

MAP SHOWING POTASSIUM-ARGON AGES FROM THE BIG DELTA QUADRANGLE, ALASKA
Frederic H. Wilson

Presented here are 13 K/Ar ages on biotites and amphiboles from 8 plutons and 1 metamorphic rock in the Big Delta quadrangle and 1 pluton in the adjacent Mt. Hayes quadrangle of Alaska. The Mt. Hayes sample is included as no immediately published reports are planned for this quadrangle. All samples were collected during the 1975 field season by the author.

Potassium was determined by flame photometry using lithium metaborate fusion. Potassium analysts were Marcelyn Cramer, J. H. Tillman and J. H. Christie. Argon extraction and measurement was accomplished with the standard techniques of isotope dilution mass spectrometry as described by Dalrymple and Lanphere (1969). Sample preparation, argon extraction and measurement and data reduction were all done by the author. The plus or minus value assigned to each age (Table 1) is an estimate of the standard deviation of analytical precision using the method of Cox and Dalrymple (1967), together with an estimate of accuracy based on evaluation of the uncertainties in the concentration of the ³⁹Ar tracer and potassium measurements.

Sample and analytical data are listed in table 1 and sample locations are plotted on the map. The single sample from the Mt. Hayes quadrangle is not plotted; it falls 20 km south of the Big Delta quadrangle near the Gerstle River. The intention of this report is to present the K/Ar data, however it is recommended that H. L. Foster* and F. R. Weber**, who are currently preparing a series of MF maps for the Alaskan Mineral Resources Assessment Program, be consulted concerning interpretation and use of this data.

* Branch of Alaskan Geology, U. S. Geological Survey, 345 Middlefield Road, Menlo Park, Ca. 94025.

** Branch of Alaskan Geology, U. S. Geological Survey, P.O. Box 80586, College, Ak. 99701.

References

Cox, Allan and Dalrymple, G. B., 1967, Statistical analysis of geomagnetic reversal data and the precision of potassium-argon dating: Jour. Geophys. Research, v. 72, no. 10, p. 2603-2604.

Dalrymple, G. B., and Lanphere, M. A., 1969, Potassium-argon dating: San Francisco, W. H. Freeman and Co., 258p.

SAMPLE NUMBER	LOCATION	ROCK TYPE	MINERAL DATED (mesh size)	%K ₂ O average	⁴⁰ Ar _{rad} moles/gram X 10 ⁻¹⁰	⁴⁰ Ar/ ³⁹ Ar	AGE m.y. ± error
75AFr2000B	Big Delta D-5 64°51'10"N 146°13'59"W	Biotite Quartz Monzonite	Biotite 60-100	8.72 8.78 8.75	6.358	68.6	48.5 ± 1.5
75AFr2100	Big Delta B-2 64°17'53"N 144°38'20"W	Garnet Amphibolite	Amphibole 100-120	0.242 0.245 0.244	0.6961	68.2	184. ± 5.5
75AFr2172	Mt. Hayes D-2 63°49'12"N 144°53'12"W	Hornblende Quartz Monzonite	Biotite 100-150 Hornblende 100-150	8.41 8.33 8.37 0.733 0.735 0.734	10.96 1.008	79.2 69.8	86.6 ± 2.6 90.6 ± 2.7
75AFr2174	Big Delta B-2 64°26'23"N 144°50'51"W	Pyroxene Quartz Diorite	Biotite 60-100	8.38 8.38 8.38	11.40	88.8	89.8 ± 2.7
75AFr2175	Big Delta C-2 64°40'50"N 144°45'50"W	Granodiorite	Biotite 60-100 Hornblende 100-200	9.12 9.07 9.095 1.057, 1.063 1.058, 1.047 1.056	13.30 1.585	68.0 75.5	96.5 ± 2.9 98.9 ± 3.0
75AFr2178	Big Delta D-4 64°48'18"N 145°45'26"W	Pyroxene Diorite	Biotite 100-200	8.24 8.28 8.26	11.37	87.5	90.9 ± 2.7
75AFr2179	Big Delta D-4 64°46'33"N 145°41'02"W	Pyroxene Diorite	Biotite 60-100	8.87 8.85 8.86	12.02	91.1	89.7 ± 2.7
75AFr2181	Big Delta B-3 64°17'06"N 145°21'09"W	Pyroxene Diorite	Biotite 60-100	9.03 9.08 9.055	11.94	83.1	87.2 ± 2.6
75AFr2182	Big Delta B-6 64°24'25"N 146°56'10"W	Pyroxene Diorite	Biotite 60-100	9.47 9.42 9.445	12.73	83.1	89.0 ± 2.7
75AFr2184	Big Delta B-6 64°19'02"N 146°33'06"W	Hornblende Granodiorite	Biotite 60-100 Hornblende 60-100	8.77 8.75 8.76 1.129, 1.124 1.140, 1.117 1.128	11.53 1.461	88.4 74.3	87.1 ± 2.6 85.7 ± 2.6



MAPPER, EDITED, AND PUBLISHED BY THE GEOLOGICAL SURVEY
 DRAWN BY [Name] AND [Name]
 COMPILED IN 1976 FROM U.S. GEOLOGICAL SURVEY 1:50,000 MAPS
 AND MANUSCRIPTS DATED 1949, 1961, AND 1975. FIELD CHECKS
 UNIVERSAL TRANSVERSE MERCATOR PROJECTION 1973 NORTH AMERICAN DATUM
 THE ONLY 1:50,000 SCALE MAP OF ALASKA SHOWING THE 1973 DATUM
 SHOWS THE 1973 DATUM TRANSVERSE MERCATOR GRID TO THE
 ZONE IN WHICH THIS MAP IS SHOWN IN BLUE
 GRID LINES 100 METERS UNDEVELOPED AND UNMARKED. LOCATIONS
 INDICATED BY THE SURVEY OF LAND MANAGEMENT IN
 FIGURE 1-1-1-1. TRANSVERSE MERCATOR AND UTM COORDINATE
 SYSTEMS ARE SHOWN IN RED. COORDINATES IN THE METER SYSTEM
 QUALITY OF SURVEYING: CONTROLS IN THE METER SYSTEM
 QUALITY OF SURVEYING: CONTROLS IN THE METER SYSTEM

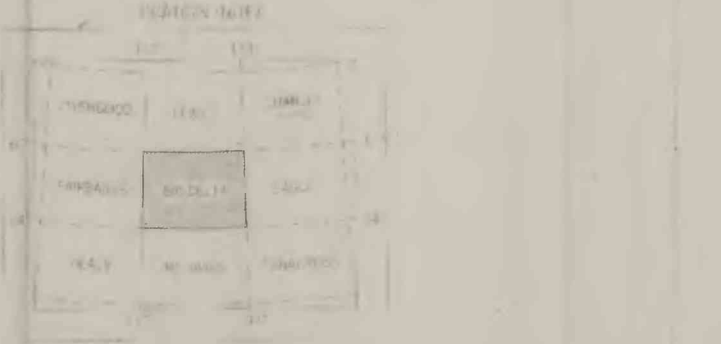


SCALE 1:250,000

CONTOUR INTERVAL 20 FEET
 DOTTED LINES INDICATE UNDEVELOPED

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BY
 FREDERIC H. WILSON
 1976



This map is preliminary and has not been reviewed for conformity with U.S. Geological Survey standards and nomenclature.

BIG DELTA, ALASKA
 1958