40}Ar	^{38}Ar	^{37}Ar	^{39}Ar	^{38}Ar	^{36}Ar	^{36}Ar	^{36}Ar
600	16	25722	149	352	0	22	1	8	0	72
700	39	73560	366	864	0	62	3	24	0	33
800	140	323049	1318	3110	0	271	13	106	0	31
950	1890	4115293	17824	42051	0	3453	163	1354	1	419
1100	1145	1181727	10800	25480	0	991	47	389	1	154
1250	574	5368784	5389	12714	0	4503	212	1766	2	118
1450	95	2606465	884	2085	0	2186	103	857	0	55

All values are in volts x 10^{-6} and have been corrected for mass discrimination.

Table 20C. GL-100 BASALT #27DD53 10:18:19 15 Apr 1998 v 4/07/98.

	MOLAR VALUES						
Temp (°C)	$^{40}Ar^*$	$^{39}Ar_K$	$^{38}Ar_{Cl}$	^{37}Ca	$^{36}Ar_i$	Apparent Age and Precision (Ma)	
600	2.164943	0.328646	0.024001	0.400944	0.004835	26.065	1.011
700	2.282736	0.806337	0.027488	1.146487	0.002236	23.419	0.139
800	6.609965	2.901530	0.026573	5.034393	0.002066	24.070	0.023
950	84.870765	39.22629	0.043210	64.125756	0.027990	22.740	0.007
1100	49.007255	23.768247	0.073716	18.411645	0.010312	22.519	0.018
1250	25.032638	11.860367	0.192969	83.628184	0.007921	22.283	0.044
1450	4.394499	1.944615	0.035295	40.596933	0.003656	19.863	0.101

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

Table 20D. GL-100 BASALT #27DD53 10:18:19 15 Apr 1998 v 4/07/98.

Temp °C	Percent ^{39}Ar of Total	Radiogenic yield (%)	$^{39}Ar_K$ ($x10^{-12}$ moles)	$^{40}Ar_R/^{39}Ar_K$	Apparent K/Ca	Apparent K/Cl	Apparent Age and Precision (Ma)	
J = 0.006469 ± 0.25%			Basalt			Sample Wt. = 0.3007 g		
600	0.4	34.0	0.328646	2.240	0.43	33	26.065	1.011
700	1.0	71.1	0.806337	2.011	0.37	71	23.419	0.139
800	3.6	90.8	2.901530	2.068	0.30	264	24.070	0.023
950	48.5	90.3	39.22629	1.953	0.32	2197	22.740	0.007
1100	29.4	93.8	23.768247	1.934	0.67	780	22.519	0.018
1250	14.7	90.6	11.860367	1.913	0.07	149	22.283	0.044
1450	2.4	75.4	1.944615	1.704	0.02	133	19.863	0.101
Total Gas	100	90.6	80.836032	1.941	0.38	1331	22.607	

NO PLATEAU

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

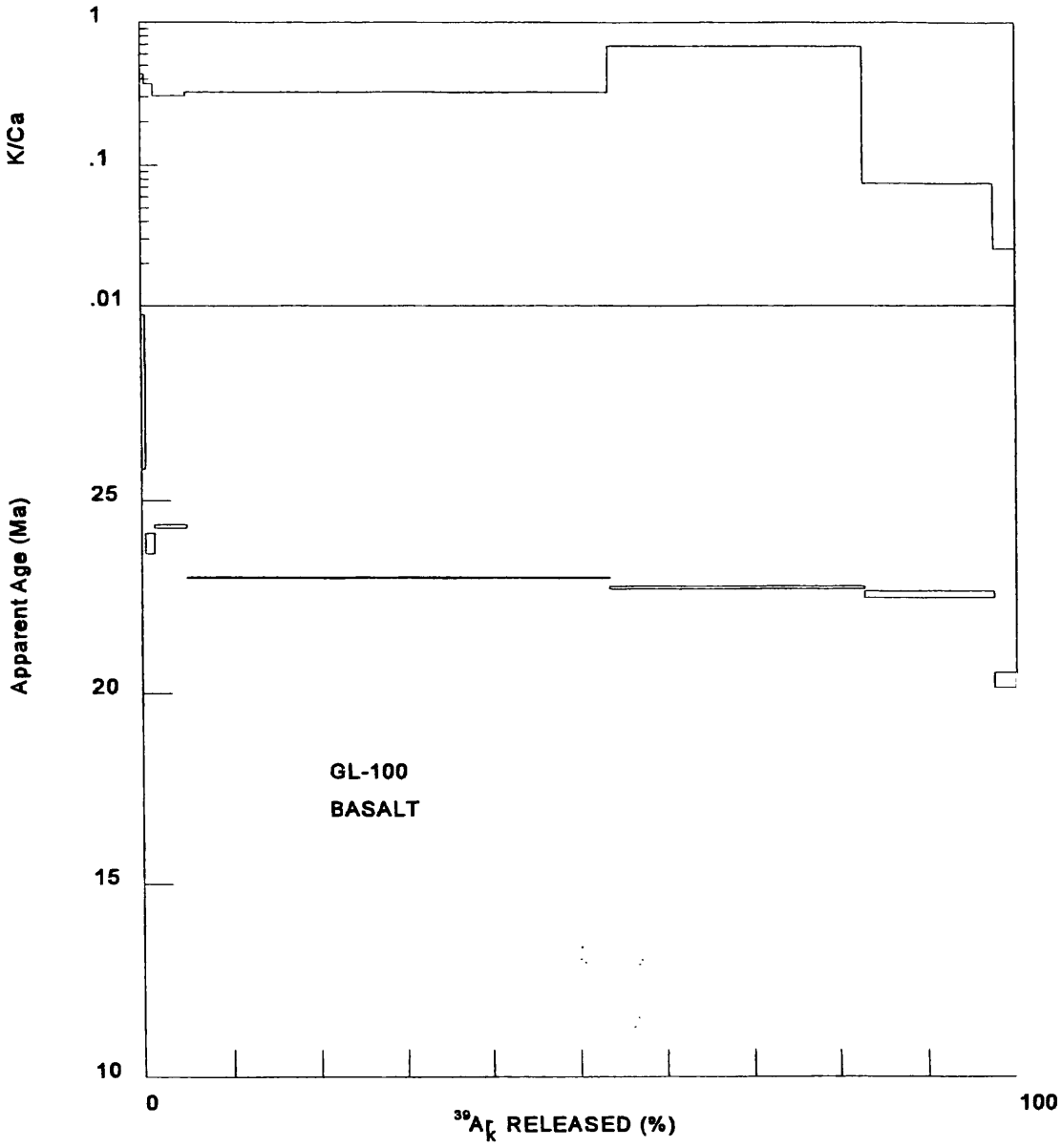

Figure 37. Age spectrum diagram and K/Ca diagrams for GL-100 basalt.

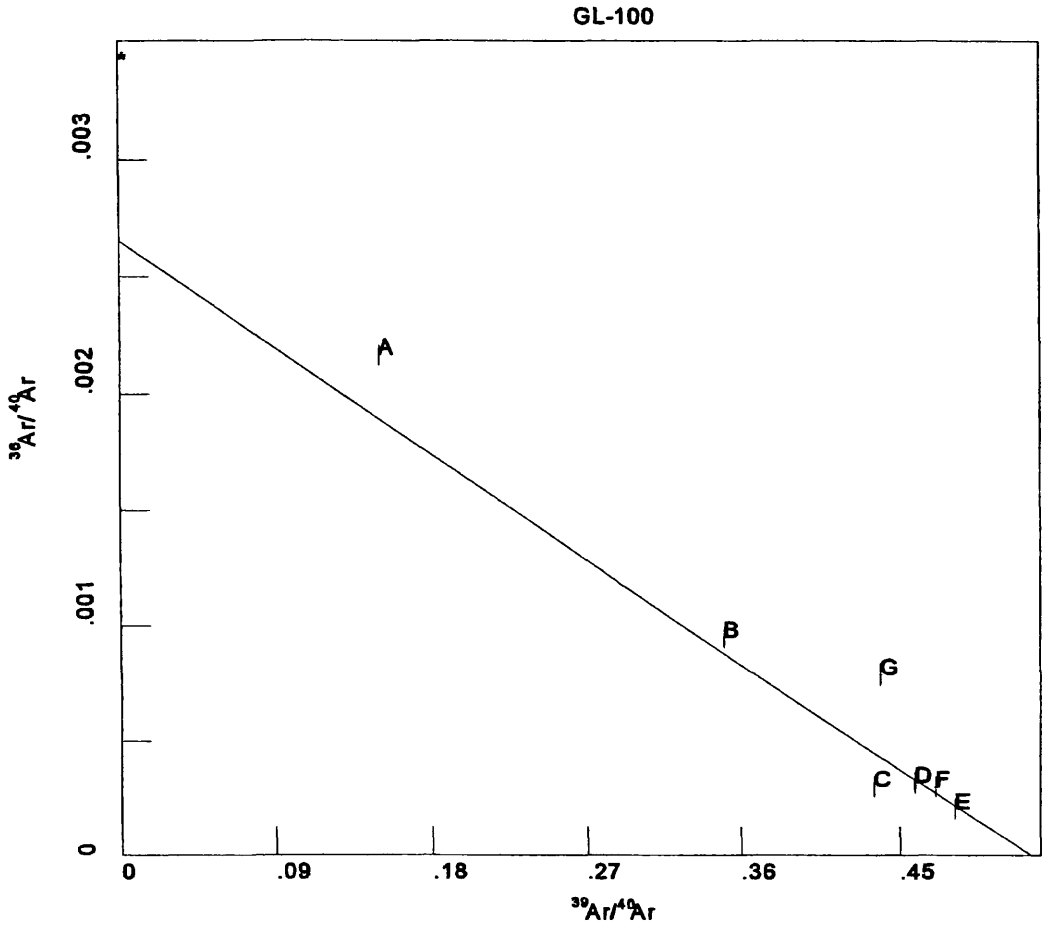

Figure 38. Inverse isotope correlation diagram for GL-100 basalt. Regressing points D, E, and F which contain 92.6% of the ^{39}Ar released, MSWD = 0.66, initial $^{40}Ar/^{36}Ar$ = 361.0 ±182.9, and apparent age = 22.04 ± 1.30 Ma.

Table 21A. DT-R2 BASALT #5KD2 11:30:05 15 Apr 1998 v 4/07/98.

RAW DATA								
File	Temp	^{40}Ar	^{39}Ar	^{38}Ar	^{37}Ar	^{36}Ar	Trap	Manifold
43602	650	1885662	142043	10580	22219	4159	200	EALL
	±	4487	107	29	50	19		
43603	750	2312811	212908	13214	133484	4311	200	EALL
	±	5127	163	25	257	34		
43604	800	883995	96553	3922	156156	1337	200	EALL
	±	1809	157	36	9	13		
43605	850	587318	97121	1870	214431	371	200	EALL
	±	785	210	28	7	9		
43606	900	458142	82890	1189	183507	142	200	EALL
	±	444	129	7	199	17		
43607	950	303872	54426	762	119453	125	200	EALL
	±	558	114	18	179	15		
43608	1050	219625	35770	574	83763	159	200	EALL
	±	462	12	20	44	10		
43609	1150	140937	20460	437	101799	176	200	EALL
	±	534	35	22	92	15		

All values are in counts. Measured $^{40}Ar/^{36}Ar = 287.7 \pm 1\%$

^{40}Ar blank = 36534 ± 441 ^{36}Ar blank = 151.7 ± 6

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

Trap current factors: 40 = 9.3 100 = 4.56 200 = 1

Manifold factors: All = 1, Split1 = 3.3, Split2 = 10.89, Split 3 = 35.937

EAll = 2, Esplit1 = 6.6, Esplit2 = 21.78

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

Table 21B. DT-R2 BASALT #5KD2 11:30:05 15 Apr 1998 v 4/07/98.

			CORRECTIONS							
Temp	^{39}Ar	^{37}Ar	-----	K-derived	-----	-----	Ca-derived	-----	Cl-derived	initial
(°C)	decay	decay	^{40}Ar	^{38}Ar	^{37}Ar	^{39}Ar	^{38}Ar	^{36}Ar	^{36}Ar	^{38}Ar
650	17	9054	801	1891	0	21	1	8	0	755
750	25	54479	1201	2833	0	124	6	49	0	776
800	11	63835	544	1283	0	145	7	57	0	233
850	11	87798	547	1290	0	199	9	78	0	53
900	10	75260	467	1101	0	171	8	67	0	13
950	6	49069	307	723	0	111	5	44	0	15
1050	4	34463	201	475	0	78	4	31	0	23
1150	2	41953	115	271	0	95	4	37	0	25

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

Table 21C. DT-R2 BASALT #5KD2 11:30:05 15 Apr 1998 v 4/07/98.

	MOLAR VALUES						
Temp (°C)	$^{40}Ar^*$	$^{39}Ar_K$	$^{38}Ar_{Cl}$	^{37}Ca	$^{36}Ar_i$	Apparent Age and Precision (Ma)	
650	37.697201	2.822025	0.186085	0.613078	0.080812	20.638	0.208
750	46.232202	4.228083	0.219540	3.684845	0.082971	21.642	0.220
800	17.669011	1.915634	0.056258	4.312712	0.024902	22.675	0.182
850	11.735428	1.925843	0.011971	5.924902	0.005651	22.023	0.119
900	9.153504	1.643630	0.001542	5.072890	0.001423	22.386	0.253
950	6.071306	1.079233	0.000765	3.303721	0.001567	21.896	0.332
1050	4.388468	0.709198	0.002206	2.317712	0.002481	21.720	0.342
1150	2.816443	0.404656	0.003623	2.818131	0.002691	21.052	0.876

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.

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

Table 21D. DT-R2 BASALT #5KD2 11:30:05 15 Apr 1998 v 4/07/98.

Temp °C	Percent ^{39}Ar of Total	Radiogenic yield (%)	$^{39}Ar_K$ ($x10^{-12}$ moles)	$^{40}Ar_R/^{39}Ar_K$	Apparent K/Ca	Apparent K/Cl	Apparent Age and Precision (Ma)	
J = 0.002350 ± 0.5%			Basalt			Sample Wt. = 0.2001 g		
650	19.2	36.7	2.822025	4.896	2.39	37	20.638	0.208
750	28.7	47.0	4.228083	5.136	0.60	47	21.642	0.220
800	13.0	58.4	1.915634	5.382	0.23	82	22.675	0.182
850	13.1	85.8	1.925843	5.227	0.17	389	22.023	0.119
900	11.2	95.4	1.643630	5.313	0.17	2579	22.386	0.253
950	7.3	92.4	1.079233	5.196	0.17	3412	21.896	0.332
1050	4.8	83.3	0.709198	5.154	0.16	778	21.720	0.342
1150	2.7	71.8	0.404656	4.995	0.07	270	21.052	0.876
Total Gas	100	62.7	14.728302	5.155	0.72	664	21.723	

NO PLATEAU

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

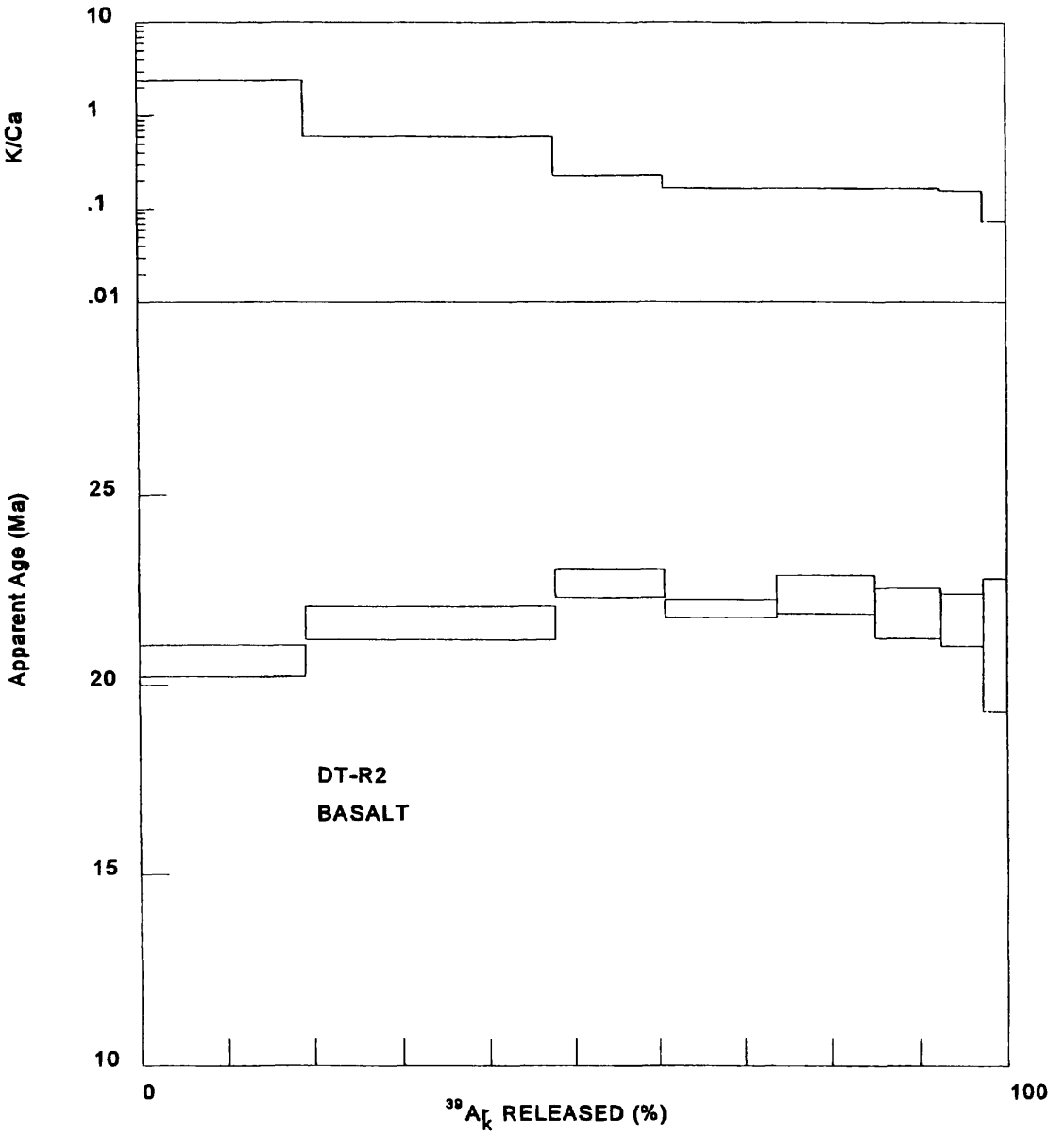

Figure 39. Age spectrum and K/Ca diagrams for DT-R2 basalt.

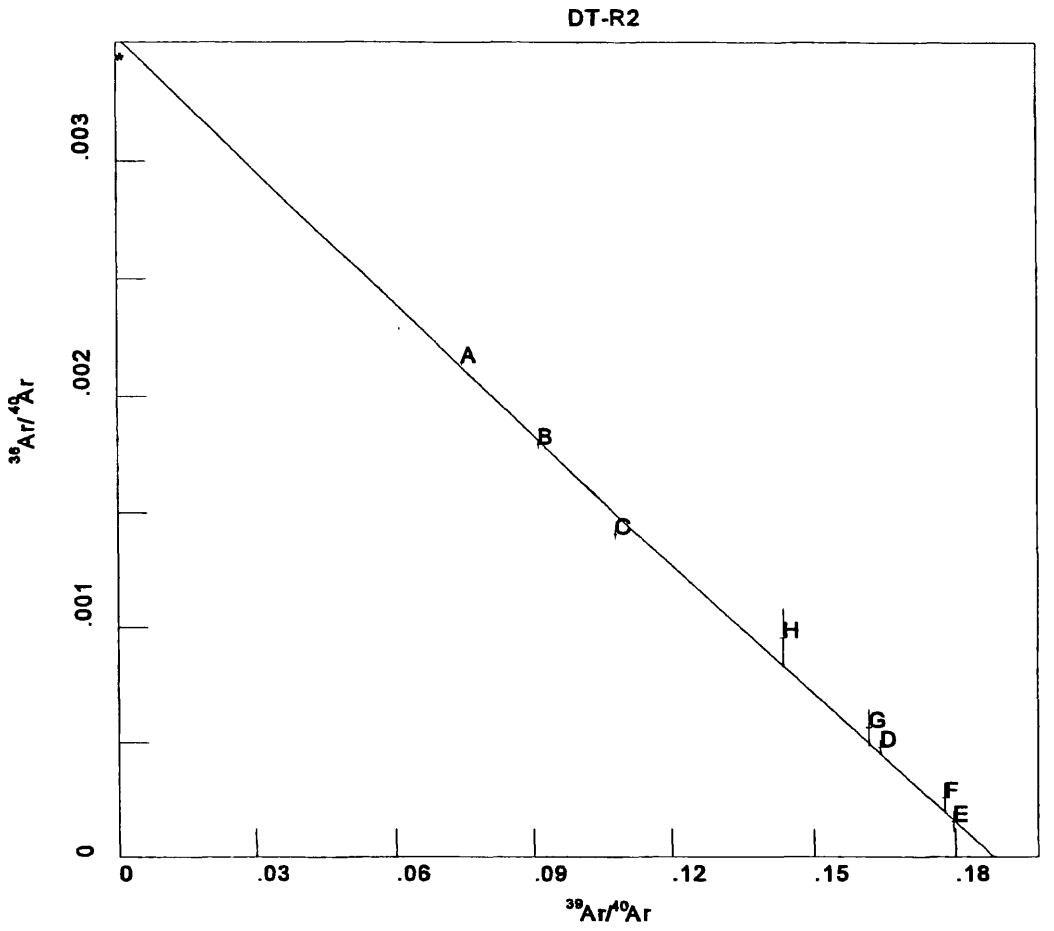

Figure 40. Inverse isotope correlation diagram for DT-R2 basalt. Regressing all points which contain 100% of the 39Ar released, MSWD = 3.1, initial 40Ar/36Ar = 283.6 ± 2.2, and apparent age = 22.38 ± 0.20 Ma.

Table 22A. L6844 BASALT #122KD2 10:59:55 15 Apr 1998 v 4/07/98.

RAW DATA								
File	Temp	^{40}Ar	^{39}Ar	^{38}Ar	^{37}Ar	^{36}Ar	Trap	Manifold
43777	750	475646	73486	1222	35797	309	200	EALL
	±	1002	107	21	79	10		
43778	850	2207756	354298	4988	143730	1129	200	EALL
	±	2656	104	5	234	18		
43779	950	4580188	861283	11797	247850	414	200	EALL
	±	3271	627	11	473	13		
43780	1050	3152114	589349	8946	131221	393	200	EALL
	±	4949	419	27	125	13		
43781	1450	1587039	282406	11472	493472	740	200	EALL
	±	3432	302	21	377	15		

All values are in counts. Measured $^{40}Ar/^{36}Ar = 287.7 \pm 1\%$

^{40}Ar blank = 37426.67 ± 851.53 ^{36}Ar blank = 144.67 ± 6.42

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

Trap current factors: 40 = 9.3 100 = 4.56 200 = 1

Manifold factors: All = 1, Split1 = 3.3, Split2 = 10.89, Split 3 = 35.937

EAll = 2, Esplit1 = 6.6, Esplit2 = 21.78

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

Table 22B. L6844 BASALT #122KD2 10:59:55 15 Apr 1998 v 4/07/98.

CORRECTIONS										
Temp	^{39}Ar	^{37}Ar	-----	K-derived	-----	-----	Ca-derived	-----	Cl-derived	initial
(°C)	decay	decay	^{40}Ar	^{38}Ar	^{37}Ar	^{39}Ar	^{38}Ar	^{36}Ar	^{36}Ar	^{38}Ar
750	14	24586	414	978	0	40	2	16	0	53
850	65	98831	1999	4715	0	160	8	63	0	194
950	159	170622	4859	11463	0	276	13	108	0	55
1050	109	90440	3325	7845	0	146	7	57	0	61
1450	52	340498	1591	3753	0	550	26	216	0	94

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

Table 22C. L6844 BASALT #122KD2 10:59:55 15 Apr 1998 v 4/07/98.

MOLAR VALUES							
Temp (°C)	$^{40}Ar^*$	$^{39}Ar_K$	$^{38}Ar_{Cl}$	^{37}Ca	$^{36}Ar_i$	Apparent Age and Precision (Ma)	
750	9.504637	1.459499	0.005581	1.183750	0.005703	22.819	0.183
850	44.115144	7.037289	0.007859	4.755180	0.020727	22.992	0.069
950	91.506569	17.109614	0.004402	8.203752	0.005897	22.349	0.025
1050	62.975775	11.70844	0.020752	4.345444	0.006512	22.213	0.045
1450	31.708961	5.600882	0.152730	16.34921	0.010093	21.851	0.084

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

Table 22D. L6844 BASALT #122KD2 10:59:55 15 Apr 1998 v 4/07/98.

Temp °C	Percent ^{39}Ar of Total	Radiogenic yield (%)	$^{39}Ar_K$ (x10^{-12} moles)	$^{40}Ar_R/^{39}Ar_K$	Apparent K/Ca	Apparent K/Cl	Apparent Age and Precision (Ma)	
J = 0.002376 ± 0.5%			Basalt			Sample Wt. = 0.1998 g		
750	3.4	82.3	1.459499	5.358	0.64	633	22.819	0.183
850	16.4	86.1	7.037289	5.398	0.77	2167	22.992	0.069
950	39.9	98.1	17.109614	5.246	1.08	9407	22.349	0.025
1050	27.3	96.9	11.708440	5.214	1.40	1365	22.213	0.045
1450	13.1	90.6	5.600882	5.129	0.18	89	21.851	0.084
Total Gas	100	94.3	42.915724	5.251	0.99	4511	22.368	

67.15% of gas on plateau in 950 through 1050 steps Plateau Age = 22.31 ± 0.12 Ma

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

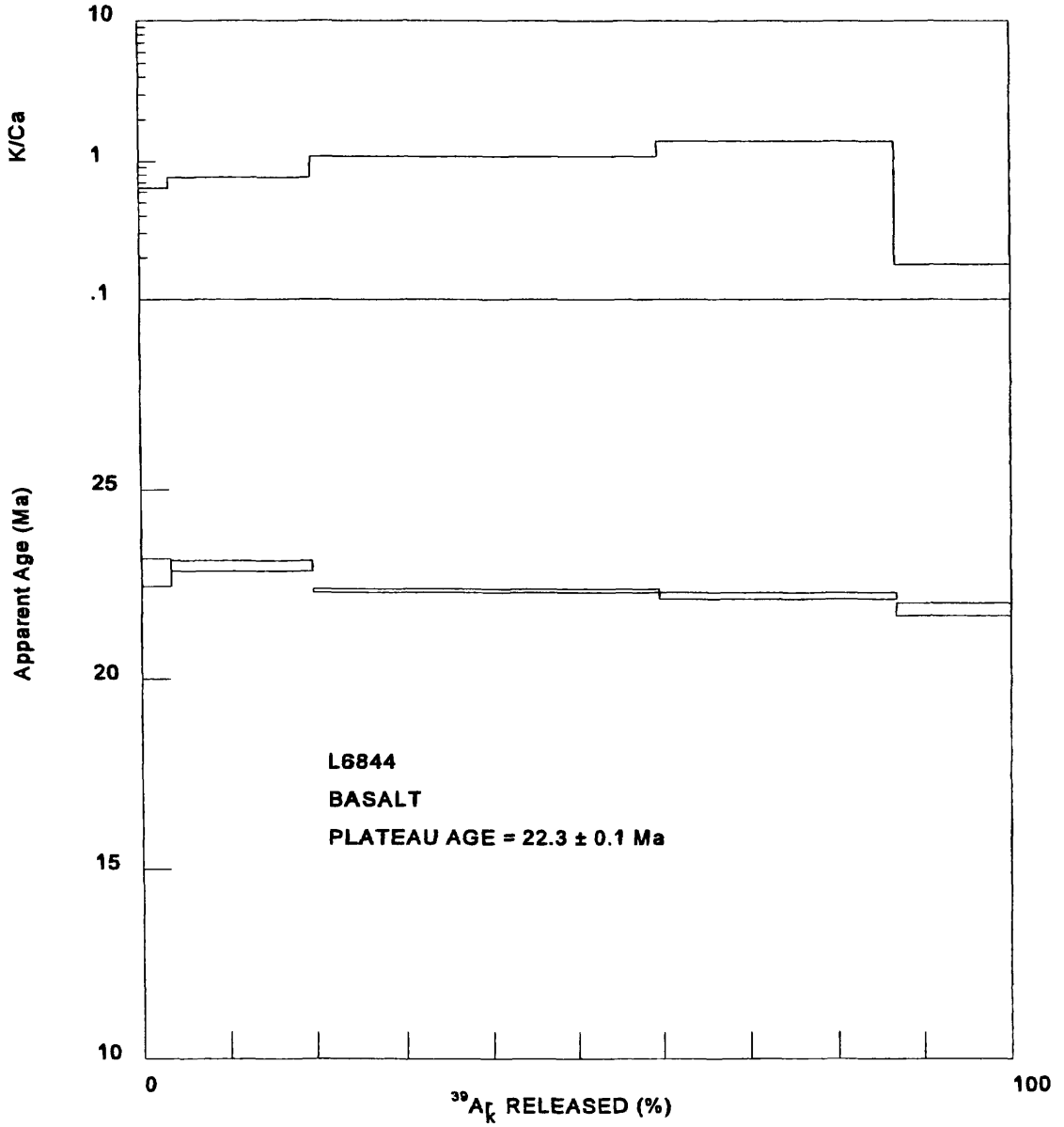

Figure 41. Age spectrum and K/Ca diagrams for L6844 basalt.

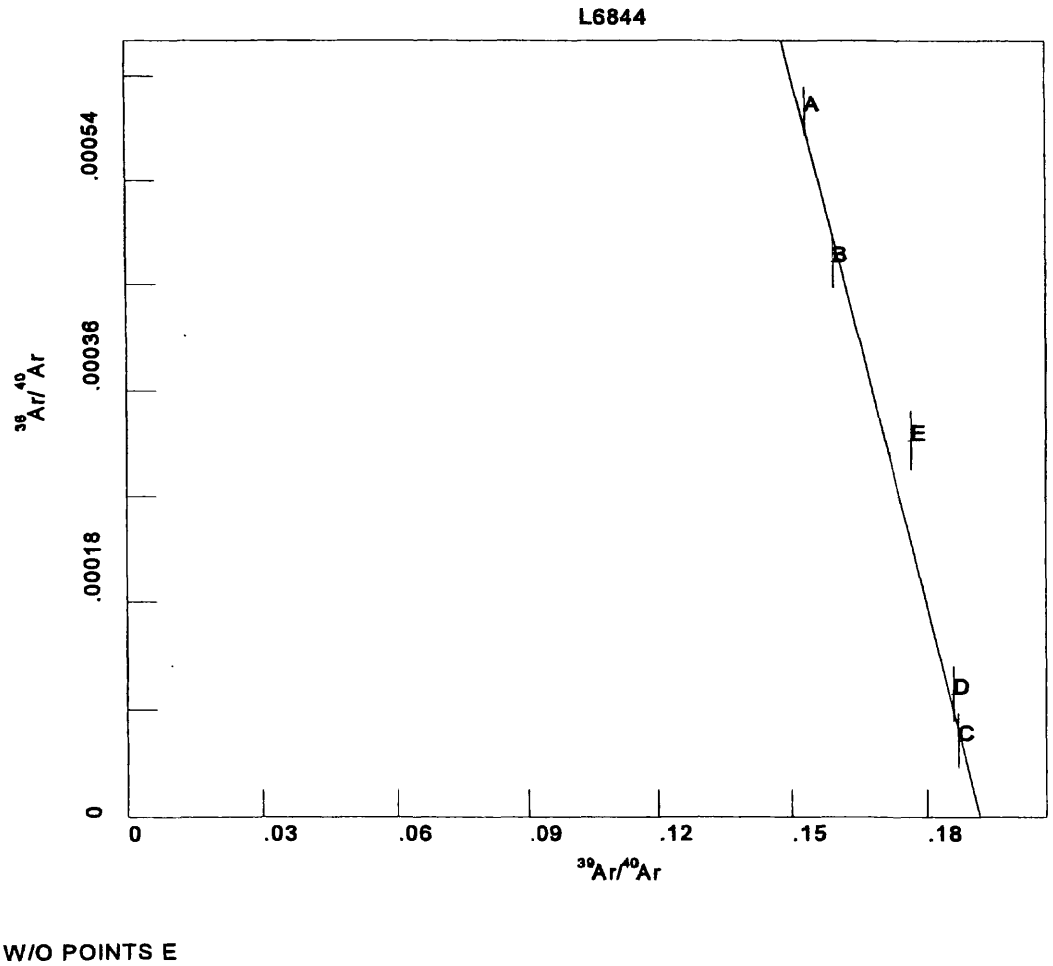

Figure 42. Inverse isotope correlation diagram for L6844 basalt. Regressing points A, B, C, D, and E which contain 86.9% of the ^{39}Ar released, MSWD = 0.97, initial $^{40}Ar/^{36}Ar = 341.2 \pm 15.4$, and apparent age = 22.22 ± 0.19 Ma.

Table 23A. L6681B BASALT #131KD2 12:03:27 15 Apr 1998 v 4/07/98.

RAW DATA								
File	Temp	^{40}Ar	^{39}Ar	^{38}Ar	^{37}Ar	^{36}Ar	Trap	Manifold
43726	750	1235516	160560	2641	98244	1237	200	EALL
	±	24721	4195	16	165	38		
43727	850	2396618	403856	5677	189827	636	200	EALL
	±	6366	227	14	236	12		
43728	950	3655666	667588	9472	212940	389	200	EALL
	±	3310	1127	9	22	14		
43729	1050	2015292	360415	7151	117849	423	200	EALL
	±	2456	775	39	281	5		

All values are in counts. Measured $^{40}Ar/^{36}Ar$ = 287.7 ± 1%
^{40}Ar blank = 39368.67 ± 1861.97 ^{36}Ar blank = 152.67 ± 3.21
Precisions are at the 1 sigma level, and are from linear regression statistics.
Trap current factors: 40 = 9.3 100 = 4.56 200 = 1
Manifold factors: All = 1, Split1 = 3.3, Split2 = 10.89, Split 3 = 35.937
EAll = 2, Esplit1 = 6.6, Esplit2 = 21.78
Sensitivity =1.00x10^{-17} moles/count. Reproducibility limit = .25 %. Detection limit = 40 counts.

Table 23B. L6681B BASALT #131KD2 12:03:27 15 Apr 1998 v 4/07/98.

CORRECTIONS										
Temp	^{39}Ar	^{37}Ar	-----	K-derived	-----	-----	Ca-derived	-----	Cl-derived	initial
(°C)	decay	decay	^{40}Ar	^{38}Ar	^{37}Ar	^{39}Ar	^{38}Ar	^{36}Ar	^{36}Ar	^{38}Ar
750	28	63130	906	2136	0	106	5	42	0	217
850	70	122147	2278	5374	0	206	10	81	0	101
950	116	137202	3766	8885	0	231	11	91	0	54
1050	63	76036	2033	4797	0	128	6	50	0	68

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

Table 23C. L6681B BASALT #131KD2 12:03:27 15 Apr 1998 v 4/07/98.

	MOLAR VALUES						
Temp (°C)	$^{40}Ar^*$	$^{39}Ar_K$	$^{38}Ar_{Cl}$	^{37}Ca	$^{36}Ar_l$	Apparent Age and Precision (Ma)	
750	24.692206	3.188431	0.013637	3.163589	0.023255	23.649	0.711
850	47.886810	8.021100	0.006380	6.115957	0.010775	23.583	0.076
950	73.037987	13.261334	0.010087	6.864216	0.005753	22.768	0.033
1050	40.265181	7.159429	0.046419	3.800930	0.007227	22.542	0.034

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

Table 23D. L6681B BASALT #131KD2 12:03:27 15 Apr 1998 v 4/07/98.

Temp °C	Percent ^{39}Ar of Total	Radiogenic yield (%)	$^{39}Ar_K$ (x10^{-12} moles)	$^{40}Ar_R/^{39}Ar_K$	Apparent K/Ca	Apparent K/Cl	Apparent Age and Precision (Ma)	
J = 0.002361 ± 0.5%			Basalt			Sample Wt. = 0.2000 g		
750	10.1	72.2	3.188431	5.589	0.52	566	23.649	0.711
850	25.4	93.4	8.021100	5.573	0.68	3043	23.583	0.076
950	41.9	97.7	13.261334	5.379	1.00	3182	22.768	0.033
1050	22.6	94.7	7.159429	5.326	0.98	373	22.542	0.034
Total Gas	100	93.3	31.630294	5.438	0.87	2247	23.012	

NO PLATEAU

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

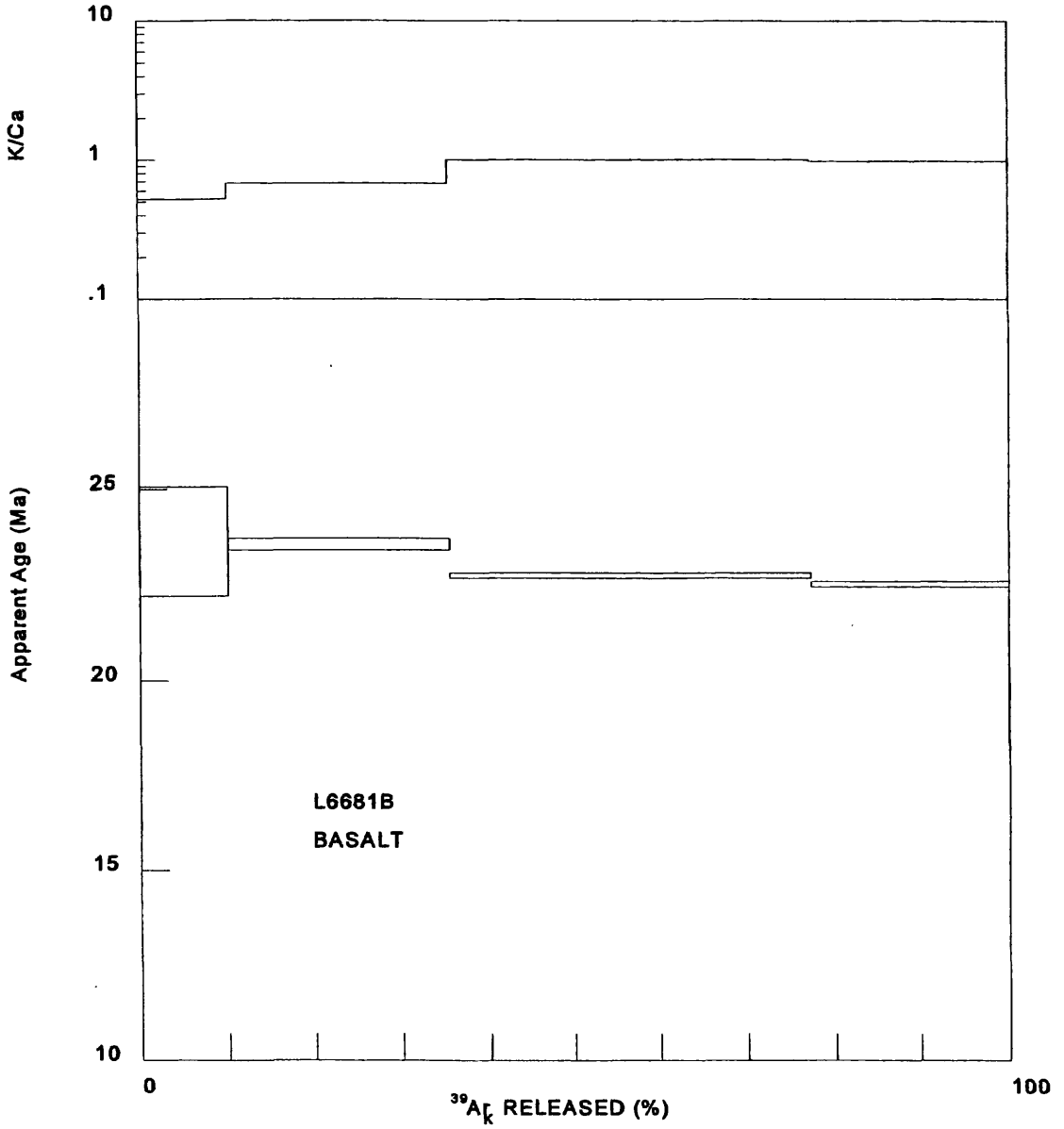

Figure 43. Age spectrum and K/Ca diagrams for L6681B basalt.

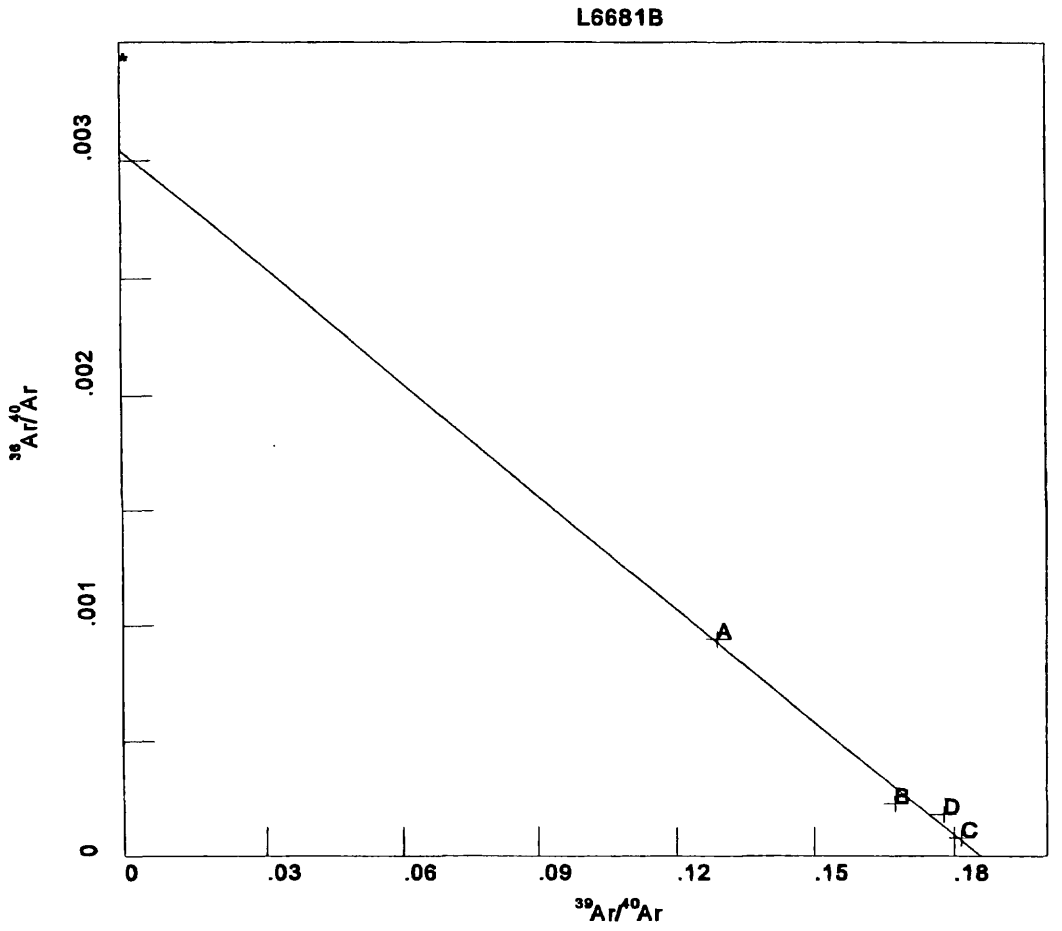

Figure 44. Inverse isotope correlation diagram for L6681B basalt . Regressing all points which contain 100% of the ^{39}Ar released, MSWD = 1.30, initial $^{40}Ar/^{36}Ar = 328.6 \pm 28.2$, and apparent age = 22.80 ± 0.33 Ma.

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