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$^{40}Ar/^{39}Ar$ Age-Spectrum Data for the Avalon and Putnam-Nashoba Lithotectonic Zones, Eastern Connecticut and Western Rhode Island

by

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TABLE OF CONTENTS

INTRODUCTION

The application of the concept of lithotectonic terrains, including suspect terrains to the geology of New England has been controversial ever since the concept was introduce by Zen (1983) and Zartman and Naylor (1984). Not only has the history of the assembly of these terrains to North America been disputed, but even the number and extent of terrains is contested. In highly metamorphosed terrains, where ages of deposition of metasediments are difficult to obtain, resolution of geologic history can only be approached through geochronologic methods. In this contribution, we employ the $^{40}Ar/^{39}Ar$ thermochronologic technique to establish the cooling histories of several adjacent lithotectonic blocks considered by Zartman and Naylor (1984) and Zartman (1988) to carry terrain status. Differences found in these cooling histories would require fault movement on the boundaries of these terrains, and support an interpretation of different tectonic histories. On the other hand, uniform cooling histories across potential terrain boundaries would require that any unique geologic characteristics that distinguish these terrains to have been acquired before or during metamorphism. Our goal in this study is to establish the cooling histories of the interiors of the blocks between the Clinton-Newbury, Tatnic, Lake Char, and Hope Valley fault zones in eastern Connecticut and adjacent Rhode Island. The results of our analysis are presented in this report; geological interpretation of these results will appear elsewhere (Wintsch, et al., 1989).

SAMPLING STRATEGY

Zartman et al. (1970) identified a Permian disturbance in conventional K-Ar ages for micas in much of eastern New England. These mica ages most reasonably reflect cooling ages of about 250-240 Ma through 350°-250°C. In an attempt to "see through" this event, we focused our dating efforts on amphibole. Its higher closure temperature (450-500°C) for Ar lattice diffusion would allow it to preserve a cooling age from high temperatures without being reset by a later heating at <450-500°C. Nevertheless, samples of muscovite, biotite, and K-feldspar were included at selected localities to establish the history of cooling from 500 to 150°C.

Two sampling strategies were employed. A northern east-west traverse in eastern Connecticut was collected along a line about 5 km south of Massachusetts to determine if different ages were preserved across the faults separating the lithotectonic blocks. A second set of samples was collected in lithologic units along north-south traverses to determine the northern limit of possible Permian heating now well documented in the Avalon zone to the south and east (Dallmeyer, 1982; Dallmeyer et al., 1990; Wintsch and Sutter, 1986; Wintsch and Aleinikoff, 1987).

The main focus of this study was to contrast cooling histories of the Putnam-Nashoba and Avalon zones across the Lake Char fault. Consequently, four sample stations were included in the Hope Valley subzone (of O'Hara and Gromet, 1985) of the Avalon zone. Two additional samples were collected east of the Hope Valley shear zone in northern Rhode Island to tie in with the work of Dallmeyer et al. (1990), and samples were collected from coastal Connecticut to expand the work of Wintsch and Sutter (1986) and Wintsch and Aleinikoff (1987).

The Putnam-Nashoba zone or thrust belt terrain of Pease (1989) lying between the Clinton-Newbury and Lake Char fault zones includes both the structurally higher Tatnic Hill Formation and the lower Quinebaug Formation separated by the Tatnic fault of Wintsch (1979). Zartman and Naylor (1984) include only the Quinebaug Formation in this zone, and use the Tatnic fault to mark the eastern limit of their Merrimack zone. To test if the Tatnic Hill and Quinebaug formations share a common cooling history, amphiboles from both units were collected for analysis.

At each locality only the freshest 5-12 kg of material was collected. After examination of over 40 thin sections, 24 samples were selected for dating of 31 minerals.

METHODS

Sample Preparation

All samples were crushed, ground, and sieved to >250, 180, 150, 125, and <125 μm sizes. The largest size fraction that excluded most composite grains was selected for mineral separation by heavy liquids, magnetic separation and/or paper shaking. Composite grains were eliminated by ultrasonic abrasion where necessary. Purity to >99% of muscovite, biotite and K-feldspar, and 99.9% for amphibole was checked with both the binocular microscope using reflected light, and with immersion oil using transmitted light in a polarizing microscope.

Approximately 1000 mg of amphibole, 100 mg of muscovite, K-feldspar, and 50-100 mg of biotite were packaged in tin capsules and sealed under vacuum in quartz tubes. 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 was MMHb-1 hornblende (Alexander et al., 1978; 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

All samples were analyzed on a VG Isotopes, Ltd, Model 1200 B Mass Spectrometer at the U.S. Geological Survey, Reston, using the step heating method. Heating for 15 minutes per step followed a schedule of 8-15 steps per sample. The number and temperature of heating steps was selected to limit the percentage of gas released to less than 20%/step, and to yield a count of ^{36}Ar to > 200 (10^{-16} moles) where analytical precision is highest.

Heating of most samples was done in a small volume molybdenum-lined "low blank" tantalum furnace. Temperature was monitored by a W_5Re-$W_{26}Re$ thermocouple and controlled by a proportional, programmable controller. The furnace and the rear manifold were evacuated as necessary by a turbo molecular pump. Two isolated ion pumps evacuated the front manifold and the mass spectrometer tube. During normal operation, the gas to be analyzed was purified in the rear manifold by a Saes ST707 Fe-V (H_2O_2) getter operated at room temperature. Gas was transferred from the rear to the front manifolds with an activated charcoal cold finger chilled with liquid N^2, and cleaned in the front manifold by a Saes ST101 Al-Zr getter operated at 400°C and a Ti (H_2) getter operated at a constant 350°C. Argon-rich gas was further purified in the mass spectrometer by a second Saes ST101 and active gas getter operated at room temperature. Its successful operation could be monitored by the drop in counts of mass 44 (dominated by CO_2) after the first gas analysis cycle. Release of the gas from the front manifold to the mass spectrometer was timed by a computer controlled inlet valve. Argon isotopes with masses 40 through 36 and CO_2, mass 44 were analyzed as a function of time in five, 90 second analysis cycles. After the analysis, the mass spectrometer was evacuated. If necessary, the fraction of gas remaining in the front manifold

could be introduced into the mass spectrometer for a replicate "split" analysis, but with a signal 3.6 x smaller (see tables below).

Four samples from Essex, Connecticut, 85-412B K-spar, 84-413 biot, 84-413 Hbl, and 85-412A musc, were treated as outlined by Snee et al. (1987, 1988). They were packaged in aluminum foil capsules, and heated in a molybdenum crucible by a radio frequency generator, in which temperature uncertainties are about ± 50°C.

Isotopic Data Reduction

All the Ar isotopic data were reduced using an updated version of the computer program ArAr* (Haugerud and Kunk, 1988) and decay constants recommended by Steiger and Jäger (1977).The isotopic measurements made in the five cycle analysis had baseline values subtracted and then were regressed, to time zero, using standard linear regression techniques. These regressed values and associated statistical estimates of analytical uncertainties of the time zero peak values were used in the data reduction. In many samples ^{36}Ar measured less than 100-200 counts, where precision is low, and in these samples mean values of ^{36}Ar rather than regressed values were used in data reduction (see tables below). In other samples, only the low and high temperature steps fell below 200 counts of ^{36}Ar, and the use of mean values rather than time zero regressed values was considered. However, in other spectra, the large signal size for all isotopes in most steps justified using regressed values. No corrections for furnace blanks were made because blanks were routinely less than 0.1% of sample signal at all temperatures.

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). 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).

In this project unique variables arise from the neutron flux as revealed through the calculated J values using Minnesota hornblende MMHb-1 (Alexander et al., 1978) and its age of 519.4 Ma ± 0.5%. Over 20 hornblende monitors were added to a single vial, and these defined smooth curves where J varied from 0.0088 to 0.0098 across the six, 12 cm long vials. Monitors were added to the top and/or bottom of each of the other five vials to assess any rotational fluctuation in the 6-vial package; none was found, within the limits of analytical precision. Sensitivities in moles ^{40}Ar/count were calculated from analytical results on Minnesota hornblende MMHb-1 and its published composition (Alexander et al., 1978), and these sensitivity values are included in the data table for each sample.

The tables and figures below include the identification of plateau ages. Plateau ages are identified where the ages of two or more contiguous steps overlap within experimental error, and whose

cumulative $^{39}Ar_K$ comprises greater than 50% of the total potassium derived ^{39}Ar (see Snee et al., 1988). All steps were also examined for colinearity on isotope correlation diagrams to assess if non-atmospheric argon components were trapped in any samples. In several instances, points that were deemed to be not colinear were deleted from the isotope correlation diagram.

SAMPLE DESCRIPTIONS

The locations and descriptions of sample analyses in this project are given below. Petrographic observations were made on a single thin section cut perpendicular to foliation and parallel to lineation where present. In the descriptions that follow, minerals are listed in decreasing order of abundance. Descriptions focus on the minerals separated and dated. Samples are unaltered by sericite, chlorite, or carbonate unless noted otherwise.

RPW-88-101A 41°57'N, 71°42'32"W

Location: From a small road cut on the west side of a road just above the shore of the west prong of the north end of Pascoag Reservoir 780 m SW of Pascoag, Rhode Island.

Map Unit: "Amphibolite" of Quinn (1967) as concordant layers in Ponagansett (granitic) gneiss (Late Proterozoic, Rodgers, 1985).

Description: Dark gray weathering, moderately foliated and layered, hornblende, epidote, clinozoisite, plagioclase, quartz, biotite amphibolite. Hornblende grains range from 200 x 500 μm to 2 to 4 mm in size. Approximately two thirds of the grains show optical zoning in pale (core) and dark (rim) pleochroic greens. About one half of the grains contain plagioclase, biotite, clinozoisite inclusions from 2-20 μm in diameter, and totalling less than 10% of the grain. About 5% of the largest hornblende grains are poikioblastic, containing many 1 μm sized inclusions, and rare twin lamellae. Plagioclase, clinozoisite, and epidote range in size from 50 x 100 μm and all preserve compositional zoning at the optical scale. The very common zoning in all modally important minerals, all from the centers to the rims of grains allows the possibility that this may be growth zoning. It could also reflect temperatures of only middle amphibolite facies (500-600°C). Only hornblende was separated.

RPW-88-102 41°55'N, 71°45'50"W

Location: Two m high road cut, north side of U.S. Rt. 44 between Bowdish Reservoir and Lake Washington; 350 m east of small bridge over Bowdish Reservoir, Rhode Island.

Map Unit: Ponagansett gneiss (Late Proterozoic) of Dixon 1974) in the Thompson quadrangle, Connecticut.

Description: Pale cream to tan, massive weathering well foliated, plagioclase, quartz, microcline, biotite, epidote, hornblende, sphene gneiss. Foliation is defined by the parallel alignment of disseminated biotite flakes. Hornblende (100 x 200 μm) occurs as anhedral equant, and as elongate grains, always surrounded by and locally embayed by biotite and epidote. Equant to

elongate grains of K-feldspar are 200 to 500 μm long, and show weak cross-hatch twinning. Plagioclase exsolution lamellae occur at a spacing of 50 μm, and patch perthite is rare. Biotite flakes are 200-500 μm long, and contain rare inclusions. Hornblende, biotite, and K-feldspar were separated.

RPW-88-105 41°54'30"N, 71°48'30"W
Location: One m high ledge 10 m north of Five Mile Road, 350 m east of intersection with Putnam Road, East Putnam, Connecticut.
Map Unit: Plainfield Formation (Cambrian?) epidote-actinolite quartzite, similar to sample no. 7 of Dixon (1974) in Thompson quadrangle, Connecticut.
Description: Gray-green, slabby weathering, well foliated quartz plagioclase - K-feldspar - tremolite - diopside - clinozoisite schist. Equant 100 μm K-feldspar grains are not perthitic, show no twinning, and are difficult to distinguish from equally untwinned plagioclase grains. Actinolite needles show a strong length preferred orientation. Most grains are 25 x 200 μm but some are as wide as 50 μm. Actinolite and K-feldspar were separated.

RPW-88-106 41°54'40"N, 71°48'W
Location: Two m high road cut, north side of River Road 110 m southwest of intersection with U.S. Rt. 44, East Putnam, Connecticut.
Map Unit: Plainfield Formation (pql) (Cambrian?) of Dixon (1974) in Thompson quadrangle, Connecticut, assigned to the Late Proterozoic by Rodgers (1985).
Description: Tan to purplish slabby weathering, well foliated quartz, plagioclase, muscovite, biotite schist (quartzite). Ten percent of the rock contains folia of almost pure muscovite-biotite schist layers. Muscovite and biotite in the quartzite occur as 50 x 20 μm flakes intergrown at the scale of 25-50 μm. Muscovite in the schist layers occurs as flakes up to 100 x 100 μm, with only a few biotite inclusions. Biotite flakes are up to 100 x 500 μm, with rare opaque inclusions. Muscovite and biotite were separated.

RPW-88-213A 41°46'30"N, 71°51'W
Location: Eastern limit of road cut of 88-213A (which see).
Map Unit: Middle schist member of the Plainfield Formation (Late Proterozoic) of Moore (1983) in the East Killingly quadrangle.
Description: Massive, dark olive green weathering well foliated hornblende, chalcopyrite, quartz, plagioclase, sphene, epidote well foliated amphibolite. Hornblende needles range in size from 30 x 30 to 150 x 350 μm. The

grains are untwinned, and fewer than 10% of the grains contain small (<5 μm) inclusions. Hornblende was separated.

RPW-88-213B 41°46'25"N, 71°51'5"W

Location: Roadcut 210 m southwest of the northeastern-most cut on the north side of the highway joining I-395 with U.S. Rt. 6, 2.2 km southwest of South Killingly, Connecticut.

Map Unit: Upper quartzite member of the Plainfield Formation (Late Proterozoic) of Moore (1983) in the East Kinningly quadrangle, Connecticut/Rhode Island. Also described by Goldstein and Owens (1985, Stop 8).

Description: Gray to tan, massive to locally slabby weathering, well foliated quartz - muscovite, biotite quartzite. Muscovite flakes range from 25 x 50 μm to 50 x 500 μm. Grains are inclusion free, but are locally intergrown with biotite. Biotite flakes range from 20 x 50 to 50 x 300 μm in size, with a few grains as long as 500 μm. Inclusions are rare. Muscovite and biotite were separated.

RPW-88-218 41°40'N, 71°52'W

Location: 60 m east of Ekonk Brook 1.15 km south of CT, Rt 95 where it crosses Ekonk Brook, in the township of Plainfield, Connecticut.

Map Unit: Mafic schist (ps) unit of the Plainfield Formation (Harwood and Goldsmith, 1971) assigned a Late Proterozoic age by Rodgers (1985).

Description: Dark gray to black, massive to coarsely layered hornblende, plagioclase, quartz, sphene, biotite amphibolite. Hornblende range in size from 100 x 200 to 200 x 1000 μm. About half of the hornblende grains contain a few small sphene inclusions at a spacing of about 100 μm, but the other portion contains no inclusions. Mottled olive yellow, biotite, intergrown with chlorite occurs in isolated patches and makes up 2% of the rock. These phylosilicates do not alter the bulk of the hornblende at the optical scale. Hornblende was separated.

RPW-88-226A 44°44'N, 71°14'N

Location: Road cut along CT, Rt 32 at its junction with U.S. Rt 6 (formerly I-84) 30 north of the US. Rt 6 overpass. Described by Wintsch and Fout (1982, Stop 1)

Map Unit: Central part of the Quinbang Formation, as mapped by Snyder (1964) in the Willimantic quadrangle. Now redefined as the Mansfield Hollow Lithofacies of the Hadlyme Formation, of Late Proterozoic age (Wintsch et al., 1990).

Description: Dark gray to black, massive, unlayered, well

foliated hornblende, plagioclase, biotite, magnetite, sphene amphibolite in gneiss (88-226B). Hornblende grains range from 200 to 1000 μm long, and 100-500 μm wide. Inclusions are biotite are rare. Equant plagioclase grains 300-500 μm diameter are commonly zoned optically and twinned. Hornblende was separated.

RPW-88-226B 44°44′N, 72°14′N
Location: (see 88-226A)
Map Unit: Pegmatite cutting the Mansfield Hollow Lithofacies of the Hadlyme Formation of Wintsch et al. (1990)
Description: 3 cm book of muscovite from a cross cutting granitic pegmatite. The book is concentrically zoned in color, but compositional variations have not been tested.

RPW-88-226C 44°44′N, 72°14′N
Location: (see 88-226A).
Map Unit: (see 88-226A)
Description: Pale gray, massive weathering, well foliated plagioclase, quartz, biotite K-feldspar, sphere, muscovite granofels. K-feldspar grains range from 100-400 μm in diameter. Most grains show only weak twinning, no conspicuous plagioclase exsolution lamellae, and no inclusions. Biotite flakes range from 100 to 700 μm long. Inclusions are rare, and only a few grains are intergrown with muscovite. Muscovite is present in small amounts. Most grains are 50 to 150 μm long, although some reach 300 μm. They typically contain many small inclusions, and are intergrown with biotite and chlorite, and less commonly K-feldspar. Biotite and K-feldspar were separated.

RPW-88-306 41°34′30"N, 71°51′30"W
Location: At the northwest end of the spillway of Sawmill Pond, along Pachaug, Great Meadow Brook, 130 m due north of CT, Rt 138 between Doaneville and Voluntown, in the Voluntown quadrangle Connecticut and Rhode Island.
Map Unit: "Mafic metamorphic rock" (Feininger, 1965) in Late Proterozoic (Zartman et al., 1988) Hope Valley Alaskitic Gneiss.
Description: Dark gray to black, massive by weathering hornblende, microcline, biotite amphibolite. Equant hornblende grains are 300 to 1000 μm in diameter, with rare zircon inclusions. Several preferred orientations are present in different amphibolite-rich folia that are separated by feldspar-rich folia. Hornblende was separated.

RPW-88-401 41°19′45"N, 72°09′W

Location: The northern of two quarries as show by Goldsmith (1967) 200 m southeast of CT Rt 156, 360 m northeast of its intersection with Gardner's Wood Road, Grainteville, Connecticut.

Map Unit: Monson Gneiss (Goldsmith, 1967) redefined as Rope Ferry Gneiss (Goldsmith, 1980) of Late Proterozoic age (Wintsch and Aleinikoff, 1987), now interpreted as an orthogneiss (Wintsch et al., 1990).

Description: Medium gray, massive weathering, weakly layered, moderately well foliated quartz, plagioclase, hornblende, biotite, K-feldspar, magnetite, sphene gneiss and granofels. Equant hornblende grains range from 125 to 500 μm in diameter, are optically unzoned and untwinned. They are commonly intergrown with or embayed by plagioclase, biotite, and rarely sphene. Plagioclase and quartz occur in layers of equant, 1/2-2 mm grains. 200-400 μm, untwinned, unaltered K-feldspar grains are associated with these larger grains. Hornblende and K-feldspar were separated.

RPW88-413A 41°50′ N, 72 23′10" W

Location: Southwest facing road cut on Ct Rt 9, 1 km north of interchange 3. Location described by Wintsch and Aleinikoff (1987).

Map Unit: Rope Ferry Gneiss of Wintsch et al., (1990).

Description: Very similar to 88-401 (which see). Medium gray, massive weathering, moderately well foliated plagioclase-quartz-hornblende-biotite gneiss, with accessory magnetite, sphene and zircon. Hornblende and biotite were separated.

RPW88-413B 41°50′N, 72 23′ 25" W

Location: Natural outcrop 200 m WNW of 88-413A.

Map unit: Jennings Pond lithofacies of the Hadlyme Formation of Wintsch et al. (1990).

Description: 1-2 cm books of muscovite in a quartz-plagioclase muscovite-biotite concordant pegmatite. Muscovite was separated.

RPW88-413C 41°50′N, 72 23′ 10" W

Map Unit: Pegmatite cutting Rope Ferry Gneiss of Wintsch et al., (1990).

Location: see 88-413A

Description: Coarse to very coarse grained, massive K-feldspar-quartz pegmatite. Perthitic grains are 2-15 cm in diameter, and are cross hatch twinned. K-feldspar was separated.

RPW-88-112 41°58′N, 71°50′W

Location: Natural 2 m high ledges 30 m north of Brandy Hill

Road, 350 m southeast of its intersection with O'Leary Rd, Thompson, Connecticut.

Map Unit: Quinebaug Formation Late Proterozoic (Zartman and Naylor, 1984) on the Thompson quadrangle of Dixon (1974).

Description: Dark olive green, massive weathering, well foliated, hornblende, plagioclase, biotite, amphibolite with a trace of chlorite. Hornblende grains are typically equant, 1000 μm in diameter. A few very small inclusions are present in patches in most grains, but all grains have larger, inclusion free areas. Biotite flakes 50 x 75 to 100 x 300 μm are present on the margins of some hornblende grains, and are locally intergrown with chlorite. However, the biotite grains do not embay the hornblende. Hornblende was separated.

RPW-88-116 41°57'25"N, 71°52'30"W

Location: One m high road cut south side of access Road 120 m west-north-west of the main building of Marianoplis College 620 m west-south-west of the junction of state highways 193 and 200, Thompson, Connecticut.

Map Unit: An amphibolite lens in the garnet-biotite schist unit (tb) at the base of the Tatnic Hill Formation (Late Proterozoic, Zartman and Naylor, 1984) just above its thrust fault contact with the Quinebaug Formation as mapped by Dixon (1974).

Description: Dark gray to black, massive weathering hornblende, plagioclase, biotite, quartz, magnetite amphibolite. Hornblende grains range in size from 200 x 300 to 500 x 1000 μm. A few very small, opaque inclusions are present along cleavage planes in some grains, suggesting minor oxidation along microcracks. However, most grains show large, inclusion-free areas. Hornblende was separated.

RPW-88-203 41°47'30"N, 71°56'W

Location: East wall of a small, abandoned quarry 50 m NE of Hyde Road, 350 m northwest of its intersection with U.S. Rt 6, Brooklyn, Connecticut.

Map Unit: Upper member, Quinebaug Formation (Late Proterozoic, Zartman and Naylor, 1984) in the Danielson quadrangle of Dixon (1968a,b).

Description: Medium to dark gray massive, weathering well foliated, weakly layered, plagioclase, hornblende, biotite, epidote gneiss. Hornblende grains are equant and range from 100 to 500 μm in diameter. Most are inclusion free, and border on plagioclase. Biotite is present in small amounts, but is marginal to, and not intergrown with hornblende. Hornblende was separated.

RPW-88-221 41°41'N, 71°56'W

Location: From natural exposures on the south face of a hill 100 m north of CT Rt 14A, 800 m east of its junction with Exley Road, in Plainfield, Connecticut.

Map Unit: The lower member of the Quinebaug Formation in the Plainfield quadrangle of Dixon (1965) of Late Proterozoic age (Zartman and Naylor, 1984).

Description: Medium to dark gray massive weathering, weakly layered hornblende, plagioclase, biotite, epidote gneiss. Hornblende grains are equant from 100 to 1000 μm in diameter. Most grains are inclusion free, but some grains are locally intergrown with biotite and epidote. Most plagioclase grains show undulose extinction and deformation twinning. Hornblende was separated.

RPW-88-225 41°38'30"N, 72°05'W

Location: Natural exposure, 1 m high 10 m north of Salt Rock Road, 450 m east of its intersection wt CT Rt 97, Hanover, Connecticut.

Map Unit: Yantic Member, Tatnic Hill Formation (Late Proterozoic, Pease, 1989) of Dixon (1965) in the Scotland quadrangle, CT.

Description: Dark gray to black, massive weathering, weakly layered, hornblende, plagioclase, biotite, clinozoisite, sphene, magnetite gneiss. Hornblende grains range from 150 to 1000 m in diameter. One fifth of the grains contain small inclusions of magnetite and biotite, but most grains are inclusion - free at a scale of 200 μm. Hornblende was separated.

RPW-88-227 41°43'30"N, 72°16'W

Location: Cuts along the west-bound entrance ramp of CT Rt 6 (was I-84) 300 m northwest of the intersection of CT Rt 6 and 66, 3 km west of Willimantic, Connecticut (Stop #5 of Wintsch and Fout, 1982).

Map Unit: Amphibolite layer in the garnet-biotite schist unit (Wintsch, 1979) of the Tatnic Hill Formation (Late Proterozoic, Pease, 1989) in the Columbia quadrangle, Connecticut (Snyder, 1967).

Description: Dark gray to black, massive weathering, well foliated hornblende, plagioclase, biotite, chlorite amphibolite. Hornblende grains range from 0.5 to 3 mm in diameter, some with a few plagioclase inclusions. Most grains contain rectangular exsolution lamellae from 10-100 μm long. A few larger grains are composed of smaller rounded, mutually embayed, randomly oriented grains, suggestive of recrystallization and grain growth. This together with the common exsolution lamellae suggest either a complicated cooling history, or a low amphibolite facies late reheating. Biotite grains 1/2 to 3 mm in

diameter, and partially replaced by equally coarse grained chlorite is concentrated in patches. Plagioclase grains, 200-500 μm in diameter all show strongly developed deformation-twinning. Hornblende was separated.

RPW-88-313A 41°36′N, 71°58′W

Location: Cuts along I-395, 150 m northeast of the overpass of Norman Road, Jewett City, Connecticut.

Map Unit: Garnet-hornblende gneiss unit of the Late Proterozoic (Zartman and Naylor, 1984) Quinebaug Formation of Dixon and Felmlee (1986) in the Jewett City quadrangle.

Description: Dark gray to black massive weathering, coarsely layered hornblende, plagioclase, biotite, magnetite, amphibolite. Hornblende grains range from 300 to 1000 μm. Most grains are inclusion free, but many contain small opaque and carbonate inclusions, and these may be twinned. A few grains show blue-green rims on the normally brown cores. Hornblende was separated.

RPW-88-317 41°33′30"N, 72°7′W

Location: Cuts along the north side of CT Rt 2 140 m of the overpass of the east bound exit ramp of Rt 2, Yantic, Connecticut.

Map Unit: Amphibolite in "biotite-muscovite schist" of Snyder (1961), defined later as the Yantic Member, Tatnic Hill Formation by Dixon (1968b), of Late Proterozoic age (Rodgers, 1985).

Description: Dark gray to black, well layered and strongly foliated and lineated hornblende, plagioclase, amphibolite with minor sphene and zircon. Hornblende grains are typically 500 μm in diameter, but they may reach 3-4 mm in length and most are inclusion free. Intersticial plagioclase grains commonly show optical zoning. Hornblende was separated.

RPW-88-329 41°35′10"N, 72°3′15"W

Location: Cuts along the north side of the eastbound on/off ramp of I-395 (was CT Rt 52) at its junction with/CT Rt 97.

Map Unit: "Sillimanite-pinnite schist" of Snyder (1961) now interpreted as the sillimanite schist unit in the unnamed lower member of the Tatnic Hill Formation of Late Proterozoic age (Pease, 1989).

Description: White to pale cream, massive weathering quartz, plagioclase, K-feldspar muscovite gneiss and granofels. Quartz grains 1/2-3 mm in diameter are undulose, and quartz-quartz interfaces are strongly sutured. Plagioclase and K-feldspar grains 1/2 to 7 mm in diameter are sericitized, especially on their margins. 200-1200 μm flakes of muscovite are weakly undulose, and contain no inclusions. Muscovite and

K-feldspar were separated.

RESULTS

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

The $^{40}Ar/^{39}Ar$ data presented in this report is organized in two different formats. The first of these formats is a condensed tabular form (Tables 1 and 2). The data presented in these tables is organized by terrains with Table 1 including data from the Avalon zone and Table 2 including data from the Putnam_Nashoba zone. These tables represent only a summary of the information contained in the succeeding, more complete individual data sets. Both formats of the data are listed in the same order as in the section on sample descriptions. The individual data sets include a series of four tables, as well as one to three graphical representations of some of the age spectrum data. Total fusion analyses have no figures.

The first table, RAW DATA, includes the computer file number of the individual argon analysis, the temperature of the step, regressed (or mean for ^{36}Ar,as indicated) peak values and their precision, the trap current (filament amperage, in microamps) and the manifold splitting option used. The relationship between the trap currents and manifold options can be found in the footnotes of the third table. No corrections have been made to the peak values, these are raw numbers.

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 footnote of table three. All tabular data in this table, as well as the two subsequent tables, is indexed by the temperature of the step analyzed.

The third table includes the percent ^{39}Ar of the age spectrum total that each step contains, the radiogenic yield (percentage of ^{40}Ar that is derived from the decay of potassium), calculated apparent K/Ca and K/Cl ratios for each step, a corrected $^{40}Ar/^{39}Ar$ ratio (labeled F) from which the age can be directly calculated, a calculated age for the step, in millions of years and a series of three estimates of the precision of each age. The intra-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. The intra-package precision includes an estimate of the precision of the irradiation parameter J and can be used to compare total fusion analyses that used the same monitor mineral. This estimate of precision should not be used to compare steps either within a single age spectrum or between different age spectra. The inter-package precision includes an estimate of the precision of the age of the monitor mineral and should not be used for comparisons of any data contained in this report. Also included, as a footnote, is 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.

The fourth data table lists molar quantities of the indicated argon isotope derived form the sources indicated. The age and the estimate of intra-sample precision are repeated. The J-value and its precision estimate, and sample weight are listed near the top of this table. If an age plateau, as defined above, was found, it is listed at the bottom of this table along with an estimate of its intra-package precision, the percent ^{39}Ar contained in the plateau and the temperatures of the first and last steps on the plateau. All precision estimates, in all tables, are at the one sigma level of confidence.

The first figure with each age spectrum data set includes two graphs. The lower and larger graph plots cumulative percent ^{39}Ar 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 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.

Selected hornblende age spectra data sets have a third figure included, an inverse isotope correlation diagram. In this figure the corrected $^{39}Ar/^{40}Ar$ ratio of each temperature step of an age spectrum is plotted against its corrected $^{36}Ar/^{40}Ar$ ratio. The intercept of the line generated by these points with the X-axis of the graph is the inverse of the $^{40}Ar/^{39}Ar$ ratio of those points included on the line, an age can be directly calculated from this value. The Y-axis intercept is the inverse of the initial $^{40}Ar/^{36}Ar$ ratio of the sample. This value can be used to indicate the presence of excess argon. Values for these intercepts and their inverse ratios as well as their errors can be found either above or below this figure. Also included are an age calculated from the inverse of the X-axis, an MSWD, for the points included in the calculations, a list of points that were not used in the regression and the percent ^{39}Ar included in the line.

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

TABLE 1. Summary of argon isotopic results from the Avalon zone.

SAMPLE	MIN	AGE, ±(Ma)	%^{39}Ar	NO. STEPS TOTAL	MSWD	^{40}Ar, ± ^{36}Ar	COMMENT
88-101A	Hb	265,1	78.9	5/8		atmos	plateau age
88-102	Hb	263,1	70.6	4/11		atmos	plateau
	Bi	249,1	100	1/1		atmos	total fusion
	Kf	239	100	12/12		atmos	total gas
88-105	Kf	238	100	13/13		atmos	total gas
88-106	Mu	249,1	60.3	4/8		atmos	plateau age
	Bi	250,1	100	1/1		atmos	total gas
88-213A	Hb	276,1	13.9	1/10		atmos	minimum age
88-213B	Mu	250,1	80.0	7/10		atmos	plateau age
	Bi	244,1	100	1/1		atmos	total fusion
88-218	Hb	265,1	90.1	6/10		atmos	plateau age
88-226A	Hb	281,3	100	8/9	1.82	566,23	isochron age
88-226B	Mu	247,1	82.7	7/9		atmos	plateau age
88-226C	Bi	243,1	100	1/1		atmos	total fusion
	Kf	228	100	15/15		atmos	total gas
88-306	Hb	263,1	69.7	7/10		atmos	plateau age
88-401	Hb	260,1	60.2	7/11		atmos	plateau age
	Kf	257	100	14/14		atmos	total gas
84-413A	Hb	261,1	74.5	5/9		atmos	plateau age
84-413B	Mu	250,1	90.2	6/7		atmos	plateau age
88-413A	Bi	255	100	7/7		atmos	total gas
84-413C	Kf	228	100	11/11		atmos	total gas

Note: Hb, hornblende; Mu, muscovite; Bi, biotite; Kf, K-feldspar

TABLE 2. Summary of argon isotopic results from the Putnam-Nashoba zone

SAMPLE	MIN	AGE, ±(Ma)	$\%^{39}Ar$	NO. STEPS TOTAL	MSWD	$^{40}Ar/^{36}Ar$, ±	COMMENT
88-112	Hb	370	23.5	1/8		atmos	minimum age
		336,5	100	8/8	1.11	2616,135	isochron age
88-116	Hb	361	15.6	1/10		atmos	minimum age
		352,7	100	10/10	0.12	1533,286	isochron age
88-203	Hb	329	12.7	1/9		atmos	minimum age
88-221	Hb	352	24	1/11		atmos	minimum age
		331,28	100	11/11	2.36	2646,1060	isochron age
88-225	Hb	313	17.4	1/11		atmos	minimum age
88-227	Hb	306	4.6	1/11		atmos	minimum age
		273,15	98.8	10/11	1.49	1632,160	isochron age
88-313A	Hb	339,2	69.7	6/12		atmos	plateau age
		334,11	30.3	6/12	1.04	3915,110	isochron age
88-317	Hb	323	22	1/8		atmos	minimum age
		307,9	98.9	7/8	1.37	1085,193	isochron age
88-329	Mu	271	100	11/11		atmos	total gas
	Kf	247	100	12/12		atmos	total gas

Note: Hb, hornblende; Mu, muscovite; Kf, K-feldspar.

R A W D A T A

FILE	TEMP	40Ar	39Ar	38Ar	37Ar	36Ar *	TRAP CURRENT	MANIFO OPTION
18619:	200	1255797	75415	3597	426732	395	200	ALL
	+	548	42	12	132	11		
18620:	1075	2706048	165239	7952	912896	652	200	ALL
	+	1286	97	16	849	19		
18621:	1100	2318095	141451	6799	787977	552	200	ALL
	+	1366	97	13	530	18		
18622:	1125	898563	54236	2647	303874	255	200	ALL
	+	384	27	8	173	8		
18623:	1150	577550	34394	1664	190738	195	200	ALL
	+	179	15	17	59	12		
18624:	1200	2546336	153983	7426	847240	640	200	ALL
	+	1978	104	16	434	23		
18625:	1250	555789	32824	1602	179031	202	200	ALL
	+	192	24	19	28	8		
18626:	1350	655421	38641	1922	208656	227	200	ALL
	+	192	8	16	77	8		

38Ar errors assigned from experience, rest calculated from regression statist
* 36Ar peak values less than 2500 are means those above 2500 are from lir
regressions

C O R R E C T I O N S

TEMP °C	39Ar Decay	37Ar Decay	-----K-derived---- 40Ar	38Ar	37Ar	----Ca-derived---- 39Ar	38Ar	36Ar	Cl-der 36Ar	Initia 38Ar
200	19	456502	425	1004	0	596	28	234	0	30
1075	41	978137	932	2200	0	1276	60	500	0	29
1100	35	845297	798	1883	0	1102	52	432	0	23
1125	13	326368	306	722	0	425	20	167	0	17
1150	9	205101	194	458	0	267	13	105	0	17
1200	38	912489	869	2050	0	1187	56	466	0	33
1250	8	193048	185	437	0	251	12	98	0	19
1350	10	225350	218	514	0	293	14	115	0	21

All values in counts, corrected for mass discrimination

v 02/05/91 12:08:33 22 May 1991

88-101A HORNBLENDE; RD58 #41,42,43

J = 0.009761 + 0.25% SAMPLE WT = 1.0016 g

TEMP C	Initial & radiogenic 40Ar	Potassium derived 39Ar	Chlorine derived 38Ar	Calcium derived 37Ar	Initial 36Ar	AGE* in Ma	**
1000	1.732E-11	1.034E-12	3.590E-14	1.222E-11	2.245E-15	263.59 +	.6
1075	3.733E-11	2.265E-12	7.913E-14	2.616E-11	2.119E-15	264.89 +	.5
1100	3.198E-11	1.939E-12	6.761E-14	2.260E-11	1.668E-15	265.42 +	.5
1125	1.240E-11	7.434E-13	2.658E-14	8.719E-12	1.229E-15	264.62 +	.6
1150	7.968E-12	4.715E-13	1.675E-14	5.476E-12	1.248E-15	263.58 +	1.5
1200	3.513E-11	2.111E-12	7.405E-14	2.435E-11	2.435E-15	266.36 +	.6
1250	7.667E-12	4.500E-13	1.623E-14	5.148E-12	1.430E-15	263.31 +	1.1
1350	9.042E-12	5.298E-13	1.958E-14	6.004E-12	1.561E-15	264.78 +	.8
TOTAL GAS	1.588E-10	9.543E-12	3.358E-13	1.107E-10	1.393E-14	265.02	

78.9% of gas on plateau, steps 1075 through 1200 PLATEAU AGE = 265.20 +

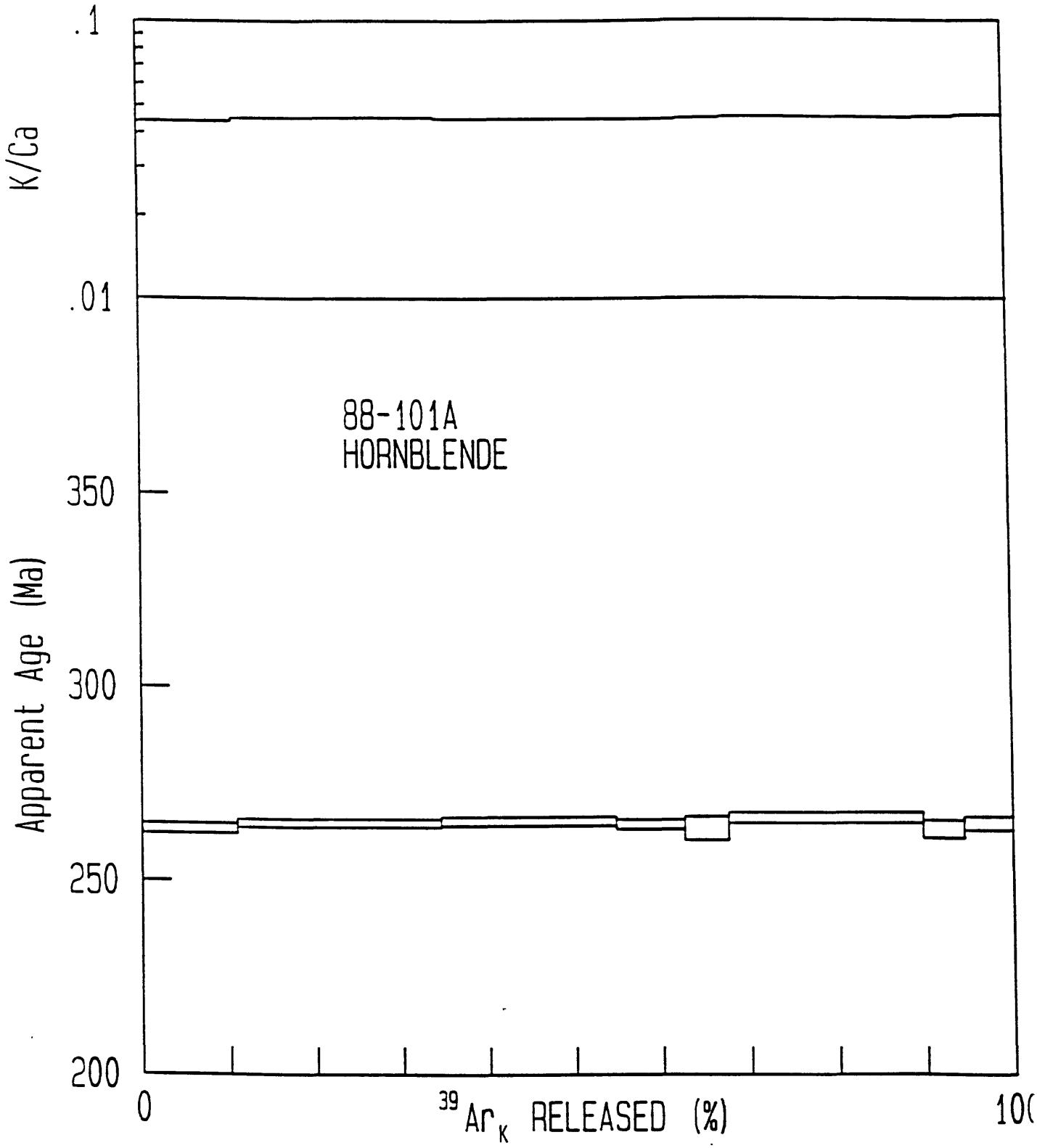
Note: all gas quantities are in moles. No blank correction.
* Ages calculated assuming initial 40Ar/36Ar = 295.5 + 0
** 1-sigma precision estimates are for intra-sample reproducibility.
** 1-sigma precision estimates for plateaux are for intra-irradiation packa reproducibility.
*** below detection limit

	TEMP C	% TOT 39Ar	RAD YIELD	APP K/Ca	APP K/Cl	F	AGE (Ma)	precision intra-sample	precision intra-package	precision inte pack
A	200	10.8	96.2	.04	70	16.118	263.59 +	.65	.90	1.53
B	1075	23.7	98.3	.05	69	16.204	264.89 +	.54	.83	1.49
C	1100	20.3	98.5	.04	69	16.239	265.42 +	.59	.86	1.51
D	1125	7.8	97.1	.04	68	16.186	264.62 +	.66	.91	1.53
E	1150	4.9	95.4	.04	68	16.117	263.58 +	1.56	1.68	2.08
F	1200	22.1	98.0	.05	69	16.300	266.36 +	.69	.94	1.56
G	1250	4.7	94.5	.05	67	16.099	263.31 +	1.18	1.33	1.81
H	1350	5.6	94.9	.05	65	16.196	264.78 +	.89	1.09	1.65

Total gas K/Ca = 0.0

Precisions are 1 sigma, measured in Ma. Measured 40/36 atm = 296.5 +.5
J = 0.009761 + 0.25% (intra-package) + 0.50% (inter-package)
Trap current factors- 40: 8.6 100: 4 200: 1
Manifold factors- ALL: 1 SPLIT 1: 3.6 SPLIT 2: 12.96 SPLIT 3: 46.656
EALL: 2 ESPLIT 1: 6.6 ESPLIT 2: 21.78
Sensitivity = 1.380E-17 % Reproducibility = .25 Detection limit = 40 cour
Data reduced assuming initial 40/36 = 295.50 + 0.00
Ca-factors: 3637=2.6E-04+1.7E-06 3837=3.2E-05+2.4E-07 3937=6.7E-04+3.7E-06
K-factors: 3739=0.0E+00+2.2E-03 3839=1.3E-02+2.4E-04 4039=5.7E-03+4.0E-03

v.02/05/91 12:09:19 22 May 1991 88-101A HORNBLENDE; RD58 #41,42,43



v 02/05/91 (40/36in = 295.5

R A W D A T A

FILE	TEMP	40Ar	39Ar	38Ar	37Ar	36Ar *	TRAP CURRENT	MANIFOL OPTION
18730:	950	4519731	276505	10326	247646	442	200	ALL
	+	1983	105	12	77	15		
18731:	1000	4641069	288226	10853	263484	302	100	ALL
	+	2076	230	36	197	21		
18732:	1050	4779002	297456	11167	263294	240	40	ALL
	+	2250	61	15	165	10		
18733:	1075	1355867	84325	3132	74147	50	40	ALL
	+	541	77	14	29	12		
18735:	1100	1117849	69244	2561	60710	49	200	SPLIT
	+	179	30	13	43	7		
18736:	1125	1461712	90501	3302	81818	57	100	ALL
	+	353	77	38	97	10		
18737:	1150	1596595	98896	3634	91584	56	100	ALL
	+	1542	92	20	13	9		
18738:	1175	669374	41164	1526	39117	32	100	ALL
	+	475	23	15	16	9		
18739:	1200	1886469	117030	4367	108515	104	100	ALL
	+	1162	79	18	81	6		
18740:	1250	1132868	70066	2629	65040	45	100	ALL
	+	241	46	14	39	11		
18741:	1350	772063	46316	1893	43784	121	200	ALL
	+	197	22	22	19	13		

38Ar errors assigned from experience, rest calculated from regression statist
* 36Ar peak values less than 2500 are means those above 2500 are from lin regressions

C O R R E C T I O N S

TEMP °C	39Ar Decay	37Ar Decay	-----K-derived---- 40Ar	38Ar	37Ar	----Ca-derived---- 39Ar	38Ar	36Ar	Cl-der 36Ar	Initia 38Ar
950	108	504022	1570	3703	0	507	24	199	1	46
1000	112	536751	1636	3860	0	540	25	212	1	17
1050	116	536858	1689	3984	0	540	25	212	1	5
1075	33	151324	479	1129	0	152	7	60	0	-2
1100	27	124055	393	927	0	125	6	49	0	0
1125	35	167339	514	1212	0	168	8	66	0	-2
1150	39	187486	561	1324	0	188	9	74	0	-3
1175	16	80152	234	551	0	80	4	32	0	0
1200	46	222554	664	1567	0	223	11	88	0	3
1250	27	133513	398	938	0	134	6	53	0	-1
1350	18	90735	263	620	0	91	4	36	0	16

All values in counts, corrected for mass discrimination

v.02/05/91 88-102 HORNBLENDE RD58 #47,48,49 12:29:50 22 May 1991

	TEMP C	% TOT 39Ar	RAD YIELD	APP K/Ca	APP K/Cl	F	AGE (Ma)		precision intra-sample	precision intra-package	precision inter-pack
A	950	4.1	98.4	.19	100	16.089	263.88	+	.27	.68	1.40
B	1000	17.3	99.4	.19	100	16.013	262.72	+	.35	.71	1.42
C	1050	38.3	99.8	.19	100	16.041	263.15	+	.19	.65	1.39
D	1075	10.9	100.0	.19	102	16.118	264.31	+	.67	.92	1.53
E	1100	3.7	100.0	.19	103	16.145	264.74	+	.48	.79	1.46
F	1125	5.4	100.0	.19	105	16.186	265.35	+	.48	.79	1.47
G	1150	5.9	100.0	.18	104	16.204	265.63	+	.46	.78	1.46
H	1175	2.5	100.0	.18	102	16.263	266.53	+	1.00	1.18	1.71
I	1200	7.0	99.7	.18	101	16.083	263.78	+	.27	.68	1.40
J	1250	4.2	100.0	.18	100	16.205	265.64	+	.69	.93	1.55
K	1350	.7	96.7	.18	87	16.131	264.51	+	1.27	1.41	1.88
Total gas K/Ca =				.2							

Precisions are 1 sigma, measured in Ma. Measured 40/36 atm = 296.5 +.5
J = 0.009790 + 0.25% (intra-package) + 0.50% (inter-package)
Trap current factors- 40: 8.6 100: 4 200: 1
Manifold factors- ALL: 1 SPLIT 1: 3.6 SPLIT 2: 12.96 SPLIT 3: 46.656
EALL: 2 ESPLIT 1: 6.6 ESPLIT 2: 21.78
Sensitivity = 1.380E-17 % Reproducibility = .25 Detection limit = 40 cour
Data reduced assuming initial 40/36 = 295.50 + 0.00
Ca-factors: 3637=2.6E-04+1.7E-06 3837=3.2E-05+2.4E-07 3937=6.7E-04+3.7E-06
K-factors: 3739=0.0E+00+2.2E-03 3839=1.3E-02+2.4E-04 4039=5.7E-03+4.0E-03

v 02/05/91 12:29:53 22 May 1991

88-102 HORNBLENDE RD58 #47,48,49

J = 0.009790 + 0.25% SAMPLE WT = 1.0056 g

TEMP C	Initial & radiogenic 40Ar	Potassium derived 39Ar	Chlorine derived 38Ar	Calcium derived 37Ar	Initial 36Ar	AGE* in Ma	**
950	6.235E-11	3.813E-12	9.195E-14	1.040E-11	3.364E-15	263.88 +	.2
1000	2.561E-10	1.590E-11	3.866E-13	4.429E-11	5.023E-15	262.72 +	.3
1050	5.670E-10	3.528E-11	8.524E-13	9.520E-11	***	263.15 +	.1
1075	1.609E-10	1.000E-11	2.372E-13	2.683E-11	***	264.31 +	.6
1100	5.552E-11	3.438E-12	8.108E-14	9.202E-12	***	264.74 +	.4
1125	8.066E-11	4.993E-12	1.152E-13	1.379E-11	***	265.35 +	.4
1150	8.810E-11	5.455E-12	1.271E-13	1.544E-11	***	265.63 +	.4
1175	3.694E-11	2.271E-12	5.374E-14	6.600E-12	***	266.53 +	1.0
1200	1.041E-10	6.456E-12	1.546E-13	1.832E-11	***	263.78 +	.2
1250	6.251E-11	3.865E-12	9.317E-14	1.099E-11	***	265.64 +	.6
1350	1.065E-11	6.387E-13	1.777E-14	1.861E-12	1.178E-15	264.51 +	1.2
TOTAL GAS	1.485E-09	9.211E-11	2.211E-12	2.529E-10	1.392E-14	263.65	

70.6% of gas on plateau, steps 950 through 1075 PLATEAU AGE = 263.33 +

52.9% of gas on plateau, steps 1050 through 1100 PLATEAU AGE = 263.48 +

Note: all gas quantities are in moles. No blank correction.

* Ages calculated assuming initial 40Ar/36Ar = 295.5 + 0

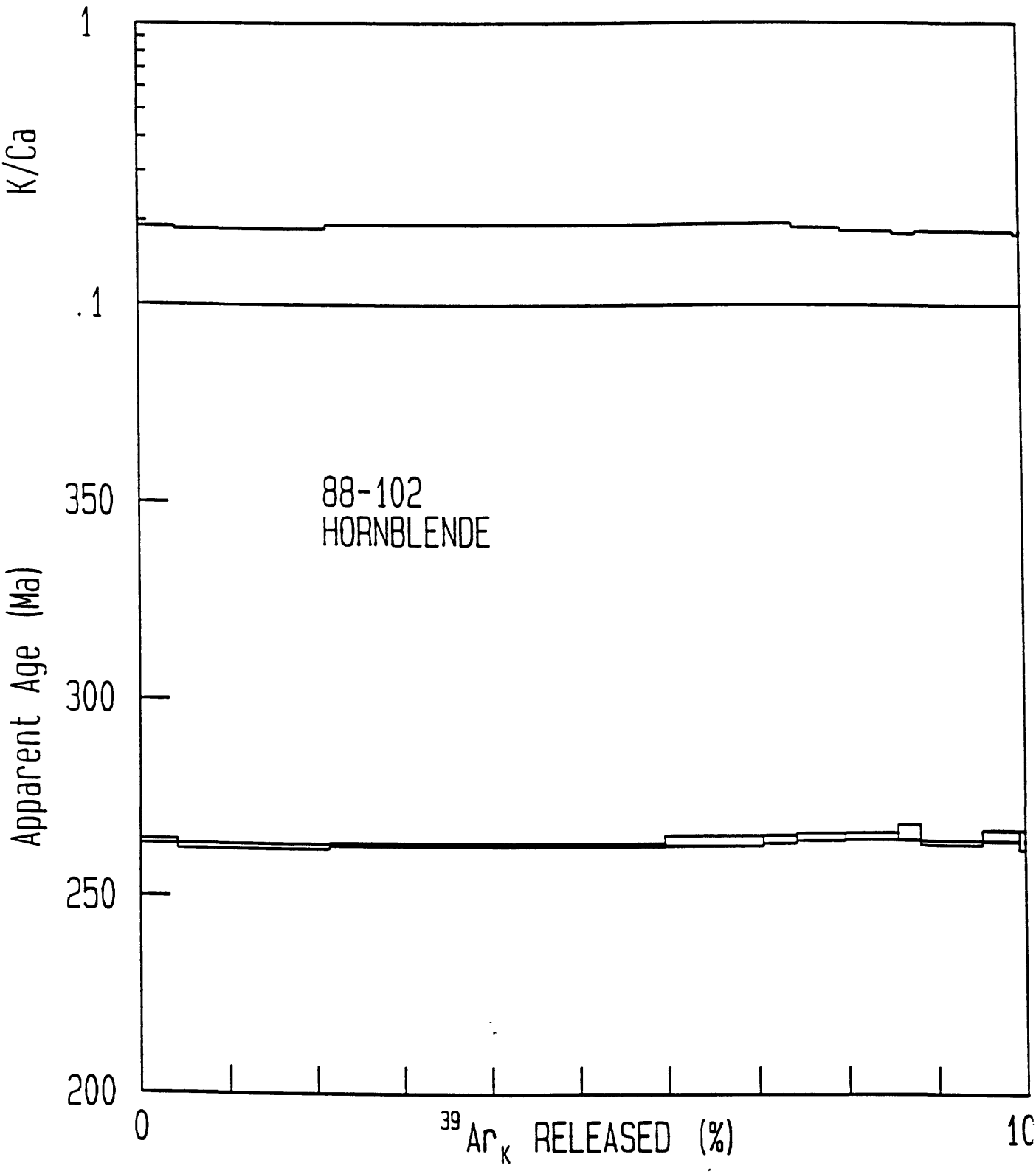
** 1-sigma precision estimates are for intra-sample reproducibility.

** 1-sigma precision estimates for plateaux are for intra-irradiation packa reproducibility.

*** below detection limit

v 02/05/91

v. 02/05/91 12:30:40 22 May 1991 88-102 HORNBLENDE RD58 #47,48,49



v 02/05/91 (40/36in = 295.

v 02/05/91 88-102 BIOTITE; RD59 #49 12:37:43 22 May 1991

R A W D A T A

FILE	TEMP	40Ar	39Ar	38Ar	37Ar	36Ar *	TRAP CURRENT	MANI OPTI
19356:	1450	3964654	235272	3731	201	199	100	SPL
	+	3082	88	32	14	11		

38Ar errors assigned from experience, rest calculated from regression stati
* 36Ar peak values less than 2500 are means those above 2500 are from 1 regressions

C O R R E C T I O N S

TEMP °C	39Ar Decay	37Ar Decay	-----K-derived---- 40Ar	38Ar	37Ar	----Ca-derived---- 39Ar	38Ar	36Ar	Cl-der 36Ar	Init 38A
1450	130	771	1338	3157	0	1	0	0	0	

All values in counts, corrected for mass discrimination

J = 0.008935 + 0.50% SAMPLE WT = 0.1007 g

TEMP C	Initial & radiogenic 40Ar	Potassium derived 39Ar	Chlorine derived 38Ar	Calcium derived 37Ar	Initial 36Ar	AGE* in Ma
1450	3.693E-10	2.195E-11	5.752E-14	9.077E-14	1.858E-14	249.10 +

Note: all gas quantities are in moles. No blank correction.
* Ages calculated assuming initial 40Ar/36Ar = 295.5 + 0
** 1-sigma precision estimates are for intra-sample reproducibility.
** 1-sigma precision estimates for plateaux are for intra-irradiation pa reproducibility.
*** below detection limit

v 02/05/91

	TEMP C	% TOT 39Ar	RAD YIELD	APP K/Ca	APP K/Cl	F	AGE (Ma)	intra-sample	precision intra-package	in pa
A	1450	100.0	98.5	125.74	923	16.572	249.10 +	.27	1.20	1.6
Total gas K/Ca =				125.7						

Precisions are 1 sigma, measured in Ma. Measured 40/36 atm = 296.5 +.5
J = 0.008935 + 0.50% (intra-package) + 0.50% (inter-package)
Trap current factors- 40: 8.6 100: 4 200: 1
Manifold factors- ALL: 1 SPLIT 1: 3.6 SPLIT 2: 12.96 SPLIT 3: 46.656
EALL: 2 ESPLIT 1: 6.6 ESPLIT 2: 21.78
Sensitivity = 6.470E-18 % Reproducibility = .25 Detection limit = 40 cc
Data reduced assuming initial 40/36 = 295.50 + 0.00
Ca-factors: 3637=2.6E-04+1.7E-06 3837=3.2E-05+2.4E-07 3937=6.7E-04+3.7E-06
K-factors: 3739=0.0E+00+2.2E-03 3839=1.3E-02+2.4E-04 4039=5.7E-03+4.0E-03

R A W D A T A

FILE	TEMP	40Ar	39Ar	38Ar	37Ar	36Ar *	TRAP CURRENT	MANIFO: OPTION
19265:	750	4385359	241101	3660	350	2335	200	ALL
	+	2676	134	22	4	71		
19266:	850	1556034	97809	1315	177	331	100	ALL
	+	1109	19	19	15	17		
19267:	950	1802454	115406	1518	216	289	100	ALL
	+	516	39	20	11	15		
19268:	1000	1320444	83783	1083	117	224	100	ALL
	+	405	19	27	20	12		
19269:	1050	1506354	95909	1248	109	231	100	ALL
	+	544	36	14	10	20		
19270:	1100	5022026	317179	4207	136	862	200	ALL
	+	2956	215	9	22	16		
19271:	1150	4412771	278107	3752	212	783	200	ALL
	+	2180	148	2	14	25		
19273:	1200	1778764	111842	1526	314	293	200	SPLIT
	+	900	59	12	16	14		
19274:	1250	1345992	83747	1100	156	219	100	ALL
	+	491	63	26	20	14		
19275:	1300	2514840	158021	2115	184	148	40	ALL
	+	1506	121	26	5	10		
19276:	1350	3898126	242362	3213	0	163	100	ALL
	+	2626	220	4	23	5		
19277:	1450	952307	55234	759	0	216	200	ALL
	+	655	49	25	8	9		

38Ar errors assigned from experience, rest calculated from regression statist
* 36Ar peak values less than 2599 are means those above 2599 are from lir regressions

C O R R E C T I O N S

TEMP °C	39Ar Decay	37Ar Decay	-----K-derived---- 40Ar	38Ar	37Ar	----Ca-derived---- 39Ar	38Ar	36Ar	Cl-der 36Ar	Initi: 38Ar
750	99	819	1371	3235	0	1	0	0	0	438
850	40	415	556	1312	0	0	0	0	0	62
950	48	507	656	1548	0	0	0	0	0	54
1000	35	275	476	1124	0	0	0	0	0	42
1050	40	259	545	1287	0	0	0	0	0	43
1100	133	325	1804	4256	0	0	0	0	0	162
1150	116	507	1582	3731	0	0	0	0	0	147
1200	47	752	636	1501	0	1	0	0	0	55
1250	35	373	476	1124	0	0	0	0	0	41
1300	66	442	899	2120	0	0	0	0	0	28
1350	102	0	1378	3252	0	0	0	0	-0	30
1450	23	0	314	741	0	0	0	0	0	40

All values in counts, corrected for mass discrimination

v 02/05/91 88-102 K-FELDSPAR; RD59 #80 13:00:44 22 May 1991

	TEMP C	% TOT 39Ar	RAD YIELD	APP K/Ca	APP K/Cl	F	AGE (Ma)		precision intra-sample	precision intra-package	precision inter pack
A	750	4.4	84.2	107.06	672	15.293	238.88	+	1.29	1.71	2.05
B	850	7.1	93.7	85.75	3534	14.881	232.84	+	.79	1.35	1.74
C	950	8.3	95.3	82.85	10847	14.853	232.43	+	.55	1.23	1.64
D	1000	6.1	95.0	110.97	67005	14.942	233.74	+	.65	1.28	1.69
E	1050	6.9	95.5	135.36	34389	14.969	234.14	+	.91	1.43	1.81
F	1100	5.7	94.9	356.97	6414	15.003	234.64	+	.26	1.14	1.58
G	1150	5.0	94.7	201.09	3875	15.008	234.71	+	.40	1.18	1.61
H	1200	7.3	95.1	54.52	3265	15.104	236.11	+	.57	1.25	1.67
I	1250	6.1	95.2	82.27	10828	15.274	238.60	+	.71	1.33	1.74
J	1300	24.6	98.3	131.17	14914	15.613	243.55	+	.31	1.18	1.64
K	1350	17.5	98.8	0.00	0	15.859	247.14	+	.18	1.17	1.65
L	1450	1.0	93.3	0.00	2258	16.056	250.01	+	.72	1.38	1.81

Total gas K/Ca = 105.6

Precisions are 1 sigma, measured in Ma. Measured 40/36 atm = 296.5 +.5
J = 0.009258 + 0.50% (intra-package) + 0.50% (inter-package)
Trap current factors- 40: 8.6 100: 4 200: 1
Manifold factors- ALL: 1 SPLIT 1: 3.6 SPLIT 2: 12.96 SPLIT 3: 46.656
EALL: 2 ESPLIT 1: 6.6 ESPLIT 2: 21.78
Sensitivity = 6.470E-18 % Reproducibility = .25 Detection limit = 40 cou
Data reduced assuming initial 40/36 = 295.50 + 0.00
Ca-factors: 3637=2.6E-04+1.7E-06 3837=3.2E-05+2.4E-07 3937=6.7E-04+3.7E-06
K-factors: 3739=0.0E+00+2.2E-03 3839=1.3E-02+2.4E-04 4039=5.7E-03+4.0E-03

v·02/05/91 13:00:46 22 May 1991

88-102 K-FELDSPAR; RD59 #80

J = 0.009258 + 0.50% SAMPLE WT = 0.1030 g

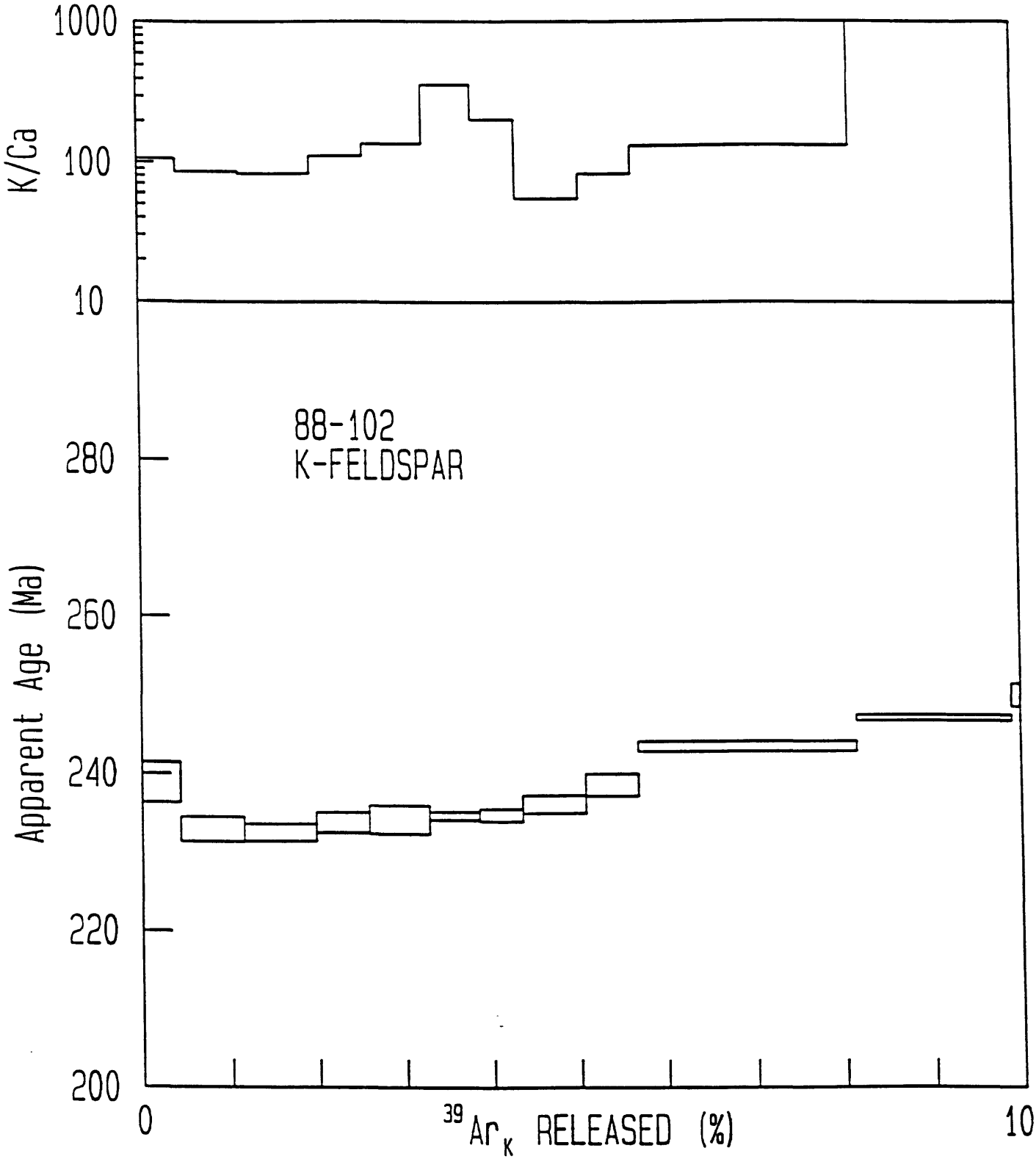
TEMP C	Initial & radiogenic 40Ar	Potassium derived 39Ar	Chlorine derived 38Ar	Calcium derived 37Ar	Initial 36Ar	AGE* in Ma	**
750	2.836E-11	1.562E-12	5.623E-15	7.586E-15	1.515E-14	238.88 +	1.2
850	4.026E-11	2.534E-12	1.736E-15	1.537E-14	8.599E-15	232.84 +	.7
950	4.663E-11	2.990E-12	***	1.877E-14	7.489E-15	232.43 +	.5
1000	3.416E-11	2.171E-12	***	1.017E-14	5.824E-15	233.74 +	.6
1050	3.897E-11	2.485E-12	***	9.547E-15	5.983E-15	234.14 +	.9
1100	3.248E-11	2.055E-12	7.753E-16	2.993E-15	5.593E-15	234.64 +	.2
1150	2.854E-11	1.802E-12	1.125E-15	4.659E-15	5.081E-15	234.71 +	.4
1200	4.142E-11	2.608E-12	1.934E-15	2.488E-14	6.836E-15	236.11 +	.5
1250	3.482E-11	2.170E-12	***	1.372E-14	5.673E-15	238.60 +	.7
1300	1.399E-10	8.804E-12	***	3.490E-14	8.231E-15	243.55 +	.3
1350	1.008E-10	6.280E-12	***	***	4.220E-15	247.14 +	.3
1450	6.159E-12	3.578E-13	3.836E-16	***	1.402E-15	250.01 +	.7
TOTAL GAS	5.725E-10	3.582E-11	1.441E-14	1.426E-13	8.008E-14	239.32	

NO PLATEAU

Note: all gas quantities are in moles. No blank correction.
* Ages calculated assuming initial 40Ar/36Ar = 295.5 + 0
** 1-sigma precision estimates are for intra-sample reproducibility.
** 1-sigma precision estimates for plateaux are for intra-irradiation pack reproducibility.
*** below detection limit

v 02/05/91

v 02/05/91 13:01:53 22 May 1991 88-102 K-FELDSPAR; RD59 #80



v 02/05/91 (40/36in = 295.

RAW DATA

FILE	TEMP	40Ar	39Ar	38Ar	37Ar	36Ar *	TRAP CURRENT	MANIFOI OPTION
19281:	750	3061128	216075	2833	118	119	200	ALL
	+	1726	111	5	18	8		
19282:	850	4883564	332443	4288	238	74	200	ALL
	+	3365	144	5	23	23		
19284:	950	2994956	202240	2645	525	52	200	SPLIT
	+	793	64	18	32	13		
19285:	1000	1958473	130444	1701	104	19	100	ALL
	+	1758	101	9	32	10		
19287:	1050	2343636	154780	2019	161	32	200	SPLIT
	+	608	38	27	16	11		
19288:	1100	1295207	85339	1084	87	6	100	ALL
	+	1130	73	25	8	7		
19289:	1150	4146084	272724	3502	199	70	200	ALL
	+	1231	114	18	19	11		
19290:	1200	4031221	264015	3404	159	85	200	ALL
	+	1213	68	22	12	15		
19292:	1250	1950605	126326	1672	167	48	200	SPLIT
	+	237	11	19	12	13		
19293:	1275	1933002	122463	1603	21	32	100	ALL
	+	1479	88	9	7	7		
19294:	1300	3364116	209209	2733	0	39	100	ALL
	+	2931	60	24	5	5		
19295:	1325	2001817	123333	1618	47	30	100	ALL
	+	734	105	16	18	8		
19296:	1350	3107630	191180	2482	0	86	200	ALL
	+	653	73	24	11	13		

38Ar errors assigned from experience, rest calculated from regression statist
* 36Ar peak values less than 1200 are means those above 1200 are from lir regressions

CORRECTIONS

TEMP °C	39Ar Decay	37Ar Decay	-----K-derived---- 40Ar	38Ar	37Ar	----Ca-derived---- 39Ar	38Ar	36Ar	Cl-der 36Ar	Initia 38Ar
750	91	285	1229	2899	0	0	0	0	-0	22
850	140	575	1891	4460	0	1	0	0	-0	14
950	85	1273	1150	2713	0	1	0	0	-0	10
1000	55	253	742	1750	0	0	0	0	-0	3
1050	66	396	880	2077	0	0	0	0	-0	6
1100	36	215	485	1145	0	0	0	0	-0	1
1150	116	490	1551	3659	0	0	0	0	-0	13
1200	113	392	1502	3542	0	0	0	0	-0	16
1250	54	411	718	1695	0	0	0	0	-0	9
1275	52	51	696	1643	0	0	0	0	-0	6
1300	89	0	1190	2807	0	0	0	0	-0	7
1325	53	116	701	1655	0	0	0	0	-0	6
1350	82	0	1087	2565	0	0	0	0	-0	16

v 02/05/91 88-105 K-FELDSPAR; RD59 #79 13:13:18 22 May 1991

	TEMP C	% TOT 39Ar	RAD YIELD	APP K/Ca	APP K/Cl	F	AGE (Ma)		precision intra-sample	precision intra-package	precision inte pack
A	750	3.8	98.8	278.11	0	13.980	219.25	+	.21	1.06	1.48
B	850	5.8	99.6	212.44	0	14.600	228.38	+	.34	1.13	1.56
C	950	12.8	99.5	58.41	0	14.709	229.98	+	.28	1.12	1.56
D	1000	9.2	99.7	189.28	0	14.947	233.48	+	.38	1.16	1.60
E	1050	9.8	99.6	144.23	0	15.056	235.08	+	.31	1.15	1.59
F	1100	6.0	99.9	146.58	0	15.131	236.17	+	.41	1.19	1.62
G	1150	4.8	99.5	205.63	0	15.102	235.75	+	.19	1.13	1.58
H	1200	4.6	99.4	248.85	0	15.149	236.43	+	.26	1.14	1.59
I	1250	8.0	99.3	113.48	0	15.305	238.71	+	.46	1.21	1.65
J	1275	8.6	99.5	888.31	0	15.682	244.21	+	.30	1.18	1.65
K	1300	14.7	99.7	0.00	0	15.998	248.82	+	.23	1.19	1.66
L	1325	8.7	99.6	391.96	0	16.133	250.77	+	.29	1.21	1.69
M	1350	3.4	99.2	0.00	0	16.095	250.22	+	.30	1.21	1.68

Total gas K/Ca = 211.3

Precisions are 1 sigma, measured in Ma. Measured 40/36 atm = 296.5 +.5
J = 0.009244 + 0.50% (intra-package) + 0.50% (inter-package)
Trap current factors- 40: 8.6 100: 4 200: 1
Manifold factors- ALL: 1 SPLIT 1: 3.6 SPLIT 2: 12.96 SPLIT 3: 46.656
EALL: 2 ESPLIT 1: 6.6 ESPLIT 2: 21.78
Sensitivity = 6.470E-18 % Reproducibility = .25 Detection limit = 40 cou
Data reduced assuming initial 40/36 = 295.50 + 0.00
Ca-factors: 3637=2.6E-04+1.7E-06 3837=3.2E-05+2.4E-07 3937=6.7E-04+3.7E-06
K-factors: 3739=0.0E+00+2.2E-03 3839=1.3E-02+2.4E-04 4039=5.7E-03+4.0E-03

v. 02/05/91 13:13:21 22 May 1991

88-105 K-FELDSPAR; RD59 #79

J = 0.009244 + 0.50% SAMPLE WT = 0.1027 g

TEMP C	Initial & radiogenic 40Ar	Potassium derived 39Ar	Chlorine derived 38Ar	Calcium derived 37Ar	Initial 36Ar	AGE* in Ma	**
750	1.980E-11	1.400E-12	***	2.617E-15	7.745E-16	219.25 +	.2
850	3.158E-11	2.154E-12	***	5.271E-15	4.791E-16	228.38 +	.3
950	6.973E-11	4.717E-12	***	4.199E-14	1.214E-15	229.98 +	.2
1000	5.067E-11	3.380E-12	***	9.286E-15	***	233.48 +	.3
1050	5.457E-11	3.610E-12	***	1.301E-14	***	235.08 +	.3
1100	3.351E-11	2.211E-12	***	7.845E-15	***	236.17 +	.4
1150	2.682E-11	1.767E-12	***	4.468E-15	4.514E-16	235.75 +	.1
1200	2.607E-11	1.710E-12	***	3.574E-15	5.503E-16	236.43 +	.2
1250	4.542E-11	2.946E-12	***	1.350E-14	1.107E-15	238.71 +	.4
1275	5.001E-11	3.173E-12	***	1.858E-15	***	244.21 +	.3
1300	8.703E-11	5.421E-12	***	***	***	248.82 +	.2
1325	5.179E-11	3.196E-12	***	4.240E-15	***	250.77 +	.2
1350	2.010E-11	1.239E-12	***	***	5.590E-16	250.22 +	.3
TOTAL GAS	5.671E-10	3.692E-11	***	1.077E-13	9.133E-15	238.43	

NO PLATEAU

Note: all gas quantities are in moles. No blank correction.

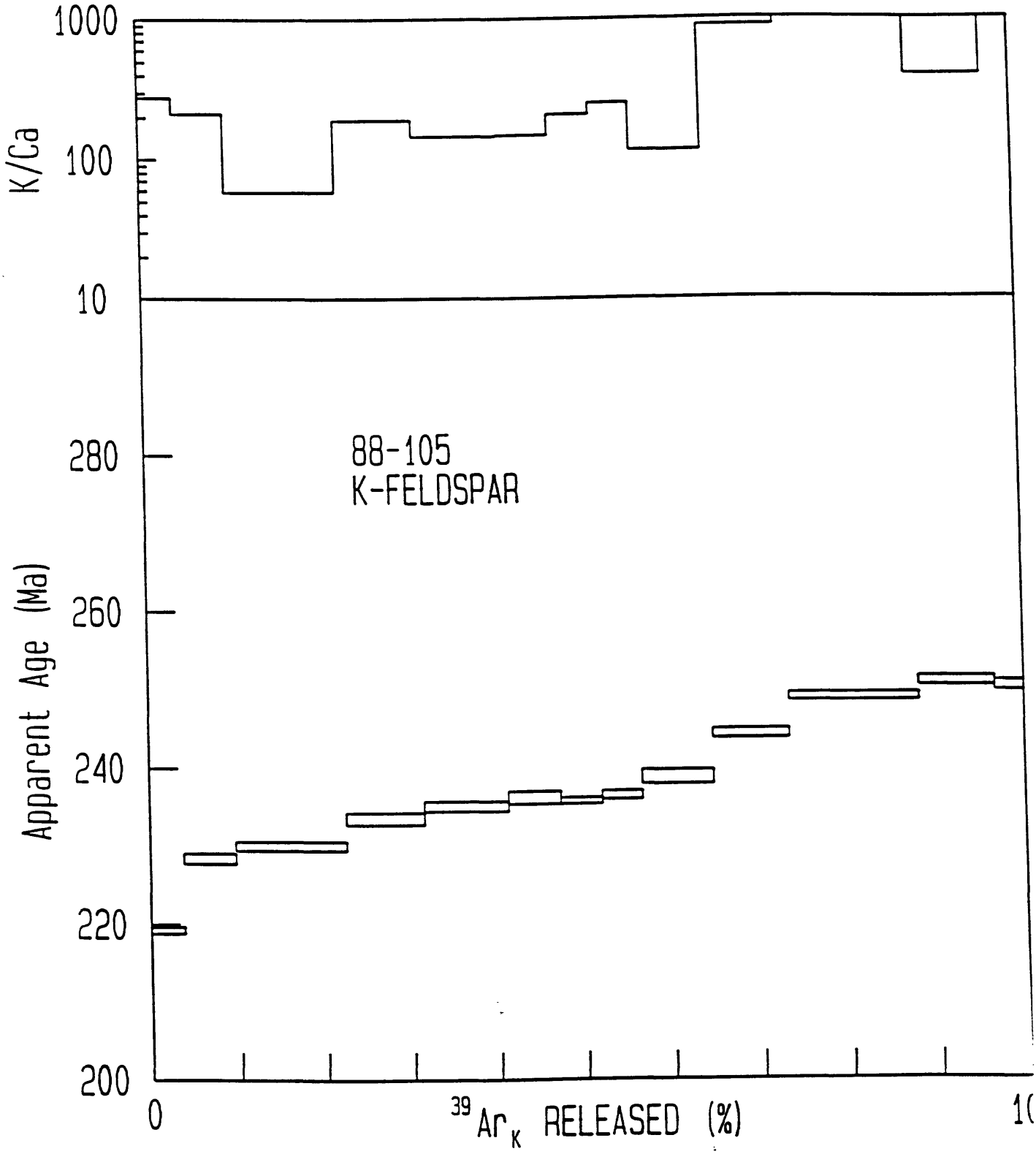
* Ages calculated assuming initial 40Ar/36Ar = 295.5 + 0

** 1-sigma precision estimates are for intra-sample reproducibility.

** 1-sigma precision estimates for plateaux are for intra-irradiation pack reproducibility.

*** below detection limit

v 02/05/91



v 02/05/91 (40/36in = 295

v 02/05/91 88-106 MUSCOVITE; RD59 #51 13:22:21 22 May 1991

R A W D A T A

FILE	TEMP	40Ar	39Ar	38Ar	37Ar	36Ar *	TRAP CURRENT	MANIFO OPTION
19369:	750	657205	37568	520	26	105	200	ALL
	+	278	6	19	15	10		
19370:	850	2436448	139835	1957	0	400	200	ALL
	+	375	74	16	21	7		
19372:	950	1383811	84428	1098	4	61	100	SPLIT
	+	1382	66	17	12	15		
19374:	1000	2829641	174659	2323	0	61	200	SPLIT
	+	695	28	9	6	8		
19376:	1050	1132689	69772	910	0	42	200	SPLIT
	+	234	25	18	13	10		
19377:	1100	4527570	279979	3703	0	119	200	ALL
	+	2408	101	15	9	6		
19379:	1200	1378720	85305	1123	6	6	100	SPLI
	+	493	53	17	9	10		
19380:	1300	2915894	178458	2359	0	86	200	ALL
	+	998	17	16	15	8		

38Ar errors assigned from experience, rest calculated from regression statis
* 36Ar peak values less than 1200 are means those above 1200 are from li
regressions

C O R R E C T I O N S

TEMP °C	39Ar Decay	37Ar Decay	-----K-derived---- 40Ar	38Ar	37Ar	----Ca-derived---- 39Ar	38Ar	36Ar	Cl-der 36Ar	Initi 38Ar
750	22	106	214	504	0	0	0	0	0	20
850	80	0	795	1876	0	0	0	0	0	75
950	48	18	480	1133	0	0	0	0	-0	11
1000	100	0	993	2344	0	0	0	0	-0	12
1050	40	0	397	936	0	0	0	0	-0	8
1100	161	0	1593	3757	0	0	0	0	-0	22
1200	49	26	485	1145	0	0	0	0	-0	1
1300	103	0	1015	2395	0	0	0	0	-0	16

All values in counts, corrected for mass discrimination

v 02/05/91 13:22:45 22 May 1991

88-106 MUSCOVITE; RD59 #51

J = 0.009223 + 0.50% SAMPLE WT = 0.1024 g

TEMP C	Initial & radiogenic 40Ar	Potassium derived 39Ar	Chlorine derived 38Ar	Calcium derived 37Ar	Initial 36Ar	AGE* in Ma	**
750	4.251E-12	2.434E-13	***	8.535E-16	6.788E-16	257.55 +	1.0
850	1.576E-11	9.060E-13	1.027E-15	***	2.596E-15	256.22 +	.2
950	1.289E-10	7.877E-12	***	***	5.665E-15	250.47 +	.7
1000	6.588E-11	4.074E-12	***	***	1.435E-15	249.30 +	.2
1050	2.637E-11	1.627E-12	***	***	9.816E-16	248.71 +	.6
1100	2.928E-11	1.814E-12	***	***	7.726E-16	248.55 +	.3
1200	1.284E-10	7.959E-12	***	***	***	249.96 +	.5
1300	1.886E-11	1.156E-12	***	***	5.557E-16	250.75 +	.2
TOTAL GAS	4.177E-10	2.566E-11	1.261E-15	5.916E-15	1.322E-14	250.16	

52.9% of gas on plateau, steps 950 through 1050 PLATEAU AGE = 249.32 +

60.3% of gas on plateau, steps 1000 through 1200 PLATEAU AGE = 248.90 +

Note: all gas quantities are in moles. No blank correction.

* Ages calculated assuming initial 40Ar/36Ar = 295.5 + 0

** 1-sigma precision estimates are for intra-sample reproducibility.

** 1-sigma precision estimates for plateaux are for intra-irradiation pack reproducibility.

*** below detection limit

	TEMP C	% TOT 39Ar	RAD YIELD	APP K/Ca	APP K/Cl	F	AGE (Ma)	precision intra-sample	precision intra-package	precision inter pack
A	750	.9	95.3	148.29	2516	16.639	257.55 +	1.09	1.62	2.02
B	850	3.5	95.1	0.00	2135	16.547	256.22 +	.22	1.22	1.71
C	950	30.7	98.7	1958.66	0	16.149	250.47 +	.78	1.41	1.83
D	1000	15.9	99.4	0.00	0	16.068	249.30 +	.21	1.19	1.66
E	1050	6.3	98.9	0.00	0	16.027	248.71 +	.64	1.33	1.77
F	1100	7.1	99.2	0.00	0	16.017	248.55 +	.15	1.18	1.65
G	1200	31.0	99.9	1392.80	0	16.114	249.96 +	.52	1.28	1.73
H	1300	4.5	99.1	0.00	0	16.169	250.75 +	.20	1.19	1.67

Total gas K/Ca =

Precisions are 1 sigma, measured in Ma. Measured 40/36 atm = 296.5 +.5

J = 0.009223 + 0.50% (intra-package) + 0.50% (inter-package)

Trap current factors- 40: 8.6 100: 4 200: 1

Manifold factors- ALL: 1 SPLIT 1: 3.6 SPLIT 2: 12.96 SPLIT 3: 46.656

EALL: 2 ESPLIT 1: 6.6 ESPLIT 2: 21.78

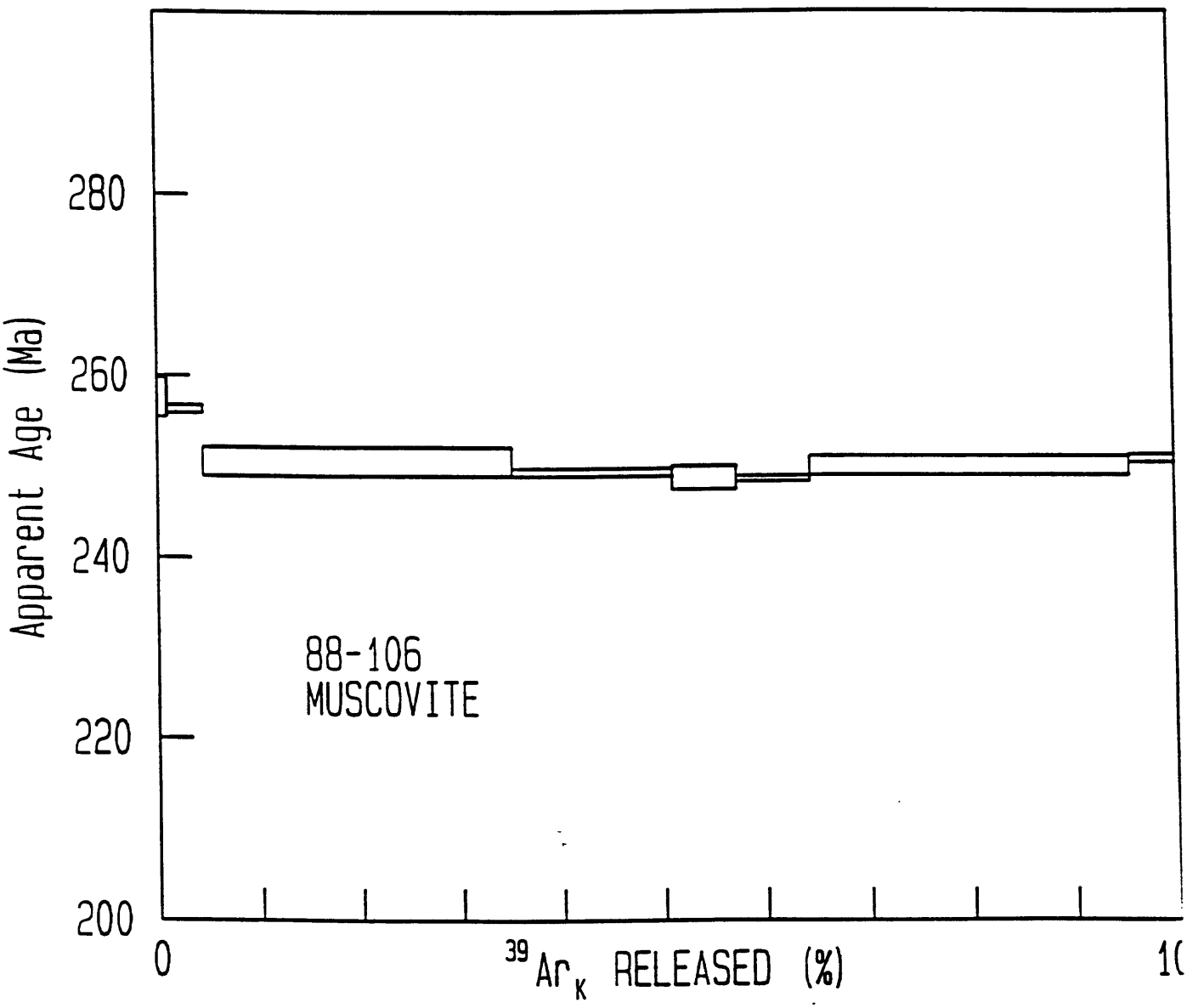
Sensitivity = 6.470E-18 % Reproducibility = .25 Detection limit = 40 cou

Data reduced assuming initial 40/36 = 295.50 + 0.00

Ca-factors: 3637=2.6E-04+1.7E-06 3837=3.2E-05+2.4E-07 3937=6.7E-04+3.7E-06

K-factors: 3739=0.0E+00+2.2E-03 3839=1 3E-02+2.4E-04 4039=5.7E-03+4.0E-03

v· 02/05/91 13:26:15 22 May 1991 88-106 MUSCOVITE; RD59 #51



v 02/05/91 (40/36in = 295

v 02/05/91 88-106 BIOTITE; RD59 #50 13:30:02 22 May 1991

R A W D A T A

FILE	TEMP	40Ar	39Ar	38Ar	37Ar	36Ar *	TRAP CURRENT	MANIFO OPTION
19358:	1450	4250903	258028	5922	3	209	100	SPLIT
	+	2678	222	8	5	15		

38Ar errors assigned from experience, rest calculated from regression statist
* 36Ar peak values less than 1200 are means those above 1200 are from lir
regressions

C O R R E C T I O N S

TEMP °C	39Ar Decay	37Ar Decay	-----K-derived---- 40Ar	38Ar	37Ar	----Ca-derived---- 39Ar	38Ar	36Ar	Cl-der 36Ar	Initia 38Ar
1450	143	10	1468	3462	0	0	0	0	0	39

All values in counts, corrected for mass discrimination

J = 0.009188 + 0.50% SAMPLE WT = 0.1071 g

TEMP C	Initial & radiogenic 40Ar	Potassium derived 39Ar	Chlorine derived 38Ar	Calcium derived 37Ar	Initial 36Ar	AGE* in Ma	**
1450	3.959E-10	2.407E-11	2.337E-13	***	1.947E-14	250.42 +	.2

Note: all gas quantities are in moles. No blank correction.
* Ages calculated assuming initial 40Ar/36Ar = 295.5 + 0
** 1-sigma precision estimates are for intra-sample reproducibility.
** 1-sigma precision estimates for plateaux are for intra-irradiation packa
reproducibility.
*** below detection limit

	TEMP C	% TOT 39Ar	RAD YIELD	APP K/Ca	APP K/Cl	F	AGE (Ma)	intra-sample	precision intra-package	inte pack
A	1450	100.0	98.5	10896.38	249	16.207	250.42 +	.29	1.21	1.68

Total gas K/Ca =

Precisions are 1 sigma, measured in Ma. Measured 40/36 atm = 296.5 +.5
J = 0.009188 + 0.50% (intra-package) + 0.50% (inter-package)
Trap current factors- 40: 8.6 100: 4 200: 1
Manifold factors- ALL: 1 SPLIT 1: 3.6 SPLIT 2: 12.96 SPLIT 3: 46.656
EALL: 2 ESPLIT 1: 6.6 ESPLIT 2: 21.78
Sensitivity = 6.470E-18 % Reproducibility = .25 Detection limit = 40 cou
Data reduced assuming initial 40/36 = 295.50 + 0.00
Ca-factors: 3637=2.6E-04+1.7E-06 3837=3.2E-05+2.4E-07 3937=6.7E-04+3.7E-06
K-factors: 3739=0.0E+00+2.2E-03 3839=1.3E-02+2.4E-04 4039=5.7E-03+4.0E-03

v.02/05/91 88-213 HORNBLENDE; RD 59 #1,2,3 13:35:58 22 May 1991

R A W D A T A

FILE	TEMP	40Ar	39Ar	38Ar	37Ar	36Ar *	TRAP CURRENT	MANIFOL OPTION
19093:	1000	842646	24126	899	82139	354	200	ALL
	+	535	30	15	66	11		
19094:	1050	423302	16822	649	62879	178	200	ALL
	+	157	24	12	43	9		
19095:	1075	422092	17569	818	74828	193	200	ALL
	+	183	20	13	33	20		
19096:	1100	858623	39352	2051	206158	302	200	ALL
	+	369	22	5	112	20		
19098:	1125	925104	44659	2354	253670	257	200	SPLIT
	+	298	25	15	152	5		
19099:	1150	2737640	140790	7429	767709	640	200	SPLIT
	+	832	50	19	374	7		
19101:	1175	1038221	55703	2891	289279	273	200	SPLIT
	+	103	7	6	94	9		
19102:	1200	1923969	97760	5233	529976	653	200	ALL
	+	631	33	13	110	15		
19103:	1250	4246957	205313	10995	1102413	1077	200	ALL
	+	2243	155	19	513	18		
19104:	1350	3728289	173040	9226	923622	997	200	ALL
	+	1563	64	9	405	10		

38Ar errors assigned from experience, rest calculated from regression statist
* 36Ar peak values less than 1200 are means those above 1200 are from lin regressions

C O R R E C T I O N S

TEMP °C	39Ar Decay	37Ar Decay	-----K-derived---- 40Ar	38Ar	37Ar	----Ca-derived---- 39Ar	38Ar	36Ar	Cl-der 36Ar	Initia 38Ar
1000	8	129993	136	322	0	143	7	56	0	56
1050	5	99647	95	224	0	110	5	43	0	25
1075	6	118702	99	234	0	131	6	51	0	27
1100	13	327362	222	523	0	360	17	141	0	30
1125	14	403348	251	593	0	443	21	174	0	16
1150	45	1222333	793	1871	0	1343	63	527	0	22
1175	18	461202	314	740	0	506	24	199	0	14
1200	31	845798	551	1299	0	928	44	364	0	54
1250	66	1761129	1157	2729	0	1932	91	758	1	60
1350	55	1476791	975	2300	0	1620	76	635	1	68

All values in counts, corrected for mass discrimination

v 02/05/91 13:36:02 22 May 1991

88-213 HORNBLENDE; RD 59 #1,2,3

J = 0.009000 + 0.50% SAMPLE WT = 1.0037 g

TEMP C	Initial & radiogenic 40Ar	Potassium derived 39Ar	Chlorine derived 38Ar	Calcium derived 37Ar	Initial 36Ar	AGE* in Ma	*
1000	5.451E-12	1.554E-13	4.065E-15	1.376E-12	1.936E-15	449.06 +	1.
1050	2.738E-12	1.083E-13	2.886E-15	1.054E-12	8.777E-16	338.03 +	2.
1075	2.730E-12	1.130E-13	3.923E-15	1.255E-12	9.219E-16	322.62 +	4.
1100	5.554E-12	2.526E-13	9.992E-15	3.461E-12	1.045E-15	309.11 +	2.
1125	2.154E-11	1.031E-12	4.098E-14	1.534E-11	1.955E-15	303.15 +	
1150	6.375E-11	3.252E-12	1.288E-13	4.647E-11	2.690E-15	289.75 +	
1175	2.417E-11	1.287E-12	4.997E-14	1.752E-11	1.759E-15	276.13 +	
1200	1.244E-11	6.272E-13	2.558E-14	8.924E-12	1.880E-15	284.14 +	
1250	2.747E-11	1.317E-12	5.341E-14	1.857E-11	2.083E-15	303.87 +	
1350	2.412E-11	1.110E-12	4.486E-14	1.557E-11	2.359E-15	313.53 +	
TOTAL GAS	1.900E-10	9.254E-12	3.644E-13	1.296E-10	1.751E-14	298.15	

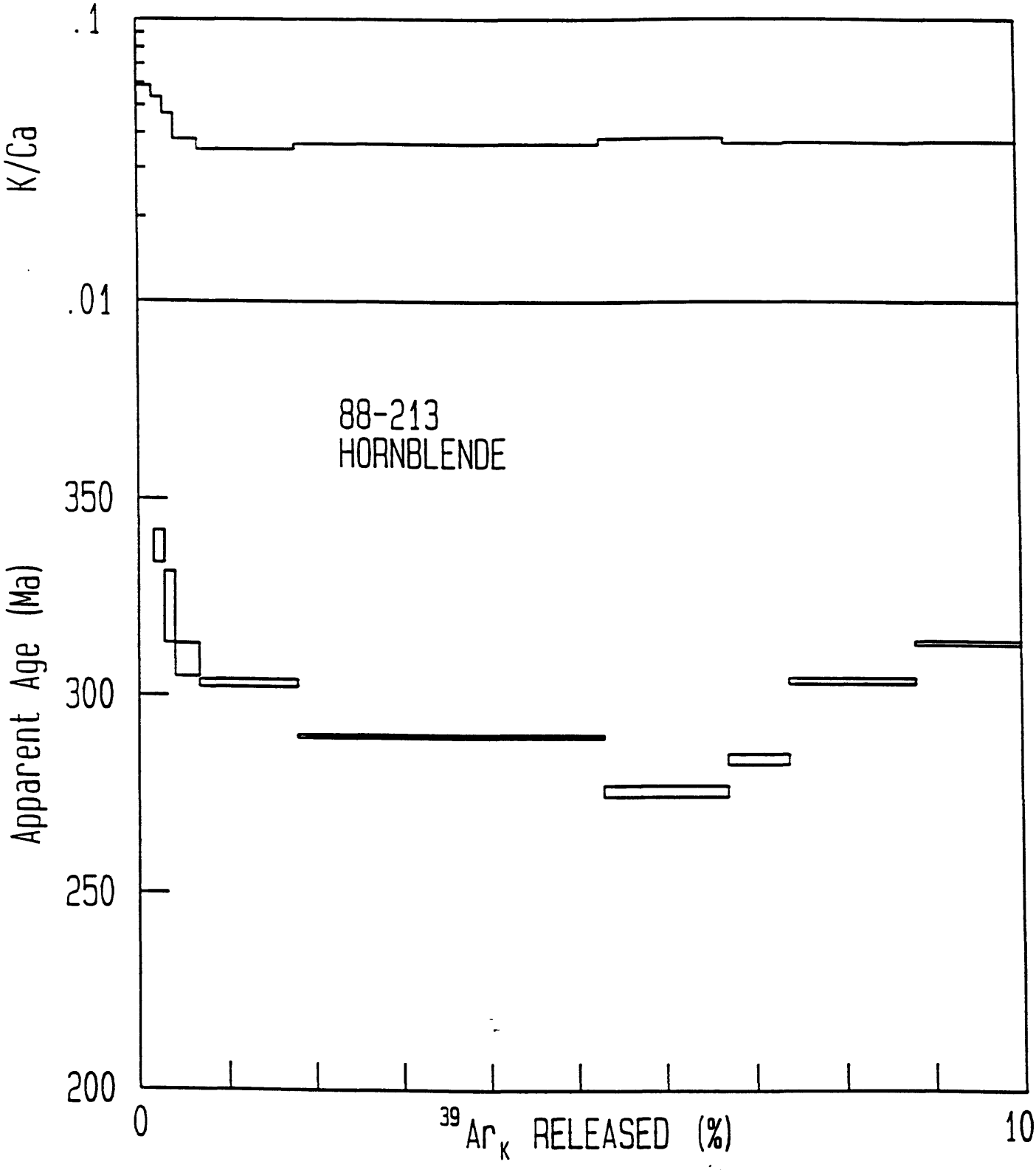
NO PLATEAU

Note: all gas quantities are in moles. No blank correction.
* Ages calculated assuming initial 40Ar/36Ar = 295.5 + 0
** 1-sigma precision estimates are for intra-sample reproducibility.
** 1-sigma precision estimates for plateaux are for intra-irradiation pac reproducibility.
*** below detection limit

	TEMP C	% TOT 39Ar	RAD YIELD	APP K/Ca	APP K/Cl	F	AGE (Ma)	intra-sample	precision intra-package	in pac
A	1000	1.7	89.5	.06	92	31.405	449.06 +	1.77	2.68	3.3
B	1050	1.2	90.5	.05	91	22.898	338.03 +	2.04	2.56	2.9
C	1075	1.2	90.0	.05	70	21.759	322.62 +	4.54	4.78	5.0
D	1100	2.7	94.4	.04	61	20.767	309.11 +	2.11	2.55	2.9
E	1125	11.1	97.3	.03	61	20.332	303.15 +	.47	1.48	2.0
F	1150	35.1	98.8	.04	61	19.359	289.75 +	.22	1.36	1.9
G	1175	13.9	97.9	.04	62	18.378	276.13 +	.68	1.45	1.9
H	1200	6.8	95.5	.04	59	18.954	284.14 +	.66	1.48	1.9
I	1250	14.2	97.8	.04	60	20.384	303.87 +	.38	1.46	2.0
J	1350	12.0	97.1	.04	60	21.090	313.53 +	.26	1.47	2.0
Total gas K/Ca =				0.0						

Precisions are 1 sigma, measured in Ma. Measured 40/36 atm = 296.5 +.5
J = 0.009000 + 0.50% (intra-package) + 0.50% (inter-package)
Trap current factors- 40: 8.6 100: 4 200: 1
Manifold factors- ALL: 1 SPLIT 1: 3.6 SPLIT 2: 12.96 SPLIT 3: 46.656
EALL: 2 ESPLIT 1: 6.6 ESPLIT 2: 21.78
Sensitivity = 6.470E-18 % Reproducibility = .25 Detection limit = 40 cc
Data reduced assuming initial 40/36 = 295.50 + 0.00
Ca-factors: 3637=2.6E-04+1.7E-06 3837=3.2E-05+2.4E-07 3937=6.7E-04+3.7E-06
K-factors: 3739=0.0E+00+2.2E-03 3839=1.3E-02+2.4E-04 4039=5.7E-03+4.0E-03

v 02/05/91 13:36:43 22 May 1991 88-213 HORNBLENDE; RD 59 #1,2,3



v 02/05/91 (40/36in = 295.

R A W D A T A

FILE	TEMP	40Ar	39Ar	38Ar	37Ar	36Ar *	TRAP CURRENT	MANIFO OPTION
19851:	750	741942	45917	669	0	91	200	ALL
	+	264	40	20	9	5		
19852:	850	2214561	132184	1792	30	66	200	ALL
	+	753	57	15	21	9		
19853:	950	2775830	169804	2243	0	68	100	ALL
	+	1329	67	4	13	3		
19854:	1000	3650783	224795	2939	0	45	100	ALL
	+	2825	25	8	14	12		
19855:	1050	2239054	138160	1816	0	19	100	ALL
	+	1953	32	21	23	8		
19857:	1100	1664485	102640	1340	12	40	200	SPLIT
	+	827	73	14	10	9		
19858:	1150	1915422	118726	1552	0	22	100	ALL
	+	410	44	10	21	5		
19859:	1200	3035920	187959	2433	0	24	100	ALL
	+	1185	61	11	9	8		
19861:	1300	1663905	102336	1339	0	39	200	SPLI
	+	286	19	13	5	4		
19862:	1450	378917	23124	309	0	32	200	ALL
	+	59	15	17	14	10		

38Ar errors assigned from experience, rest calculated from regression statis
* 36Ar peak values less than 1200 are means those above 1200 are from li
regressions

C O R R E C T I O N S

TEMP °C	39Ar Decay	37Ar Decay	-----K-derived---- 40Ar	38Ar	37Ar	----Ca-derived---- 39Ar	38Ar	36Ar	Cl-der 36Ar	Initi 38Ar
750	36	0	261	616	0	0	0	0	0	17
850	104	245	752	1774	0	0	0	0	0	12
950	134	0	966	2279	0	0	0	0	-0	13
1000	177	0	1279	3017	0	0	0	0	-0	8
1050	109	0	786	1854	0	0	0	0	-0	4
1100	81	99	584	1378	0	0	0	0	-0	7
1150	94	0	675	1594	0	0	0	0	-0	4
1200	149	0	1069	2523	0	0	0	0	-0	4
1300	81	0	582	1374	0	0	0	0	-0	7
1450	18	2	132	310	0	0	0	0	0	6

All values in counts, corrected for mass discrimination

v 02/05/91 13:45:04 22 May 1991

88-213 MUSCOVITE; RD59 #57

J = 0.009223 + 0.50% SAMPLE WT = 0.1027 g

TEMP C	Initial & radiogenic 40Ar	Potassium derived 39Ar	Chlorine derived 38Ar	Calcium derived 37Ar	Initial 36Ar	AGE* in Ma	**
750	4.799E-12	2.976E-13	4.588E-16	***	5.887E-16	241.66 +	.51
850	1.432E-11	8.566E-13	***	1.785E-15	4.279E-16	256.60 +	.31
950	7.181E-11	4.402E-12	***	***	1.774E-15	251.15 +	.14
1000	9.445E-11	5.827E-12	***	***	1.169E-15	250.47 +	.29
1050	5.793E-11	3.581E-12	***	***	***	250.24 +	.32
1100	3.876E-11	2.395E-12	***	2.584E-15	9.319E-16	249.32 +	.38
1150	4.955E-11	3.078E-12	***	***	***	248.99 +	.19
1200	7.854E-11	4.872E-12	***	***	***	249.51 +	.20
1300	3.874E-11	2.388E-12	***	***	***	249.97 +	.17
1450	2.451E-12	1.499E-13	***	***	***	247.54 +	1.85
TOTAL GAS	4.514E-10	2.785E-11	***	4.387E-15	7.677E-15	250.15	

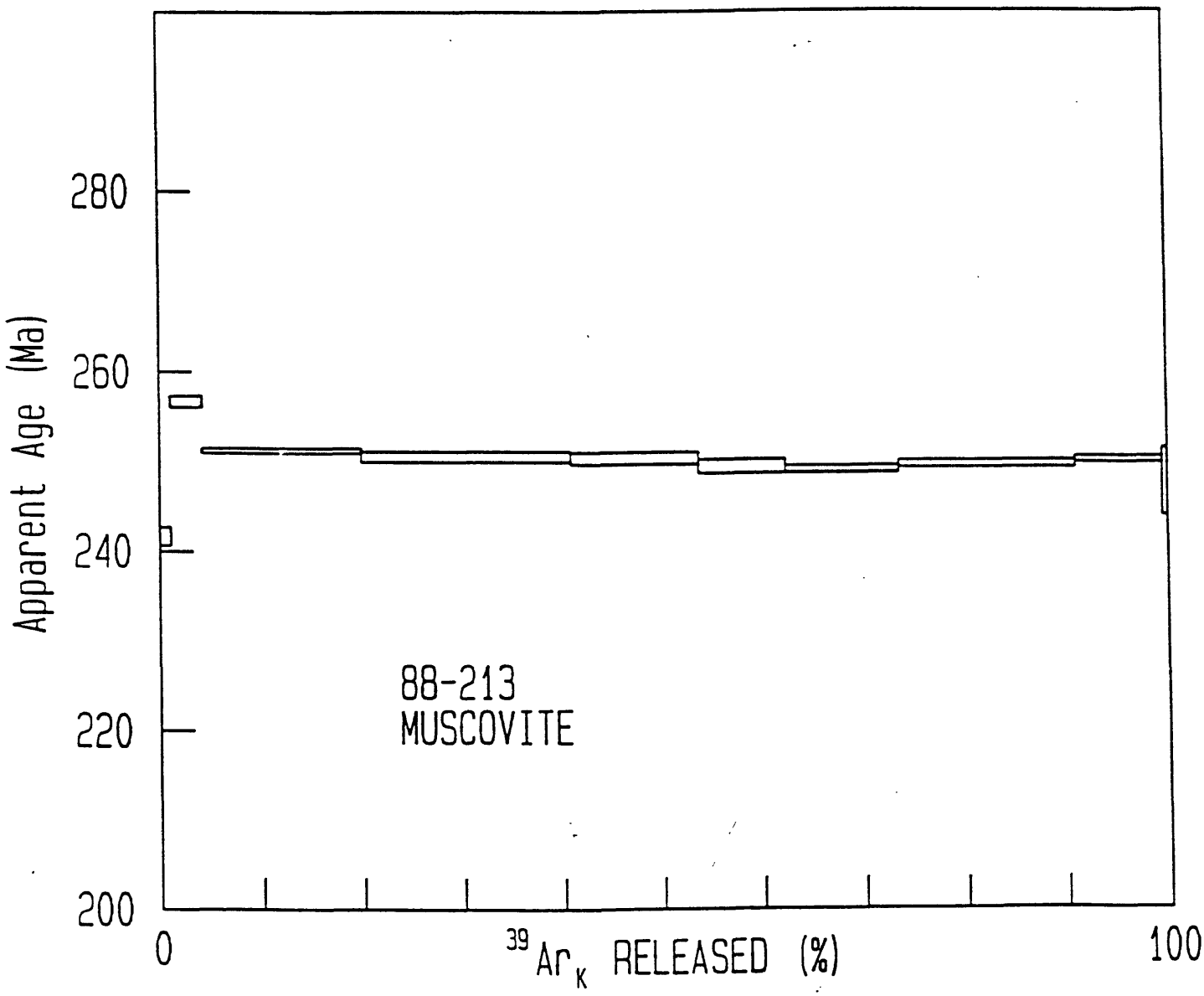
80.0% of gas on plateau, steps 1000 through 1450 PLATEAU AGE = 249.67 + 1

Note: all gas quantities are in moles. No blank correction.
* Ages calculated assuming initial 40Ar/36Ar = 295.5 + 0
** 1-sigma precision estimates are for intra-sample reproducibility.
** 1-sigma precision estimates for plateaux are for intra-irradiation packa reproducibility.
*** below detection limit

	TEMP C	% TOT 39Ar	RAD YIELD	APP K/Ca	APP K/Cl	F	AGE (Ma)	intra-sample	precision intra-package	inter packa
A	750	1.1	96.4	0.00	1570	15.542	241.66 +	.51	1.24	1.68
B	850	3.1	99.1	249.49	9604	16.573	256.60 +	.31	1.24	1.72
C	950	15.8	99.3	0.00	0	16.196	251.15 +	.14	1.18	1.67
D	1000	20.9	99.6	0.00	0	16.149	250.47 +	.29	1.21	1.68
E	1050	12.9	99.7	0.00	0	16.133	250.24 +	.32	1.22	1.69
F	1100	8.6	99.3	481.83	0	16.070	249.32 +	.38	1.23	1.69
G	1150	11.1	99.7	0.00	0	16.047	248.99 +	.19	1.18	1.66
H	1200	17.5	99.8	0.00	0	16.083	249.51 +	.20	1.19	1.66
I	1300	8.6	99.3	0.00	0	16.114	249.97 +	.17	1.18	1.66
J	1450	.5	97.5	4412.07	10179	15.947	247.54 +	1.85	2.19	2.47
Total gas K/Ca =				72.9						

Precisions are 1 sigma, measured in Ma. Measured 40/36 atm = 296.5 +.5
J = 0.009223 + 0.50% (intra-package) + 0.50% (inter-package)
Trap current factors- 40: 8.6 100: 4 200: 1
Manifold factors- ALL: 1 SPLIT 1: 3.6 SPLIT 2: 12.96 SPLIT 3: 46.656
EALL: 2 ESPLIT 1: 6.6 ESPLIT 2: 21.78
Sensitivity = 6.470E-18 % Reproducibility = .25 Detection limit = 40 coun
Data reduced assuming initial 40/36 = 295.50 + 0.00
Ca-factors: 3637=2.6E-04+1.7E-06 3837=3.2E-05+2.4E-07 3937=6.7E-04+3.7E-06
K-factors: 3739=0.0E+00+2.2E-03 3839=1.3E-02+2.4E-04 4039=5.7E-03+4.0E-03

v 02/05/91 13:45:51 22 May 1991 88-213 MUSCOVITE; RD59 #57



v 02/05/91 (40/36in = 295.5

R A W D A T A

FILE	TEMP	40Ar	39Ar	38Ar	37Ar	36Ar *	TRAP CURRENT	MANIFOI OPTION
19360:	1450	3760837	227512	3649	0	204	100	SPLIT
	+	998	106	36	8	12		

38Ar errors assigned from experience, rest calculated from regression statist
* 36Ar peak values less than 1200 are means those above 1200 are from lin regressions

C O R R E C T I O N S

TEMP °C	39Ar Decay	37Ar Decay	-----K-derived---- 40Ar	38Ar	37Ar	----Ca-derived---- 39Ar	38Ar	36Ar	Cl-der 36Ar	Initia 38Ar
1450	127	0	1294	3053	0	0	0	0	0	38

All values in counts, corrected for mass discrimination

J = 0.008920 + 0.50% SAMPLE WT = 0.0991 g

TEMP C	Initial & radiogenic 40Ar	Potassium derived 39Ar	Chlorine derived 38Ar	Calcium derived 37Ar	Initial 36Ar	AGE* in Ma	**
1450	2.189E-11	1.327E-12	3.730E-15	***	1.191E-15	244.00 +	.2

Note: all gas quantities are in moles. No blank correction.
* Ages calculated assuming initial 40Ar/36Ar = 295.5 + 0
** 1-sigma precision estimates are for intra-sample reproducibility.
** 1-sigma precision estimates for plateaux are for intra-irradiation packa reproducibility.
*** below detection limit

TEMP C	% TOT 39Ar	RAD YIELD	APP K/Ca	APP K/Cl	F	AGE (Ma)	intra-sample	precision intra-package	inte pack
A 1450	100.0	98.4	0.00	861	16.236	244.00 +	.23	1.17	1.63
Total gas K/Ca =			0.0						

Precisions are 1 sigma, measured in Ma. Measured 40/36 atm = 296.5 +.5
J = 0.008920 + 0.50% (intra-package) + 0.50% (inter-package)
Trap current factors- 40: 8.6 100: 4 200: 1
Manifold factors- ALL: 1 SPLIT 1: 3.6 SPLIT 2: 12.96 SPLIT 3: 46.656
EALL: 2 ESPLIT 1: 6.6 ESPLIT 2: 21.78
Sensitivity = 6.470E-18 % Reproducibility = .25 Detection limit = 40 cour
Data reduced assuming initial 40/36 = 295.50 + 0.00
Ca-factors: 3637=2.6E-04+1.7E-06 3837=3.2E-05+2.4E-07 3937=6.7E-04+3.7E-06
K-factors: 3739=0.0E+00+2.2E-03 3839=1.3E-02+2.4E-04 4039=5.7E-03+4.0E-03

v 02/05/91 88-218 HORNBLENDE; RD 59 #4,5,6 14:12:15 22 May 1991

R A W D A T A

FILE	TEMP	40Ar	39Ar	38Ar	37Ar	36Ar *	TRAP CURRENT	MANIFOLD OPTION
19117:	1000	968216	50225	1391	111704	304	200	ALL
	+	395	31	25	46	11		
19118:	1050	3076083	171765	4646	339507	467	200	ALL
	+	1700	86	10	186	17		
19120:	1075	1682939	95956	2471	178086	199	200	SPLIT
	+	554	76	4	54	17		
19122:	1100	2547948	146033	3692	268217	272	200	SPLIT
	+	850	45	7	110	8		
19124:	1125	4117184	236008	5840	431720	423	200	SPLIT
	+	1195	126	8	165	7		
19126:	1150	3090746	176754	4326	322835	317	200	SPLIT
	+	972	82	20	200	16		
19128:	1175	2377407	135812	3338	260416	272	200	SPLIT
	+	1182	71	10	151	11		
19130:	1200	1654221	94127	2271	198834	215	200	SPLIT
	+	242	31	25	85	8		
19131:	1250	1121893	60633	1499	130768	249	200	ALL
	+	481	36	14	69	13		
19132:	1350	1243914	66600	1660	138369	252	200	ALL
	+	747	29	10	119	8		

38Ar errors assigned from experience, rest calculated from regression statisti
* 36Ar peak values less than 1200 are means those above 1200 are from line
regressions

C O R R E C T I O N S

TEMP °C	39Ar Decay	37Ar Decay	-----K-derived---- 40Ar	38Ar	37Ar	----Ca-derived---- 39Ar	38Ar	36Ar	Cl-der 36Ar	Initial 38Ar
1000	17	188963	284	671	0	203	10	80	0	42
1050	57	574887	973	2296	0	617	29	242	0	42
1075	32	307710	544	1283	0	328	15	129	0	13
1100	49	464046	828	1953	0	494	23	194	0	15
1125	80	748140	1338	3156	0	796	37	312	0	21
1150	60	560176	1002	2363	0	596	28	234	0	16
1175	46	452453	770	1816	0	481	23	189	0	16
1200	32	346020	533	1258	0	368	17	144	0	13
1250	21	227789	343	810	0	242	11	95	0	29
1350	23	241420	377	890	0	256	12	101	0	29

All values in counts, corrected for mass discrimination

02/05/91 14:12:19 22 May 1991
88-218 HORNBLENDE; RD 59 #4,5,6

J = 0.009117 + 0.50% SAMPLE WT = 0.9995 g

TEMP C	Initial & radiogenic 40Ar	Potassium derived 39Ar	Chlorine derived 38Ar	Calcium derived 37Ar	Initial 36Ar	AGE* in Ma	**
1000	6.263E-12	3.240E-13	4.887E-15	1.950E-12	1.461E-15	274.05 +	.93
1050	1.990E-11	1.109E-12	1.534E-14	5.931E-12	1.462E-15	267.85 +	.44
1075	3.919E-11	2.230E-12	2.773E-14	1.134E-11	1.663E-15	264.94 +	.77
1100	5.933E-11	3.394E-12	4.047E-14	1.710E-11	1.844E-15	264.49 +	.24
1125	9.587E-11	5.485E-12	6.237E-14	2.755E-11	2.618E-15	264.73 +	.15
1150	7.197E-11	4.108E-12	4.559E-14	2.062E-11	1.952E-15	265.32 +	.40
1175	5.536E-11	3.156E-12	3.543E-14	1.665E-11	1.964E-15	265.01 +	.37
1200	3.852E-11	2.186E-12	2.359E-14	1.272E-11	1.664E-15	265.51 +	.36
1250	7.256E-12	3.912E-13	4.587E-15	2.326E-12	1.001E-15	271.19 +	.90
1350	8.046E-12	4.298E-13	5.103E-15	2.463E-12	9.864E-16	274.74 +	.51
TOTAL GAS	4.017E-10	2.281E-11	2.651E-13	1.187E-10	1.661E-14	265.52	

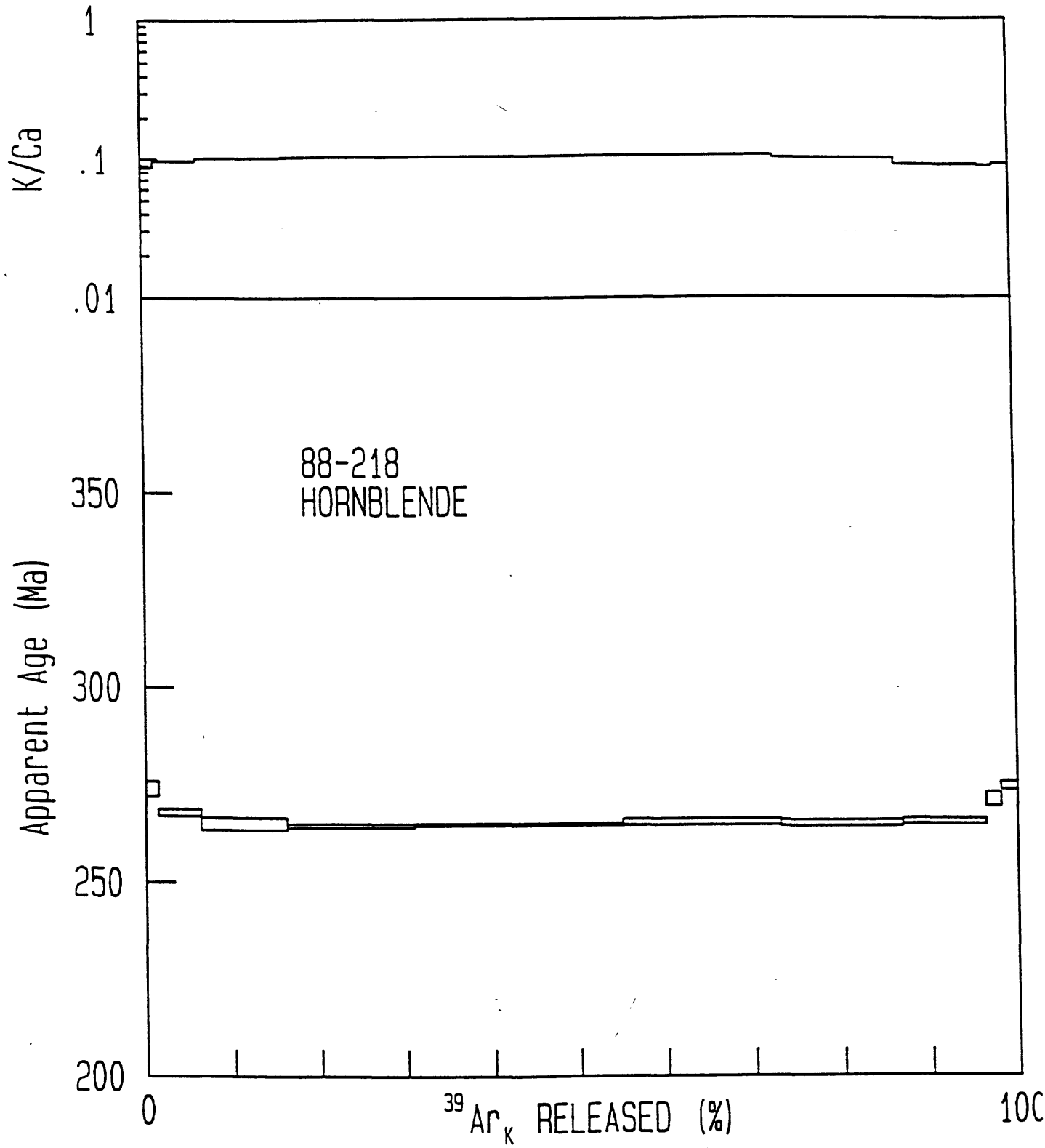
90.1% of gas on plateau, steps 1075 through 1200 PLATEAU AGE = 264.85 + 1.

Note: all gas quantities are in moles. No blank correction.
* Ages calculated assuming initial 40Ar/36Ar = 295.5 + 0
** 1-sigma precision estimates are for intra-sample reproducibility.
** 1-sigma precision estimates for plateaux are for intra-irradiation packa reproducibility.
*** below detection limit

	TEMP C	% TOT 39Ar	RAD YIELD	APP K/Ca	APP K/Cl	F	AGE (Ma)	precision intra-sample	precision intra-package	precision inter packa
A	1000	1.4	93.1	.09	160	17.995	274.05 +	.93	1.58	2.03
B	1050	4.9	97.8	.10	175	17.557	267.85 +	.44	1.33	1.82
C	1075	9.8	98.7	.10	195	17.352	264.94 +	.77	1.46	1.91
D	1100	14.9	99.1	.10	203	17.320	264.49 +	.24	1.26	1.76
E	1125	24.0	99.2	.10	213	17.337	264.73 +	.15	1.24	1.75
F	1150	18.0	99.2	.10	218	17.378	265.32 +	.40	1.30	1.79
G	1175	13.8	99.0	.10	216	17.357	265.01 +	.37	1.29	1.79
H	1200	9.6	98.7	.09	224	17.392	265.51 +	.36	1.29	1.79
I	1250	1.7	95.9	.09	206	17.793	271.19 +	.90	1.55	2.00
J	1350	1.9	96.4	.09	204	18.043	274.74 +	.51	1.38	1.88
Total gas K/Ca =				.1						

Precisions are 1 sigma, measured in Ma. Measured 40/36 atm = 296.5 +.5
J = 0.009117 + 0.50% (intra-package) + 0.50% (inter-package)
Trap current factors- 40: 8.6 100: 4 200: 1
Manifold factors- ALL: 1 SPLIT 1: 3.6 SPLIT 2: 12.96 SPLIT 3: 46.656
EALL: 2 ESPLIT 1: 6.6 ESPLIT 2: 21.78
Sensitivity = 6.470E-18 % Reproducibility = .25 Detection limit = 40 coun
Data reduced assuming initial 40/36 = 295.50 + 0.00
Ca-factors: 3637=2.6E-04+1.7E-06 3837=3.2E-05+2.4E-07 3937=6.7E-04+3.7E-06
K-factors: 3739=0.0E+00+2.2E-03 3839=1.3E-02+2.4E-04 4039=5.7E-03+4.0E-03

v 02/05/91 14:13:02 22 May 1991 88-218 HORNBLENDE; RD 59 #4,5,6



v 02/05/91 (40/36in = 295.5

v 02/05/91 88-226A HORNBLENDE RD59 #13,14,15 12:23:08 21 Jun 1991

R A W D A T A

FILE	TEMP	40Ar	39Ar	38Ar	37Ar	36Ar *	TRAP CURRENT	MANIFOI OPTION
19161:	1050	508789	18339	1516	64185	359	200	ALL
	+	266	11	14	28	10		
19162:	1075	929820	42515	4197	162005	477	200	ALL
	+	419	22	15	117	21		
19163:	1100	2224051	114580	12323	457961	757	200	ALL
	+	1434	95	18	297	21		
19164:	1125	4455344	235788	26242	1019558	1154	200	ALL
	+	3893	176	29	854	38		
19165:	1150	2482015	131498	14222	497114	479	100	ALL
	+	1692	82	12	469	14		
19166:	1175	995915	52280	5515	192829	223	100	ALL
	+	326	40	24	82	9		
19167:	1200	505460	26611	2920	105282	133	100	ALL
	+	71	25	13	71	21		
19169:	1250	1922338	99584	11019	377818	437	200	SPLIT
	+	696	44	8	188	3		
19170:	1350	4433664	218910	24458	823297	1009	200	ALL
	+	2137	117	15	436	26		

38Ar errors assigned from experience, rest calculated from regression statist:
* 36Ar peak values less than 3400 are means those above 3400 are from line regressions

C O R R E C T I O N S

TEMP °C	39Ar Decay	37Ar Decay	-----K-derived---- 40Ar	38Ar	37Ar	----Ca-derived---- 39Ar	38Ar	36Ar	Cl-der 36Ar	Initial 38Ar
1050	6	118860	104	244	0	124	6	48	0	58
1075	15	300290	240	566	0	312	15	122	0	67
1100	41	849677	647	1525	0	882	42	346	1	77
1125	84	1893431	1330	3137	0	1965	93	771	2	72
1150	47	924073	742	1751	0	959	45	376	1	19
1175	19	358785	295	696	0	372	18	146	0	15
1200	9	196078	150	354	0	203	10	80	0	10
1250	35	704763	562	1326	0	730	34	287	1	28
1350	78	1537194	1236	2916	0	1593	75	625	2	72

All values in counts, corrected for mass discrimination

v 02/05/91 12:23:11 21 Jun 1991

88-226 HORNBLENDE RD59 #13,14,15

J = 0.009337 + 0.50% SAMPLE WT = 1.0011 g

TEMP C	Initial & radiogenic 40Ar	Potassium derived 39Ar	Chlorine derived 38Ar	Calcium derived 37Ar	Initial 36Ar	AGE* in Ma	*
1050	3.291E-12	1.180E-13	8.585E-15	1.187E-12	2.014E-15	348.86 +	2.
1075	6.014E-12	2.734E-13	2.387E-14	2.999E-12	2.305E-15	301.88 +	2.
1100	1.439E-11	7.365E-13	7.023E-14	8.482E-12	2.667E-15	286.90 +	.
1125	2.882E-11	1.515E-12	1.497E-13	1.889E-11	2.489E-15	288.02 +	.
1150	6.422E-11	3.382E-12	3.227E-13	3.687E-11	2.681E-15	291.04 +	.
1175	2.577E-11	1.345E-12	1.249E-13	1.431E-11	2.011E-15	290.54 +	.
1200	1.308E-11	6.843E-13	6.655E-14	7.819E-12	1.391E-15	287.60 +	3.
1250	4.476E-11	2.305E-12	2.261E-13	2.528E-11	3.509E-15	294.14 +	.
1350	2.868E-11	1.408E-12	1.396E-13	1.531E-11	2.492E-15	306.71 +	.
TOTAL GAS	2.290E-10	1.177E-11	1.132E-12	1.312E-10	2.156E-14	293.47	

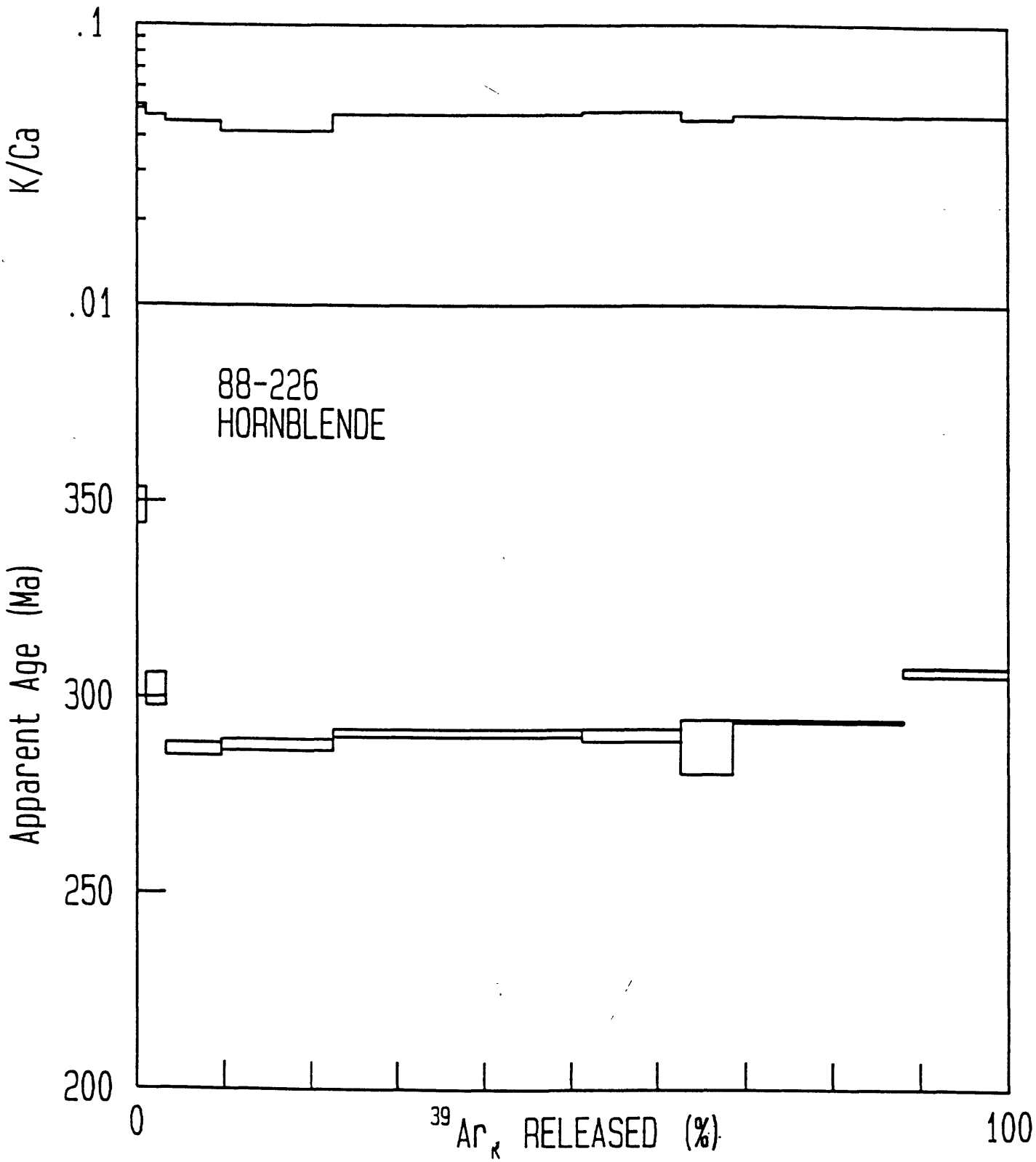
NO PLATEAU

Note: all gas quantities are in moles. No blank correction.
* Ages calculated assuming initial 40Ar/36Ar = 295.5 + 0
** 1-sigma precision estimates are for intra-sample reproducibility.
** 1-sigma precision estimates for plateaux are for intra-irradiation pack reproducibility.
*** below detection limit

TEMP C	% TOT 39Ar	RAD YIELD	APP K/Ca	APP K/Cl	F	AGE (Ma)	intra-sample	precision intra-package	int pac
A 1050	1.0	81.9	.05	33	22.849	348.86 +	2.28	2.79	3.2
B 1075	2.3	88.7	.05	28	19.509	301.88 +	2.08	2.51	2.8
C 1100	6.3	94.5	.05	25	18.462	286.90 +	.80	1.56	2.0
D 1125	12.9	97.4	.04	24	18.540	288.02 +	.73	1.52	2.0
E 1150	28.7	98.8	.05	25	18.751	291.04 +	.48	1.43	1.9
F 1175	11.4	97.7	.05	26	18.716	290.54 +	.76	1.55	2.0
G 1200	5.8	96.9	.05	25	18.511	287.60 +	3.45	3.70	3.9
H 1250	19.6	97.7	.05	25	18.967	294.14 +	.16	1.37	1.9
I 1350	12.0	97.4	.05	24	19.848	306.71 +	.53	1.51	2.0
Total gas K/Ca =			0.0						

Precisions are 1 sigma, measured in Ma. Measured 40/36 atm = 296.5 +.5
J = 0.009337 + 0.50% (intra-package) + 0.50% (inter-package)
Trap current factors- 40: 8.6 100: 4 200: 1
Manifold factors- ALL: 1 SPLIT 1: 3.6 SPLIT 2: 12.96 SPLIT 3: 46.656
EALL: 2 ESPLIT 1: 6.6 ESPLIT 2: 21.78
Sensitivity = 6.470E-18 % Reproducibility = .25 Detection limit = 40 co
Data reduced assuming initial 40/36 = 295.50 + 0.00
Ca-factors: 3637=2.6E-04+1.7E-06 3837=3.2E-05+2.4E-07 3937=6.7E-04+3.7E-06
K-factors: 3739=0.0E+00+2.2E-03 3839=1.3E-02+2.4E-04 4039=5.7E-03+4.0E-03

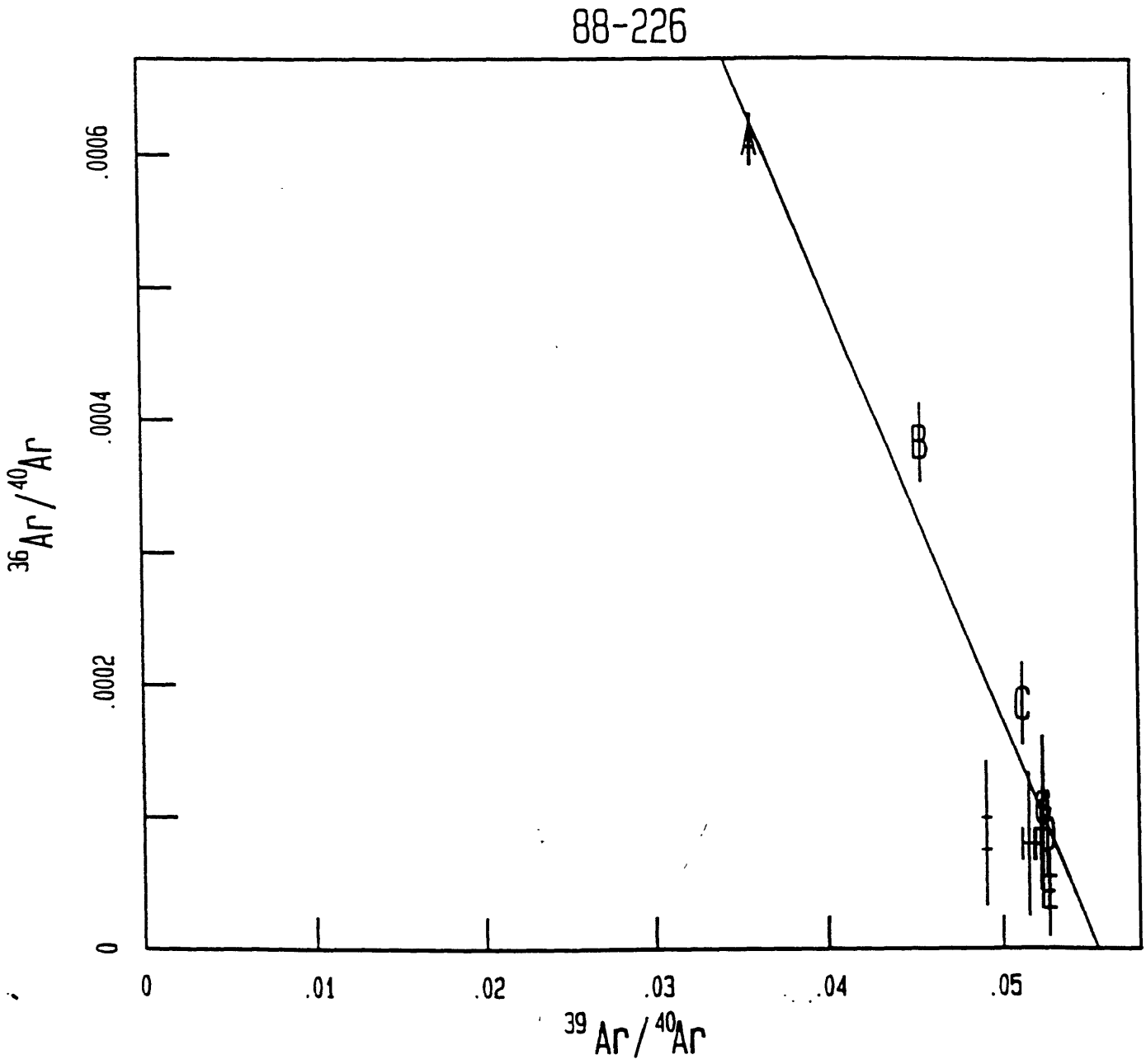
v 02/05/91 14:24:24 21 Jun 1991 88-226 HORNBLENDE RD59 #13,14,15



v 02/05/91 (40/36in = 295.5)

v 02/05/91 14:27:28 21 Jun 1991 88-226 HORNBLENDE RD59 #13,14,15

8 points regressed out of 9 includes 88 % of 39Ar
Mean X = .460E-01 Mean Y = .301E-03 Slope = -.318E-01 + .153E-02
36/40 = .177E-02 + .714E-04 39/40 = .555E-01 + .577E-03
Fit parameters: SUMS = 10.938 MSWD = 1.823
40Ar/36Ar = 566.38 + 22.89 F = 18.02 + .187 AGE = 280.54 + 3 Ma



W/O POINTS I

R A W D A T A

FILE	TEMP	40Ar	39Ar	38Ar	37Ar	36Ar regression	TRAP CURRENT	MANIFO: OPTION
22518	750	863480	52739	589	9	116	200	ALL
	+	1243	104	15	15	8		
22519	850	2142689	128846	1738	0	226	200	ALL
	+	1523	85	14	10	4		
22520	950	1587095	97358	1084	5	83	200	SPLIT
	+	874	85	26	10	6		
22521	975	2837673	176837	2341	0	57	200	SPLIT
	+	1353	125	8	10	4		
22522	1000	1707961	106362	1401	0	21	200	SPLIT
	+	701	96	10	7	7		
22523	1000	4367909	271770	3571	0	83	200	ALL
	+	1754	190	5	9	4		
22525	1100	499731	30935	336	11	25	200	SPLIT
	+	277	12	9	5	9		
22526	1150	1866979	115880	1537	7	59	200	SPLIT
	+	918	62	6	12	5		
22527	1150	2307460	144015	1891	26	89	200	EALL
	+	1627	89	32	34	32		

C O R R E C T I O N S

TEMP °C	39Ar Decay	37Ar Decay	-----K-derived---- 40Ar	38Ar	37Ar	----Ca-derived---- 39Ar	38Ar	36Ar	Cl-der 36Ar	Initi: 38Ar
750	151	23021	301	709	0	16	1	6	-0	21
850	369	0	735	1733	0	0	0	0	0	42
950	279	13145	555	1309	0	9	0	3	-0	15
975	506	0	1008	2378	0	0	0	0	-0	11
1000	305	0	606	1431	0	0	0	0	-0	4
1000	778	0	1549	3655	0	0	0	0	-0	16
1100	89	26459	176	416	0	18	1	7	-0	3
1150	332	17366	661	1558	0	12	1	5	-0	10
1150	413	64513	821	1936	0	44	2	17	-0	13

All values in counts, corrected for mass discrimination

16:53:37 23 May 1991
88-226B MUSCOVITE; RD59 #88

J = 0.009220 + 0.50% SAMPLE WT = 0.1018 g

TEMP C	Initial & radiogenic 40Ar	Potassium derived 39Ar	Chlorine derived 38Ar	Calcium derived 37Ar	Initial 36Ar	AGE* in Ma	**
750	8.632E-12	5.292E-13	***	2.309E-13	1.102E-15	243.83 +	1.1
850	2.142E-11	1.293E-12	5.063E-16	***	2.271E-15	248.87 +	.3
950	5.236E-11	3.224E-12	***	4.351E-13	2.634E-15	248.18 +	.4
975	9.361E-11	5.857E-12	***	***	1.881E-15	246.60 +	.2
1000	5.634E-11	3.523E-12	***	***	***	247.29 +	.3
1000	4.366E-11	2.728E-12	***	***	8.369E-16	247.02 +	.3
1100	5.440E-11	3.379E-12	***	2.890E-12	***	247.20 +	1.3
1150	6.159E-11	3.838E-12	***	5.748E-13	1.802E-15	246.91 +	.3
1150	4.613E-11	2.890E-12	***	1.294E-12	1.436E-15	245.56 +	1.3
TOTAL GAS	4.381E-10	2.726E-11	***	5.425E-12	1.460E-14	246.98	

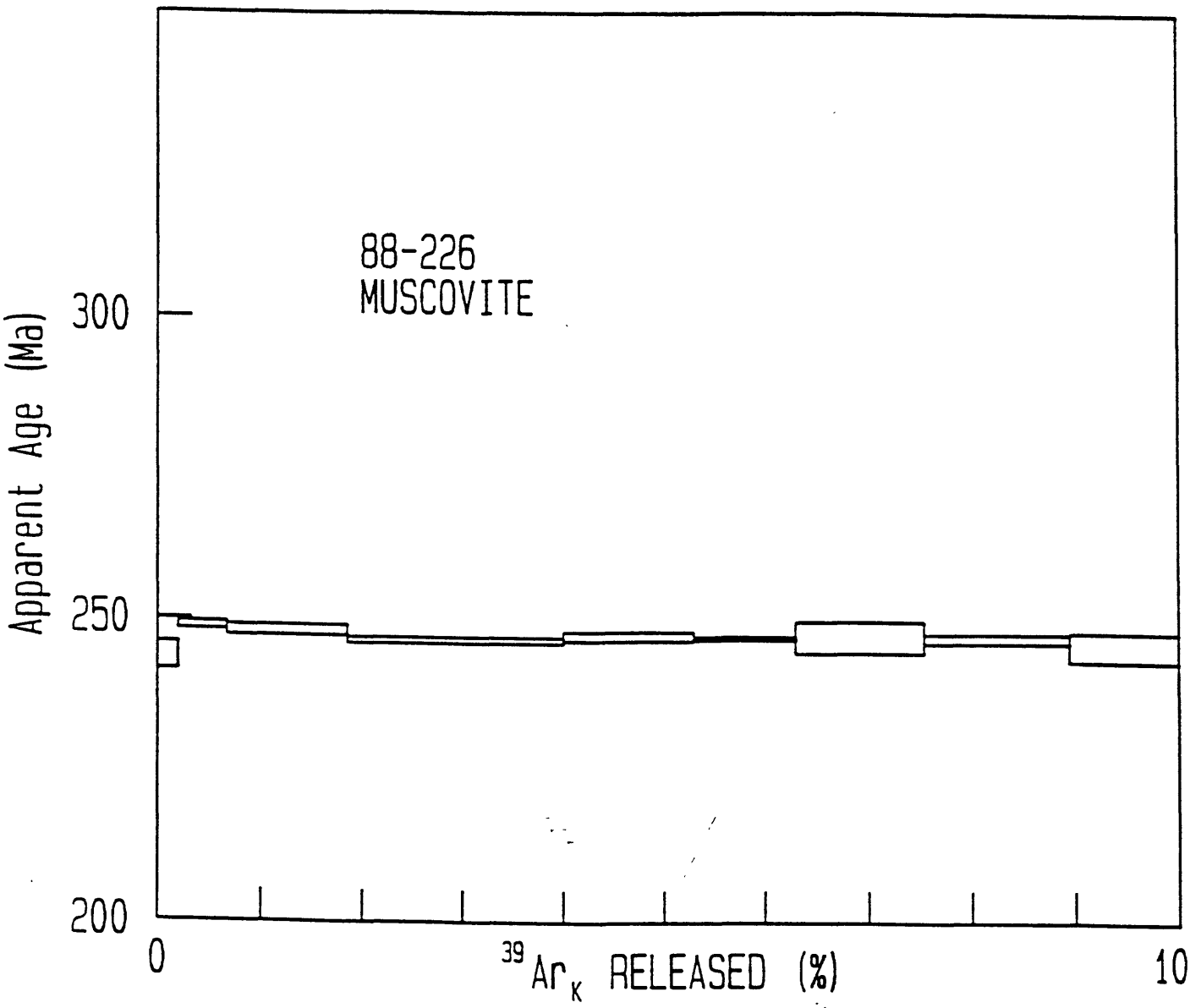
82.7% of gas on plateau, steps 950 through 1150 PLATEAU AGE = 247.03 +
81.5% of gas on plateau, steps 975 through 1150 PLATEAU AGE = 246.91 +

Note: all gas quantities are in moles. No blank correction.
* Ages calculated assuming initial 40Ar/36Ar = 295.5 + 0
** 1-sigma precision estimates are for intra-sample reproducibility.
** 1-sigma precision estimates for plateaux are for intra-irradiation pack reproducibility.
*** below detection limit

	TEMP C	% TOT 39Ar	RAD YIELD	APP K/Ca	APP K/Cl	F	AGE (Ma)	precision intra-sample	precision intra-package	precision inte pack
A	750	1.9	96.2	1.19	0	15.696	243.83 +	1.14	1.62	1.98
B	850	4.7	96.9	0.00	6181	16.044	248.87 +	.32	1.21	1.68
C	950	11.8	98.5	3.85	0	15.996	248.18 +	.44	1.24	1.70
D	975	21.5	99.4	0.00	0	15.887	246.60 +	.23	1.18	1.65
E	1000	12.9	99.6	0.00	0	15.934	247.29 +	.37	1.22	1.68
F	1000	10.0	99.4	0.00	0	15.916	247.02 +	.16	1.17	1.64
G	1100	12.4	98.9	.61	0	15.928	247.20 +	1.31	1.75	2.10
H	1150	14.1	99.1	3.47	0	15.909	246.91 +	.38	1.22	1.68
I	1150	10.6	99.1	1.16	0	15.815	245.56 +	1.23	1.68	2.04
Total gas K/Ca =				1.2						

Precisions are 1 sigma, measured in Ma. Measured 40/36 atm = 296.5 +.5
J = 0.009220 + 0.50% (intra-package) + 0.50% (inter-package)
Trap current factors- 40: 5.66 100: 2.62 200: 1
Manifold factors- ALL: 1 SPLIT 1: 3.3 SPLIT 2: 10.89 SPLIT 3: 35.937
EALL: 2 ESPLIT 1: 6.6 ESPLIT 2: 21.78
Sensitivity = 1.000E-17 % Reproducibility = .25 Detection limit = 40 cou
Data reduced assuming initial 40/36 = 295.50 + 0.00
Ca-factors: 3637=2.6E-04+1.7E-06 3837=3.2E-05+2.4E-07 3937=6.7E-04+3.7E-06
K-factors: 3739=0.0E+00+2.2E-03 3839=1.3E-02+2.4E-04 4039=5.7E-03+4.0E-03

v 02/05/91 16:54:36 23 May 1991 88-226B MUSCOVITE; RD59 #88



v 02/05/91 (40/36in = 295.

88-226C BIOTITE; RD59 #62 14:55:32 22 May 1991

R A W D A T A

FILE	TEMP	40Ar	39Ar	38Ar	37Ar	36Ar *	TRAP CURRENT	MANI OPTI
19362:	1450	3288086	202288	4848	198	127	100	SPI
	+	1338	58	7	30	7		

38Ar errors assigned from experience, rest calculated from regression stati
* 36Ar peak values less than 1200 are means those above 1200 are from l
regressions

C O R R E C T I O N S

TEMP °C	39Ar Decay	37Ar Decay	-----K-derived---- 40Ar	38Ar	37Ar	----Ca-derived---- 39Ar	38Ar	36Ar	Cl-der 36Ar	Ini 38
1450	113	782	1151	2714	0	1	0	0	0	

All values in counts, corrected for mass discrimination

TEMP C	% TOT 39Ar	RAD YIELD	APP K/Ca	APP K/Cl	F	AGE (Ma)	intra-sample	precision intra-package	i: p:
A 1450	100.0	98.9	107.30	226	16.042	243.03 +	.17	1.15	1.
Total gas K/Ca =			107.3						

Precisions are 1 sigma, measured in Ma. Measured 40/36 atm = 296.5 +.5
J = 0.008990 + 0.50% (intra-package) + 0.50% (inter-package)
Trap current factors- 40: 8.6 100: 4 200: 1
Manifold factors- ALL: 1 SPLIT 1: 3.6 SPLIT 2: 12.96 SPLIT 3: 46.656
EALL: 2 ESPLIT 1: 6.6 ESPLIT 2: 21.78
Sensitivity = 6.470E-18 % Reproducibility = .25 Detection limit = 40 c
Data reduced assuming initial 40/36 = 295.50 + 0.00
Ca-factors: 3637=2.6E-04+1.7E-06 3837=3.2E-05+2.4E-07 3937=6.7E-04+3.7E-0
K-factors: 3739=0.0E+00+2.2E-03 3839=1.3E-02+2.4E-04 4039=5.7E-03+4.0E-0

J = 0.008990 + 0.50% SAMPLE WT = 0.0901 g

TEMP C	Initial & radiogenic 40Ar	Potassium derived 39Ar	Chlorine derived 38Ar	Calcium derived 37Ar	Initial 36Ar	AGE* in Ma
1450	3.062E-10	1.887E-11	2.017E-13	9.147E-14	1.177E-14	243.03 +

Note: all gas quantities are in moles. No blank correction.
* Ages calculated assuming initial 40Ar/36Ar = 295.5 + 0
** 1-sigma precision estimates are for intra-sample reproducibility.
** 1-sigma precision estimates for plateaux are for intra-irradiation pa
reproducibility.
*** below detection limit

v 02/05/91 88-226C K-FELDSPAR; RD59 #84 15:22:17 22 May 1991

R A W D A T A

FILE	TEMP	40Ar	39Ar	38Ar	37Ar	36Ar *	TRAP CURRENT	MANIFOI OPTION
19791:	750	1465772	98532	1360	504	138	200	ALL
	+	518	34	19	14	14		
19792:	850	3555725	262675	3429	646	69	200	ALL
	+	1792	130	20	5	16		
19793:	950	2436165	177368	2278	297	28	200	SPLIT
	+	622	93	10	10	7		
19794:	1000	1348530	96275	1232	154	10	100	ALL
	+	390	69	28	13	6		
19795:	1050	1382464	97190	1215	95	11	100	ALL
	+	653	21	14	16	5		
19796:	1100	1146237	79400	1017	49	18	100	ALL
	+	734	52	12	19	19		
19797:	1150	4259606	289484	3734	111	48	200	ALL
	+	1512	126	13	17	9		
19798:	1200	4107605	276020	3591	252	45	200	ALL
	+	1596	103	12	16	11		
19799:	1250	3163393	211695	2795	498	69	200	ALL
	+	1093	96	14	12	10		
19800:	1275	2477425	164247	2171	490	69	200	ALL
	+	854	31	11	6	8		
19801:	1300	2801365	184483	2486	388	87	200	ALL
	+	579	46	16	14	7		
19802:	1325	3717286	243237	3252	162	72	200	ALL
	+	1166	48	13	6	9		
19803:	1350	1395987	90501	1201	54	22	100	ALL
	+	752	56	32	19	15		
19804:	1450	3968505	254802	3398	5	68	100	ALL
	+	1839	58	6	10	5		
19805:	1550	365468	22836	283	33	12	200	ALL
	+	51	33	18	6	10		

38Ar errors assigned from experience, rest calculated from regression statis
* 36Ar peak values less than 1500 are means those above 1500 are from li
regressions

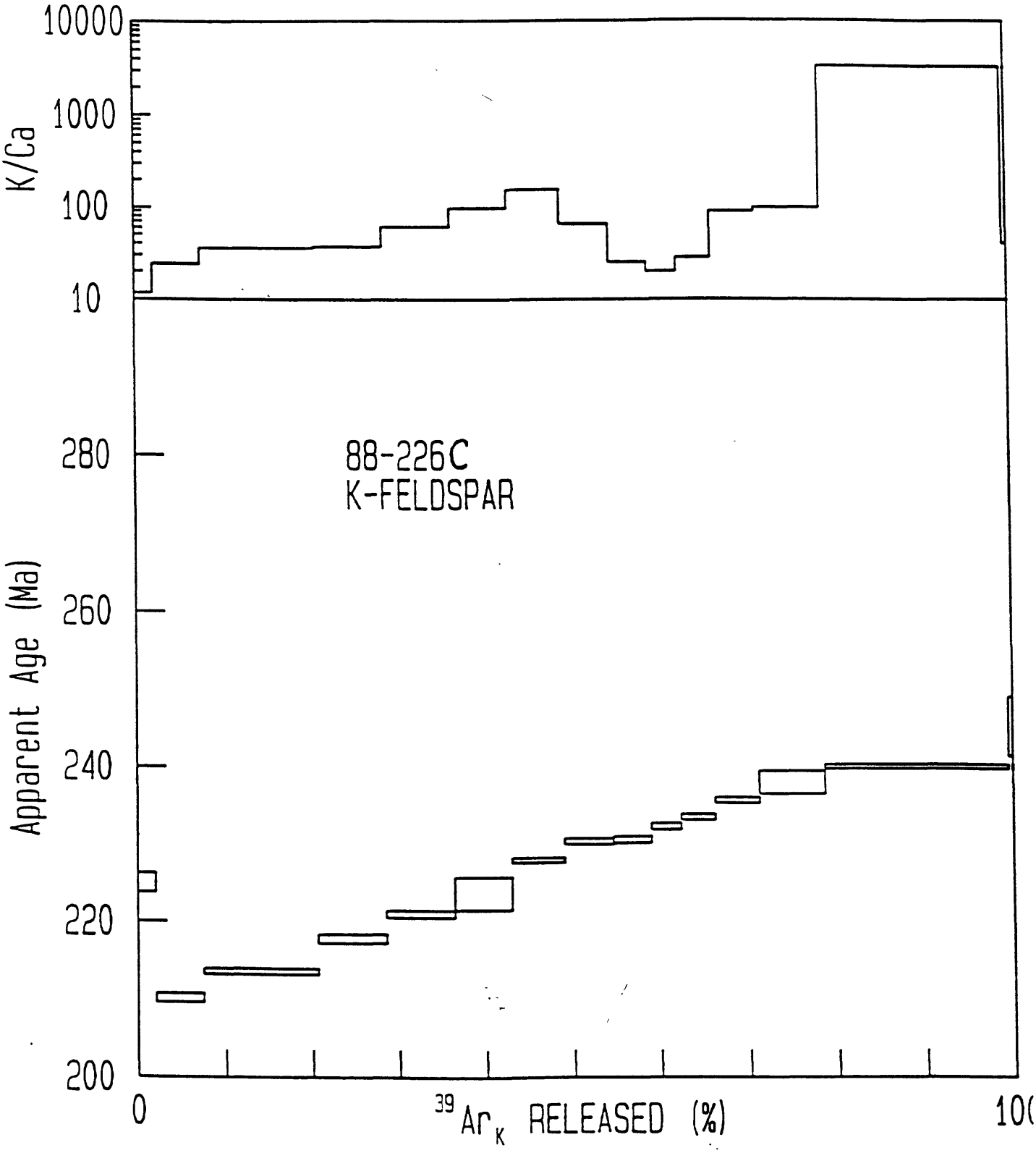
v 02/05/91

v 02/05/91 88-226C K-FELDSPAR; RD59 #84 15:22:20 22 May 1991

	TEMP C	% TOT 39Ar	RAD YIELD	APP K/Ca	APP K/Cl	F	AGE (Ma)		precision intra-sample	precision intra-package	precision inter pack
A	750	2.0	97.2	11.65	3648	14.435	224.99	+	.61	1.22	1.62
B	850	5.4	99.4	24.22	0	13.434	210.26	+	.28	1.04	1.44
C	950	13.1	99.7	35.51	0	13.662	213.63	+	.18	1.03	1.44
D	1000	7.9	99.8	37.11	0	13.950	217.88	+	.29	1.07	1.48
E	1050	8.0	99.8	60.63	0	14.162	220.99	+	.22	1.07	1.49
F	1100	6.5	99.5	96.78	0	14.341	223.62	+	1.05	1.49	1.82
G	1150	6.0	99.7	155.27	0	14.636	227.94	+	.16	1.09	1.53
H	1200	5.7	99.7	65.05	0	14.804	230.40	+	.19	1.10	1.55
I	1250	4.4	99.4	25.24	0	14.819	230.62	+	.21	1.11	1.55
J	1275	3.4	99.2	19.87	0	14.932	232.27	+	.21	1.11	1.56
K	1300	3.8	99.1	28.14	14898	15.016	233.49	+	.18	1.11	1.56
L	1325	5.0	99.4	89.00	95109	15.164	235.65	+	.17	1.12	1.58
M	1350	7.4	99.5	98.48	0	15.323	237.96	+	.73	1.34	1.74
N	1450	21.0	99.5	3307.61	0	15.465	240.02	+	.14	1.14	1.60
O	1550	.5	99.0	40.30	0	15.820	245.17	+	1.91	2.23	2.51

Total gas K/Ca = 741.1

Precisions are 1 sigma, measured in Ma. Measured 40/36 atm = 296.5 +.5
J = 0.009202 + 0.50% (intra-package) + 0.50% (inter-package)
Trap current factors- 40: 8.6 100: 4 200: 1
Manifold factors- ALL: 1 SPLIT 1: 3.6 SPLIT 2: 12.96 SPLIT 3: 46.656
EALL: 2 ESPLIT 1: 6.6 ESPLIT 2: 21.78
Sensitivity = 6.470E-18 % Reproducibility = .25 Detection limit = 40 cou
Data reduced assuming initial 40/36 = 295.50 + 0.00
Ca-factors: 3637=2.6E-04+1.7E-06 3837=3.2E-05+2.4E-07 3937=6.7E-04+3.7E-06
K-factors: 3739=0.0E+00+2.2E-03 3839=1.3E-02+2.4E-04 4039=5.7E-03+4.0E-03



v 02/05/91 (40/36in = 295.5

RAW DATA

FILE	TEMP	40Ar	39Ar	38Ar	37Ar	36Ar *	TRAP CURRENT	MANIFOLD OPTION
19180:	1000	1244889	61938	2185	80720	659	200	ALL
	+	344	7	9	37	20		
19182:	1050	1765891	99327	4246	126559	284	200	SPLIT 1
	+	719	47	15	91	19		
19184:	1075	2444705	138216	6077	169156	347	200	SPLIT 1
	+	1346	65	21	154	13		
19186:	1100	3846868	220523	9622	265435	367	200	SPLIT 1
	+	3084	216	18	223	21		
19188:	1125	4061091	234650	10108	277546	359	200	SPLIT 1
	+	2260	128	17	208	20		
19190:	1150	1511727	87552	3606	100268	90	100	SPLIT 1
	+	939	50	20	73	18		
19192:	1175	2366305	135788	5551	153860	226	200	SPLIT 1
	+	824	66	23	93	8		
19194:	1200	1790000	101837	4236	117157	200	200	SPLIT 1
	+	1072	94	7	91	10		
19197:	1250	1975543	113097	4718	128191	175	200	SPLIT 1
	+	628	62	18	105	12		
19198:	1350	798663	41084	1750	46593	325	200	ALL
	+	347	16	8	15	15		

38Ar errors assigned from experience, rest calculated from regression statisti
* 36Ar peak values less than 1200 are means those above 1200 are from linea
regressions

CORRECTIONS

TEMP °C	39Ar Decay	37Ar Decay	K-derived 40Ar	K-derived 38Ar	K-derived 37Ar	Ca-derived 39Ar	Ca-derived 38Ar	Ca-derived 36Ar	Cl-der 36Ar	Initial 38Ar
1000	22	154265	351	829	0	159	7	62	0	112
1050	36	242170	563	1329	0	249	12	98	0	35
1075	51	330315	784	1850	0	337	16	132	0	40
1100	81	518966	1251	2952	0	529	25	208	1	30
1125	86	543490	1331	3141	0	554	26	217	1	27
1150	32	196588	497	1172	0	200	9	79	0	2
1175	50	302036	770	1818	0	308	14	121	0	20
1200	38	230272	578	1363	0	234	11	92	0	20
1250	42	252431	642	1514	0	257	12	101	0	14
1350	15	91836	233	550	0	93	4	37	0	54

All values in counts, corrected for mass discrimination

v 02/05/91 14:25:28 22 May 1991

88-306 HORNBLENDE; RD 59 #19,20,21

J = 0.009129 + 0.50% SAMPLE WT = 0.9970 g

TEMP C	Initial & radiogenic 40Ar	Potassium derived 39Ar	Chlorine derived 38Ar	Calcium derived 37Ar	Initial 36Ar	AGE* in Ma	**
1000	8.052E-12	4.002E-13	9.476E-15	1.524E-12	3.876E-15	263.95 +	1.39
1050	4.112E-11	2.311E-12	6.864E-14	8.610E-12	4.367E-15	263.64 +	.80
1075	5.692E-11	3.215E-12	9.928E-14	1.166E-11	5.026E-15	263.70 +	.41
1100	8.957E-11	5.130E-12	1.559E-13	1.832E-11	3.738E-15	263.73 +	.45
1125	9.456E-11	5.459E-12	1.627E-13	1.917E-11	3.322E-15	262.27 +	.39
1150	1.408E-10	8.148E-12	2.267E-13	2.773E-11	***	263.70 +	.8
1175	5.510E-11	3.159E-12	8.730E-14	1.065E-11	2.468E-15	263.23 +	.2
1200	4.168E-11	2.369E-12	6.731E-14	8.113E-12	2.521E-15	264.19 +	.4
1250	1.656E-10	9.473E-12	2.695E-13	3.200E-11	6.259E-15	264.32 +	.4
1350	5.166E-12	2.655E-13	8.106E-15	8.979E-13	1.874E-15	265.52 +	1.5
TOTAL GAS	6.986E-10	3.993E-11	1.155E-12	1.387E-10	3.449E-14	263.66	

69.7% of gas on plateau, steps 1000 through 1175 PLATEAU AGE = 263.25 + 1

58.6% of gas on plateau, steps 1150 through 1350 PLATEAU AGE = 263.70 + 1

Note: all gas quantities are in moles. No blank correction.

* Ages calculated assuming initial 40Ar/36Ar = 295.5 + 0

** 1-sigma precision estimates are for intra-sample reproducibility.

** 1-sigma precision estimates for plateaux are for intra-irradiation packa reproducibility.

*** below detection limit

	TEMP C	% TOT 39Ar	RAD YIELD	APP K/Ca	APP K/Cl	F	AGE (Ma)		precision intra-sample	precision intra-package	precision inter packa
A	1000	1.0	85.8	.14	102	17.259	263.95	+	1.39	1.86	2.23
B	1050	5.8	96.9	.14	81	17.237	263.64	+	.80	1.47	1.91
C	1075	8.1	97.4	.14	78	17.242	263.70	+	.41	1.30	1.79
D	1100	12.8	98.8	.15	80	17.244	263.73	+	.45	1.31	1.80
E	1125	13.7	99.0	.15	81	17.141	262.27	+	.39	1.29	1.77
F	1150	20.4	99.8	.15	87	17.242	263.70	+	.87	1.50	1.94
G	1175	7.9	98.7	.15	88	17.208	263.23	+	.27	1.26	1.76
H	1200	5.9	98.2	.15	85	17.276	264.19	+	.45	1.31	1.80
I	1250	23.7	98.9	.15	85	17.285	264.32	+	.47	1.32	1.81
J	1350	.7	89.3	.15	79	17.369	265.52	+	1.57	2.01	2.36
Total gas K/Ca =				.1							

Precisions are 1 sigma, measured in Ma. Measured 40/36 atm = 296.5 +.5

J = 0.009129 + 0.50% (intra-package) + 0.50% (inter-package)

Trap current factors- 40: 8.6 100: 4 200: 1

Manifold factors- ALL: 1 SPLIT 1: 3.6 SPLIT 2: 12.96 SPLIT 3: 46.656

EALL: 2 ESPLIT 1: 6.6 ESPLIT 2: 21.78

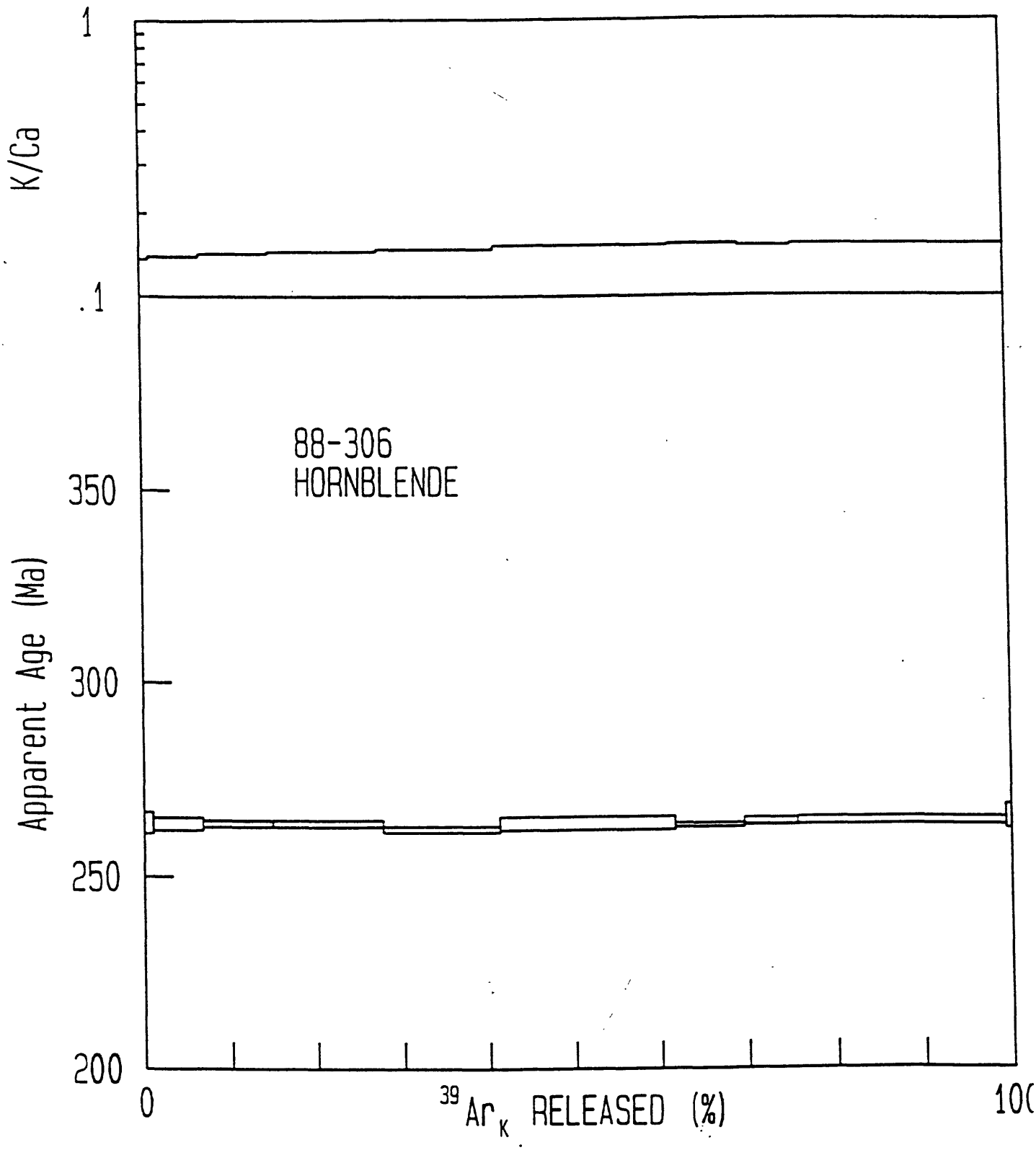
Sensitivity = 6.470E-18 % Reproducibility = .25 Detection limit = 40 coun

Data reduced assuming initial 40/36 = 295.50 + 0.00

Ca-factors: 3637=2.6E-04+1.7E-06 3837=3.2E-05+2.4E-07 3937=6.7E-04+3.7E-06

K-factors: 3739=0.0E+00+2.2E-03 3839=1.3E-02+2.4E-04 4039=5.7E-03+4.0E-03

v 02/05/91 14:26:20 22 May 1991 88-306 HORNBLENDE; RD 59 #19,20,21



v 02/05/91 (40/36in = 295.5

v 02/05/91 88-401 HORNBLENDE; RD 59 #96,97,98 14:38:35 22 May 1991

R A W D A T A

FILE	TEMP	40Ar	39Ar	38Ar	37Ar	36Ar *	TRAP CURRENT	MANIFOLD OPTION
19902:	1075	2788814	163852	67001	58508	310	200	ALL
	+	1071	87	20	27	6		
19903:	1100	4351316	258287	106245	92687	356	200	ALL
	+	2596	244	102	47	11		
19905:	1120	1863051	110624	43817	39410	166	200	SPLIT
	+	71	53	23	18	12		
19906:	1140	1773079	105437	40380	37655	135	100	ALL
	+	382	32	19	39	9		
19908:	1160	3426938	204144	75338	72269	254	200	SPLIT
	+	697	45	49	47	12		
19909:	1180	2400186	142919	51206	50189	175	100	ALL
	+	135	72	12	17	11		
19910:	1200	2842595	168919	59510	58899	183	100	ALL
	+	1264	115	50	39	10		
19911:	1225	3964386	234422	82104	81156	265	100	ALL
	+	2329	111	57	59	13		
19912:	1250	3360573	198673	69974	68872	220	100	ALL
	+	1692	150	19	32	14		
19913:	1350	1577116	93105	32816	32260	114	100	ALL
	+	490	39	28	5	11		
19914:	1450	468248	25652	8234	8058	152	200	ALL
	+	110	11	13	23	4		

38Ar errors assigned from experience, rest calculated from regression statist
* 36Ar peak values less than 1200 are means those above 1200 are from lin regressions

C O R R E C T I O N S

TEMP °C	39Ar Decay	37Ar Decay	-----K-derived---- 40Ar	38Ar	37Ar	----Ca-derived---- 39Ar	38Ar	36Ar	Cl-der 36Ar	Initia 38Ar
1075	132	504553	930	2194	0	380	18	149	14	28
1100	208	799858	1466	3459	0	602	28	236	22	18
1120	89	340409	628	1481	0	256	12	101	9	11
1140	85	325476	598	1412	0	245	12	96	8	6
1160	165	625376	1159	2734	0	471	22	185	15	10
1180	115	434611	811	1914	0	327	15	128	11	7
1200	136	510495	959	2262	0	384	18	151	12	4
1225	189	703889	1331	3139	0	530	25	208	17	8
1250	161	597901	1128	2661	0	450	21	176	14	6
1350	75	280248	529	1247	0	211	10	83	7	5
1450	21	70049	146	344	0	53	2	21	2	24

All values in counts, corrected for mass discrimination

v 02/05/91 88-401 HORNBLENDE; RD 59 #96,97,98 14:38:37 22 May 1991

	TEMP C	% TOT 39Ar	RAD YIELD	APP K/Ca	APP K/Cl	F	AGE (Ma)		precision intra-sample	precision intra-package	precision inter packa
A	1075	3.1	98.4	.15	6	16.758	260.02	+	.18	1.23	1.73
B	1100	4.8	99.3	.15	6	16.739	259.76	+	.24	1.24	1.73
C	1120	7.4	99.1	.15	6	16.696	259.13	+	.48	1.30	1.78
D	1140	7.9	99.5	.15	7	16.735	259.70	+	.38	1.27	1.76
E	1160	13.7	99.5	.15	7	16.713	259.37	+	.26	1.24	1.73
F	1180	10.7	99.6	.15	7	16.724	259.54	+	.32	1.25	1.74
G	1200	12.6	99.8	.15	7	16.796	260.57	+	.27	1.25	1.74
H	1225	17.5	99.7	.15	7	16.864	261.56	+	.28	1.25	1.75
I	1250	14.8	99.7	.15	7	16.876	261.73	+	.32	1.26	1.76
J	1350	7.0	99.5	.15	7	16.864	261.56	+	.50	1.32	1.80
K	1450	.5	91.8	.17	8	16.753	259.96	+	.72	1.41	1.86

Total gas K/Ca = .2

Precisions are 1 sigma, measured in Ma. Measured 40/36 atm = 296.5 +.5
J = 0.009252 + 0.50% (intra-package) + 0.50% (inter-package)
Trap current factors- 40: 8.6 100: 4 200: 1
Manifold factors- ALL: 1 SPLIT 1: 3.6 SPLIT 2: 12.96 SPLIT 3: 46.656
EALL: 2 ESPLIT 1: 6.6 ESPLIT 2: 21.78
Sensitivity = 6.470E-18 % Reproducibility = .25 Detection limit = 40 coun
Data reduced assuming initial 40/36 = 295.50 + 0.00
Ca-factors: 3637=2.6E-04+1.7E-06 3837=3.2E-05+2.4E-07 3937=6.7E-04+3.7E-06
K-factors: 3739=0.0E+00+2.2E-03 3839=1.3E-02+2.4E-04 4039=5.7E-03+4.0E-03

v 02/05/91 14:38:39 22 May 1991

88-401 HORNBLENDE; RD 59 #96,97,98

J = 0.009252 + 0.50% SAMPLE WT = 1.0046 g

TEMP C	Initial & radiogenic 40Ar	Potassium derived 39Ar	Chlorine derived 38Ar	Calcium derived 37Ar	Initial 36Ar	AGE* in Ma	**
1075	1.804E-11	1.059E-12	4.201E-13	3.652E-12	9.622E-16	260.02 +	.18
1100	2.814E-11	1.670E-12	6.662E-13	5.789E-12	6.397E-16	259.76 +	.24
1120	4.338E-11	2.575E-12	9.878E-13	8.869E-12	1.316E-15	259.13 +	.48
1140	4.587E-11	2.727E-12	1.010E-12	9.422E-12	***	259.70 +	.38
1160	7.979E-11	4.752E-12	1.694E-12	1.629E-11	1.277E-15	259.37 +	.26
1180	6.210E-11	3.696E-12	1.278E-12	1.258E-11	***	259.54 +	.32
1200	7.354E-11	4.369E-12	1.484E-12	1.477E-11	***	260.57 +	.27
1225	1.026E-10	6.063E-12	2.047E-12	2.037E-11	1.068E-15	261.56 +	.28
1250	8.694E-11	5.139E-12	1.745E-12	1.730E-11	***	261.73 +	.32
1350	4.080E-11	2.408E-12	8.184E-13	8.108E-12	***	261.56 +	.50
1450	3.029E-12	1.659E-13	5.129E-14	5.066E-13	8.434E-16	259.96 +	.72
TOTAL GAS	5.842E-10	3.462E-11	1.220E-11	1.177E-10	9.810E-15	260.47	

60.2% of gas on plateau, steps 1075 through 1200 PLATEAU AGE = 259.83 + 1.

51.9% of gas on plateau, steps 1200 through 1350 PLATEAU AGE = 261.27 + 1.

Note: all gas quantities are in moles. No blank correction.

* Ages calculated assuming initial 40Ar/36Ar = 295.5 + 0

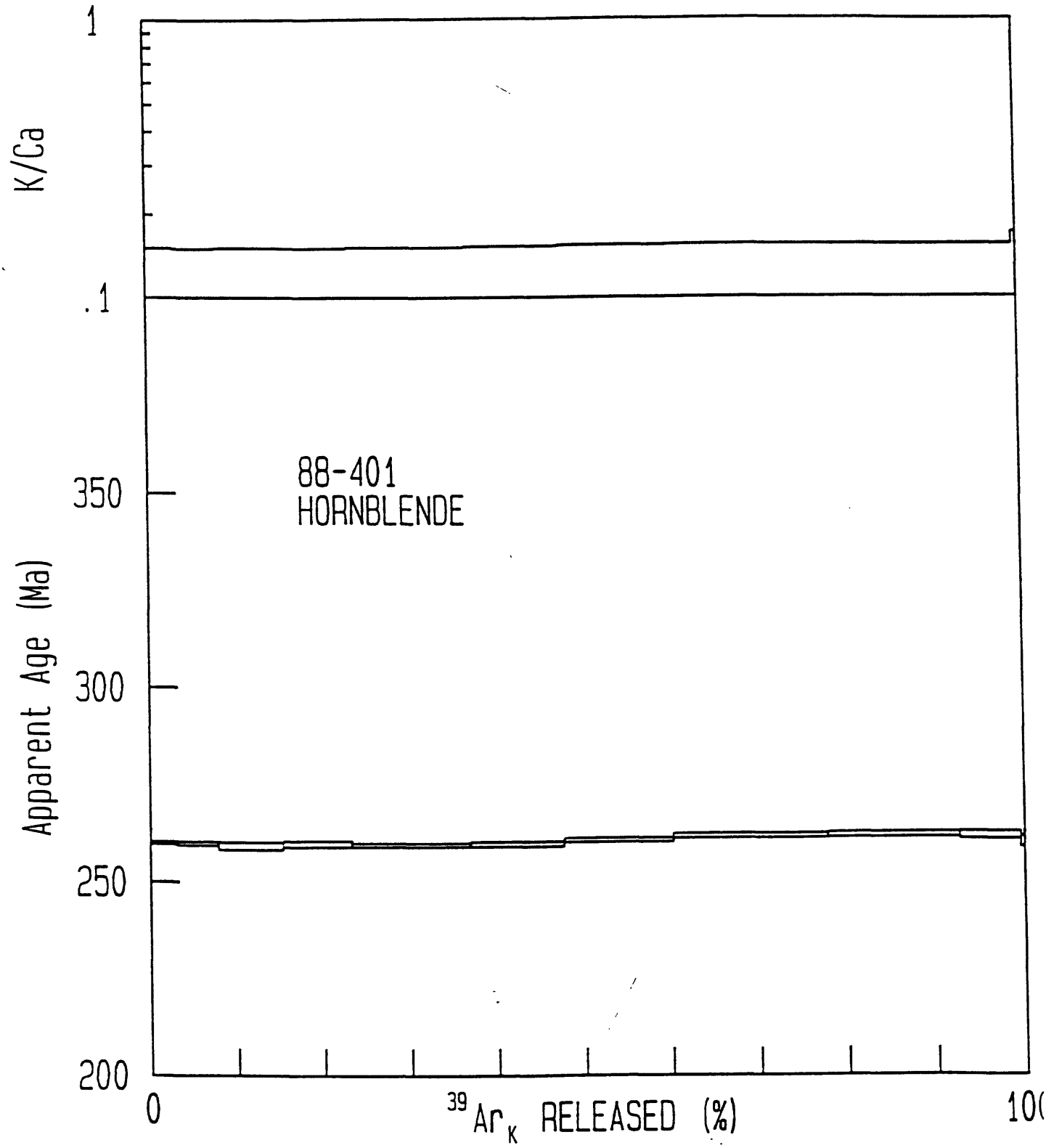
** 1-sigma precision estimates are for intra-sample reproducibility.

** 1-sigma precision estimates for plateaux are for intra-irradiation packa reproducibility.

*** below detection limit

v 02/05/91

v 02/05/91 14:39:25 22 May 1991 88-401 HORNBLENDE; RD 59 #96,97,98



v 02/05/91 (40/36in = 295.5

v 02/05/91 88-401 K-FELDSPAR; RD59 #81 14:50:43 22 May 1991

R A W D A T A

FILE	TEMP	40Ar	39Ar	38Ar	37Ar	36Ar *	TRAP CURRENT	MANIFOLD OPTION
19755:	750	2566019	132677	2230	103	212	200	ALL
	+	830	43	2	6	6		
19756:	850	3939304	262452	3495	245	76	200	ALL
	+	906	63	14	12	9		
19757:	950	2060471	137589	1796	144	21	100	ALL
	+	1486	87	12	25	13		
19758:	1000	3835120	257658	3335	184	34	200	ALL
	+	1178	92	12	13	9		
19759:	1050	3784419	251977	3283	118	36	200	ALL
	+	1349	90	20	21	8		
19760:	1100	3476466	227221	2980	90	46	200	ALL
	+	3083	155	14	21	14		
19761:	1150	3349489	210936	2826	77	70	200	ALL
	+	1015	168	14	9	6		
19762:	1200	3704245	223384	3051	117	90	200	ALL
	+	1308	86	2	6	17		
19763:	1250	4032321	239583	3333	153	104	200	ALL
	+	1176	126	5	20	4		
19764:	1275	4058808	242126	3522	141	105	200	ALL
	+	2659	126	28	11	12		
19766:	1300	1134469	67547	1005	21	45	200	SPLIT
	+	129	8	11	17	9		
19767:	1325	1694625	97291	1440	50	50	100	ALL
	+	406	46	15	11	8		
19768:	1350	3449218	193957	2929	0	106	100	ALL
	+	407	80	17	21	18		
19770:	1450	1417017	78505	1156	0	61	100	SPLIT
	+	143	27	9	14	9		

38Ar errors assigned from experience, rest calculated from regression statist
* 36Ar peak values less than 1200 are means those above 1200 are from lin regressions

C O R R E C T I O N S

TEMP °C	39Ar Decay	37Ar Decay	-----K-derived---- 40Ar	38Ar	37Ar	----Ca-derived---- 39Ar	38Ar	36Ar	Cl-der 36Ar	Initia 38Ar
750	101	774	755	1781	0	1	0	0	0	40
850	200	1838	1493	3522	0	1	0	1	-0	14
950	105	1080	783	1847	0	1	0	0	-0	4
1000	196	1384	1466	3458	0	1	0	0	-0	6
1050	192	891	1434	3382	0	1	0	0	-0	7
1100	173	677	1293	3050	0	1	0	0	-0	9
1150	161	577	1200	2831	0	0	0	0	0	13
1200	170	886	1271	2998	0	1	0	0	0	17
1250	183	1152	1363	3216	0	1	0	0	0	19
1275	185	1066	1377	3250	0	1	0	0	0	20
1300	52	162	384	907	0	0	0	0	0	8
1325	74	379	554	1306	0	0	0	0	0	9

1350	148	0	1103	2603	0	0	0	0	0	20
1450	60	0	447	1054	0	0	0	0	0	11

All values in counts, corrected for mass discrimination

	TEMP C	% TOT 39Ar	RAD YIELD	APP K/Ca	APP K/Cl	F	AGE (Ma)		precision intra-sample	precision intra-package	int pac
A	750	2.6	97.5	78.64	653	18.831	289.73	+	.21	1.36	1.91
B	850	5.1	99.4	65.46	0	14.895	232.90	+	.16	1.11	1.56
C	950	10.7	99.7	58.44	0	14.901	232.99	+	.45	1.18	1.61
D	1000	5.0	99.7	85.36	0	14.816	231.75	+	.17	1.11	1.55
E	1050	4.9	99.7	129.76	0	14.947	233.66	+	.16	1.11	1.56
F	1100	4.4	99.6	153.91	0	15.210	237.51	+	.33	1.16	1.6
G	1150	4.1	99.4	167.58	41368	15.750	245.41	+	.13	1.16	1.6
H	1200	4.3	99.3	115.62	7187	16.431	255.29	+	.33	1.24	1.7
I	1250	4.7	99.2	95.44	4062	16.670	258.75	+	.10	1.21	1.7
J	1275	4.7	99.2	104.18	1973	16.603	257.78	+	.27	1.24	1.7
K	1300	4.7	98.8	191.14	1507	16.567	257.26	+	.55	1.33	1.7
L	1325	7.6	99.1	117.91	1618	17.232	266.87	+	.35	1.29	1.7
M	1350	15.1	99.1	0.00	1341	17.587	271.97	+	.40	1.33	1.8
N	1450	22.0	98.7	0.00	1642	17.785	274.81	+	.50	1.37	1.8

Total gas K/Ca = 68.3

Precisions are 1 sigma, measured in Ma. Measured 40/36 atm = 296.5 +.5
J = 0.009252 + 0.50% (intra-package) + 0.50% (inter-package)
Trap current factors- 40: 8.6 100: 4 200: 1
Manifold factors- ALL: 1 SPLIT 1: 3.6 SPLIT 2: 12.96 SPLIT 3: 46.656
EALL: 2 ESPLIT 1: 6.6 ESPLIT 2: 21.78
Sensitivity = 6.470E-18 % Reproducibility = .25 Detection limit = 40 co
Data reduced assuming initial 40/36 = 295.50 + 0.00
Ca-factors: 3637=2.6E-04+1.7E-06 3837=3.2E-05+2.4E-07 3937=6.7E-04+3.7E-06
K-factors: 3739=0.0E+00+2.2E-03 3839=1.3E-02+2.4E-04 4039=5.7E-03+4.0E-03

v 02/05/91 14:50:48 22 May 1991

88-401 K-FELDSPAR; RD59 #81

J = 0.009252 + 0.50% SAMPLE WT = 0.0997 g

TEMP C	Initial & radiogenic 40Ar	Potassium derived 39Ar	Chlorine derived 38Ar	Calcium derived 37Ar	Initial 36Ar	AGE* in Ma	**
750	1.660E-11	8.598E-13	3.188E-15	5.686E-15	1.376E-15	289.73 +	.21
850	2.548E-11	1.701E-12	***	1.351E-14	4.898E-16	232.90 +	.16
950	5.330E-11	3.567E-12	***	3.173E-14	***	232.99 +	.45
1000	2.480E-11	1.670E-12	***	1.017E-14	***	231.75 +	.17
1050	2.448E-11	1.633E-12	***	6.544E-15	***	233.66 +	.16
1100	2.248E-11	1.472E-12	***	4.975E-15	2.993E-16	237.51 +	.33
1150	2.166E-11	1.367E-12	***	4.242E-15	4.513E-16	245.41 +	.13
1200	2.396E-11	1.448E-12	4.874E-16	6.511E-15	5.851E-16	255.29 +	.33
1250	2.608E-11	1.553E-12	9.250E-16	8.459E-15	6.734E-16	258.75 +	.10
1275	2.625E-11	1.569E-12	1.925E-15	7.832E-15	6.785E-16	257.78 +	.27
1300	2.642E-11	1.576E-12	2.530E-15	4.287E-15	1.043E-15	257.26 +	.55
1325	4.384E-11	2.522E-12	3.773E-15	1.112E-14	1.300E-15	266.87 +	.35
1350	8.924E-11	5.028E-12	9.075E-15	***	2.759E-15	271.97 +	.40
1450	1.320E-10	7.326E-12	1.080E-14	***	5.710E-15	274.81 +	.50
TOTAL GAS	5.566E-10	3.329E-11	3.278E-14	1.151E-13	1.636E-14	257.36	

NO PLATEAU

Note: all gas quantities are in moles. No blank correction.

* Ages calculated assuming initial 40Ar/36Ar = 295.5 + 0

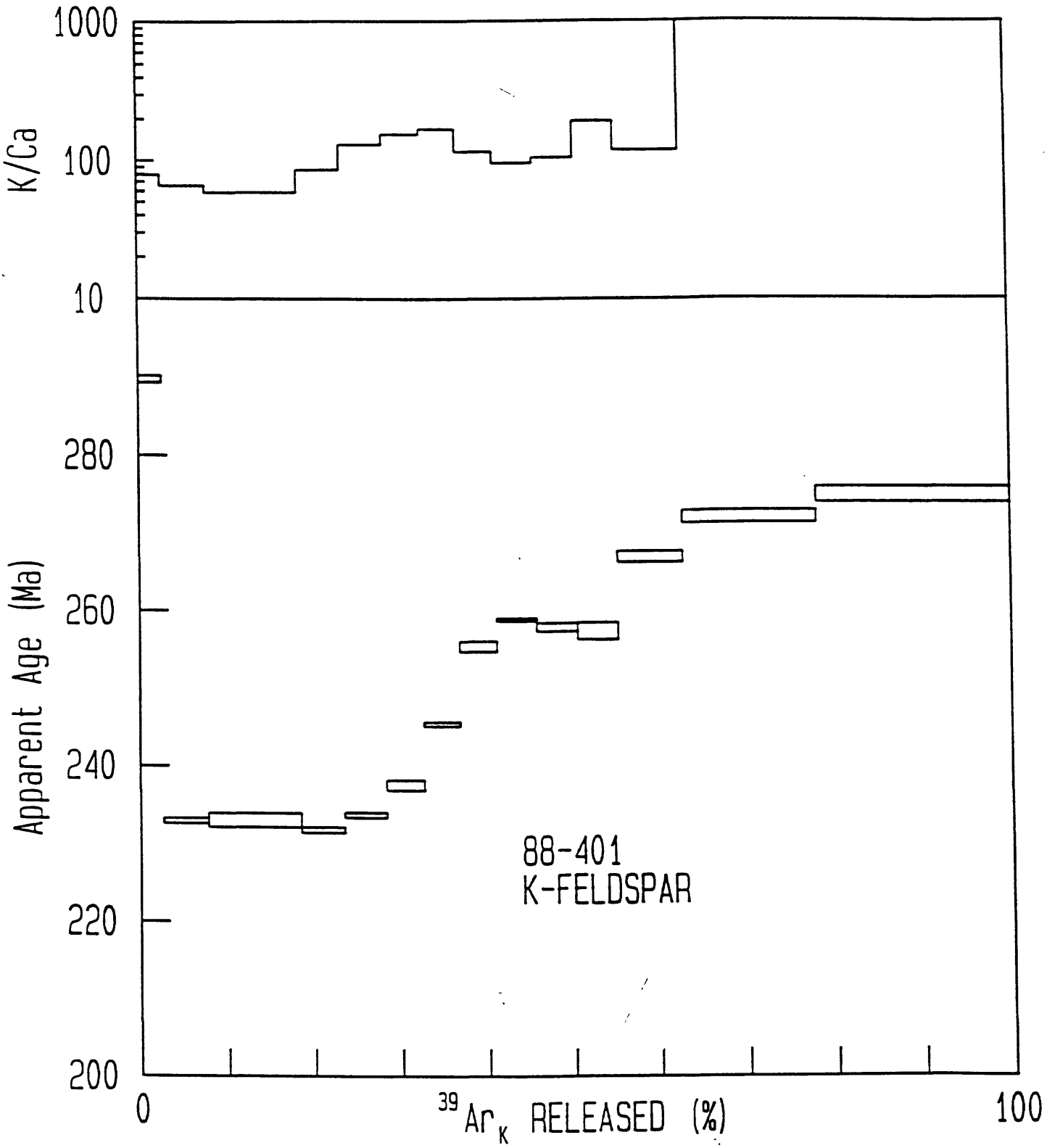
** 1-sigma precision estimates are for intra-sample reproducibility.

** 1-sigma precision estimates for plateaux are for intra-irradiation packa reproducibility.

*** below detection limit

v 02/05/91

v 02/05/91 14:51:27 22 May 1991 88-401 K-FELDSPAR; RD59 #81



v 02/05/91 (40/36in = 295.5)

v 02/05/91 14:39:24 23 May 1991

84-413A HORNBLENDE; RD36 #18,19

J = 0.006990 + 0.50% SAMPLE WT = 1.0105 g

TEMP C	Initial & radiogenic 40Ar	Potassium derived 39Ar	Chlorine derived 38Ar	Calcium derived 37Ar	Initial 36Ar	AGE* in Ma	**
950	1.664E-11	5.905E-13	1.722E-13	1.803E-12	7.779E-15	282.80 +	.56
1000	2.080E-11	9.025E-13	2.786E-13	3.087E-12	2.119E-15	261.89 +	.41
1050	5.785E-11	2.561E-12	7.840E-13	8.859E-12	3.071E-15	260.59 +	.43
1100	8.194E-11	3.639E-12	1.105E-12	1.260E-11	2.989E-15	261.02 +	.43
1150	4.721E-11	2.094E-12	6.355E-13	7.255E-12	2.082E-15	260.77 +	.38
1200	3.437E-11	1.514E-12	4.580E-13	5.238E-12	1.740E-15	261.96 +	.79
1250	3.156E-11	1.388E-12	4.177E-13	4.805E-12	1.631E-15	262.30 +	.75
1300	2.386E-11	1.038E-12	3.133E-13	3.614E-12	2.111E-15	262.38 +	.62
1400	1.557E-11	6.497E-13	1.972E-13	2.271E-12	3.806E-15	260.55 +	.55
TOTAL GAS	3.298E-10	1.438E-11	4.361E-12	4.953E-11	2.733E-14	262.16	

74.5% of gas on plateau, steps 1000 through 1200 PLATEAU AGE = 261.13 + 1.
67.3% of gas on plateau, steps 1100 through 1300 PLATEAU AGE = 261.34 + 1.

Note: all gas quantities are in moles. No blank correction.
* Ages calculated assuming initial 40Ar/36Ar = 295.5 + 0
** 1-sigma precision estimates are for intra-sample reproducibility.
** 1-sigma precision estimates for plateaux are for intra-irradiation packac reproducibility.
*** below detection limit

	TEMP C	% TOT 39Ar	RAD YIELD	APP K/Ca	APP K/Cl	F	AGE (Ma)	intra-sample	precision intra-package	precision inter packa
A	950	4.1	86.2	.17	8	24.280	282.80 +	.56	1.43	1.94
B	1000	6.3	97.0	.15	8	22.352	261.89 +	.41	1.29	1.78
C	1050	17.8	98.4	.15	8	22.232	260.59 +	.43	1.29	1.77
D	1100	25.3	98.9	.15	8	22.272	261.02 +	.43	1.29	1.77
E	1150	14.6	98.7	.15	8	22.249	260.77 +	.38	1.28	1.76
F	1200	10.5	98.5	.15	8	22.358	261.96 +	.79	1.46	1.90
G	1250	9.7	98.5	.15	8	22.390	262.30 +	.75	1.44	1.89
H	1300	7.2	97.4	.15	8	22.397	262.38 +	.62	1.38	1.84
I	1400	4.5	92.8	.15	8	22.229	260.55 +	.55	1.34	1.81
Total gas K/Ca =				.2						

Precisions are 1 sigma, measured in Ma. Measured 40/36 atm = 296.5 +.5
J = 0.006990 + 0.50% (intra-package) + 0.50% (inter-package)
Trap current factors- 40: 5 100: 2.51 200: 1
Manifold factors- ALL: 1 SPLIT 1: 3.6 SPLIT 2: 12.96 SPLIT 3: 46.656
EALL: 2 ESPLIT 1: 6.6 ESPLIT 2: 21.78
Sensitivity = 6.000E-18 % Reproducibility = .25 Detection limit = 40 coun
Data reduced assuming initial 40/36 = 295.50 + 0.00
Ca-factors: 3637=2.6E-04+1.7E-06 3837=3.2E-05+2.4E-07 3937=6.7E-04+3.7E-06
K-factors: 3739=0.0E+00+2.2E-03 3839=1.3E-02+2.4E-04 4039=5.7E-03+4.0E-03

R A W D A T A

FILE	TEMP	40Ar	39Ar	38Ar	37Ar	36Ar *	TRAP CURRENT	MANIFOLD OPTION
8855:T	950	2773306	98495	29727	83454	1375	200	ALL
	+	1005	67	0	42	17		
8856:T	1000	1381393	59986	19250	56880	196	100	ALL
	+	378	33	0	35	7		
8857:T	1050	3842105	170238	54227	163141	364	100	ALL
	+	3048	115	0	93	20		
8858:T	1100	2731997	121437	38383	116404	214	40	ALL
	+	1745	39	0	92	15		
8859:T	1150	3135282	139188	43975	133470	270	100	ALL
	+	1773	96	0	94	15		
8860:T	1200	2283043	100663	31696	96304	210	100	ALL
	+	2237	53	0	16	23		
8861:T	1250	2095971	92255	28913	88300	195	100	ALL
	+	898	50	0	36	21		
8862:T	1300	1584908	68970	21671	66382	205	100	ALL
	+	1266	39	0	47	13		
8863:T	1400	1033939	43188	13606	41693	293	100	ALL
	+	259	38	0	20	7		

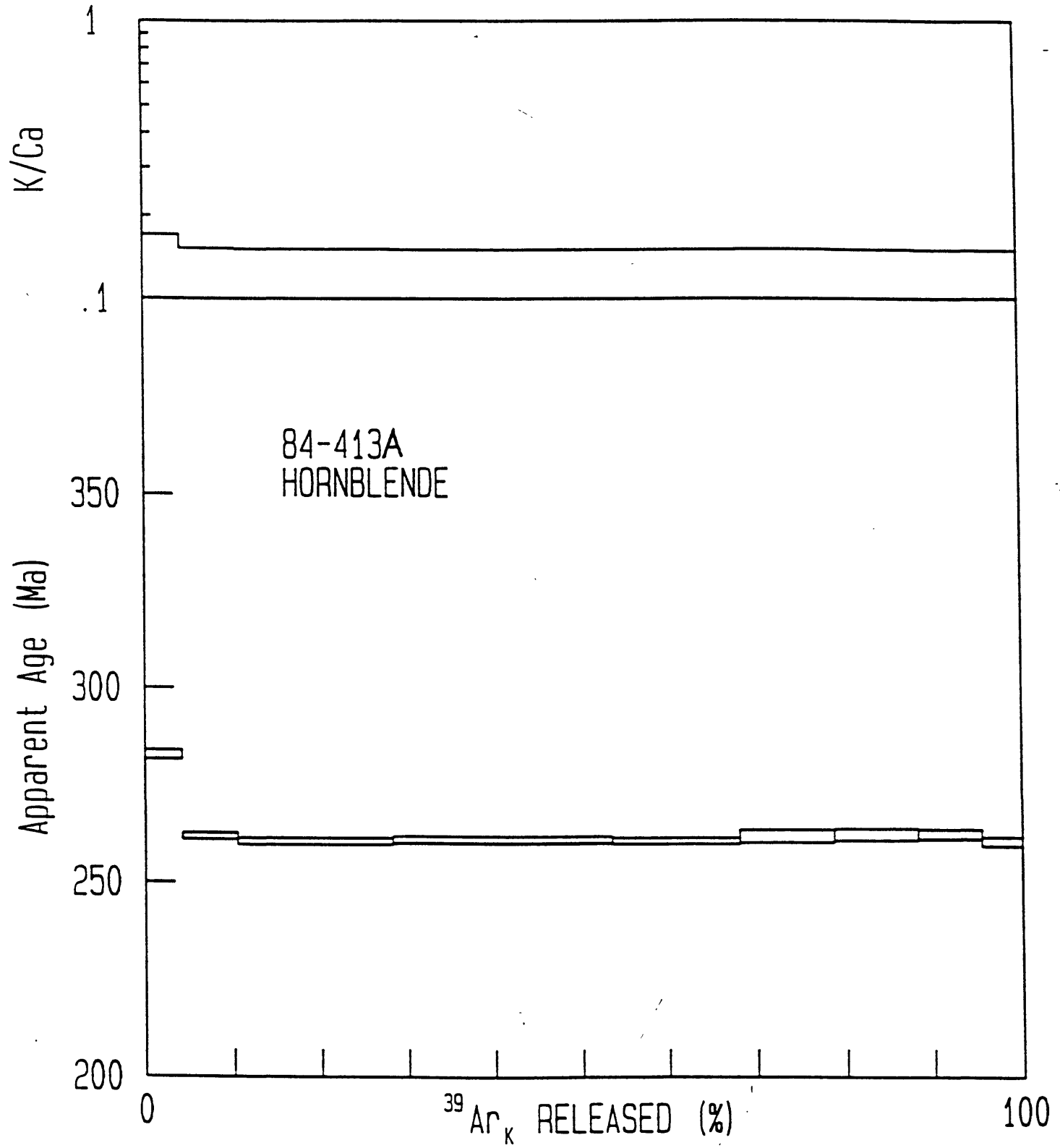
38Ar errors assigned from experience, rest calculated from regression statistic
* 36Ar peak values less than 2000 are means those above 2000 are from linea regressions

C O R R E C T I O N S

TEMP °C	39Ar Decay	37Ar Decay	-----K-derived---- 40Ar	38Ar	37Ar	----Ca-derived---- 39Ar	38Ar	36Ar	Cl-der 36Ar	Initial 38Ar
950	45	216208	559	1319	0	202	10	79	3	242
1000	27	147613	340	803	0	138	6	54	2	26
1050	77	423624	966	2279	0	396	19	155	6	38
1100	55	302521	689	1626	0	283	13	111	4	19
1150	63	347071	790	1863	0	324	15	127	5	26
1200	46	250640	571	1347	0	234	11	92	4	22
1250	42	229939	523	1235	0	215	10	84	3	20
1300	31	172961	391	923	0	161	8	63	2	26
1400	20	108694	245	578	0	101	5	40	2	47

All values in counts, corrected for mass discrimination

v 02/05/91 14:40:16 23 May 1991 84-413A HORNBLENDE; RD36 #18,19



v 02/05/91 (40/36in = 295.5)

v 02/05/91 84-413B MUSCOVITE; RD36 #23 14:26:27 23 May 1991

R A W D A T A

FILE	TEMP	40Ar	39Ar	38Ar	37Ar	36Ar *	TRAP CURRENT	MANIFOLD OPTION
8872:T	650	3215813	126850	3320	305	1873	200	ALL
	+	1061	42	0	1	27		
8873:T	750	1158115	50057	784	139	399	100	ALL
	+	689	43	0	36	11		
8874:T	850	4215508	196068	2657	204	497	100	ALL
	+	2516	92	0	8	19		
8875:T	950	1389263	64491	869	141	171	100	ALL
	+	793	2	0	9	3		
8876:T	1050	1112193	50852	710	43	182	100	ALL
	+	609	31	0	12	16		
8877:T	1100	3085843	143751	1949	123	336	200	ALL
	+	932	64	0	16	12		
8878:T	1200	2601005	120367	1652	193	322	200	ALL
	+	1489	58	0	11	12		

38Ar errors assigned from experience, rest calculated from regression statistic
* 36Ar peak values less than 2000 are means those above 2000 are from linea regressions

C O R R E C T I O N S

TEMP °C	39Ar Decay	37Ar Decay	-----K-derived---- 40Ar	38Ar	37Ar	----Ca-derived---- 39Ar	38Ar	36Ar	Cl-der 36Ar	Initial 38Ar
650	58	804	721	1702	0	1	0	0	0	351
750	23	366	285	672	0	0	0	0	0	75
850	91	544	1115	2631	0	1	0	0	0	93
950	30	378	367	865	0	0	0	0	0	32
1050	23	114	289	682	0	0	0	0	0	34
1100	66	329	818	1929	0	0	0	0	0	63
1200	56	517	685	1615	0	0	0	0	0	60

All values in counts, corrected for mass discrimination

v. 02/05/91 84-413B MUSCOVITE; RD36 #23 14:26:28 23 May 1991

	TEMP C	% TOT 39Ar	RAD. YIELD	APP K/Ca	APP K/Cl	F	AGE (Ma)	intra-sample	precision intra-package	inte pack
A	650	9.8	82.7	59.39	156	20.942	252.51 +	.71	1.39	1.82
B	750	9.7	89.8	51.49	643	20.740	250.23 +	.76	1.40	1.83
C	850	37.9	96.5	136.18	3827	20.717	249.97 +	.35	1.22	1.69
D	950	12.5	96.4	64.50	4228	20.724	250.05 +	.22	1.19	1.67
E	1050	9.8	95.2	168.58	1961	20.780	250.68 +	1.08	1.60	1.98
F	1100	11.1	96.8	164.99	4027	20.741	250.24 +	.29	1.21	1.68
G	1200	9.3	96.3	88.11	2921	20.783	250.72 +	.35	1.23	1.70

Total gas K/Ca = 113.5

Precisions are 1 sigma, measured in Ma. Measured 40/36 atm = 296.5 +.5
J = 0.007174 + 0.50% (intra-package) + 0.50% (inter-package)
Trap current factors- 40: 5 100: 2.51 200: 1
Manifold factors- ALL: 1 SPLIT 1: 3.6 SPLIT 2: 12.96 SPLIT 3: 46.656
EALL: 2 ESPLIT 1: 6.6 ESPLIT 2: 21.78
Sensitivity = 6.000E-18 % Reproducibility = .25 Detection limit = 40 cou
Data reduced assuming initial 40/36 = 295.50 + 0.00
Ca-factors: 3637=2.6E-04+1.7E-06 3837=3.2E-05+2.4E-07 3937=6.7E-04+3.7E-06
K-factors: 3739=0.0E+00+2.2E-03 3839=1.3E-02+2.4E-04 4039=5.7E-03+4.0E-03

J = 0.007174 + 0.50% SAMPLE WT = 0.0756 g

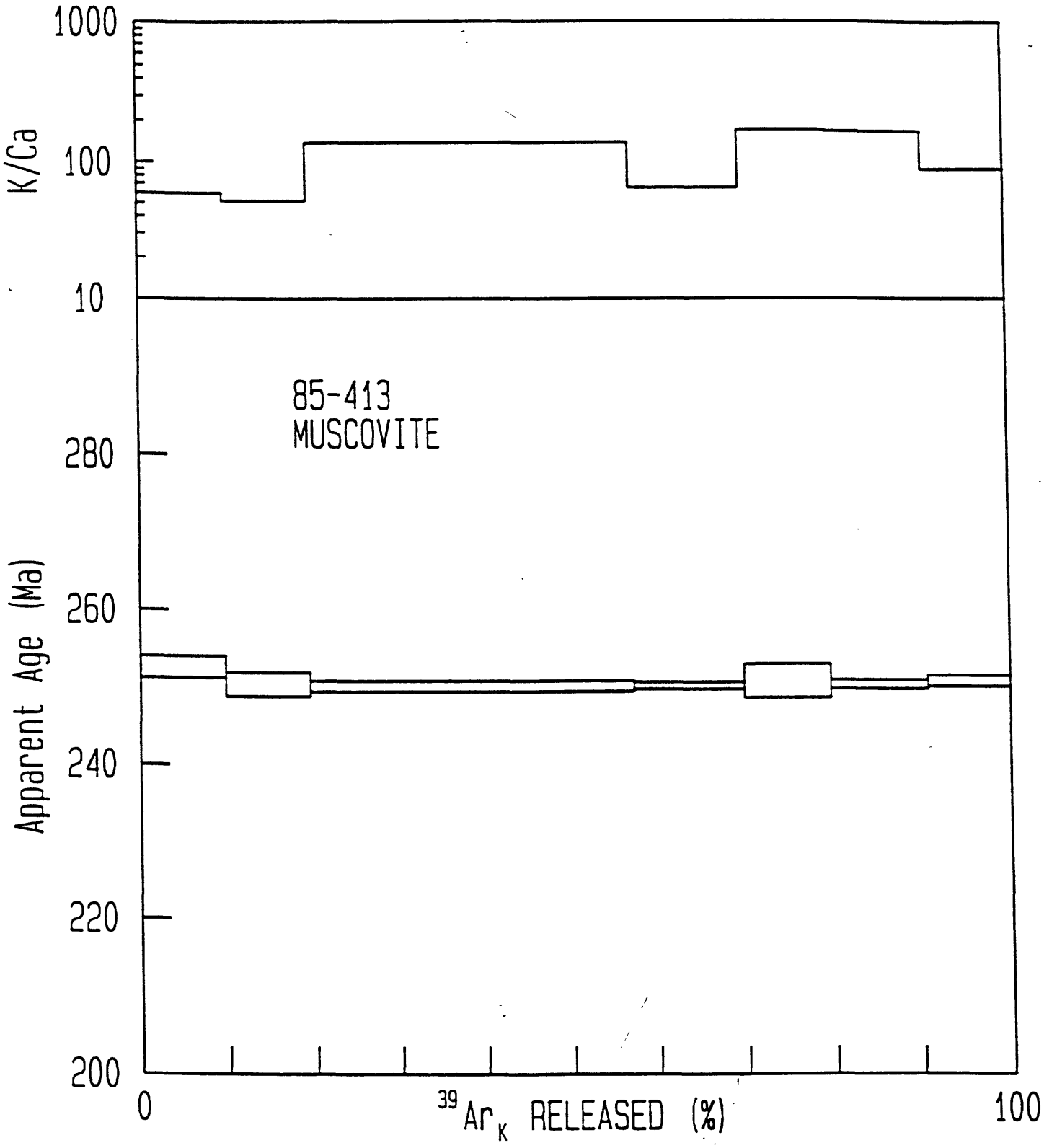
TEMP C	Initial & radiogenic 40Ar	Potassium derived 39Ar	Chlorine derived 38Ar	Calcium derived 37Ar	Initial 36Ar	AGE* in Ma	**
650	1.929E-11	7.621E-13	1.185E-14	6.673E-15	1.127E-14	252.51 +	.7
750	1.744E-11	7.548E-13	2.839E-15	7.623E-15	6.030E-15	250.23 +	.7
850	6.347E-11	2.957E-12	1.869E-15	1.129E-14	7.502E-15	249.97 +	.3
950	2.092E-11	9.725E-13	***	7.841E-15	2.582E-15	250.05 +	.3
1050	1.675E-11	7.668E-13	9.464E-16	2.365E-15	2.743E-15	250.68 +	1.(
1100	1.851E-11	8.636E-13	5.190E-16	2.722E-15	2.023E-15	250.24 +	.3
1200	1.560E-11	7.231E-13	5.992E-16	4.268E-15	1.938E-15	250.72 +	.3
TOTAL GAS	1.720E-10	7.800E-12	1.918E-14	4.278E-14	3.409E-14	250.42	

90.2% of gas on plateau, steps 750 through 1200 PLATEAU AGE = 250.21 +

Note: all gas quantities are in moles. No blank correction.
* Ages calculated assuming initial 40Ar/36Ar = 295.5 + 0
** 1-sigma precision estimates are for intra-sample reproducibility.
** 1-sigma precision estimates for plateaux are for intra-irradiation pack reproducibility.
*** below detection limit

v 02/05/91

v 02/05/91 14:27:18 23 May 1991 84-413B MUSCOVITE; RD36 #23



v 02/05/91 (40/36in = 295.5

R A W D A T A

FILE	TEMP	40Ar	39Ar	38Ar	37Ar	36Ar *	TRAP CURRENT	MANIFOLD OPTION
8865:T	650	1923762	90242	5100	344	253	100	ALL
	+	684	13	0	16	7		
8866:T	850	2978884	138382	7565	187	96	100	ALL
	+	2057	78	0	5	13		
8867:T	950	2181215	100165	5517	306	82	100	ALL
	+	1207	30	0	12	15		
8868:T	1050	3574010	165513	9107	552	93	100	ALL
	+	1113	19	0	7	21		
8869:T	1100	3276290	153400	8365	249	76	100	ALL
	+	1952	66	0	17	27		
8870:T	1200	3455734	161749	8723	112	61	100	ALL
	+	1414	45	0	7	25		
8871:T	1400	1811289	80597	4254	307	328	200	ALL
	+	378	28	0	15	5		

38Ar errors assigned from experience, rest calculated from regression statisti
* 36Ar peak values less than 2000 are means those above 2000 are from line regressions

C O R R E C T I O N S

TEMP °C	39Ar Decay	37Ar Decay	-----K-derived---- 40Ar	38Ar	37Ar	----Ca-derived---- 39Ar	38Ar	36Ar	Cl-der 36Ar	Initial 38Ar
650	41	912	513	1211	0	1	0	0	0	47
850	64	497	787	1857	0	0	0	0	1	18
950	46	812	570	1344	0	1	0	0	1	15
1050	76	1468	941	2221	0	1	0	1	1	17
1100	71	663	872	2058	0	1	0	0	1	14
1200	75	299	920	2170	0	0	0	0	1	11
1400	37	818	458	1081	0	1	0	0	0	61

All values in counts, corrected for mass discrimination

v 02/05/91 14:45:43 23 May 1991

84-413A BIOTITE; RD36 #20

J = 0.007174 + 0.50% SAMPLE WT = 0.1391 g

TEMP C	Initial & radiogenic 40Ar	Potassium derived 39Ar	Chlorine derived 38Ar	Calcium derived 37Ar	Initial 36Ar	AGE* in Ma	**
650	2.896E-11	1.361E-12	5.942E-14	1.895E-14	3.812E-15	247.03 +	.
850	4.485E-11	2.087E-12	8.643E-14	1.034E-14	1.442E-15	256.40 +	.
950	3.284E-11	1.510E-12	6.321E-14	1.689E-14	1.219E-15	258.81 +	.
1050	5.381E-11	2.496E-12	1.042E-13	3.051E-14	1.389E-15	257.60 +	.
1100	4.933E-11	2.313E-12	9.541E-14	1.378E-14	1.138E-15	255.17 +	.
1200	5.203E-11	2.439E-12	9.908E-14	6.204E-15	9.096E-16	255.64 +	.
1400	1.086E-11	4.842E-13	1.945E-14	6.765E-15	1.972E-15	255.80 +	.
TOTAL GAS	2.727E-10	1.269E-11	5.272E-13	1.034E-13	1.188E-14	255.53	

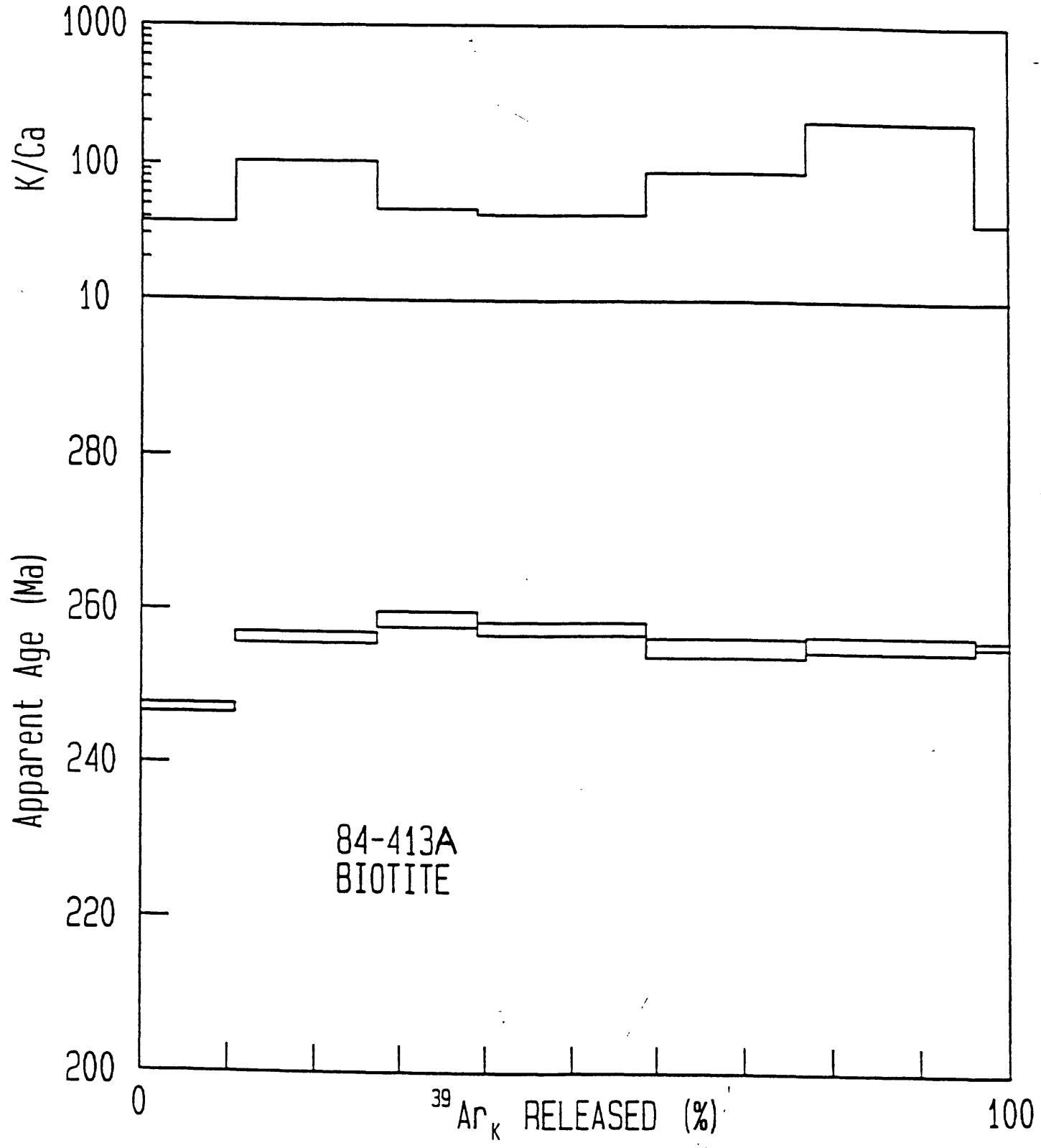
NO PLATEAU

Note: all gas quantities are in moles. No blank correction.
* Ages calculated assuming initial 40Ar/36Ar = 295.5 + 0
** 1-sigma precision estimates are for intra-sample reproducibility.
** 1-sigma precision estimates for plateaux are for intra-irradiation pack reproducibility.
*** below detection limit

	TEMP C	% TOT 39Ar	RAD YIELD	APP K/Ca	APP K/Cl	F	AGE (Ma)	intra-sample	precision intra-package	inte pack
A	650	10.7	96.1	37.34	55	20.457	247.03 +	.29	1.19	1.66
B	850	16.4	99.0	104.96	58	21.289	256.40 +	.35	1.25	1.73
C	950	11.9	98.9	46.51	58	21.504	258.81 +	.51	1.31	1.78
D	1050	19.7	99.2	42.54	58	21.395	257.60 +	.42	1.28	1.75
E	1100	18.2	99.3	87.29	59	21.179	255.17 +	.61	1.34	1.79
F	1200	19.2	99.5	204.43	60	21.221	255.64 +	.51	1.30	1.77
G	1400	3.8	94.6	37.22	60	21.235	255.80 +	.21	1.22	1.70
Total gas K/Ca =				91.8						

Precisions are 1 sigma, measured in Ma. Measured 40/36 atm = 296.5 +.5
J = 0.007174 + 0.50% (intra-package) + 0.50% (inter-package)
Trap current factors- 40: 5 100: 2.51 200: 1
Manifold factors- ALL: 1 SPLIT 1: 3.6 SPLIT 2: 12.96 SPLIT 3: 46.656
EALL: 2 ESPLIT 1: 6.6 ESPLIT 2: 21.78
Sensitivity = 6.000E-18 % Reproducibility = .25 Detection limit = 40 cou
Data reduced assuming initial 40/36 = 295.50 + 0.00
Ca-factors: 3637=2.6E-04+1.7E-06 3837=3.2E-05+2.4E-07 3937=6.7E-04+3.7E-06
K-factors: 3739=0.0E+00+2.2E-03 3839=1.3E-02+2.4E-04 4039=5.7E-03+4.0E-03

v 02/05/91 14:46:17 23 May 1991 84-413A BIOTITE; RD36 #20



v 02/05/91

(40/36in = 295.5)

R A W D A T A

FILE	TEMP	40Ar	39Ar	38Ar	37Ar	36Ar *	TRAP CURRENT	MANIFOLD OPTION
8880:T	800	2411949	120302	1583	158	145	100	ALL
	+	2411	116	0	8	11		
8881:T	900	900924	45483	596	63	46	100	ALL
	+	644	34	0	10	10		
8882:T	1000	968539	48946	661	69	44	100	ALL
	+	114	19	0	9	17		
8883:T	1050	1040399	52820	658	55	60	100	ALL
	+	251	17	0	9	23		
8884:T	1100	1378979	70186	911	92	57	100	ALL
	+	381	8	0	14	7		
8885:T	1150	1820662	92238	1239	136	75	100	ALL
	+	345	27	0	11	16		
8886:T	1200	2343833	117719	1521	155	78	100	ALL
	+	1080	67	0	8	13		
8887:T	1250	2092994	103765	1338	126	81	100	ALL
	+	1156	59	0	12	13		
8888:T	1300	1518893	74074	959	57	90	100	ALL
	+	394	44	0	12	19		
8889:T	1350	1151376	55498	718	29	90	100	ALL
	+	383	39	0	12	30		
8890:T	1450	2842814	132399	1778	77	500	200	ALL
	+	941	56	0	17	13		

38Ar errors assigned from experience, rest calculated from regression statisti
* 36Ar peak values less than 2000 are means those above 2000 are from line regressions

C O R R E C T I O N S

TEMP °C	39Ar Decay	37Ar Decay	K-derived 40Ar	K-derived 38Ar	K-derived 37Ar	Ca-derived 39Ar	Ca-derived 38Ar	Ca-derived 36Ar	Cl-der 36Ar	Initial 38Ar
800	56	429	684	1614	0	0	0	0	-0	27
900	21	173	259	610	0	0	0	0	-0	9
1000	23	189	278	657	0	0	0	0	0	8
1050	25	150	300	709	0	0	0	0	-0	11
1100	33	250	399	942	0	0	0	0	-0	11
1150	43	371	525	1238	0	0	0	0	0	14
1200	55	425	670	1580	0	0	0	0	-0	15
1250	49	345	590	1392	0	0	0	0	-0	15
1300	35	155	421	994	0	0	0	0	-0	17
1350	26	80	316	745	0	0	0	0	-0	17
1450	62	211	753	1776	0	0	0	0	0	94

All values in counts, corrected for mass discrimination

v' 02/05/91 84-413C K-FELDSPAR; RD36 #21 14:18:43 23 May 19:1

	TEMP C	% TOT 39Ar	RAD YIELD	APP K/Ca	APP K/Cl	F	AGE (Ma)		precision intra-sample	precision intra-package	precision inter-packag
A	800	14.4	98.2	106.41	0	19.660	227.14	+	.37	1.13	1.56
B	900	5.5	98.5	100.07	0	19.479	225.18	+	.70	1.27	1.66
C	1000	5.9	98.7	98.21	8678	19.492	225.32	+	1.10	1.53	1.86
D	1050	6.3	98.3	133.97	0	19.327	223.52	+	1.42	1.77	2.06
E	1100	8.4	98.8	106.68	0	19.376	224.05	+	.31	1.10	1.53
F	1150	11.1	98.8	94.60	12865	19.468	225.05	+	.57	1.21	1.60
G	1200	14.1	99.0	105.36	0	19.684	227.40	+	.37	1.13	1.56
H	1250	12.4	98.8	114.50	0	19.907	229.82	+	.41	1.16	1.58
I	1300	8.9	98.3	181.38	0	20.115	232.07	+	.82	1.37	1.75
J	1350	6.7	97.7	262.44	0	20.235	233.38	+	1.72	2.04	2.32
K	1450	6.3	94.8	238.59	3250	20.320	234.29	+	.32	1.15	1.59
Total gas K/Ca =				132.3							

Precisions are 1 sigma, measured in Ma. Measured 40/36 atm = 296.5 +.5
J = 0.006825 + 0.50% (intra-package) + 0.50% (inter-package)
Trap current factors- 40: 5 100: 2.51 200: 1
Manifold factors- ALL: 1 SPLIT 1: 3.6 SPLIT 2: 12.96 SPLIT 3: 46.656
EALL: 2 ESPLIT 1: 6.6 ESPLIT 2: 21.78
Sensitivity = 6.000E-18 % Reproducibility = .25 Detection limit = 40 count
Data reduced assuming initial 40/36 = 295.50 + 0.00
Ca-factors: 3637=2.6E-04+1.7E-06 3837=3.2E-05+2.4E-07 3937=6.7E-04+3.7E-06
K-factors: 3739=0.0E+00+2.2E-03 3839=1.3E-02+2.4E-04 4039=5.7E-03+4.0E-03

v 02/05/91 14:18:45 23 May 1991

84-413C K-FELDSPAR; RD36 #21

J = 0.006825 + 0.50% SAMPLE WT = 0.1094 g

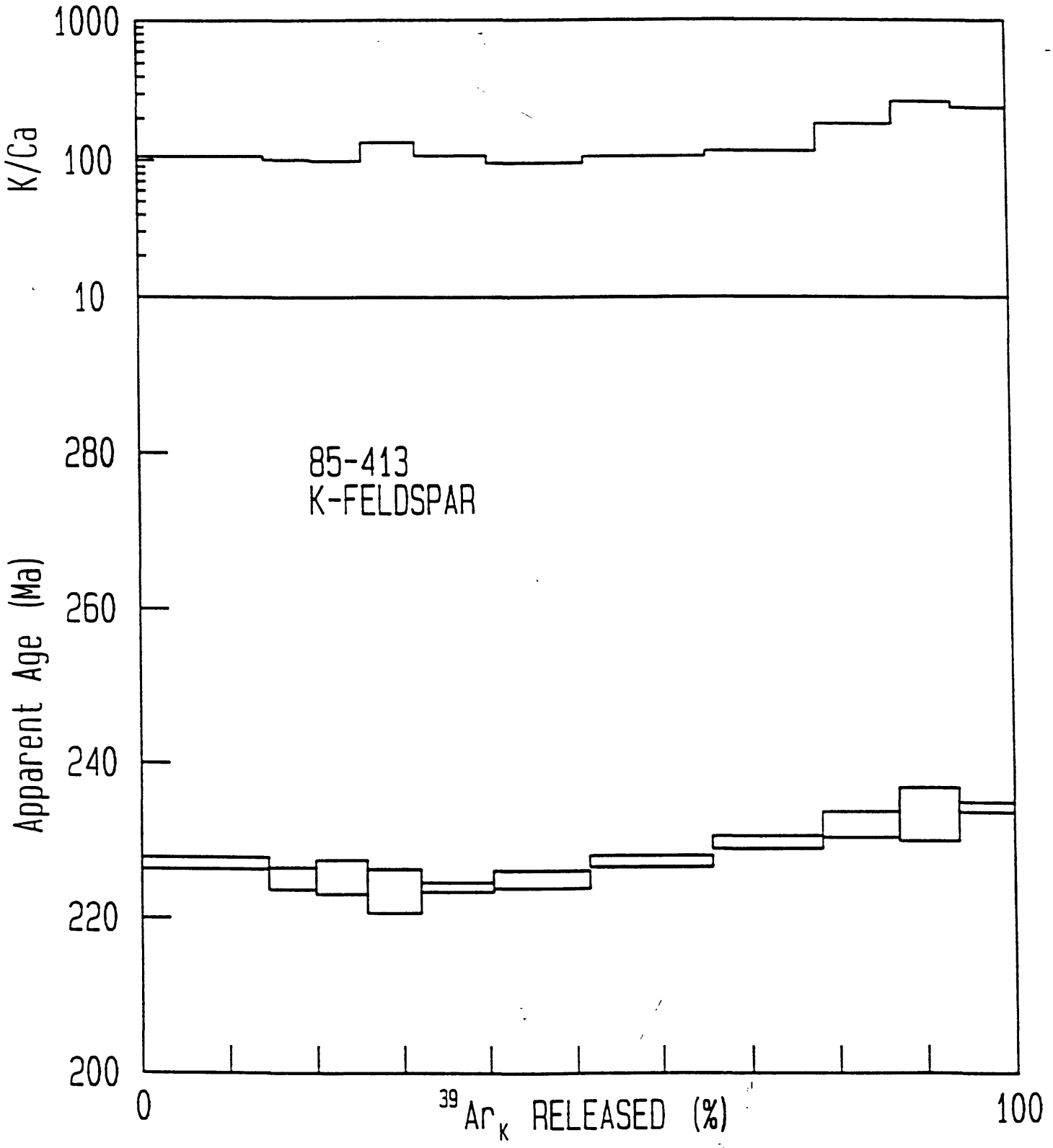
TEMP C	Initial & radiogenic 40Ar	Potassium derived 39Ar	Chlorine derived 38Ar	Calcium derived 37Ar	Initial 36Ar	AGE* in Ma	**
800	3.631E-11	1.814E-12	***	8.865E-15	2.195E-15	227.14 +	.37
900	1.356E-11	6.859E-13	***	3.564E-15	6.896E-16	225.18 +	.70
1000	1.458E-11	7.381E-13	***	3.908E-15	6.608E-16	225.32 +	1.10
1050	1.566E-11	7.965E-13	***	3.092E-15	9.135E-16	223.52 +	1.42
1100	2.076E-11	1.058E-12	***	5.159E-15	8.615E-16	224.05 +	.31
1150	2.741E-11	1.391E-12	***	7.646E-15	1.128E-15	225.05 +	.57
1200	3.529E-11	1.775E-12	***	8.761E-15	1.170E-15	227.40 +	.37
1250	3.151E-11	1.565E-12	***	7.107E-15	1.227E-15	229.82 +	.41
1300	2.287E-11	1.117E-12	***	3.202E-15	1.352E-15	232.07 +	.82
1350	1.733E-11	8.369E-13	***	1.658E-15	1.354E-15	233.38 +	1.72
1450	1.705E-11	7.954E-13	5.922E-16	1.734E-15	3.008E-15	234.29 +	.32
TOTAL GAS	2.524E-10	1.257E-11	1.060E-15	5.470E-14	1.456E-14	227.88	

NO PLATEAU

Note: all gas quantities are in moles. No blank correction.
* Ages calculated assuming initial 40Ar/36Ar = 295.5 + 0
** 1-sigma precision estimates are for intra-sample reproducibility.
** 1-sigma precision estimates for plateaux are for intra-irradiation packag reproducibility.
*** below detection limit

v 02/05/91

v 02/05/91 14:19:55 23 May 1991 84-413C K-FELDSPAR; RD36 #21



v 02/05/91 (40/36in = 295.5)

RAW DATA

FILE	TEMP	40Ar	39Ar	38Ar	37Ar	36Ar *	TRAP CURRENT	MANIFOLD OPTION
18601:	1050	1682913	54622	6658	130884	281	200	ALL
	+	1076	17	9	70	5		
18602:	1075	2862211	105368	8752	249623	378	200	ALL
	+	1303	79	16	130	10		
18603:	1100	4634108	173897	13056	413880	571	200	ALL
	+	1279	47	7	186	10		
18605:	1125	3985474	162509	10612	365758	412	200	SPLIT
	+	1190	34	14	131	10		
18607:	1150	2930729	124420	7666	275752	296	200	SPLIT
	+	893	49	16	95	10		
18609:	1200	2347667	98512	6137	218271	251	200	SPLIT
	+	370	17	17	47	14		
18610:	1250	3387408	127948	9119	285705	397	200	ALL
	+	1651	79	11	150	10		
18611:	1350	1418539	53080	3813	118831	191	200	ALL
	+	525	22	8	116	5		

38Ar errors assigned from experience, rest calculated from regression statisti
* 36Ar peak values less than 800 are means those above 800 are from linear regressions

CORRECTIONS

TEMP °C	39Ar Decay	37Ar Decay	-----K-derived---- 40Ar	38Ar	37Ar	----Ca-derived---- 39Ar	38Ar	36Ar	Cl-der 36Ar	Initial 38Ar
1050	13	137353	310	730	0	181	9	71	0	39
1075	26	262276	597	1409	0	345	16	135	0	46
1100	42	435208	986	2325	0	573	27	225	1	65
1125	40	385378	921	2173	0	507	24	199	1	40
1150	30	291011	705	1664	0	382	18	150	0	28
1200	24	230626	558	1317	0	303	14	119	0	25
1250	31	302191	725	1711	0	397	19	156	0	45
1350	13	125809	301	710	0	165	8	65	0	24

All values in counts, corrected for mass discrimination

v 02/05/91 15:34:37 22 May 1991

88-112 HORNBLENDE; RD58 #35,36,37

J = 0.009780 + 0.25% SAMPLE WT = 1.0001 g

TEMP C	Initial & radiogenic 40Ar	Potassium derived 39Ar	Chlorine derived 38Ar	Calcium derived 37Ar	Initial 36Ar	AGE* in Ma	**
1050	2.322E-11	7.521E-13	8.238E-14	3.711E-12	2.903E-15	460.47 +	..
1075	3.949E-11	1.451E-12	1.019E-13	7.082E-12	3.361E-15	416.20 +	..
1100	6.394E-11	2.394E-12	1.489E-13	1.175E-11	4.796E-15	410.26 +	..
1125	1.980E-10	8.057E-12	4.210E-13	3.741E-11	1.063E-14	382.92 +	..
1150	1.456E-10	6.169E-12	2.993E-13	2.823E-11	7.308E-15	369.56 +	.
1200	1.166E-10	4.884E-12	2.405E-13	2.236E-11	6.589E-15	372.84 +	.
1250	4.674E-11	1.762E-12	1.028E-13	8.134E-12	3.345E-15	408.18 +	.
1350	1.957E-11	7.310E-13	4.313E-14	3.385E-12	1.746E-15	409.67 +	.
TOTAL GAS	6.531E-10	2.620E-11	1.440E-12	1.221E-10	4.068E-14	387.02	

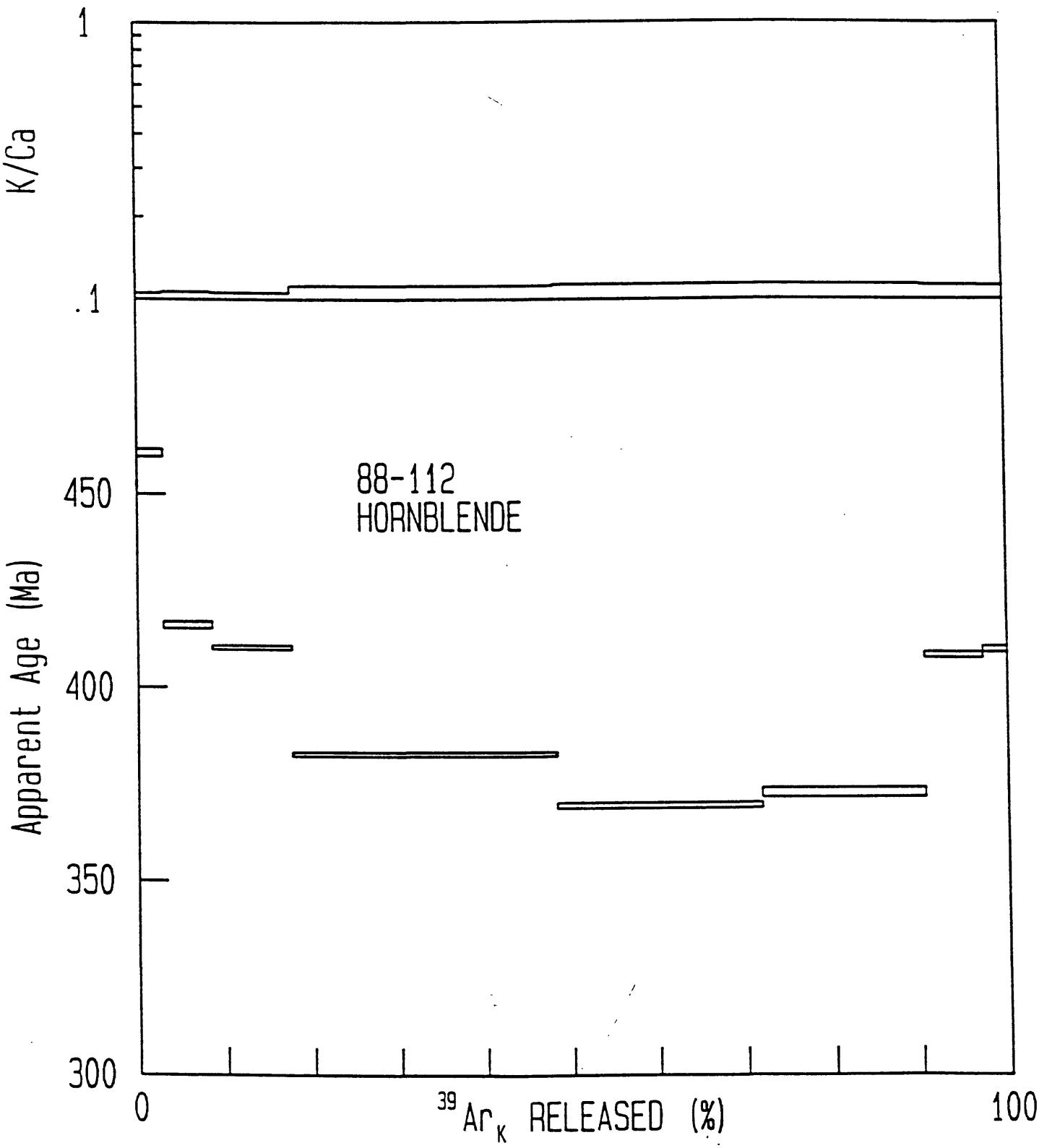
NO PLATEAU

Note: all gas quantities are in moles. No blank correction.
* Ages calculated assuming initial 40Ar/36Ar = 295.5 + 0
** 1-sigma precision estimates are for intra-sample reproducibility.
** 1-sigma precision estimates for plateaux are for intra-irradiation pack reproducibility.
*** below detection limit

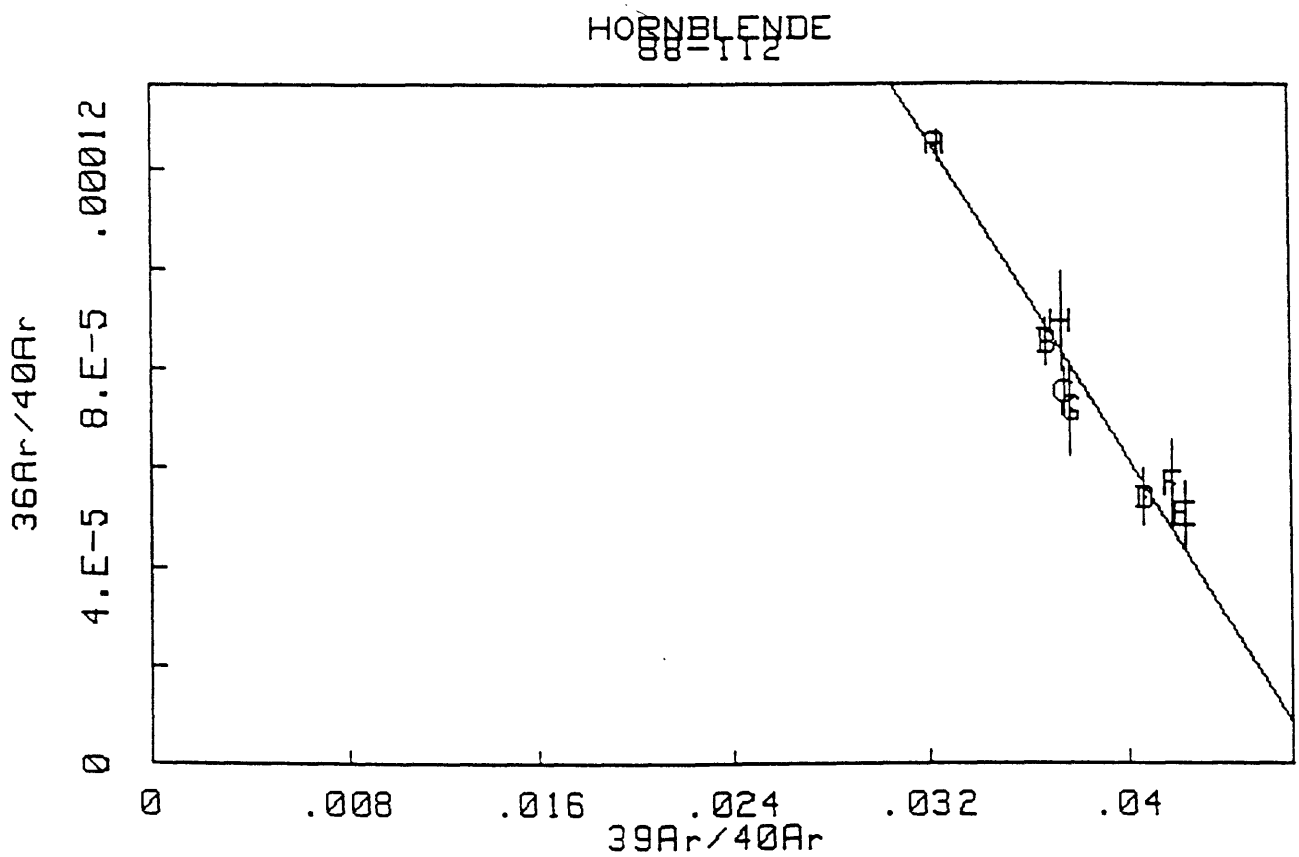
	TEMP C	% TOT 39Ar	RAD YIELD	APP K/Ca	APP K/Cl	F	AGE (Ma)	intra-sample	precision intra-package	int pac
A	1050	2.9	96.3	.11	22	29.733	460.47 +	.47	1.14	2.33
B	1075	5.5	97.5	.11	34	26.533	416.20 +	.43	1.04	2.13
C	1100	9.1	97.8	.11	39	26.110	410.26 +	.27	.97	2.08
D	1125	30.8	98.4	.11	46	24.179	382.92 +	.27	.92	1.96
E	1150	23.5	98.5	.11	50	23.246	369.56 +	.36	.92	1.91
F	1200	18.6	98.3	.11	49	23.474	372.84 +	.62	1.05	1.99
G	1250	6.7	97.9	.11	41	25.962	408.18 +	.36	1.00	2.08
H	1350	2.8	97.4	.11	41	26.067	409.67 +	.39	1.01	2.09
Total gas K/Ca =				.1						

Precisions are 1 sigma, measured in Ma. Measured 40/36 atm = 296.5 +.5
J = 0.009780 + 0.25% (intra-package) + 0.50% (inter-package)
Trap current factors- 40: 8.6 100: 4 200: 1
Manifold factors- ALL: 1 SPLIT 1: 3.6 SPLIT 2: 12.96 SPLIT 3: 46.656
EALL: 2 ESPLIT 1: 6.6 ESPLIT 2: 21.78
Sensitivity = 1.380E-17 % Reproducibility = .25 Detection limit = 40 co
Data reduced assuming initial 40/36 = 295.50 + 0.00
Ca-factors: 3637=2.6E-04+1.7E-06 3837=3.2E-05+2.4E-07 3937=6.7E-04+3.7E-06
K-factors: 3739=0.0E+00+2.2E-03 3839=1.3E-02+2.4E-04 4039=5.7E-03+4.0E-03

v 02/05/91 15:35:17 22 May 1991 88-112 HORNBLENDE; RD58 #35,36,37



v 02/05/91 (40/36in = 295.5



8 points regressed out of 8
Mean X = .364E-01 Mean Y = .907E-04 Slope = -.801E-02 + .537E-03
36/40 = .382E-03 + .197E-04 39/40 = .477E-01 + .798E-03
Fit parameters: SUMS = 6.669 MSWD = 1.112
40Ar/36Ar = 2616.41 + 134.53 F = 20.954 + .35 AGE = 336.31 + 5.19 Ma

R A W D A T A

FILE	TEMP	40Ar	39Ar	38Ar	37Ar	36Ar *	TRAP CURRENT	MANIFOLI OPTION
18647:	1000	686259	23843	13552	55109	145	200	ALL
	+	458	25	19	29	15		
18648:	1050	2936846	116946	37192	263769	407	200	ALL
	+	1619	55	27	178	11		
18649:	1075	4140673	171692	24380	384183	503	200	ALL
	+	1332	94	21	161	17		
18651:	1100	2004799	82681	6549	185154	224	200	SPLIT
	+	515	74	9	120	10		
18653:	1125	3234028	136283	7311	316488	336	200	SPLIT
	+	1042	57	8	264	7		
18655:	1150	2237380	95151	4878	219391	249	200	SPLIT
	+	697	45	13	86	18		
18656:	1175	4441861	190246	9924	440083	475	200	ALL
	+	1450	77	9	305	11		
18658:	1200	2562265	110749	5895	254401	285	200	SPLIT
	+	1360	54	19	143	21		
18660:	1250	3242598	140845	8314	319977	337	200	SPLIT
	+	769	69	3	179	17		
18662:	1350	4698281	198226	11925	440135	453	200	SPLIT
	+	765	86	15	140	9		

38Ar errors assigned from experience, rest calculated from regression statisti
* 36Ar peak values less than 800 are means those above 800 are from linear regressions

C O R R E C T I O N S

TEMP °C	39Ar Decay	37Ar Decay	K-derived 40Ar	K-derived 38Ar	K-derived 37Ar	Ca-derived 39Ar	Ca-derived 38Ar	Ca-derived 36Ar	Cl-der 36Ar	Initial 38Ar
1000	8	93462	135	319	0	100	5	39	1	20
1050	40	447955	662	1563	0	480	23	188	3	41
1075	59	653094	972	2294	0	700	33	275	2	43
1100	29	315166	468	1105	0	338	16	132	0	17
1125	47	539423	772	1821	0	577	27	227	1	21
1150	33	379818	539	1271	0	404	19	159	0	17
1175	67	762880	1077	2541	0	812	38	318	1	30
1200	39	441574	627	1480	0	470	22	184	0	19
1250	50	556118	798	1882	0	591	28	232	1	20
1350	70	765943	1123	2649	0	814	38	319	1	25

All values in counts, corrected for mass discrimination

v 02/05/91 88-116 HORNBLENDE; #25,26,27 RD58 08:18:31 23 May 1991

	TEMP C	% TOT 39Ar	RAD YIELD	APP K/Ca	APP K/Cl	F	AGE (Ma)		precision intra-sample	precision intra-package	precision inter-packa
A	1000	.7	95.5	.08	4	27.552	426.66	+	2.59	2.76	3.35
B	1050	3.6	97.8	.08	8	24.631	385.92	+	.44	.99	2.00
C	1075	5.3	98.4	.09	19	23.787	373.97	+	.43	.96	1.94
D	1100	9.2	98.6	.09	37	23.981	376.73	+	.49	.99	1.97
E	1125	15.1	99.0	.08	60	23.557	370.70	+	.23	.88	1.90
F	1150	10.5	98.8	.08	64	23.296	366.99	+	.81	1.17	2.03
G	1175	5.8	98.9	.08	62	23.168	365.17	+	.27	.88	1.87
H	1200	12.3	98.8	.08	60	22.930	361.76	+	.84	1.18	2.02
I	1250	15.6	99.0	.08	53	22.864	360.82	+	.51	.97	1.90
J	1350	21.9	99.2	.09	52	23.564	370.81	+	.20	.88	1.89

Total gas K/Ca = .1

Precisions are 1 sigma, measured in Ma. Measured 40/36 atm = 296.5 +.5
J = 0.009684 + 0.25% (intra-package) + 0.50% (inter-package)
Trap current factors- 40: 8.6 100: 4 200: 1
Manifold factors- ALL: 1 SPLIT 1: 3.6 SPLIT 2: 12.96 SPLIT 3: 46.656
EALL: 2 ESPLIT 1: 6.6 ESPLIT 2: 21.78
Sensitivity = 1.380E-17 % Reproducibility = .25 Detection limit = 40 count
Data reduced assuming initial 40/36 = 295.50 + 0.00
Ca-factors: 3637=2.6E-04+1.7E-06 3837=3.2E-05+2.4E-07 3937=6.7E-04+3.7E-06
K-factors: 3739=0.0E+00+2.2E-03 3839=1.3E-02+2.4E-04 4039=5.7E-03+4.0E-03

v 02/05/91 08:18:33 23 May 1991

88-116 HORNBLENDE; #25,26,27 RD58

J = 0.009684 + 0.25% SAMPLE WT = 0.9949 g

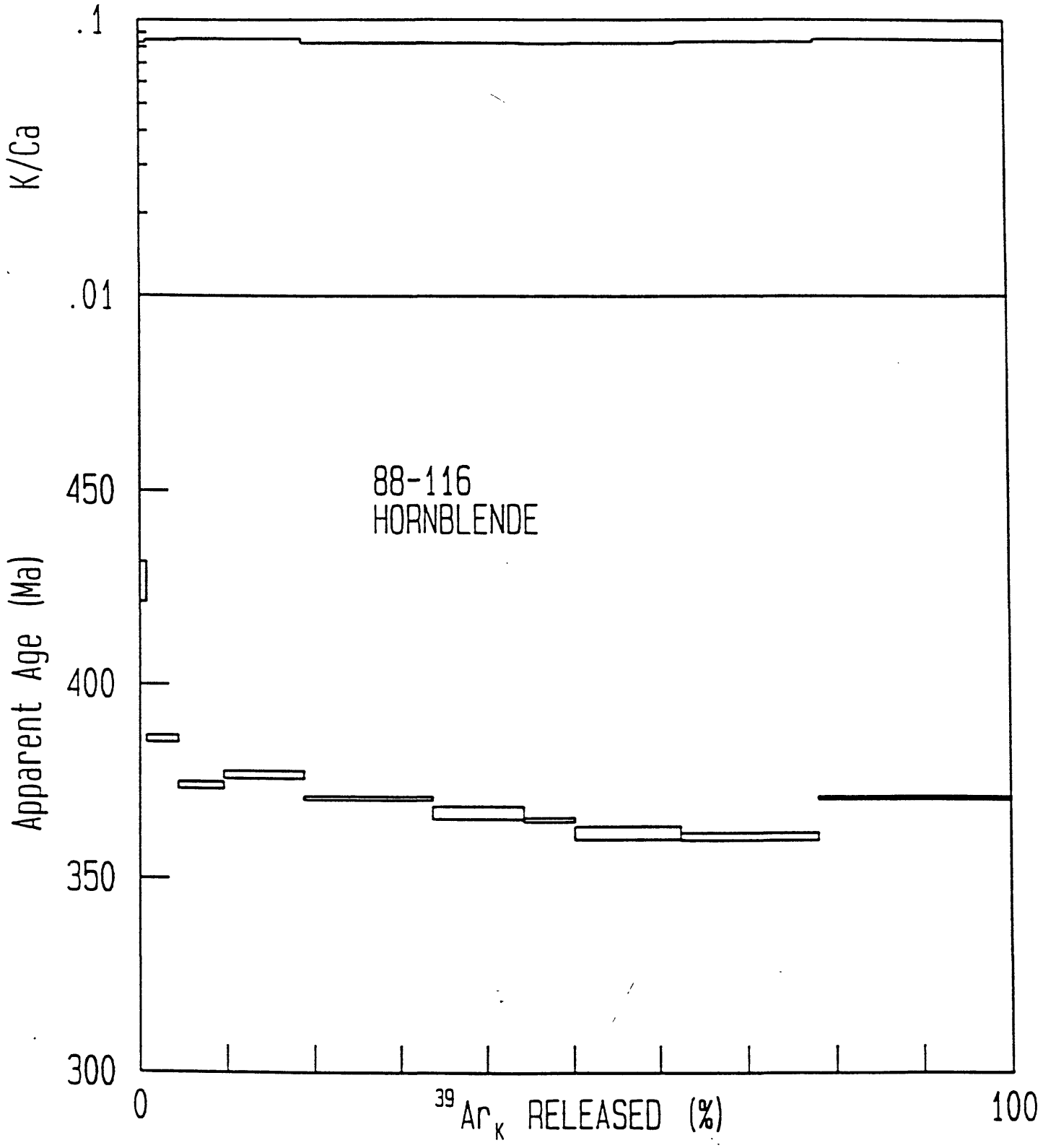
TEMP C	Initial & radiogenic 40Ar	Potassium derived 39Ar	Chlorine derived 38Ar	Calcium derived 37Ar	Initial 36Ar	AGE* in Ma	**
1000	9.469E-12	3.280E-13	1.832E-13	2.055E-12	1.455E-15	426.66 +	2.59
1050	4.052E-11	1.609E-12	4.928E-13	9.847E-12	2.991E-15	385.92 +	.44
1075	5.713E-11	2.363E-12	3.055E-13	1.435E-11	3.148E-15	373.97 +	.43
1100	9.958E-11	4.096E-12	2.711E-13	2.492E-11	4.583E-15	376.73 +	.49
1125	1.606E-10	6.750E-12	2.730E-13	4.263E-11	5.485E-15	370.70 +	.23
1150	1.111E-10	4.713E-12	1.795E-13	2.984E-11	4.532E-15	366.99 +	.81
1175	6.128E-11	2.617E-12	1.020E-13	1.664E-11	2.178E-15	365.17 +	.27
1200	1.273E-10	5.485E-12	2.197E-13	3.466E-11	5.025E-15	361.76 +	.84
1250	1.611E-10	6.976E-12	3.199E-13	4.363E-11	5.230E-15	360.82 +	.51
1350	2.334E-10	9.819E-12	4.612E-13	6.007E-11	6.670E-15	370.81 +	.20
TOTAL GAS	1.061E-09	4.476E-11	2.808E-12	2.787E-10	4.130E-14	369.07	

NO PLATEAU

Note: all gas quantities are in moles. No blank correction.
* Ages calculated assuming initial 40Ar/36Ar = 295.5 + 0
** 1-sigma precision estimates are for intra-sample reproducibility.
** 1-sigma precision estimates for plateaux are for intra-irradiation packag reproducibility.
*** below detection limit

v 02/05/91

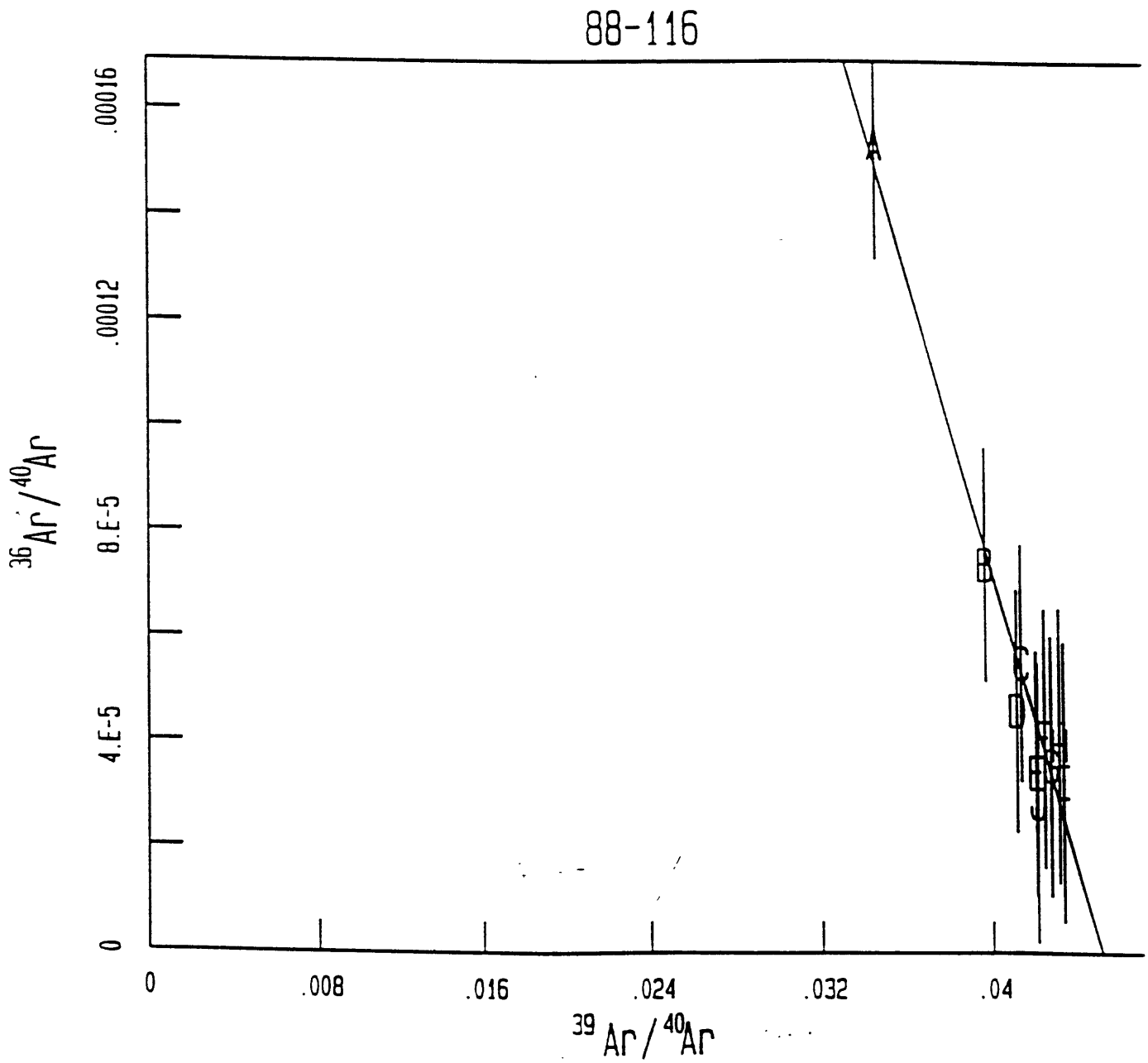
v 02/05/91 08:19:18 23 May 1991 88-116 HORNBLENDE; #25,26,27 RD58



v 02/05/91 (40/36in = 295.5)

v 02/05/91 08:27:42 23 May 1991 88-116 HORNBLENDE; #25,26,27 RD58

10 points regressed out of 10
Mean X = .410E-01 Mean Y = .574E-04 Slope = -.145E-01 + .296E-02
36/40 = .652E-03 + .122E-03 39/40 = .450E-01 + .967E-03
Fit parameters: SUMS = .985 MSWD = .123
40Ar/36Ar = 1532.64 + 286.02 F = 22.245 + .479 AGE = 351.95 + 6.92 Ma



W/O POINTS J

v 02/05/91 88-203 HORNBLENDE; #50,51,52 RD58 08:38:15 23 May 1991

R A W D A T A

FILE	TEMP	40Ar	39Ar	38Ar	37Ar	36Ar *	TRAP CURRENT	MANIFOL OPTION
18671:	1050	905865	33585	9616	60709	148	200	ALL
	+	405	22	23	41	9		
18672:	1075	1218745	52903	16410	100377	147	200	ALL
	+	460	37	7	28	17		
18673:	1100	2806246	124751	35249	238617	320	200	ALL
	+	1356	90	19	182	12		
18674:	1125	1029557	45454	11949	86959	83	100	ALL
	+	588	31	19	72	3		
18676:	1150	4441208	195798	48475	373144	407	200	SPLIT
	+	1901	117	32	151	18		
18679:	1175	1681370	75277	18325	140441	166	200	SPLIT
	+	1085	83	32	83	6		
18681:	1200	1197610	54532	13240	102855	94	100	SPLIT
	+	904	20	19	92	20		
18682:	1250	2521457	117707	28799	225068	228	100	ALL
	+	1635	22	16	116	12		
18684:	1350	2283103	104673	25624	196307	217	200	SPLIT
	+	1448	29	17	125	7		

38Ar errors assigned from experience, rest calculated from regression statisti
* 36Ar peak values less than 800 are means those above 800 are from linear regressions

C O R R E C T I O N S

TEMP °C	39Ar Decay	37Ar Decay	-----K-derived---- 40Ar	38Ar	37Ar	----Ca-derived---- 39Ar	38Ar	36Ar	Cl-der 36Ar	Initial 38Ar
1050	12	108374	190	449	0	114	5	45	1	19
1075	19	179292	300	707	0	189	9	74	1	13
1100	45	427061	707	1668	0	449	21	176	3	27
1125	16	155784	258	608	0	164	8	64	1	3
1150	70	669543	1109	2617	0	704	33	276	4	24
1175	27	252402	427	1006	0	265	12	104	2	11
1200	20	185028	309	729	0	194	9	76	1	3
1250	42	405401	667	1573	0	425	20	167	3	11
1350	38	353935	593	1399	0	371	17	146	2	13

All values in counts, corrected for mass discrimination

v 02/05/91 08:38:19 23 May 1991

88-203 HORNBLENDE; #50,51,52 RD58

J = 0.009395 + 0.50% SAMPLE WT = 1.0002 g

TEMP C	Initial & radiogenic 40Ar	Potassium derived 39Ar	Chlorine derived 38Ar	Calcium derived 37Ar	Initial 36Ar	AGE* in Ma	*
1050	1.250E-11	4.625E-13	1.269E-13	2.339E-12	1.425E-15	395.83 +	1.
1075	1.681E-11	7.283E-13	2.171E-13	3.869E-12	9.879E-16	348.54 +	1.
1100	3.872E-11	1.717E-12	4.643E-13	9.210E-12	1.961E-15	341.82 +	
1125	5.682E-11	2.503E-12	6.269E-13	1.343E-11	***	347.10 +	
1150	2.206E-10	9.704E-12	2.282E-12	5.193E-11	6.342E-15	346.48 +	
1175	3.006E-10	1.343E-11	3.103E-12	7.044E-11	1.090E-14	340.93 +	
1200	2.379E-10	1.081E-11	2.490E-12	5.735E-11	***	337.79 +	1
1250	1.391E-10	6.482E-12	1.505E-12	3.489E-11	3.285E-15	329.33 +	
1350	1.134E-10	5.188E-12	1.205E-12	2.741E-11	3.457E-15	334.16 +	
TOTAL GAS	1.137E-09	5.103E-11	1.202E-11	2.709E-10	3.264E-14	340.11	

NO PLATEAU

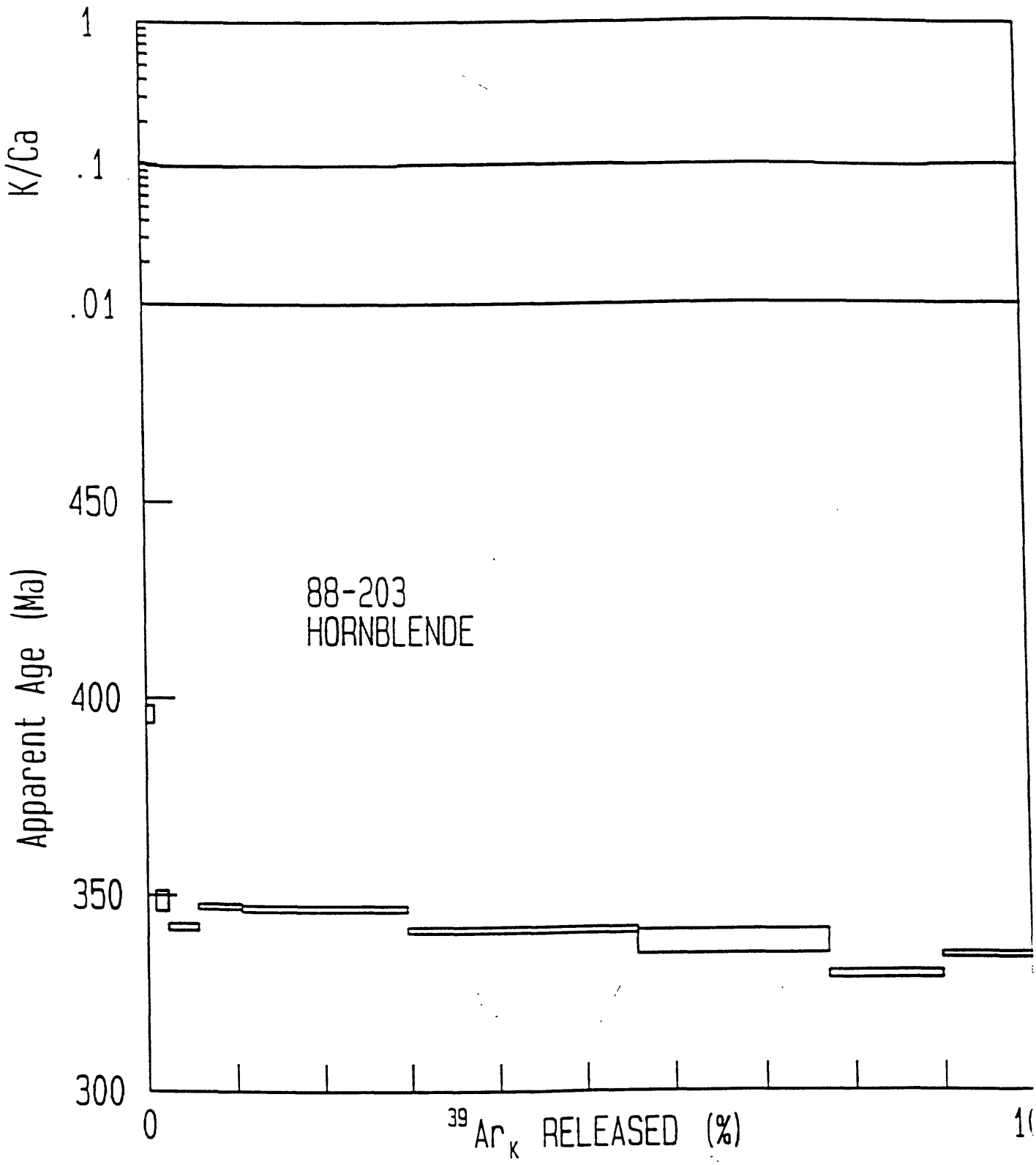
Note: all gas quantities are in moles. No blank correction.
* Ages calculated assuming initial 40Ar/36Ar = 295.5 + 0
** 1-sigma precision estimates are for intra-sample reproducibility.
** 1-sigma precision estimates for plateaux are for intra-irradiation pac reproducibility.
*** below detection limit

	TEMP C	% TOT 39Ar	RAD YIELD	APP K/Ca	APP K/Cl	F	AGE (Ma)	intra-sample	precision intra-package	ir pa
A	1050	.9	96.6	.10	9	26.115	395.83 +	1.11	2.10	2.
B	1075	1.4	98.3	.10	8	22.685	348.54 +	1.31	2.06	2.
C	1100	3.4	98.5	.10	9	22.206	341.82 +	.44	1.62	2.
D	1125	4.9	99.5	.10	10	22.582	347.10 +	.35	1.62	2.
E	1150	19.0	99.2	.10	10	22.538	346.48 +	.40	1.63	2.
F	1175	26.3	98.9	.10	10	22.142	340.93 +	.40	1.61	2.
G	1200	21.2	99.6	.10	11	21.918	337.79 +	1.53	2.18	2.
H	1250	12.7	99.3	.10	10	21.318	329.33 +	.48	1.59	2.
I	1350	10.2	99.1	.10	10	21.660	334.16 +	.33	1.57	2.

Total gas K/Ca = .1

Precisions are 1 sigma, measured in Ma. Measured 40/36 atm = 296.5 +.5
J = 0.009395 + 0.50% (intra-package) + 0.50% (inter-package)
Trap current factors- 40: 8.6 100: 4 200: 1
Manifold factors- ALL: 1 SPLIT 1: 3.6 SPLIT 2: 12.96 SPLIT 3: 46.656
EALL: 2 ESPLIT 1: 6.6 ESPLIT 2: 21.78
Sensitivity = 1.380E-17 % Reproducibility = .25 Detection limit = 40 c
Data reduced assuming initial 40/36 = 295.50 + 0.00
Ca-factors: 3637=2.6E-04+1.7E-06 3837=3.2E-05+2.4E-07 3937=6.7E-04+3.7E-06
K-factors: 3739=0.0E+00+2.2E-03 3839=1.3E-02+2.4E-04 4039=5.7E-03+4.0E-03

v 02/05/91 08:39:24 23 May 1991 88-203 HORNBLENDE; #50,51,52 RD58



v 02/05/91 (40/36in = 295

v 02/05/91 88-221 HORNBLENDE; RD58 #28,29,30 15:06:45 23 May 1991

R A W D A T A

FILE	TEMP	40Ar	39Ar	38Ar	37Ar	36Ar *	TRAP CURRENT	MANIFOL OPTION
18693:	1000	946689	36367	4652	54323	152	200	ALL
	+	594	27	13	35	14		
18694:	1050	4234805	160303	37515	277004	497	200	ALL
	+	2285	85	13	125	6		
18696:	1075	624284	23745	4205	39321	51	100	SPLIT
	+	246	10	18	26	13		
18698:	1100	1128027	42859	5500	67841	77	100	SPLIT
	+	238	35	5	52	11		
18699:	1125	2760761	117593	8052	174778	196	40	ALL
	+	67	74	30	103	5		
18701:	1150	2904505	126418	7304	180253	211	40	ALL
	+	2510	93	18	91	15		
18703:	1175	1421069	59921	4504	87697	114	200	SPLIT
	+	395	23	20	24	15		
18705:	1200	2196137	90162	7020	131321	193	200	SPLIT
	+	651	27	11	49	4		
18706:	1250	3438064	131154	11678	190138	248	100	ALL
	+	1556	108	25	111	9		
18707:	1350	4384518	169870	15666	246595	359	200	ALL
	+	1882	101	22	137	18		
18708:	1450	1242712	49456	3841	70774	188	200	ALL
	+	524	16	11	22	7		

38Ar errors assigned from experience, rest calculated from regression statist
* 36Ar peak values less than 800 are means those above 800 are from linea regressions

C O R R E C T I O N S

TEMP °C	39Ar Decay	37Ar Decay	-----K-derived---- 40Ar	38Ar	37Ar	----Ca-derived---- 39Ar	38Ar	36Ar	Cl-der 36Ar	Initia 38Ar
1000	13	100756	206	487	0	105	5	41	0	21
1050	59	514264	909	2144	0	534	25	209	3	53
1075	9	73069	135	318	0	76	4	30	0	4
1100	16	126267	243	573	0	131	6	51	0	5
1125	43	325611	667	1573	0	338	16	132	1	12
1150	48	352093	717	1691	0	359	17	141	1	13
1175	23	171567	340	802	0	175	8	69	0	9
1200	34	257232	511	1206	0	262	12	103	1	17
1250	50	372789	744	1755	0	380	18	149	1	19
1350	65	483932	963	2272	0	493	23	193	1	31
1450	19	139063	280	662	0	142	7	56	0	25

All values in counts, corrected for mass discrimination

v 02/05/91 88-221 HORNBLENDE; RD58 #28,29,30 15:06:47 23 May 1991

	TEMP C	% TOT 39Ar	RAD. YIELD	APP K/Ca	APP K/Cl	F	AGE (Ma)	precision intra-sample	precision intra-package	precision inter packa
A	1000	.8	96.5	.12	21	25.162	384.72 +	1.65	2.40	2.96
B	1050	3.5	98.0	.10	11	25.940	395.40 +	.24	1.80	2.53
C	1075	7.5	99.0	.11	15	26.073	397.21 +	2.25	2.88	3.39
D	1100	13.6	99.3	.11	21	26.188	398.80 +	1.03	2.07	2.74
E	1125	22.3	99.3	.12	44	23.351	359.61 +	.16	1.65	2.32
F	1150	24.0	99.3	.12	54	22.842	352.49 +	.57	1.70	2.34
G	1175	4.8	99.1	.12	39	23.525	362.04 +	1.01	1.93	2.54
H	1200	7.2	98.8	.12	37	24.097	370.00 +	.20	1.69	2.38
I	1250	11.6	99.1	.12	32	26.028	396.60 +	.33	1.82	2.54
J	1350	3.7	98.9	.12	31	25.561	390.20 +	.46	1.82	2.53
K	1450	1.1	96.8	.12	37	24.366	373.73 +	.61	1.80	2.47

Total gas K/Ca = .1

Precisions are 1 sigma, measured in Ma. Measured 40/36 atm = 296.5 +.5
J = 0.009447 + 0.50% (intra-package) + 0.50% (inter-package)
Trap current factors- 40: 8.6 100: 4 200: 1
Manifold factors- ALL: 1 SPLIT 1: 3.6 SPLIT 2: 12.96 SPLIT 3: 46.656
EALL: 2 ESPLIT 1: 6.6 ESPLIT 2: 21.78
Sensitivity = 1.380E-17 % Reproducibility = .25 Detection limit = 40 cour
Data reduced assuming initial 40/36 = 295.50 + 0.00
Ca-factors: 3637=2.6E-04+1.7E-06 3837=3.2E-05+2.4E-07 3937=6.7E-04+3.7E-06
K-factors: 3739=0.0E+00+2.2E-03 3839=1.3E-02+2.4E-04 4039=5.7E-03+4.0E-03

v 02/05/91 15:06:51 23 May 1991

88-221 HORNBLENDE; RD58 #28,29,30

J = 0.009447 + 0.50% SAMPLE WT = 1.0053 g

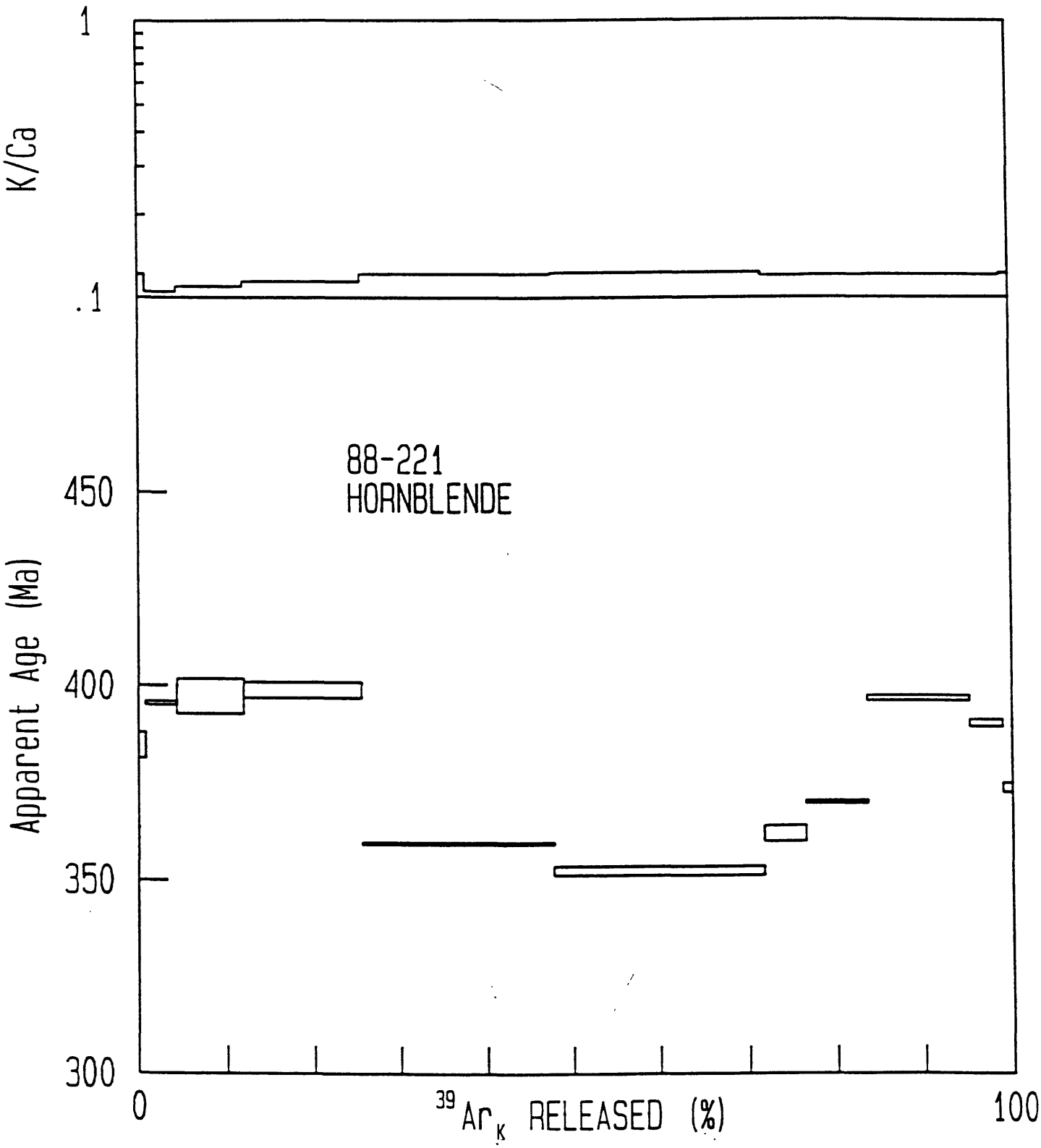
TEMP C	Initial & radiogenic 40Ar	Potassium derived 39Ar	Chlorine derived 38Ar	Calcium derived 37Ar	Initial 36Ar	AGE* in Ma	**
1000	1.306E-11	5.010E-13	5.781E-14	2.146E-12	1.538E-15	384.72 +	1.65
1050	5.843E-11	2.207E-12	4.894E-13	1.095E-11	3.942E-15	395.40 +	.24
1075	1.240E-10	4.709E-12	7.741E-13	2.239E-11	***	397.21 +	2.25
1100	2.241E-10	8.501E-12	9.806E-13	3.867E-11	***	398.80 +	1.03
1125	3.276E-10	1.393E-11	7.700E-13	5.954E-11	7.512E-15	359.61 +	.16
1150	3.446E-10	1.498E-11	6.672E-13	6.334E-11	8.350E-15	352.49 +	.57
1175	7.058E-11	2.972E-12	1.844E-13	1.291E-11	2.265E-15	362.04 +	1.01
1200	1.091E-10	4.472E-12	2.896E-13	1.935E-11	4.473E-15	370.00 +	.20
1250	1.897E-10	7.228E-12	5.489E-13	3.115E-11	5.484E-15	396.60 +	.33
1350	6.049E-11	2.340E-12	1.853E-13	1.011E-11	2.281E-15	390.20 +	.46
1450	1.715E-11	6.814E-13	4.422E-14	2.903E-12	1.838E-15	373.73 +	.61
TOTAL GAS	1.539E-09	6.252E-11	4.992E-12	2.735E-10	4.691E-14	374.07	

NO PLATEAU

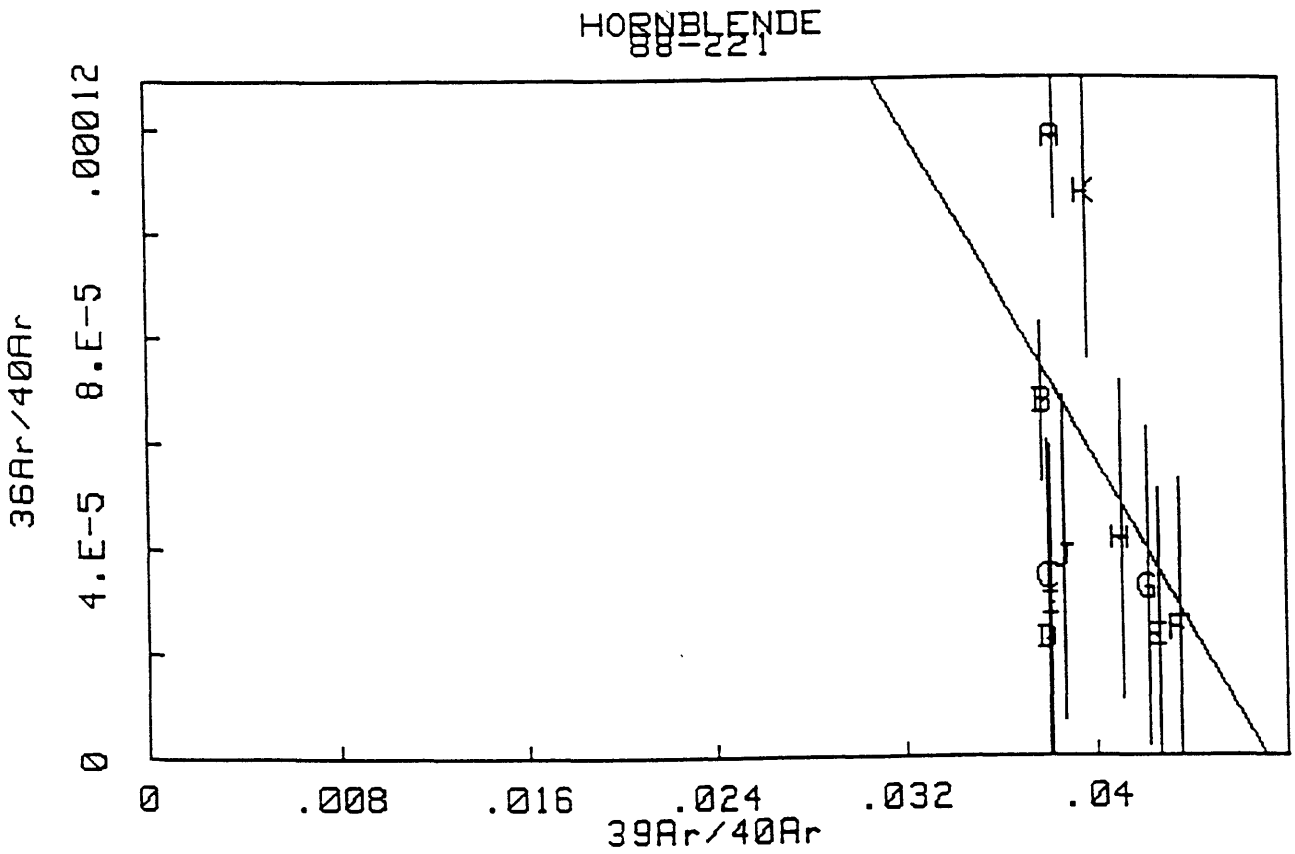
Note: all gas quantities are in moles. No blank correction.
* Ages calculated assuming initial 40Ar/36Ar = 295.5 + 0
** 1-sigma precision estimates are for intra-sample reproducibility.
** 1-sigma precision estimates for plateaux are for intra-irradiation packa
reproducibility.
*** below detection limit

v 02/05/91

v 02/05/91 15:07:29 23 May 1991 88-221 HORNBLENDE; RD58 #28,29,30



v 02/05/91 (40/36in = 295.5



11 points regressed out of 11
Mean X = .392E-01 Mean Y = .619E-04 Slope = -.806E-02 + .386E-02
36/40 = .378E-03 + .151E-03 39/40 = .469E-01 + .427E-02
Fit parameters: SUMS = 21.214 MSWD = 2.357
40Ar/36Ar = 2645.54 + 1059.89 F = 21.313 + 1.942 AGE = 330.93 + 27.59 Ma

v 02/05/91 88-225 HORNBLENDE; RD59 #10,11,12 11:01:10 23 May 1991

R A W D A T A

FILE	TEMP	40Ar	39Ar	38Ar	37Ar	36Ar *	TRAP CURRENT	MANIFOL OPTION
19055:	950	1561638	30013	7840	61868	2945	200	ALL
	+	525	31	23	35	82		
19056:	1000	1535624	32059	8990	66710	2854	200	ALL
	+	592	19	24	42	62		
19057:	1050	4384523	178171	56078	494847	2789	200	ALL
	+	2442	90	32	327	91		
19058:	1075	1412677	57875	16294	165806	678	100	ALL
	+	203	17	10	31	7		
19059:	1100	2307138	104243	27041	284333	722	100	ALL
	+	258	29	11	54	9		
19060:	1125	2519624	116840	31866	320738	724	100	ALL
	+	913	64	15	157	6		
19061:	1175	1504022	66618	18274	183668	599	100	ALL
	+	559	36	17	81	17		
19062:	1200	2402647	108544	29572	298393	736	100	ALL
	+	143	18	22	94	23		
19063:	1250	3055736	142150	37910	381022	711	100	ALL
	+	894	59	20	116	13		
19064:	1350	1287789	37792	10211	99648	1693	200	ALL
	+	555	9	21	53	45		
19065:	1450	1096940	30296	8169	79726	1590	200	ALL
	+	491	25	9	18	28		

38Ar errors assigned from experience, rest calculated from regression statist:
* 36Ar peak values less than 3400 are means those above 3400 are from line regressions

C O R R E C T I O N S

TEMP °C	39Ar Decay	37Ar Decay	-----K-derived---- 40Ar	38Ar	37Ar	----Ca-derived---- 39Ar	38Ar	36Ar	Cl-der 36Ar	Initia. 38Ar
950	9	88752	170	401	0	102	5	40	1	545
1000	9	95797	182	429	0	110	5	43	1	527
1050	53	711609	1009	2379	0	814	38	319	4	463
1075	17	238685	328	773	0	273	13	107	1	107
1100	31	409737	590	1392	0	468	22	184	2	101
1125	35	463328	661	1560	0	529	25	208	2	97
1175	20	265414	377	890	0	303	14	119	1	90
1200	32	431648	614	1450	0	493	23	193	2	101
1250	43	560236	805	1898	0	635	30	249	3	86
1350	11	146670	214	505	0	166	8	65	1	305
1450	9	117469	172	405	0	133	6	52	1	288

All values in counts, corrected for mass discrimination

v 02/05/91 88-225 HORNBLENDE; RD59 #10,11,12 11:01:12 23 May 1991

	TEMP C	% TOT 39Ar	RAD YIELD	APP K/Ca	APP K/Cl	F	AGE (Ma)		precision intra-sample	precision intra-package	precision inter packa
A	950	1.1	44.8	.10	9	23.382	355.54	+	11.15	11.30	11.41
B	1000	1.2	45.7	.10	9	21.950	335.68	+	8.08	8.25	8.40
C	1050	6.6	83.3	.08	8	20.569	316.29	+	2.16	2.61	2.99
D	1075	8.6	88.0	.07	9	21.561	330.24	+	.51	1.60	2.20
E	1100	15.5	93.1	.08	10	20.669	317.71	+	.36	1.51	2.10
F	1125	17.4	93.9	.08	9	20.321	312.80	+	.25	1.47	2.05
G	1175	9.9	90.5	.08	9	20.507	315.43	+	1.06	1.80	2.31
H	1200	16.1	93.3	.08	9	20.723	318.46	+	.87	1.71	2.25
I	1250	21.1	95.5	.08	9	20.600	316.74	+	.40	1.51	2.10
J	1350	1.4	62.5	.08	9	21.373	327.60	+	4.92	5.16	5.37
K	1450	1.1	58.5	.08	9	21.230	325.59	+	3.92	4.22	4.47

Total gas K/Ca = .1

Precisions are 1 sigma, measured in Ma. Measured 40/36 atm = 296.5 +.5
J = 0.009317 + 0.50% (intra-package) + 0.50% (inter-package)
Trap current factors- 40: 8.6 100: 4 200: 1
Manifold factors- ALL: 1 SPLIT 1: 3.6 SPLIT 2: 12.96 SPLIT 3: 46.656
EALL: 2 ESPLIT 1: 6.6 ESPLIT 2: 21.78
Sensitivity = 6.470E-18 % Reproducibility = .25 Detection limit = 40 coun
Data reduced assuming initial 40/36 = 295.50 + 0.00
Ca-factors: 3637=2.6E-04+1.7E-06 3837=3.2E-05+2.4E-07 3937=6.7E-04+3.7E-06
K-factors: 3739=0.0E+00+2.2E-03 3839=1.3E-02+2.4E-04 4039=5.7E-03+4.0E-03

v 02/05/91 11:01:15 23 May 1991

88-225 HORNBLENDE; RD59 #10,11,12

J = 0.009317 + 0.50% SAMPLE WT = 0.9978 g

TEMP C	Initial & radiogenic 40Ar	Potassium derived 39Ar	Chlorine derived 38Ar	Calcium derived 37Ar	Initial 36Ar	AGE* in Ma	**
950	1.010E-11	1.937E-13	5.171E-14	9.770E-13	1.886E-14	355.54 +	11.15
1000	9.934E-12	2.069E-13	5.887E-14	1.054E-12	1.825E-14	335.68 +	8.08
1050	2.836E-11	1.149E-12	3.508E-13	7.826E-12	1.601E-14	316.29 +	2.16
1075	3.655E-11	1.492E-12	4.049E-13	1.049E-11	1.480E-14	330.24 +	.51
1100	5.969E-11	2.689E-12	6.670E-13	1.801E-11	1.394E-14	317.71 +	.36
1125	6.519E-11	3.014E-12	7.876E-13	2.034E-11	1.337E-14	312.80 +	.25
1175	3.891E-11	1.718E-12	4.527E-13	1.165E-11	1.245E-14	315.43 +	1.06
1200	6.216E-11	2.800E-12	7.312E-13	1.894E-11	1.404E-14	318.46 +	.87
1250	7.906E-11	3.667E-12	9.351E-13	2.442E-11	1.194E-14	316.74 +	.40
1350	8.331E-12	2.437E-13	6.484E-14	1.598E-12	1.056E-14	327.60 +	4.92
1450	7.096E-12	1.954E-13	5.215E-14	1.279E-12	9.977E-15	325.59 +	3.92
TOTAL GAS	4.054E-10	1.737E-11	4.557E-12	1.166E-10	1.542E-13	318.41	

NO PLATEAU

Note: all gas quantities are in moles. No blank correction.

* Ages calculated assuming initial 40Ar/36Ar = 295.5 + 0

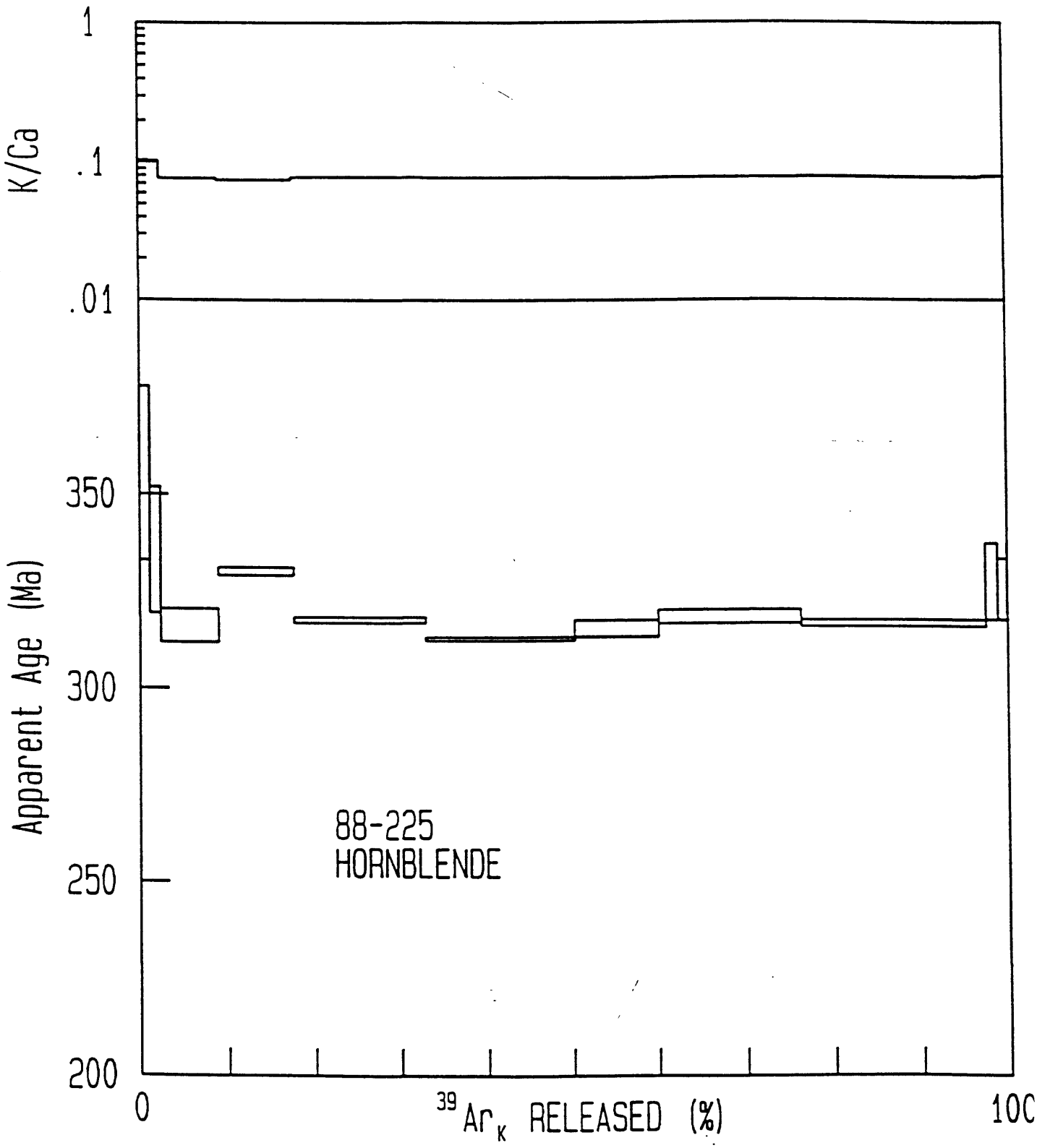
** 1-sigma precision estimates are for intra-sample reproducibility.

** 1-sigma precision estimates for plateaux are for intra-irradiation packag reproducibility.

*** below detection limit

v 02/05/91

v 02/05/91 11:02:11 23 May 1991 88-225 HORNBLENDE; RD59 #10,11,12



v 02/05/91 (40/36in = 295.5

v 02/05/91 88-227 HORNBLENDE RD59 #16,17,18 11:55:09 21 Jun 1991

R A W D A T A

FILE	TEMP	40Ar	39Ar	38Ar	37Ar	36Ar *	TRAP CURRENT	MANIFOLI OPTION
19139:	950	682326	23961	3563	26579	286	200	ALL
	+	179	10	20	23	8		
19140:	1000	674429	18786	6036	49665	307	200	ALL
	+	308	27	16	25	23		
19141:	1050	1084811	25787	17083	115120	412	200	ALL
	+	511	19	17	78	11		
19142:	1075	845637	24866	18478	106721	281	200	ALL
	+	329	17	16	52	22		
19143:	1100	1076647	36684	26657	147971	373	200	ALL
	+	567	18	20	104	27		
19145:	1125	1716296	71019	66043	271859	404	200	SPLIT
	+	806	56	59	198	15		
19146:	1150	3573092	167809	125834	601818	708	100	ALL
	+	2891	37	83	417	24		
19148:	1175	2161513	104663	68768	367118	429	200	SPLIT
	+	588	71	54	247	10		
19149:	1200	467095	22199	17718	85124	128	100	ALL
	+	192	8	4	30	9		
19151:	1250	1296878	60264	43995	231059	347	200	SPLIT
	+	250	15	21	155	18		
19152:	1300	4293535	197321	156759	735309	993	200	ALL
	+	2457	142	98	625	27		

38Ar errors assigned from experience, rest calculated from regression statisti
* 36Ar peak values less than 3400 are means those above 3400 are from line regressions

C O R R E C T I O N S

TEMP °C	39Ar Decay	37Ar Decay	-----K-derived---- 40Ar	38Ar	37Ar	----Ca-derived---- 39Ar	38Ar	36Ar	Cl-der 36Ar	Initial 38Ar
950	8	47402	136	321	0	50	2	20	0	50
1000	6	88659	106	251	0	93	4	37	1	51
1050	9	205704	145	343	0	216	10	85	2	61
1075	9	190879	140	331	0	201	9	79	2	38
1100	13	264998	207	488	0	279	13	109	2	49
1125	25	487491	401	946	0	512	24	201	6	37
1150	58	1080204	948	2236	0	1135	53	445	11	47
1175	36	659786	591	1395	0	693	33	272	6	28
1200	8	153182	125	296	0	161	8	63	2	12
1250	21	416325	340	803	0	437	21	171	4	32
1300	69	1326160	1114	2629	0	1391	66	546	14	82

All values in counts, corrected for mass discrimination

v 02/05/91 88-227 HORNBLENDE RD59 #16,17,18 11:55:11 21 Jun 1991

	TEMP C	% TOT 39Ar	RAD YIELD	APP K/Ca	APP K/Cl	F	AGE (Ma)		precision intra-sample	precision intra-package	precision inter packa
A	950	1.2	88.4	.17	18	25.205	373.03	+	1.41	2.21	2.78
B	1000	1.0	88.1	.07	8	31.753	458.53	+	4.61	5.05	5.44
C	1050	1.3	91.1	.04	4	38.594	543.71	+	1.54	2.82	3.67
D	1075	1.3	93.0	.04	3	31.831	459.52	+	3.39	3.96	4.45
E	1100	1.9	92.8	.05	3	27.404	402.20	+	2.86	3.39	3.84
F	1125	13.2	96.6	.05	3	23.478	349.80	+	.86	1.81	2.41
G	1150	34.7	97.9	.05	3	20.957	315.33	+	.63	1.58	2.15
H	1175	19.5	97.9	.05	4	20.327	306.61	+	.39	1.47	2.04
I	1200	4.6	96.0	.05	3	20.311	306.39	+	1.77	2.26	2.67
J	1250	11.2	96.1	.05	3	20.794	313.08	+	1.25	1.91	2.39
K	1300	10.2	97.0	.05	3	21.225	319.02	+	.59	1.58	2.16

Total gas K/Ca = .1

Precisions are 1 sigma, measured in Ma. Measured 40/36 atm = 296.5 +.5
J = 0.009114 + 0.50% (intra-package) + 0.50% (inter-package)
Trap current factors- 40: 8.6 100: 4 200: 1
Manifold factors- ALL: 1 SPLIT 1: 3.6 SPLIT 2: 12.96 SPLIT 3: 46.656
EALL: 2 ESPLIT 1: 6.6 ESPLIT 2: 21.78
Sensitivity = 6.470E-18 % Reproducibility = .25 Detection limit = 40 count
Data reduced assuming initial 40/36 = 295.50 + 0.00
Ca-factors: 3637=2.6E-04+1.7E-06 3837=3.2E-05+2.4E-07 3937=6.7E-04+3.7E-06
K-factors: 3739=0.0E+00+2.2E-03 3839=1.3E-02+2.4E-04 4039=5.7E-03+4.0E-03

v 02/05/91 11:55:13 21 Jun 1991

88-227 HORNBLENDE RD59 #16,17,18

J = 0.009114 + 0.50% SAMPLE WT = 0.9933 g

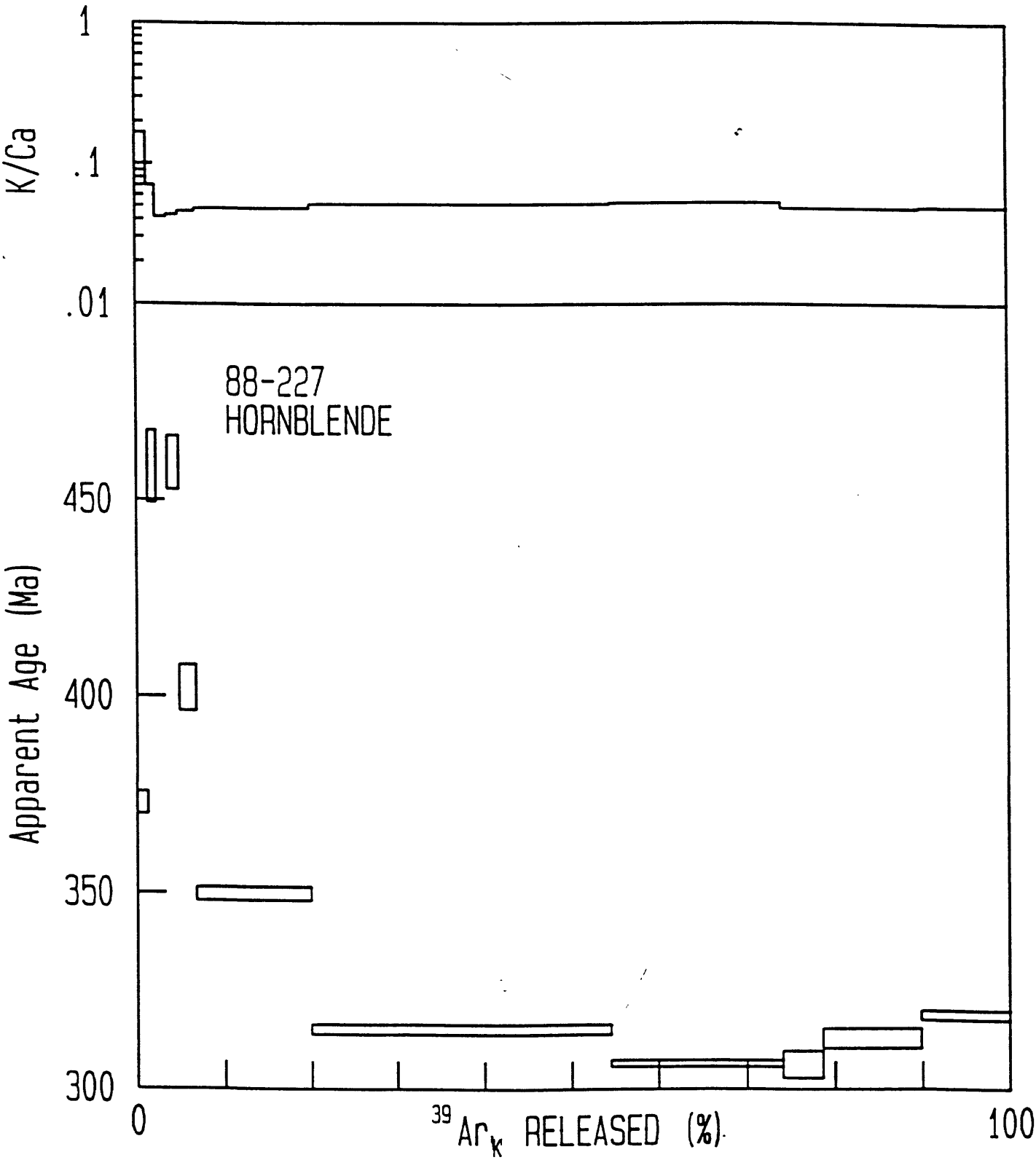
TEMP C	Initial & radiogenic 40Ar	Potassium derived 39Ar	Chlorine derived 38Ar	Calcium derived 37Ar	Initial 36Ar	AGE* in Ma	**
950	4.414E-12	1.549E-13	2.133E-14	4.799E-13	1.725E-15	373.03 +	1.41
1000	4.363E-12	1.211E-13	3.780E-14	8.972E-13	1.753E-15	458.53 +	4.61
1050	7.018E-12	1.656E-13	1.088E-13	2.081E-12	2.115E-15	543.71 +	1.54
1075	5.470E-12	1.598E-13	1.178E-13	1.930E-12	1.301E-15	459.52 +	3.39
1100	6.965E-12	2.358E-13	1.698E-13	2.679E-12	1.699E-15	402.20 +	2.86
1125	3.997E-11	1.644E-12	1.519E-12	1.773E-11	4.617E-15	349.80 +	.86
1150	9.245E-11	4.319E-12	3.204E-12	4.364E-11	6.568E-15	315.33 +	.63
1175	5.033E-11	2.425E-12	1.572E-12	2.398E-11	3.544E-15	306.61 +	.39
1200	1.209E-11	5.710E-13	4.518E-13	6.183E-12	1.648E-15	306.39 +	1.77
1250	3.020E-11	1.395E-12	1.008E-12	1.512E-11	4.019E-15	313.08 +	1.25
1300	2.777E-11	1.269E-12	9.991E-13	1.337E-11	2.822E-15	319.02 +	.59
TOTAL GAS	2.810E-10	1.246E-11	9.210E-12	1.281E-10	3.181E-14	326.93	

NO PLATEAU

Note: all gas quantities are in moles. No blank correction.
* Ages calculated assuming initial 40Ar/36Ar = 295.5 + 0
** 1-sigma precision estimates are for intra-sample reproducibility.
** 1-sigma precision estimates for plateaux are for intra-irradiation packag reproducibility.
*** below detection limit

v 02/05/91

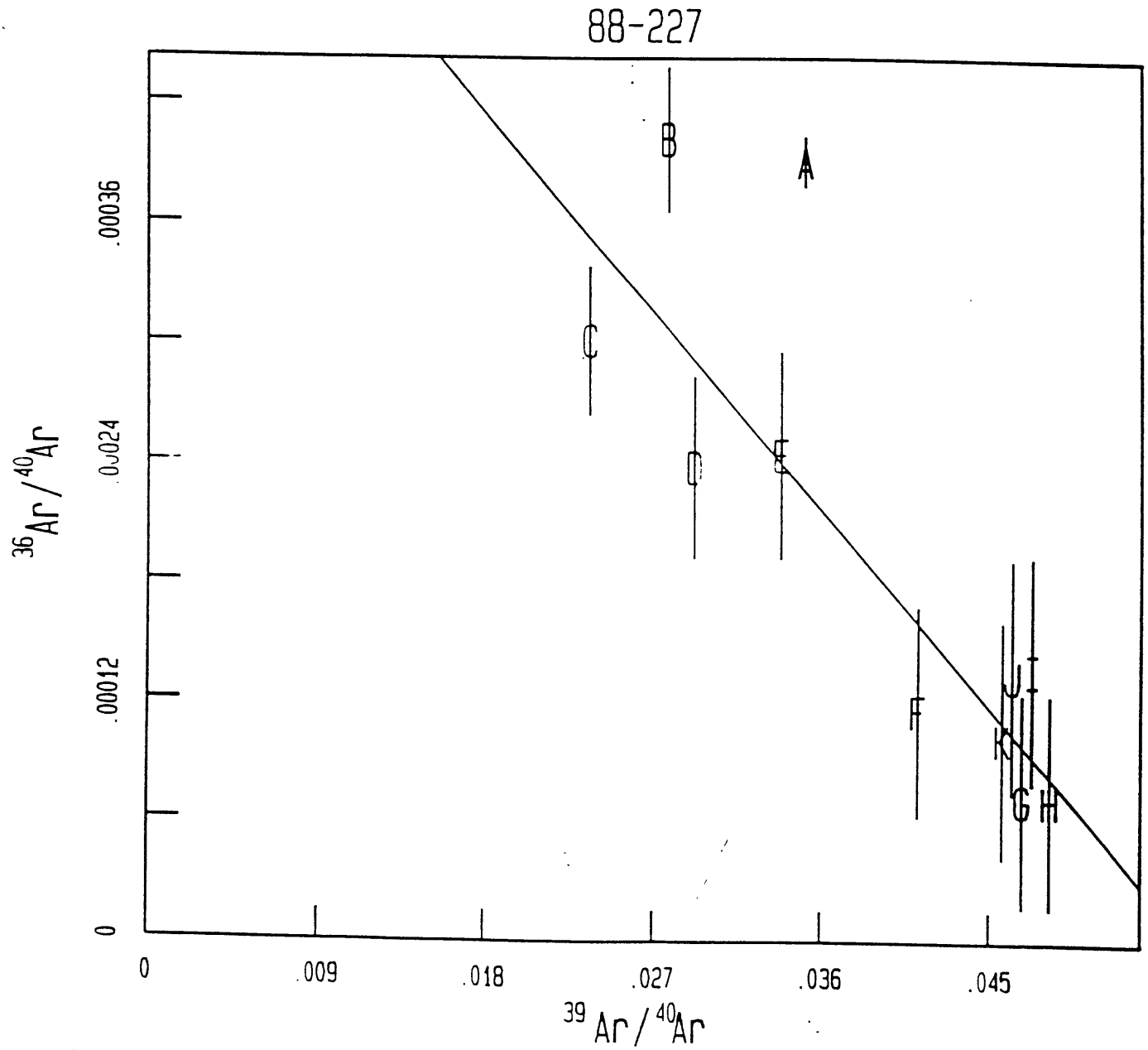
v 02/05/91 11:56:02 21 Jun 1991 88-227 HORNBLENDE RD59 #16,17,18



v 02/05/91 (40/36in = 295.5)

v 02/05/91 10:35:17 21 Jun 1991 88-227 HORNBLENDE RD59 #16,17,18

Point A deleted;
10 points regressed out of 11 includes 98.8 % of 39Ar
Mean X = .360E-01 Mean Y = .217E-03 Slope = -.110E-01 + .162E-02
36/40 = .613E-03 + .602E-04 39/40 = .557E-01 + .330E-02
Fit parameters: SUMS = 11.953 MSWD = 1.494
40Ar/36Ar = 1631.9 + 160.29 F = 17.951 + 1.062 AGE = 273.34 + 15.06 M
a



W/O POINTS A

R A W D A T A

FILE	TEMP	40Ar	39Ar	38Ar	37Ar	36Ar regression	TRAP CURRENT	MANIFOI OPTION
18714:	850	2299186	23635	3443	27203	476	200	ALL
	+	779	23	15	22	11		
18715:	950	2181460	49555	8586	40350	323	200	ALL
	+	576	7	22	10	20		
18716:	1000	3349864	98864	35311	108513	354	200	ALL
	+	1138	37	50	54	10		
18717:	1050	2175823	84606	29314	159472	208	100	ALL
	+	918	85	21	39	13		
18718:	1075	1402388	58551	15156	114432	162	100	ALL
	+	203	46	18	60	18		
18719:	1100	1013983	43921	10246	85116	40	100	ALL
	+	831	29	20	56	7		
18720:	1125	2021359	90790	19781	169043	174	100	ALL
	+	1928	77	20	89	20		
18721:	1150	2065308	92663	21642	170971	174	100	ALL
	+	1387	51	25	142	17		
18723:	1175	1430665	63636	13229	114719	150	100	SPLIT
	+	490	55	13	105	9		
18724:	1200	1397783	63005	12354	113622	109	100	ALL
	+	525	6	13	61	20		
18725:	1250	3833914	171916	34503	313864	312	200	ALL
	+	2549	109	22	102	29		
18726:	1350	952555	42433	8753	78551	95	200	ALL
	+	171	29	7	21	17		

38Ar errors assigned from experience, rest calculated from regression statist

C O R R E C T I O N S

TEMP °C	39Ar Decay	37Ar Decay	-----K-derived---- 40Ar	38Ar	37Ar	----Ca-derived---- 39Ar	38Ar	36Ar	Cl-der 36Ar	Initia 38Ar
850	9	53868	134	316	0	55	3	21	0	85
950	19	79974	281	664	0	81	4	32	1	54
1000	38	215341	561	1323	0	219	10	86	3	50
1050	32	316762	479	1131	0	321	15	126	3	15
1075	22	227509	332	782	0	231	11	91	1	13
1100	17	168963	249	587	0	171	8	67	1	-5
1125	35	336710	514	1214	0	341	16	134	2	7
1150	36	340972	525	1239	0	345	16	135	2	7
1175	25	231625	361	851	0	234	11	92	1	11
1200	24	229621	357	842	0	232	11	91	1	3
1250	67	634882	974	2298	0	640	30	251	3	11
1350	16	159038	240	567	0	160	8	63	1	6

All values in counts, corrected for mass discrimination

v 02/05/91 88-313A HORNBLENDE; RD58 #53,54,55 09:27:59 23 May 1991

	TEMP C	% TOT 39Ar	RAD YIELD	APP K/Ca	APP K/Cl	F	AGE (Ma)		precision intra-sample	precision intra-package	precision inter-packag
A	850	.8	94.1	.15	18	91.680	1111.37	+	1.30	4.37	6.03
B	950	1.6	96.1	.21	15	42.297	597.82	+	1.44	2.93	3.88
C	1000	3.3	97.6	.16	7	33.114	483.81	+	.43	2.17	3.04
D	1050	11.1	98.9	.09	7	25.499	383.48	+	.63	1.85	2.53
E	1075	7.7	98.5	.09	10	23.654	358.31	+	1.29	2.08	2.64
F	1100	5.8	100.0	.09	11	23.335	353.93	+	.74	1.77	2.40
G	1125	12.0	99.4	.09	12	22.187	338.05	+	.95	1.81	2.38
H	1150	12.2	99.5	.09	11	22.219	338.49	+	.77	1.73	2.32
I	1175	30.2	98.8	.10	12	22.264	339.12	+	.57	1.65	2.26
J	1200	8.3	99.6	.09	13	22.151	337.55	+	1.33	2.04	2.56
K	1250	5.7	99.6	.09	13	22.251	338.93	+	.73	1.72	2.31
L	1350	1.4	99.0	.09	12	22.279	339.33	+	1.62	2.24	2.72

Total gas K/Ca = .1

Precisions are 1 sigma, measured in Ma. Measured 40/36 atm = 296.5 +.5
J = 0.009289 + 0.50% (intra-package) + 0.50% (inter-package)
Trap current factors- 40: 8.6 100: 4 200: 1
Manifold factors- ALL: 1 SPLIT 1: 3.6 SPLIT 2: 12.96 SPLIT 3: 46.656
EALL: 2 ESPLIT 1: 6.6 ESPLIT 2: 21.78
Sensitivity = 6.470E-18 % Reproducibility = .25 Detection limit = 40 count
Data reduced assuming initial 40/36 = 295.50 + 0.00
Ca-factors: 3637=2.6E-04+1.7E-06 3837=3.2E-05+2.4E-07 3937=6.7E-04+3.7E-06
K-factors: 3739=0.0E+00+2.2E-03 3839=1.3E-02+2.4E-04 4039=5.7E-03+4.0E-03

v 02/05/91 09:28:01 23 May 1991

88-313A HORNBLENDE; RD58 #53,54,55

J = 0.009289 + 0.50% SAMPLE WT = 0.9966 g

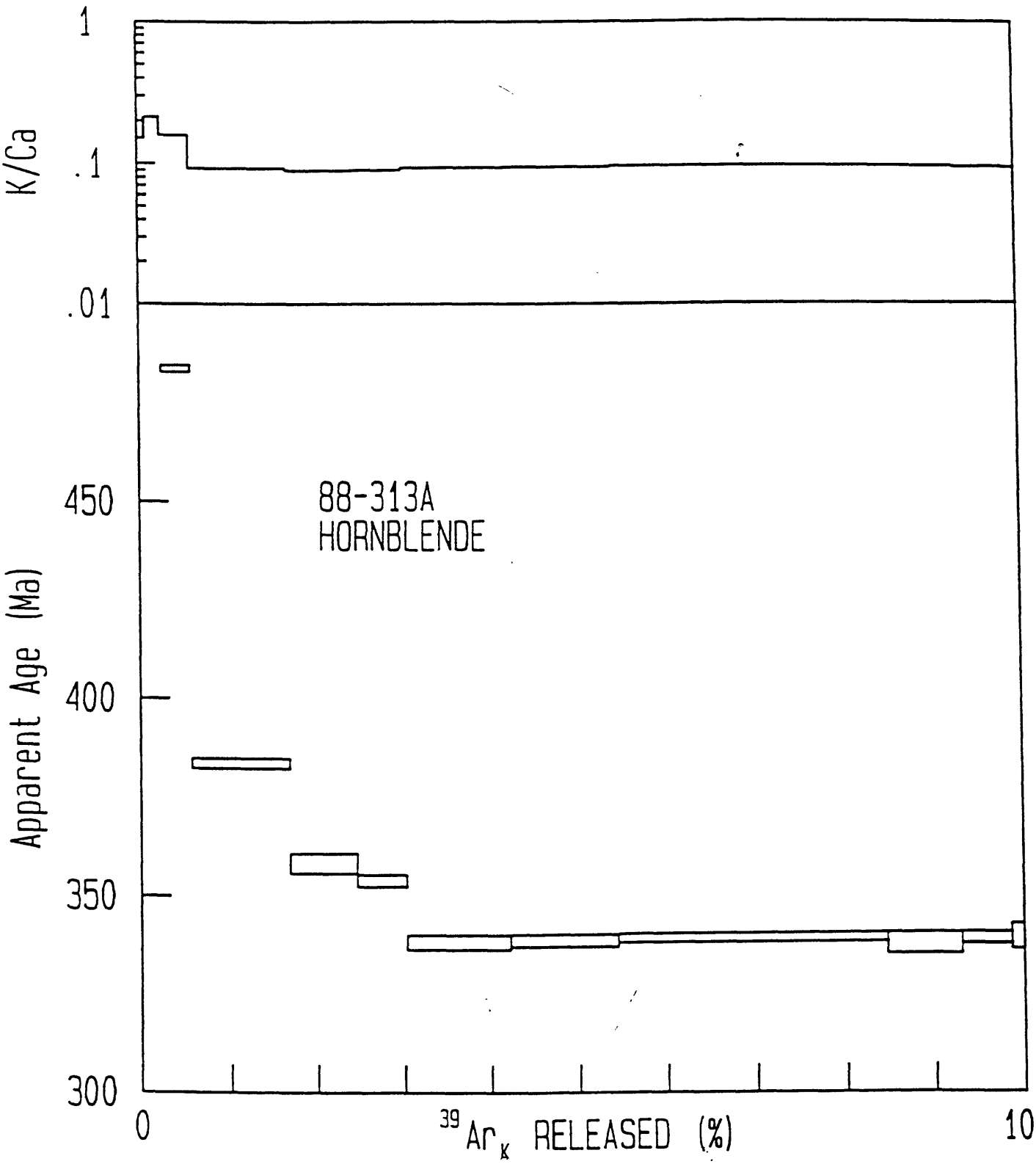
TEMP C	Initial & radiogenic 40Ar	Potassium derived 39Ar	Chlorine derived 38Ar	Calcium derived 37Ar	Initial 36Ar	AGE* in Ma	**
850	1.487E-11	1.528E-13	2.080E-14	5.259E-13	2.947E-15	1111.37 +	1.30
950	1.411E-11	3.205E-13	5.168E-14	7.805E-13	1.884E-15	597.82 +	1.44
1000	2.167E-11	6.390E-13	2.205E-13	2.101E-12	1.724E-15	483.81 +	.43
1050	5.630E-11	2.184E-12	7.307E-13	1.236E-11	2.061E-15	383.48 +	.63
1075	3.629E-11	1.511E-12	3.727E-13	8.872E-12	1.827E-15	358.31 +	1.29
1100	2.624E-11	1.134E-12	2.501E-13	6.592E-12	***	353.93 +	.74
1125	5.230E-11	2.344E-12	4.812E-13	1.312E-11	***	338.05 +	.95
1150	5.344E-11	2.392E-12	5.288E-13	1.328E-11	***	338.49 +	.77
1175	1.333E-10	5.914E-12	1.155E-12	3.235E-11	5.346E-15	339.12 +	.57
1200	3.617E-11	1.627E-12	2.983E-13	8.906E-12	***	337.55 +	1.33
1250	2.480E-11	1.110E-12	2.086E-13	6.154E-12	3.772E-16	338.93 +	.73
1350	6.161E-12	2.738E-13	5.305E-14	1.541E-12	***	339.33 +	1.62
TOTAL GAS	4.756E-10	1.960E-11	4.372E-12	1.066E-10	1.881E-14	362.79	

69.7% of gas on plateau, steps 1125 through 1350 PLATEAU AGE = 338.72 + 1.

Note: all gas quantities are in moles. No blank correction.
* Ages calculated assuming initial 40Ar/36Ar = 295.5 + 0
** 1-sigma precision estimates are for intra-sample reproducibility.
** 1-sigma precision estimates for plateaux are for intra-irradiation packag
reproducibility.
*** below detection limit

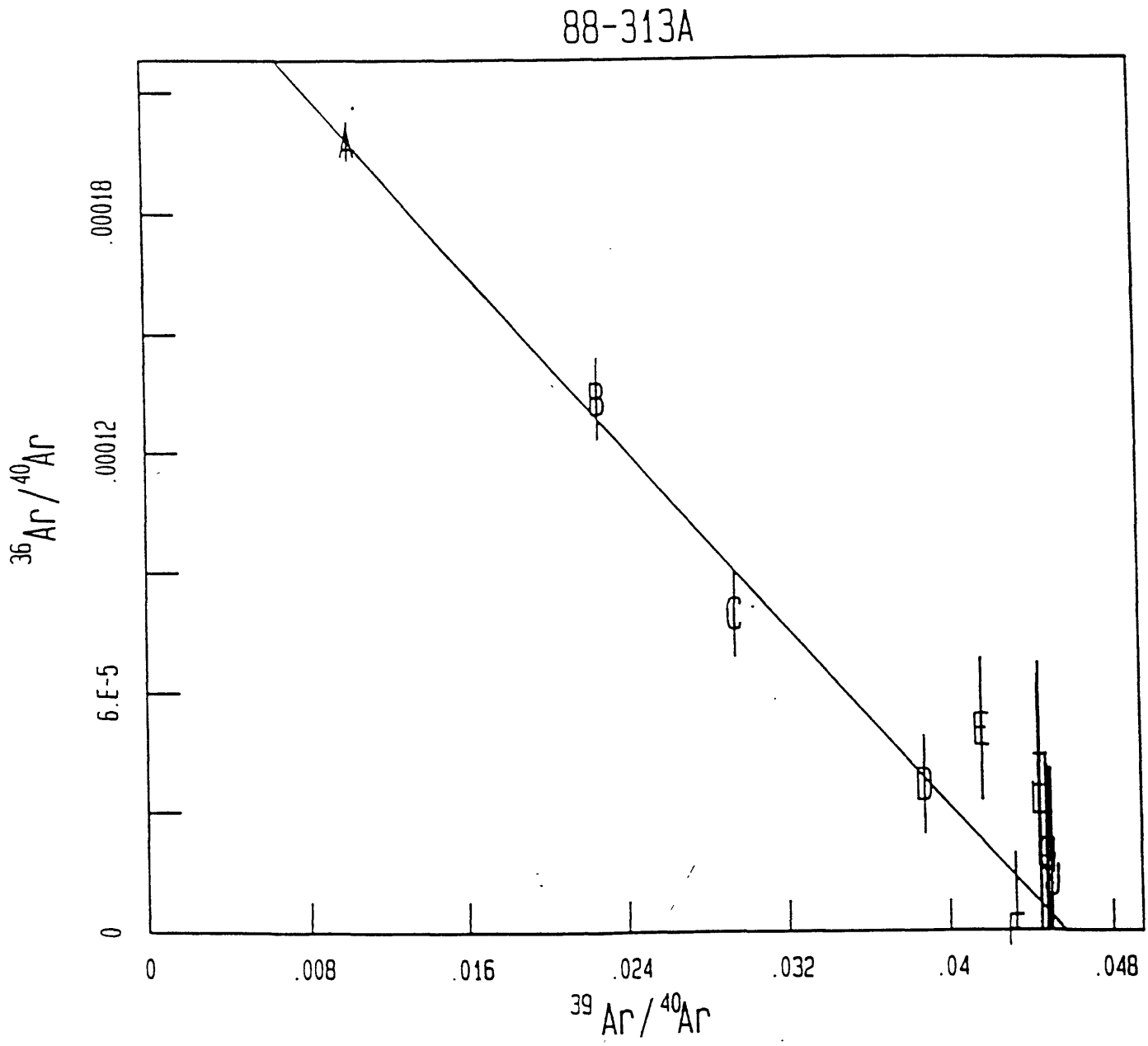
v 02/05/91

v 02/05/91 09:28:45 23 May 1991 88-313A HORNBLENDE; RD58 #53,54,55



v 02/05/91 (40/36in = 295.

v 02/05/91 88-313A HORNBLENDE; RD58 #53,54,55 09:39:34 23 May 1991
Points GHIJKL deleted;
6 points regressed out of 12 includes 30.3 % of 39Ar
Mean X = .193E-01 Mean Y = .148E-03 Slope = -.560E-02 + .317E-03
36/40 = .255E-03 + .715E-05 39/40 = .456E-01 + .164E-02
Fit parameters: SUMS = 4.165 MSWD = 1.041
40Ar/36Ar = 3915.4 + 109.65 F = 21.908 + .785 AGE = 334.16 + 11.04 Ma



W/O POINTS GHIJKL

v 02/05/91 88-317 HORNBLENDE RD59 #22,23,24 09:59:47 21 Jun 1991

R A W D A T A

FILE	TEMP	40Ar	39Ar	38Ar	37Ar	36Ar *	TRAP CURRENT	MANIFOI OPTION
19078:	1100	385871	15221	4388	63664	220	200	ALL
	+	92	13	26	24	9		
19079:	1125	1082664	41722	14085	242361	427	200	ALL
	+	254	34	26	65	11		
19080:	1150	3821842	164258	49090	1032794	1075	200	ALL
	+	3246	99	31	518	16		
19082:	1175	1807099	82417	24333	485832	462	200	SPLIT
	+	393	20	14	211	15		
19084:	1200	1510567	68363	20128	404232	418	200	SPLIT
	+	472	23	34	199	7		
19086:	1225	1733016	80998	24232	471061	492	200	SPLIT
	+	571	39	19	185	10		
19088:	1250	884548	39994	12290	227354	271	200	SPLIT
	+	146	28	7	114	5		
19089:	1300	2810616	128420	38684	715463	803	200	ALL
	+	1044	62	20	295	18		

38Ar errors assigned from experience, rest calculated from regression statist:
* 36Ar peak values less than 3400 are means those above 3400 are from line regressions

C O R R E C T I O N S

TEMP °C	39Ar Decay	37Ar Decay	-----K-derived---- 40Ar	38Ar	37Ar	----Ca-derived---- 39Ar	38Ar	36Ar	Cl-der 36Ar	Initial 38Ar
1100	5	97871	86	203	0	109	5	43	0	33
1125	13	372964	235	554	0	415	20	163	1	49
1150	51	1590962	924	2180	0	1770	83	694	4	71
1175	26	749413	464	1095	0	833	39	327	2	25
1200	21	624389	385	908	0	694	33	272	2	27
1225	25	728602	456	1076	0	809	38	318	2	33
1250	13	357159	225	531	0	394	19	155	1	22
1300	41	1125084	723	1706	0	1242	58	487	3	59

All values in counts, corrected for mass discrimination

v 02/05/91 09:59:51 21 Jun 1991

88-317 HORNBLENDE RD59 #22,23,24

J = 0.009376 + 0.50% SAMPLE WT = 0.9998 g

TEMP C	Initial & radiogenic 40Ar	Potassium derived 39Ar	Chlorine derived 38Ar	Calcium derived 37Ar	Initial 36Ar	AGE* in Ma	*
1100	2.496E-12	9.789E-14	2.731E-14	1.048E-12	1.146E-15	338.86 +	2.
1125	7.003E-12	2.676E-13	8.789E-14	3.991E-12	1.711E-15	370.06 +	1.
1150	2.472E-11	1.053E-12	3.040E-13	1.702E-11	2.462E-15	349.44 +	.
1175	4.208E-11	1.902E-12	5.419E-13	2.884E-11	3.128E-15	333.15 +	.
1200	3.518E-11	1.578E-12	4.484E-13	2.402E-11	3.382E-15	333.51 +	.
1225	4.035E-11	1.870E-12	5.402E-13	2.801E-11	4.063E-15	323.37 +	.
1250	2.060E-11	9.234E-13	2.744E-13	1.365E-11	2.696E-15	330.48 +	.
1300	1.818E-11	8.238E-13	2.397E-13	1.194E-11	2.043E-15	328.97 +	.
TOTAL GAS	1.906E-10	8.516E-12	2.464E-12	1.285E-10	2.063E-14	333.64	

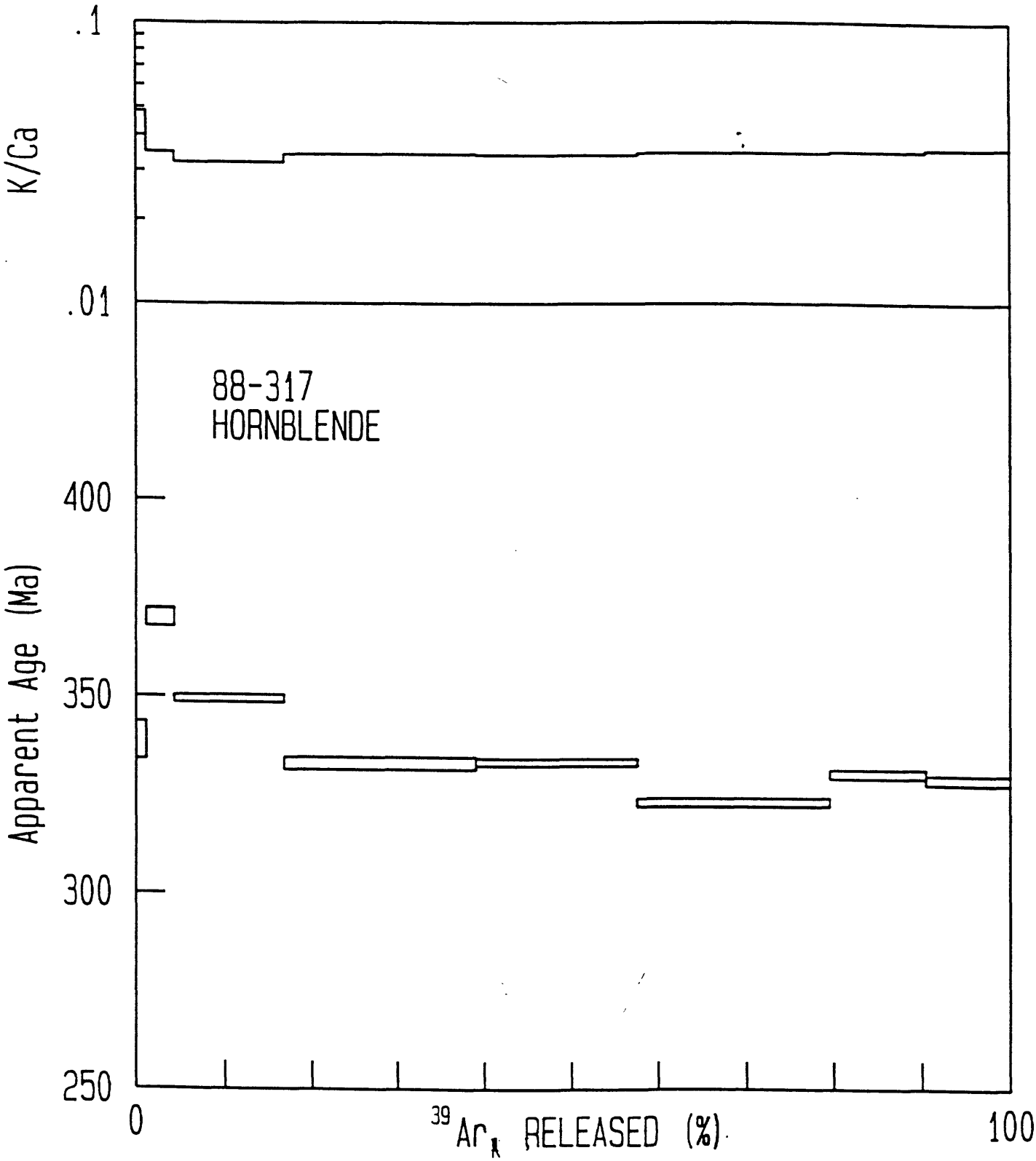
NO PLATEAU

Note: all gas quantities are in moles. No blank correction.
* Ages calculated assuming initial 40Ar/36Ar = 295.5 + 0
** 1-sigma precision estimates are for intra-sample reproducibility.
** 1-sigma precision estimates for plateaux are for intra-irradiation pack reproducibility.
*** below detection limit

TEMP C	% TOT 39Ar	RAD YIELD	APP K/Ca	APP K/Cl	F	AGE (Ma)	intra-sample	precision intra-package	int pac
A 1100	1.1	86.4	.05	9	22.039	338.86 +	2.34	2.81	3.21
B 1125	3.1	92.8	.03	7	24.284	370.06 +	1.13	2.03	2.63
C 1150	12.4	97.1	.03	8	22.796	349.44 +	.49	1.67	2.31
D 1175	22.3	97.8	.03	8	21.633	333.15 +	.79	1.72	2.30
E 1200	18.5	97.2	.03	9	21.658	333.51 +	.43	1.59	2.20
F 1225	22.0	97.0	.03	8	20.939	323.37 +	.52	1.58	2.17
G 1250	10.8	96.1	.04	8	21.443	330.48 +	.55	1.61	2.21
H 1300	9.7	96.7	.04	8	21.336	328.97 +	.59	1.62	2.22
Total gas K/Ca =			0.0						

Precisions are 1 sigma, measured in Ma. Measured 40/36 atm = 296.5 +.5
J = 0.009376 + 0.50% (intra-package) + 0.50% (inter-package)
Trap current factors- 40: 8.6 100: 4 200: 1
Manifold factors- ALL: 1 SPLIT 1: 3.6 SPLIT 2: 12.96 SPLIT 3: 46.656
EALL: 2 ESPLIT 1: 6.6 ESPLIT 2: 21.78
Sensitivity = 6.470E-18 % Reproducibility = .25 Detection limit = 40 cou
Data reduced assuming initial 40/36 = 295.50 + 0.00
Ca-factors: 3637=2.6E-04+1.7E-06 3837=3.2E-05+2.4E-07 3937=6.7E-04+3.7E-06
K-factors: 3739=0.0E+00+2.2E-03 3839=1.3E-02+2.4E-04 4039=5.7E-03+4.0E-03

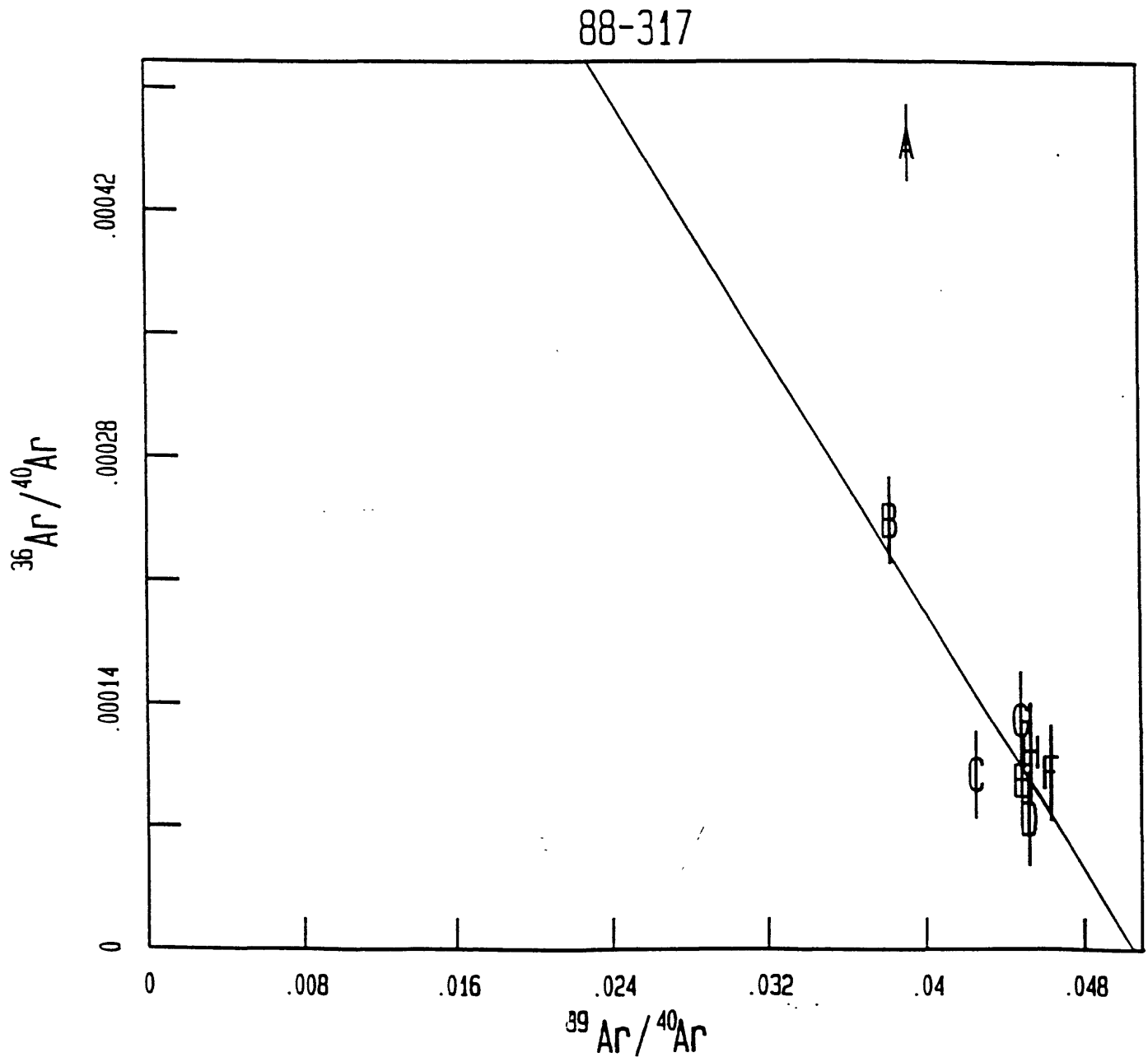
v 02/05/91 10:02:18 21 Jun 1991 88-317 HORNBLENDE RD59 #22,23,24



v 02/05/91 (40/36in = 295.5)

v 02/05/91 10:09:55 21 Jun 1991 88-317 HORNBLENDE RD59 #22,23,24

7 points regressed out of 8 includes 98.9 % of 39Ar
Mean X = .437E-01 Mean Y = .125E-03 Slope = -.182E-01 + .374E-02
36/40 = .921E-03 + .164E-03 39/40 = .506E-01 + .155E-02
Fit parameters: SUMS = 6.843 MSWD = 1.369
40Ar/36Ar = 1085.43 + 193.07 F = 19.778 + .605 AGE = 306.89 + 8.74 Ma



W/O POINTS A

v 02/05/91 88-329 MUSCOVITE; RD59 #65 09:58:15 23 May 1991

R A W D A T A

FILE	TEMP	40Ar	39Ar	38Ar	37Ar	36Ar *	TRAP CURRENT	MANIFOLD OPTION
19837:	750	531461	30247	409	0	85	200	ALL
	+	183	20	10	17	11		
19838:	850	3654524	211008	2978	32	262	200	ALL
	+	1156	89	15	15	16		
19839:	950	2367465	131870	1887	4	154	100	ALL
	+	1243	111	9	20	6		
19840:	1000	3510153	198023	2783	0	100	100	ALL
	+	2713	139	17	10	9		
19841:	1050	1678378	96782	1311	0	44	100	ALL
	+	664	39	15	4	10		
19842:	1100	1417422	80455	1104	0	50	100	ALL
	+	965	61	9	13	8		
19843:	1150	1443070	80783	1143	6	57	100	ALL
	+	289	56	22	24	11		
19844:	1200	2310938	128801	1861	8	64	100	ALL
	+	1441	91	11	4	11		
19845:	1300	3568969	198590	2801	0	60	100	ALL
	+	2202	89	18	11	9		
19846:	1450	2449660	135268	1915	35	73	200	ALL
	+	430	68	6	9	3		
19847:	1550	436804	23656	338	15	43	200	ALL
	+	56	12	10	11	4		

38Ar errors assigned from experience, rest calculated from regression statisti
* 36Ar peak values less than 800 are means those above 800 are from linear regressions

C O R R E C T I O N S

TEMP °C	39Ar Decay	37Ar Decay	-----K-derived---- 40Ar	38Ar	37Ar	----Ca-derived---- 39Ar	38Ar	36Ar	Cl-der 36Ar	Initial 38Ar
750	24	0	172	406	0	0	0	0	0	16
850	165	257	1200	2832	0	0	0	0	0	49
950	103	31	750	1770	0	0	0	0	0	29
1000	155	0	1127	2658	0	0	0	0	0	19
1050	76	0	551	1299	0	0	0	0	0	8
1100	63	0	458	1080	0	0	0	0	0	9
1150	63	52	460	1084	0	0	0	0	0	11
1200	101	62	733	1729	0	0	0	0	0	12
1300	155	0	1130	2665	0	0	0	0	0	11
1450	106	280	770	1816	0	0	0	0	0	14
1550	19	120	135	318	0	0	0	0	0	8

All values in counts, corrected for mass discrimination

v 02/05/91 88-329 MUSCOVITE; RD59 #65 09:58:17 23 May 1991

	TEMP C	% TOT 39Ar	RAD YIELD	APP K/Ca	APP K/Cl	F	AGE (Ma)	precision intra-sample	precision intra-package	precision inter-packa
A	750	.7	95.2	0.00	3780	16.703	258.63 +	1.60	2.01	2.34
B	850	5.2	97.9	379.11	2561	16.918	261.73 +	.33	1.27	1.76
C	950	13.0	98.1	1945.08	2149	17.571	271.12 +	.23	1.29	1.80
D	1000	19.5	99.2	0.00	3237	17.542	270.69 +	.28	1.29	1.80
E	1050	9.5	99.2	0.00	10192	17.172	265.39 +	.44	1.31	1.80
F	1100	7.9	99.0	0.00	5465	17.399	268.64 +	.46	1.33	1.83
G	1150	8.0	98.8	723.43	2729	17.620	271.81 +	.56	1.38	1.87
H	1200	12.7	99.2	962.22	2113	17.760	273.82 +	.39	1.33	1.84
I	1300	19.6	99.5	0.00	3184	17.847	275.06 +	.25	1.31	1.83
J	1450	3.3	99.1	223.54	2807	17.915	276.03 +	.10	1.29	1.82
K	1550	.6	97.1	91.40	1986	17.895	275.75 +	.67	1.45	1.93

Total gas K/Ca = 459.9

Precisions are 1 sigma, measured in Ma. Measured 40/36 atm = 296.5 +.5
J = 0.009229 + 0.50% (intra-package) + 0.50% (inter-package)
Trap current factors- 40: 8.6 100: 4 200: 1
Manifold factors- ALL: 1 SPLIT 1: 3.6 SPLIT 2: 12.96 SPLIT 3: 46.656
EALL: 2 ESPLIT 1: 6.6 ESPLIT 2: 21.78
Sensitivity = 6.470E-18 % Reproducibility = .25 Detection limit = 40 coun
Data reduced assuming initial 40/36 = 295.50 + 0.00
Ca-factors: 3637=2.6E-04+1.7E-06 3837=3.2E-05+2.4E-07 3937=6.7E-04+3.7E-06
K-factors: 3739=0.0E+00+2.2E-03 3839=1.3E-02+2.4E-04 4039=5.7E-03+4.0E-03

v 02/05/91 09:58:19 23 May 1991

88-329 MUSCOVITE; RD59 #65

J = 0.009229 + 0.50% SAMPLE WT = 0.1011 g

TEMP C	Initial & radiogenic 40Ar	Potassium derived 39Ar	Chlorine derived 38Ar	Calcium derived 37Ar	Initial 36Ar	AGE* in Ma	**
750	3.437E-12	1.960E-13	***	***	5.531E-16	258.63 +	1.60
850	2.364E-11	1.367E-12	1.292E-15	1.876E-15	1.700E-15	261.73 +	.33
950	6.125E-11	3.418E-12	3.850E-15	***	4.011E-15	271.12 +	.23
1000	9.081E-11	5.133E-12	3.838E-15	***	2.601E-15	270.69 +	.28
1050	4.342E-11	2.509E-12	***	***	1.150E-15	265.39 +	.44
1100	3.667E-11	2.086E-12	***	***	1.301E-15	268.64 +	.46
1150	3.733E-11	2.094E-12	1.857E-15	1.505E-15	1.482E-15	271.81 +	.56
1200	5.979E-11	3.339E-12	3.823E-15	1.804E-15	1.661E-15	273.82 +	.39
1300	9.234E-11	5.148E-12	3.913E-15	***	1.565E-15	275.06 +	.25
1450	1.584E-11	8.766E-13	7.557E-16	2.039E-15	4.745E-16	276.03 +	.10
1550	2.825E-12	1.533E-13	***	8.722E-16	2.769E-16	275.75 +	.67
TOTAL GAS	4.674E-10	2.632E-11	2.116E-14	9.010E-15	1.678E-14	271.07	

NO PLATEAU

Note: all gas quantities are in moles. No blank correction.

* Ages calculated assuming initial 40Ar/36Ar = 295.5 + 0

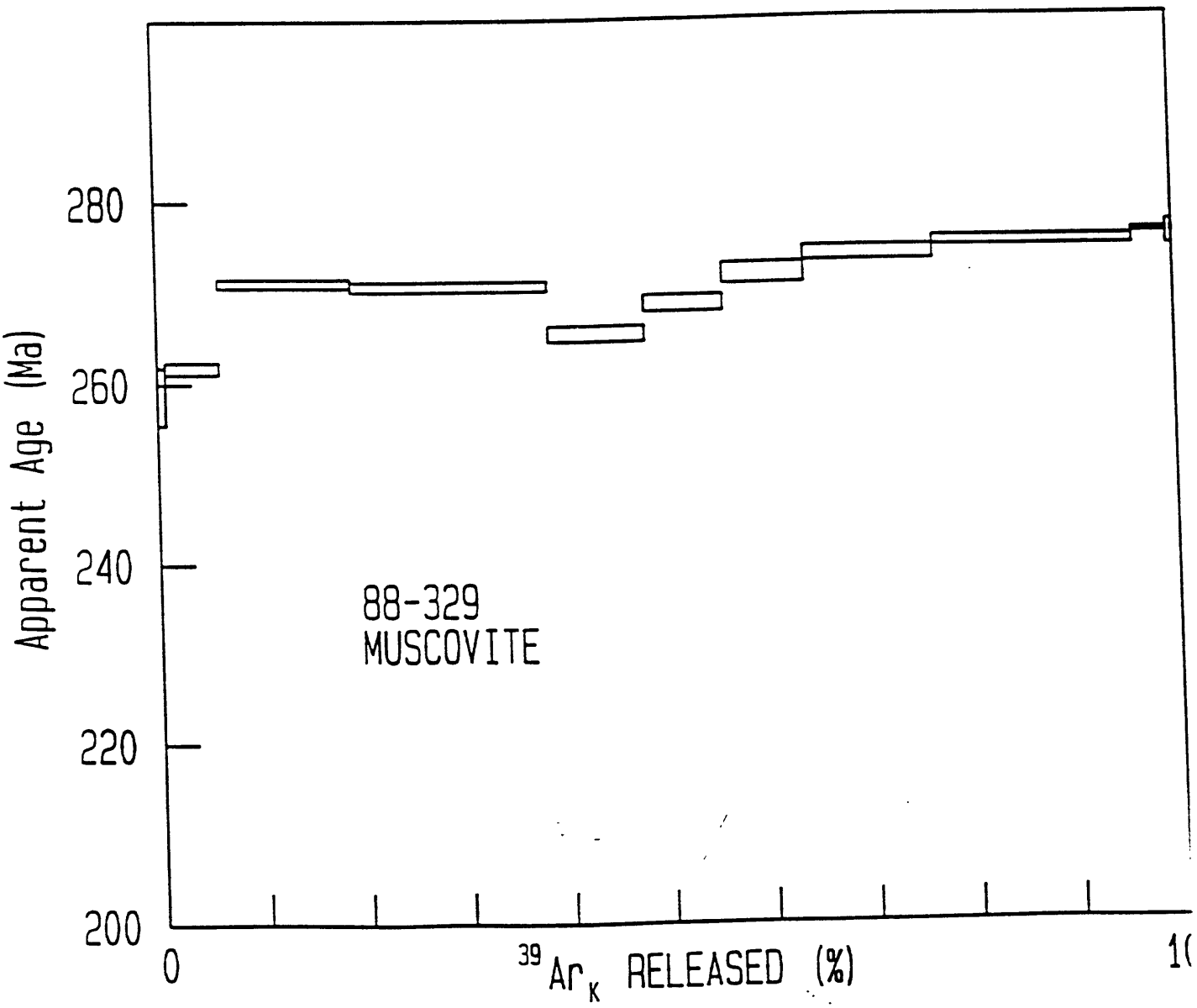
** 1-sigma precision estimates are for intra-sample reproducibility.

** 1-sigma precision estimates for plateaux are for intra-irradiation packag reproducibility.

*** below detection limit

v 02/05/91

v 02/05/91 09:59:01 23 May 1991 88-329 MUSCOVITE; RD59 #65



v 02/05/91 (40/36in = 295

v 02/05/91 88-329 K-FELDSPAR; RD59 #85 10:36:13 23 May 1991

R A W D A T A

FILE	TEMP	40Ar	39Ar	38Ar	37Ar	36Ar *	TRAP CURRENT	MANIFO OPTION
19299:	750	3777948	289743	4104	321	212	200	ALL
	+	2368	229	26	15	7		
19300:	850	3242339	217844	2890	283	103	200	ALL
	+	976	100	16	12	18		
19301:	950	3989511	255525	3400	417	184	200	ALL
	+	1336	58	22	12	16		
19302:	1000	2486939	158502	2090	178	108	200	ALL
	+	1025	58	16	12	8		
19303:	1050	2409162	149721	2043	91	86	200	ALL
	+	700	61	11	15	20		
19304:	1100	2704988	164097	2361	117	115	200	ALL
	+	1408	64	4	19	10		
19305:	1150	3307601	194967	3086	270	201	200	ALL
	+	1203	77	8	20	16		
19307:	1200	1452411	82682	1449	343	115	200	SPLI
	+	124	31	8	19	12		
19309:	1250	2707700	154868	2909	387	172	200	SPLI
	+	854	36	6	10	7		
19310:	1275	1675696	97573	1647	64	80	100	ALL
	+	1343	77	16	15	9		
19312:	1300	1203953	70592	1118	19	58	200	SPLI
	+	773	14	15	20	9		
19313:	1325	448070	25243	415	17	61	200	ALL
	+	95	26	4	14	10		

38Ar errors assigned from experience, rest calculated from regression statis
* 36Ar peak values less than 800 are means those above 800 are from line regressions

C O R R E C T I O N S

TEMP °C	39Ar Decay	37Ar Decay	-----K-derived---- 40Ar	38Ar	37Ar	----Ca-derived---- 39Ar	38Ar	36Ar	Cl-der 36Ar	Initi 38Ar
750	126	813	1648	3888	0	1	0	0	0	4C
850	94	717	1239	2923	0	1	0	0	-0	1S
950	111	1058	1453	3428	0	1	0	0	0	34
1000	69	451	901	2127	0	0	0	0	-0	2C
1050	65	232	852	2009	0	0	0	0	0	1E
1100	71	298	933	2202	0	0	0	0	0	2:
1150	85	688	1109	2616	0	1	0	0	0	3E
1200	36	872	470	1109	0	1	0	0	0	2:
1250	67	986	881	2078	0	1	0	0	0	3:
1275	42	163	555	1309	0	0	0	0	0	1S
1300	31	49	401	947	0	0	0	0	0	1:
1325	11	43	144	339	0	0	0	0	0	1:

All values in counts, corrected for mass discrimination

v 02/05/91 88-329 K-FELDSPAR; RD59 #85 10:36:15 23 May 1991

	TEMP C	% TOT 39Ar	RAD YIELD	APP K/Ca	APP K/Cl	F	AGE (Ma)	precision intra-sample	precision intra-package	precision inter-pack
A	750	9.8	98.3	132.67	2665	12.800	199.45 +	.16	.96	1.35
B	850	7.4	99.1	113.18	0	14.720	227.55 +	.37	1.13	1.56
C	950	8.6	98.6	89.97	53441	15.375	237.03 +	.27	1.15	1.60
D	1000	5.4	98.7	130.96	0	15.462	238.30 +	.24	1.15	1.60
E	1050	5.1	98.9	240.60	6779	15.894	244.53 +	.57	1.28	1.72
F	1100	5.6	98.7	205.33	2154	16.249	249.63 +	.28	1.20	1.68
G	1150	6.6	98.2	105.67	921	16.633	255.12 +	.35	1.25	1.72
H	1200	10.1	97.7	35.33	551	17.128	262.20 +	.60	1.36	1.83
I	1250	18.9	98.1	58.56	432	17.127	262.18 +	.20	1.24	1.74
J	1275	13.2	98.6	222.66	664	16.903	258.99 +	.46	1.29	1.77
K	1300	8.6	98.6	544.45	930	16.785	257.30 +	.56	1.33	1.79
L	1325	.9	96.0	218.06	689	17.007	260.46 +	1.70	2.09	2.42

Total gas K/Ca = 159.4

Precisions are 1 sigma, measured in Ma. Measured 40/36 atm = 296.5 +.5
J = 0.009133 + 0.50% (intra-package) + 0.50% (inter-package)
Trap current factors- 40: 8.6 100: 4 200: 1
Manifold factors- ALL: 1 SPLIT 1: 3.6 SPLIT 2: 12.96 SPLIT 3: 46.656
EALL: 2 ESPLIT 1: 6.6 ESPLIT 2: 21.78
Sensitivity = 6.470E-18 % Reproducibility = .25 Detection limit = 40 cou
Data reduced assuming initial 40/36 = 295.50 + 0.00
Ca-factors: 3637=2.6E-04+1.7E-06 3837=3.2E-05+2.4E-07 3937=6.7E-04+3.7E-06
K-factors: 3739=0.0E+00+2.2E-03 3839=1.3E-02+2.4E-04 4039=5.7E-03+4.0E-03

v 02/05/91 10:36:17 23 May 1991

88-329 K-FELDSPAR; RD59 #85

J = 0.009133 + 0.50% SAMPLE WT = 0.0997 g

TEMP C	Initial & radiogenic 40Ar	Potassium derived 39Ar	Chlorine derived 38Ar	Calcium derived 37Ar	Initial 36Ar	AGE* in Ma	**
750	2.443E-11	1.877E-12	1.704E-15	7.357E-15	1.375E-15	199.45 +	.
850	2.097E-11	1.411E-12	***	6.484E-15	6.650E-16	227.55 +	.
950	2.580E-11	1.655E-12	***	9.568E-15	1.192E-15	237.03 +	.
1000	1.608E-11	1.027E-12	***	4.077E-15	7.033E-16	238.30 +	.
1050	1.558E-11	9.699E-13	3.463E-16	2.096E-15	5.590E-16	244.53 +	.
1100	1.750E-11	1.063E-12	1.194E-15	2.692E-15	7.483E-16	249.63 +	.
1150	2.139E-11	1.263E-12	3.318E-15	6.215E-15	1.303E-15	255.12 +	.
1200	3.382E-11	1.928E-12	8.471E-15	2.838E-14	2.675E-15	262.20 +	.
1250	6.305E-11	3.612E-12	2.022E-14	3.207E-14	4.018E-15	262.18 +	.
1275	4.335E-11	2.528E-12	9.214E-15	5.905E-15	2.077E-15	258.99 +	.
1300	2.803E-11	1.646E-12	4.284E-15	1.572E-15	1.350E-15	257.30 +	.
1325	2.898E-12	1.635E-13	5.745E-16	3.900E-16	3.958E-16	260.46 +	1.
TOTAL GAS	3.129E-10	1.914E-11	4.941E-14	1.068E-13	1.706E-14	247.21	

NO PLATEAU

Note: all gas quantities are in moles. No blank correction.

* Ages calculated assuming initial 40Ar/36Ar = 295.5 + 0

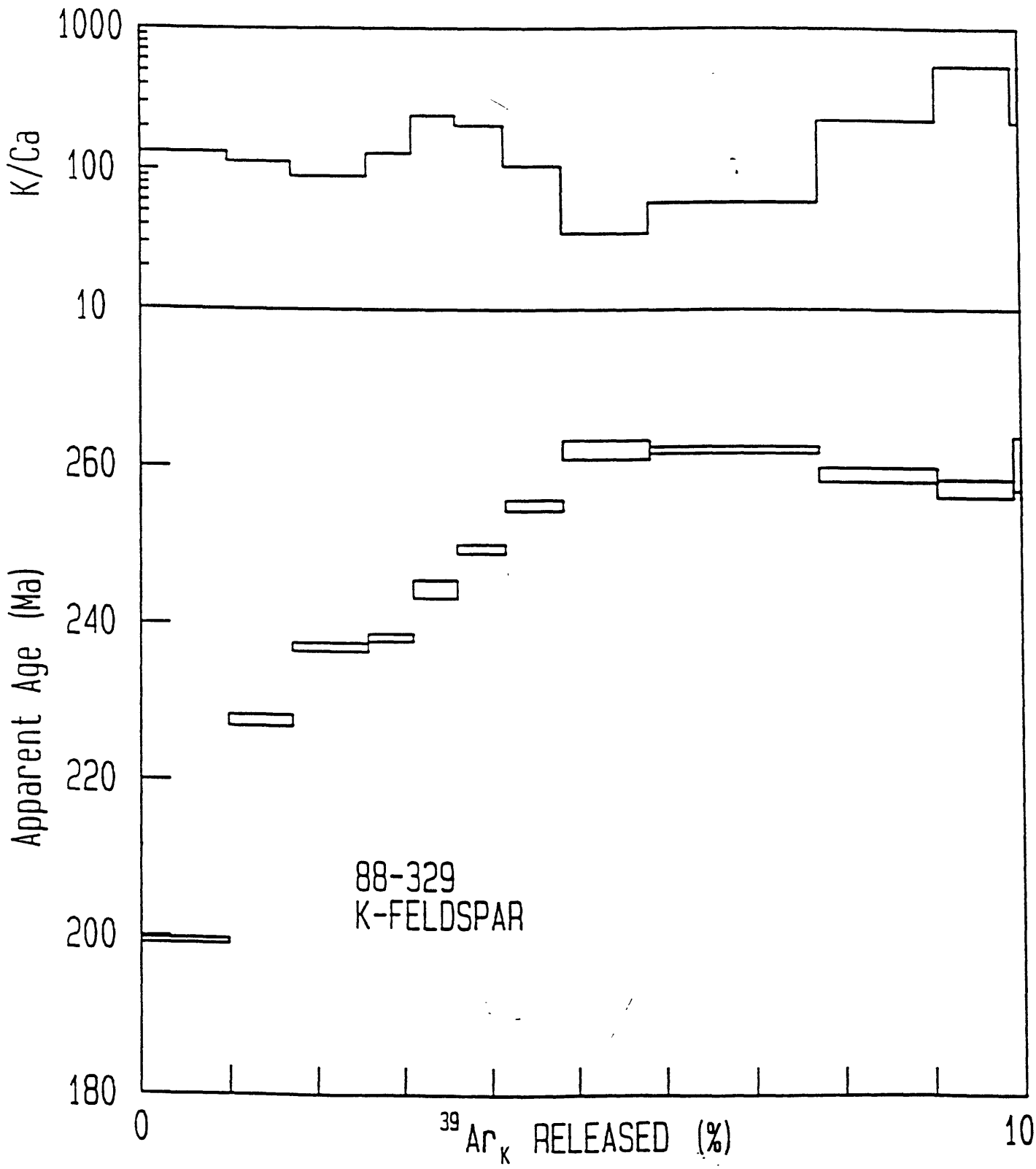
** 1-sigma precision estimates are for intra-sample reproducibility.

** 1-sigma precision estimates for plateaux are for intra-irradiation pack reproducibility.

*** below detection limit

v 02/05/91

v 02/05/91 10:37:05 23 May 1991 88-329 K-FELDSPAR; RD59 #85



v 02/05/91 (40/36in = 295.

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