UNITED STATES DEPARTMENT OF THE INTERIOR

GEOLOGICAL SURVEY

PRELIMINARY COMPILATION OF ISOTOPIC AGES WITHIN THE AJO 1°X2° QUADRANGLE, ARIZONA

by

R. M. Tosdal
U.S. Geological Survey, Menlo Park, Calif. 94025

U.S. Geological Survey
Open-File Report 79-399
1979

Preliminary Compilation of Isotopic Ages within the Ajo 1°x2° quadrangle, Arizona

by

R. M. Tosdal

U.S. Geological Survey, Menlo Park, Calif. 94025

The tabulated isotopic ages in this report are located within the Ajo 1°x2° quadrangle, Arizona. Isotopic ages were collected from eight references. Radiometric decay constants and detailed analytical procedures and data are to be found in the references to the individual isotopic ages. The first-listed reference for the respective isotopic ages represents the publication in which the isotopic age was first reported.

The isotopic ages are arranged in two tables according to the radiometric-dating method. K-Ar radiometric ages represent the bulk of the published analyses and are listed in Table 1. Lead-alpha and uranium-lead ages are combined in Table 2. The individual tables are arranged such that each listed isotopic age includes the sample location in latitude and longitude, radiometric method and material analysed, rock type, age (Ma) and associated error when available, and references. The isotopic ages are listed in chronological order from youngest to oldest and the letter prefix to the sample number (e.g., K18) signifies the radiometric method utilized. The original sample number for the isotopic ages are listed after the respective isotopic ages.

Isotopic ages tabulated in this report are complete as of December 1978. It is possible that some isotopic ages have not been included in the report. These are either unreported ages determined in association with unpublished research projects, unpublished mining company reports, or missed during the

Table 1.--K-Ar isotopic ages.

Sample number	Location	Material data/method	Rock type	Age (Ma)	Reference
K1	32°53′24"N., 113°10′30"W.	K-Ar/Whole Rock	basalt (Sentinel Plain)	1.71±0.25 (UAKA-73-5)	Shoustra and others (1976); S. B. Keith and S. J. Reynolds, unpub. data
K2	32°56′06"N., 113°18′05"W.	K-Ar/Whole Rock	basalt (Sentinel Plain)	3.0±0.9 (no. 106)	Eberly and Stanley (1978) S. B. Keith and S. J. Reynolds, unpub. data
K3	32°50′06"N., 113°00′W.	K-Ar/Whole Rock	basalt (Sentinel Plain)	3.0±0.4 (R-2642/GB-4)	Eberly and Stanley (1976) S. B. Keith and S. J. Reynolds, unpub. data
K4	32°25′03"N., 112°48′W.	K-Ar/Whole Rock	felsic tuff (over Childs latite)	15.1±0.3 (UAKA-72-64)	Jones (1974); S. B. Keith and S. J. Reynolds, unpub. data
K5	32°18′20"N., 113°00′26"W.	K-Ar/Whole Rock	basalt (Batamote Andesite)	15±2.2 (no. 109)	Eberly and Stanley (1978) S. B. Keith and S. J. Reynolds, unpub. data
K6	32°04′18"N., 112°42′35"W.	K-Ar/Whole Rock	felsic tuff	16.9±0.3 (UAKA-72-42)	Jones (1974); S. B. Keith and S. J. Reynolds, unpub. data
K7	32°09′18"N., 112°42′32"W.	K-Ar/Whole Rock	felsic tuff	17.1±0.3 (UAKA-72-42)	Jones (1974); S. B. Keith and S. J. Reynolds, unpub. data
K8	32°31′55"N., 112°52′53"W.	K-Ar/Biotite	quartz monzonite (New Cornelia)	19.1±1.3 (L-844) (alteration age)	McDowell (1971); S. B. Keith and S. J. Reynolds, unpub. data
K9	32°21′55"N., 112°52′53"W.	K-Ar/Hornblende	quartz monzonite (New Cornelia)	19.6±3.5 (L-844) (alteration age)	McDowell (1971); S. B. Keith and S. J. Reynolds, unpub. data
K10	32°33′03"N., 112°52′43"W.	K-Ar/Whole Rock	basalt	21±1.2 (no. 107)	Eberly and Stanley (1978) S. B. Keith and S. J. Reynolds, unpub. data
K11	32°47′51"N., 112°10′30"W.	K-Ar/Whole Rock	basalt (Antelope Peak)	23±5.2 (no. 1)	Eberly and Stanley (1978)
K12	32°19′37"N., 112°57′13"W.	K-Ar/Whole Rock	basalt	25±2.7 (no. 108) (Ajo volcanic)	Eberly and Stanley (1978) S. J. Keith and S. B. Reynolds, unpub. dsta
K13	32°22′N., 112°52′30"W.	K-Ar/Biotite	quartz monzonite (New Cornelia)	34 (Ar loss)	Rose and Cook (1965); S. J. Keith and S. B. Reynolds, unpub. data
K14	32°08′12"N., 112°37′15"W.	K-Ar/Biotite	granite	39.3±0.6 (UAKA-72-63)	Jones (1974); S. J. Keith and S. B. Reynolds, unpub. data
K15	32°10′N., 112°40′W.	K-Ar/Biotite	granite	46.0±0.7 (UAKA-72-63)	Damon, unpub. (1973); Jones (1974); S. J. Keith and S. B. Reynolds, unpub. data
K16	32°21′32"N., 112°52′12"W.	K-Ar/Biotite	quartz monzonite (New Cornelia)	62.8±1.9 (L843) (average of 3)	McDowell (1971); S. J. Keith and S. B. Reynolds, unpub. data
K17	32°21′31"N., 112°52′W.	K-Ar/Biotite	quartz monzonite pegmatite (New Cornelia)	63.1±2 (RM-2-62)	Damon and others (1964); S. J. Keith and S. B. Reynolds, unpub. data
K18	32°53′28"N., 112°08′58"W.	K-Ar/Biotite	quartz monzonite (Table Top)	1328±40 (KA-71-75) (average of 2)	Balla (1972); S. J. Keith and S. B. Reynolds, unpub. data

Table 2. Lead-alpha and uranium-lead isotopic ages.

Sample number	Location	Material data/Method	Rock type	Age (Ma)	Reference
U-1	32°22′N., 112°52′30"W.	Pb-alpha/zircon	quartz monzonite (New Cornelia)	54	Rose and Cook (1965); S. J. Keith and S. B. Reynolds, unpub. data
U-2	32°22′N., 122°52′30"W.	Pb-alpha/zircon	quartz monzonite (New Cornelia)	65	Rose and Cook (1965); S. J. Keith and S. B. Reynolds, unpub. data
U-3	32°26′51"N., 112°06′26"W.	U-Pb/zircon	granodiorite (Montazona mine)	67.6	ames E. Wright (1978, written commun.); Briskey and others, (1978)

compilation. The author would appreciate assistance in making him aware of these ages. Please refer these additions to R. M. Tosdal, U.S. Geological Survey, 345 Middlefield Road, Menlo Park, CA 94025.

References

Balla, J. C., 1972, The relationship of Laramide stocks to regional structure in central Arizona: Tucson, Arizona University, Ph. D. thesis, unpublished, 184 p.

Briskey, J. A., Haxel, Gordon, Peterson, J. A., Theodore, T. G., 1978, Reconnaissance geologic map of the Gu Achi quadrangle, Pima County, Arizona: U.S. Geological Survey Miscellaneous Field Studies Map MF-965, scale 1:62,500.

Damon, P. E., Mauger, R. L., Bikerman, M., 1964, K-Ar dating of Laramide plutonic and volcanic rocks within the Basin and Range province of Arizona and Sonora: International Geologic Congress, 22nd, New Delhi, India, p. 45-55.

Eberly, L. D., and Stanley, T. B., Jr., 1978, Cenozoic stratigraphy and geologic history of southwestern Arizona: Geological Society of America Bulletin, v. 89, p. 921-140.

Jones, W. C., 1974, General geology of the northern portion of the Ajo range, Pima County, Arizona: Tucson, Arizona University, M.S. thesis, 77 p.

Keith, S. B., and Reynolds, S. J., 1976, Compilation of radiometric age dates for Arizona: unpub. data, 187 p.

McDowell, R. W., 1971, K-Ar ages of igneous rocks from the western United States: Isochron/West, no. 2, p. 1-17.

Rose, A. W., and Cook D. R., 1965, Radioactive age dates of porphyry copper deposits in the western United States [abs.]: Geological Society of America Special Papers 87, p. 139.

Shoustra, J. J., Smith, J. L., Scott, J. D., Strand, R. L., and Duff, D., 1976, Geology and seismicity, site lithologic conditions and Appendix 2Q (radiometric dating--in Palo Verde Nuclear Generating Station 1, 2, and 3, Preliminary safety analysis report: Arizona Public Service Commission, v. 2, p. 2.5-60--2.5-76 and v. 8, Appendix 2Q.