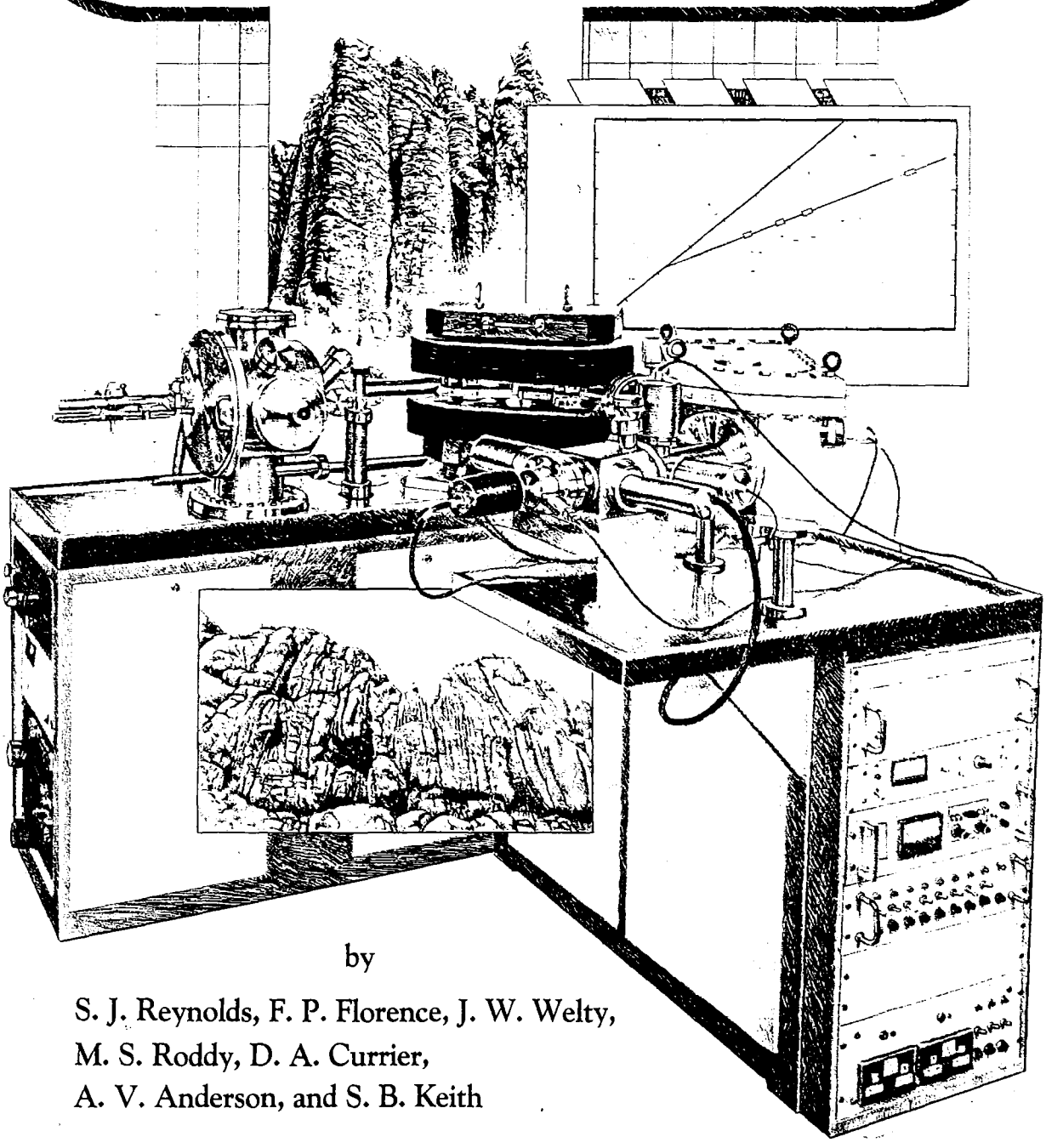
Compilation of Radiometric Age Determinations in Arizona



by

S. J. Reynolds, F. P. Florence, J. W. Welty,
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Arizona Bureau of Geology and Mineral Technology
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Preface

Radiometric age determinations, which involve precise field studies and detailed laboratory analyses, are expensive. Results have been included in many scientific publications, some of which are obscure. The purpose of this report is to make radiometric age determinations for Arizona more accessible to users. We have attempted to assemble all published determinations under one cover and index them to facilitate their use. The determinations are indexed by age, geographic location, and rock unit. The location for each determination is plotted on the accompanying maps. To the best of our knowledge, this is one of the first computerized and cross-indexed age compilations of its kind.

Relative ages of sedimentary rocks are determined by their position in sequence and by the fossils preserved in them. Rocks that were originally molten (igneous) or that may have subsequently been heated to high temperatures usually do not contain recognizable fossils. It may be possible, however, to determine their absolute ages by using radiometric methods, *i.e.*, by measuring the ratio of a radioactive element and its decay product. Use of relative and absolute age determinations in conjunction further increases our understanding of the sequence and timing of events that occurred during the geologic past.

Knowledge of absolute ages of rocks is important to most geoscientists, especially mineral explorationists. Mineralization that occurred during a specific time interval can be characterized by its type and style. For example, granitic rocks that were intruded during the Laramide orogeny, which began approximately 80 million years ago (Ma) and ended 55 Ma, are commonly associated with metallic elements such as copper, molybdenum, silver, gold, lead, and zinc. Most of the metals mined in Arizona were emplaced during that time interval. Mineralization that occurred 40 to 15 Ma (mid-Tertiary time), however, is different in style and type from that of the Laramide.

Those who examine this report and the accompanying maps will see that the ages of some rock units are much better known than others. Perhaps this compilation will serve as a guide to future geochronologic research.

If you know of published age determinations that are not listed in this report, please inform us so that we may include them in future updates.

Larry D. Fellows
State Geologist and Assistant Director
Arizona Bureau of Geology and Mineral Technology

Introduction

This compilation includes information for 1,688 K-Ar, Ar-Ar, Rb-Sr, fission-track, isotopic-lead, and lead-alpha age determinations in Arizona. The data were compiled from original references and entered into a microcomputer using database-management software.

The compilation consists of five main lists and two maps. Part I is a master list of all information compiled for each date, including dating method, material dated, rock type, name of rock unit, location information, and comments about the geologic setting and significance of the date. The dates are listed in order of increasing age and are denoted with a record number (computer identification number) that is referenced in the cross indices in parts II, III, and IV. The master list contains information that may be important for interpreting the significance of each date and should be consulted after locating a date of interest in the cross indices. A double-asterisk "flag" following the reported age indicates that interpretation of the date is required because the rock has undergone a complex thermal history or there are questions concerning the analysis (e.g., too high a K content for the material reportedly dated). We cannot overstate the need to refer to the comments in the master list and, in many cases, to consult the original reference to appreciate the validity and significance of reported ages. Certain dates known to be inaccurate are included in the listings, but are flagged with the warning asterisks and discussed in the comment section. These dates are included for completeness and to alleviate confusion stemming from past discussion of such dates. Comments may also contain reference to age determinations made from different samples or by using different methods on the same sample or rock unit.

Part II is a cross index that arranges dates by geographic area, such as mountain range, and lists the record number, method, age, material dated, rock type, name of rock unit, and sample number for each age determination. This list simplifies the task of identifying the dates that exist for a given area. Most geographic-area names were compiled from existing maps and are self-explanatory (e.g., Superstition Mtns. or Defiance Plateau). We have assigned names to some areas for which no suitable names existed. These newly assigned names include terms such as the "Carrizo Embayment" for the area between Fort Apache and the Canyon Creek fault, and the "Santa Maria Mtns." for the mountain range south of the Santa Maria River and east of the Date Creek Basin (referred to on some maps as the Black Mtns.). In addition, we have used a variety of informal area names such as Lake Mead area, San Carlos area, Blue Range area, Cameron area, etc. All geographic names are listed by county in Table A, along with the two-letter code assigned to each county in the database.

Part III is a cross index that lists all dates on a particular formation or rock unit, such as the Galiuro Volcanics. This index lists the record number, method, age, material dated, rock type, sample number, and quadrangle for each age determination. This index is useful in determining the age range of a particular rock unit and in evaluating agreement or discrepancy among different dates for the same rock unit or sample. Constructing this list required us to assign informal rock-unit names, derived from geographic features, to previously unnamed rock units. For a date obtained from a rock from a drill hole, the informal rock-unit name generally incorporates the name of the well (e.g., Exxon State 32-1 basalt). In all cases, our informal names are listed in lowercase letters, except for the proper-name portion of the unit name (e.g., Springerville basalt). In contrast, all formal rock-unit names are listed with uppercase letters (e.g., Canelo Hills Volcanics). Many names listed with lowercase letters are widely used, but not formally named (e.g., Wilderness granite). It should be emphasized that our newly assigned rock-unit names are informal and, if used in the future, should retain their informal character until they are formally designated. In general, the accuracy of rock-type names, such as basalt, assigned in original sources was not evaluated. In some cases, rock-type names have been modified to reflect presently accepted igneous-rock classifications (Streckeisen, 1976).

Part IV is a list arranged by original sample number and is primarily useful in comparing multiple dates on a single sample or in locating a date for which only the sample number is known. For references that report dates in tabular form with consecutive numbers starting at one or "A," we have prefixed the sample numbers with a code denoting the original reference (e.g., M73:10 is sample number 10 in Marvin and others, 1973). This permits the user (and computer) to distinguish between what would otherwise be identical sample numbers for two entirely different samples. A list of these sample-number prefix codes is given in Table B. Part V is a complete list of references cited.

The Appendix lists age determinations that are of uncertain geochronologic significance. These include all lead-alpha age determinations, several invalid Rb-Sr isochron ages and single point Rb-Sr model ages based on questionable assumptions, and two K-Ar age determinations whose purpose was to identify excess argon problems. These dates are not included in any of the indices in parts II through IV.

The compilation is accompanied by two 1:1,000,000-scale maps upon which all dates listed in part I have been plotted. A photographically reduced version of the 1969 State geologic map serves as a base and aid to the reader. Plate 1 is a plot of all K-Ar and Ar-Ar age determinations, and plate 2 is a plot of all Rb-Sr, fission-track, and isotopic-lead ages. Dates listed in the Appendix are not plotted on either map.

We have tried to include in the compilation every published radiometric age determination for which there is analytical data. We have also included many unpublished dates that are cited as personal or written communications in published references. Some age determinations reported in theses, especially those from out-of-State universities, may have been overlooked. This bulletin is partly based on and supersedes Arizona Bureau of Geology and Mineral Technology Open-File Reports 77-1 (Keith, 1977), 85-8 (Reynolds and others, 1985), and 85-15 (Florence and Reynolds, 1985).

All ages for which analytical data are available have been recalculated using presently accepted decay constants (Roberts and others, 1968; Steiger and Jager, 1977). Ages published without analytical data have been recalculated using decay-constant conversion tables (Dalrymple, 1979), unless the original constant is unknown, in which case the date has not be recalculated. Many pre-1980 isotopic-lead age determinations were recalculated using the approximations listed in Table C. This table also lists all laboratories and decay constants used in this compilation.

********** NOTE **********

A double-asterisk symbol following any listed entry indicates that the significance of that particular age determination is subject to considerable interpretation and that the reader should check the comments section or the original reference for additional information.

****

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This compilation would not have been possible without the help of many people. Drs. Paul E. Damon, M. Shafiqullah, and Daniel J. Lynch, Laboratory of Isotope Geochemistry, University of Arizona, kindly answered questions about specific dates and aided in recalculating the ages using modern decay constants. Dr. Jon Haman, National Park Service, reviewed an earlier version of the K-Ar compilation and provided information on numerous published and unpublished dates. Dr. Ed DeWitt, U.S. Geological Survey (USGS), reviewed a preliminary listing of the isotopic-lead dates. Dr. C. W. Naeser, USGS, reviewed a preliminary listing of the fission-track dates and provided invaluable assistance in the recalculation of these dates. Dr. W. E. Elston, University of New Mexico, Dr. E. I. Smith, University of Nevada-Las Vegas, and Dr. E. G. Frost, San Diego State University, kindly assisted in the location of age determinations cited in theses and dissertations at their respective universities. Dr. Larry D. Fellows, State Geologist and Assistant Director of the Bureau, and Dr. William P. Cosart, former Associate Director of the Bureau, supported acquisition of the necessary computer equipment and provided funds for graduate-student assistance. Additional funding was provided by the USGS under Cooperative Agreement #14-08-0001-A-0092. Dr. Jon E. Spencer helped plan the project and Dr. H. Wesley Peirce, Principal Geologist with the Bureau, shared his vast knowledge of Arizona geology. Evelyn VandenDolder edited the introduction and references. Pete Corrao and Joe LaVoie drafted the maps, and Pete Corrao drew the cover illustration.

TABLE A. LIST OF AREA DESIGNATIONS BY COUNTY (SHOWING COUNTY CODES)

APACHE COUNTY (AP)

Blue Range area
Carrizo Mtns.
Chinle Valley
Defiance Plateau
Hopi Buttes
Lukachukai Mtns.
Springerville volcanic field
White Mtns.

COCHISE COUNTY (CH)

Babocomari River area
Chiricahua Mtns.
Cienega Gap area
Dos Cabezas Mtns.
Dragoon Mtns.
Galiuro Mtns.
Huachuca Mtns.
Johnny Lyon Hills
Little Dragoon Mtns.
Mule Mtns.
Pearce area
Pedregosa Mtns.
Peloncillo Mtns.
San Bernardino Valley
San Pedro Valley
Sulphur Springs Valley
Swisshelm Mtns.
Tombstone Hills
Whetstone Mtns.

COCONINO COUNTY (CN)

Anderson Mesa
Cameron area
Coconino Plateau
Dry Beaver Creek
Grand Canyon
Hualapai Plateau
Long Point area
Mt. Floyd area
Oak Creek Canyon
San Francisco volcanic field
Sycamore Canyon
Tonto Segment
Williams area

GILA COUNTY (GI)

Apache Segment
Carrizo Embayment
Diamond Butte area
Dripping Spring Mtns.
Fossil Creek Canyon
Globe Hills
Globe-Miami area
Mazatzal Mtns.
Mescal Mtns.
Payson area
Pinal Mtns.
Ray area
Salt River Canyon area
San Carlos area
Sierra Ancha

GRAHAM COUNTY (GM)

Aravaipa area
Galiuro Mtns.
Gila Mtns.
Natanes Plateau
Peloncillo Mtns.
Pinaleno Mtns.
San Simon Valley
Santa Teresa Mtns.
Whitlock Mtns.

GREENLEE COUNTY (GN)

Blue Range area
Morenci area

LA PAZ COUNTY (LP)

Bouse Hills
Buckskin Mtns.
Eagletail Mtns.
Granite Wash Mtns.
Harcuvar Mtns.
Harquahala Mtns.
Little Harquahala Mtns.
Plomosa Mtns.
Trigo Mtns.

MARICOPA COUNTY (MA)

Agua Fria area
Arlington Valley
Belmont Mtns.
Buckeye area
Cave Creek area
Gila Bend Mtns.
Goldfield Mtns.
Hieroglyphic Mtns.
Higley Basin
Lower Verde area
Luke Basin
Maricopa Mtns.
Mazatzal Mtns.
Mt. McDowell area
New River area
Painted Rock Mtns.
Palo Verde Hills
Paradise Valley
Phoenix Mtns. area
Sand Tank Mtns.
Sauceda Mtns.
Sentinel volcanic field
South Mtns.
Superstition Mtns.
Union Hills area
Vulture Mtns.
Weaver Mtns.
White Tank Mtns.
Wickenburg Mtns.

MOHAVE COUNTY (MO)

Aquarius Mtns.
Artillery Mtns.
Aubrey Hills
Aubrey Peak area
Big Sandy Valley
Bill Williams Mtns.
Black Mtns.
Burro Creek area
Castaneda Hills
Cerbat Mtns.
Cottonwood Cliffs area
Cottonwood Mtns.
Date Creek Basin area
Grand Canyon
Grand Wash area
Grand Wash Cliffs
Hoover Dam area
Hualapai Mtns.
Hualapai Plateau
Kingman area
Lake Mead area
McCracken Mtns.
Music Mtns.
Peacock Mtns. area
Poachie Range
Rawhide Mtns.
Shivwits Plateau
Uinkaret Plateau
Virgin River area
White Hills

NAVAJO COUNTY (NA)

Carrizo Embayment
Hopi Buttes
Petrified Forest area
Springerville volcanic field

PIMA COUNTY (PM)

Ajo Range
Avra Valley
Baboquivari Mtns.
Batamote Mtns.
Bates Mtns.
Cerro Colorado Mtns.
Cienega Gap area
Cimarron Mtns.
Comobabi Mtns.
Coyote Mtns.
Crater Range
Del Bac Hills
Empire Mtns.
Growler Mtns.
Gu Vo Hills
Gunsight Hills
Las Guijas
Little Ajo Mtns.
Quinlan Mtns.
Quitobaquito Hills
Rincon Mtns.
Roskruge Mtns.
Santa Catalina Mtns.
Santa Catalina-Tortolita Mtns.
Santa Catalina-Tortolita-Rincon Mtns.
Santa Rita Mtns.
Santa Rosa Mtns.
Sauceda Mtns.
Sheridan Mtns.
Sierrita Mtns.
Silver Bell Mtns.
Tortolita Mtns.
Tucson Basin
Tucson Mtns.

TABLE A, continued

PINAL COUNTY (PN)

Black Mtn.
Dripping Spring Mtns.
Durham-Suizo area
Florence area
Galiuro Mtns.
Mescal Mtns.
Mineral Mtn. area
Oracle area
Picacho Basin
Picacho Mtns.
Picacho Peak
Ray area
Sacaton Mtns.
San Manuel area
San Pedro Valley
San Tan Mtns.
Santa Catalina Mtns.
Santa Catalina-Tortolita Mtns.
Sierra Estrella
Silver Bell Mtns.
Slate Mtns.
Superior area
Table Top Mtns.
Tortilla Mtns.
Tortolita Mtns.

SANTA CRUZ COUNTY (SC)

Atascosa Mtns.
Canelo Hills
Patagonia Mtns.
Santa Cruz Valley
Santa Rita Mtns.
Tumacacori Mtns.

YAVAPAI COUNTY (YA)

Agua Fria area
Aguila Ridge
Aquarius Mtns.
Bagdad area
Black Hills
Bradshaw Mtns.
Buckhorn Mtns.
Burro Creek area
Chino Valley
Date Creek Basin area
Dry Beaver Creek
East Juniper Mtns.
Fossil Creek Canyon
Hackberry Mtn. area
Harcuvar Mtns.
Hieroglyphic Mtns.
Jerome area
Juniper Mtns.
Lake Pleasant area
Mohon Mtns.
Mt. Floyd area
Poachie Range
Prescott area
Santa Maria area
Santa Maria Mtns.
Sierra Prieta
Sycamore Canyon
Verde Valley
Wagoner area
Weaver Mtns.
West Clear Creek
Wet Beaver Creek
Wickenburg Mtns.

YUMA COUNTY (YU)

Aguila Mtns.
Cabeza Prieta Mtns.
Castle Dome Mtns.
Clanton Hills
Gila Mtns. (Yuma)
Kofa Mtns.
Laguna Mtns.
Muggins Mtns.
Palomas Plain
Tule Mtns.
Yuma area
Yuma Desert

TABLE B. SAMPLE-NUMBER PREFIX CODES FOR REFERENCES WITH CONSECUTIVELY NUMBERED DATE LISTS

A57: — Aldrich and others (1957)
A68: — Anderson (1968)
A70: — Armstrong (1970)
A71: — Anderson and others (1971)
A72: — Anderson and others (1972)
A75: — Armstrong (1975)
A76: — Armstrong and others (1976)
B72: — Banks and others (1972)
B84: — Bohannon (1984)
C62: — Creasey and Kistler (1962)
C80: — Creasey (1980)
C83: — Creasey and others (1983)
C84: — Creasey (1984)
D69: — Dalrymple (1969)
DH82: — Drewes (1982)
DH85: — Drewes (1985)
DT: — DeWitt and Thorson (in press)
EM: — Elston and McKee (1982)
ES: — Eberly and Stanley (1978)
G85: — Gray and others (1985)
H85: — Houser and others (1985)
K80: — Keith and others (1980)
L68: — Lanphere (1968)
M65: — Mauger and others (1965)
M73: — Marvin and others (1973)
M78: — Marvin and others (1978)
MM: — McKee and McKee (1972)
N82: — Nason and others (1982)
R81: — Richter and others (1981)
R82: — Rehrig (1982)
R83: — Richter and others (1983)
RR: — Reif and Robinson (1981)
T86: — Tosdal and others (1986)
U84: — Ulrich and others (1984)
Y79: — Young (1979)

TABLE C. LABORATORY AND DECAY-CONSTANT CODES

LABORATORIES

LABORATORY CODE #		LABORATORY AND NUMBER OF DETERMINATIONS
1	—	University of Arizona - 698
2	—	USGS Denver - 293
3	—	USGS Menlo Park - 324
4	—	Massachusetts Institute of Technology - 8
5	—	Geochron Labs. - 51
6	—	Isotopes, Inc. - 20
7	—	San Diego State University - 59
8	—	California Institute of Technology - 53
9	—	University of California at Berkeley - 15
A	—	Columbia University - 28
B	—	Rice University - 44
C	—	University of Toronto - 12
D	—	Yale University - 5
E	—	Carnegie Institute - 8
F	—	Conoco - 2
G	—	University of New Mexico - 1
H	—	University of Texas - 7
I	—	Teledyne - 2
J	—	University of British Columbia - 2
K	—	Washington University (St. Louis) - 8
L	—	Queen's University (Canada) - 1
M	—	Arizona State University - 3
N	—	University of California at Santa Barbara - 1
	—	unknown - 36

CONSTANTS

CONSTANT CODE #	METHOD	λ	REFERENCE
1	KA	$\lambda_e = 0.581 \times 10^{-10}\ yr^{-1}$ $\lambda_B = 4.962 \times 10^{-10}\ yr^{-1}$ (or 4.963×10^{-10}) $40K/K = 1.167 \times 10^{-4}$	Steiger and Jager, 1977
1	FT	$7.03 \times 10^{-17}\ yr^{-1}$	Roberts and others, 1968
1	SR	$1.42 \times 10^{-11}\ yr^{-1}$	Steiger and Jager, 1977
1	PB	$9.8485 \times 10^{-10}\ yr^{-1}$ (235U) $1.55125 \times 10^{-10}\ yr^{-1}$ (238U) $4.9475 \times 10^{-11}\ yr^{-1}$ (232Th)	Steiger and Jager, 1977
2	PB	Approximations used for recalculating pre-1980 Pb dates: U-Pb concordia - 2.00% reduction 238U-206Pb ages - 1.10% reduction 235U-207Pb ages - 1.00% reduction	
3	Pb-alpha	$1.56 \times 10^{-4}\ yr^{-1}$	Marvin and others, 1973

Part I

Comprehensive List of Radiometric Age Determinations in Order of Increasing Age

This list is the comprehensive master list that contains all information contained in the computerized database. The dates are listed in order of increasing age. Information on each date is displayed in the following format:

AGE AND UNCERTAINTY (in m.y.) (**) RECORD #
METHOD/MATERIAL DATED/ROCK TYPE **NAME OF ROCK UNIT** REFERENCE
AREA — COMMENTS. QUADRANGLE. COUNTY. (LATITUDE AND LONGITUDE).
LABORATORY WHERE DATED, CONSTANT USED, **SAMPLE NUMBER.**

** - See comments for interpretation of age determination.

0.010 ± 0.000 # 1
KA/w.r./basalt Vulcans Throne basalt Damon and others, 1967
Grand Canyon — Central part. Near Vulcans Throne, beside Colorado River. Stage III flow with large pyroxene phenocrysts and pyroxene-olivine clots. Very high atmospheric correction. Latitude in original reference is incorrect. Vulcans Throne quad., MO county (36° 13.20', 113° 5.10'). L-1, K%= 1.5, *Ar=0.1, #PED-46-66.

0.051 ± 0.046 # 2
KA/w.r./basaltic andesite Strawberry Crater basalt Damon and others, 1974
San Francisco volcanic field -- Basaltic andesite with small plagioclase and olivine phenocrysts. Stage IV, Merriam age group. Strawberry Crater quad., CN county (35° 26.30', 111° 27.85'). L-1, K%= 2.1, *Ar=1, #UAKA-73-121.

0.056 ± 0.014 # 3
KA/w.r./basaltic andesite O'Neil Crater basalt Damon and others, 1974
San Francisco volcanic field -- Stage IV, Merriam age group. Winona quad., CN county (35° 14.22', 111° 26.38'). L-1, K%= 2.2, *Ar=4, #UAKA-73-120.

0.058 ± 0.380 # 4
KA/w.r./mantle xenolith San Carlos xenolith Bernatowicz, 1981
San Carlos area — Cooling age of mantle xenolith in host basanite. Generalized lat-lon. San Carlos quad., GI county (33° 20.57', 110° 28.12'). L-K, K%= 0.1, #PA-12.

0.071 ± 0.004 # 5
KA/w.r./basalt S P basalt Baksi, 1974
San Francisco volcanic field — Date from 18 drill core samples is a K-Ar isochron age. Generalized lat-lon. S P Mtn. quad., CN county (35° 37.00', 111° 37.50'). L-L, K%= 2.0.

0.210 ± 0.000 ** # 6
KA/w.r./basalt Sunset Crater basalt Dalrymple, 1969
San Francisco volcanic field — Sunset Crater. Date is too old because of excess argon. The actual age of the flow is 1064-1065 A.D. Exact location not published. Sunset Crater West quad., CN county (35° 21.70', 111° 30.47'). L-3, K%= 0.7, #D69:2.

0.218 ± 0.021 # 7
KA/sani/rhyolite O'Leary Peak rhyolite Damon and others, 1974
San Francisco volcanic field — Stage III, Tappan age group. Emplacement of rhyolite predates the glacial outwash from the interior valley of the San Francisco Peaks. O'Leary Peak quad., CN county (35° 23.83', 111° 31.60'). L-1, K%= 9.1, *Ar=9, #PED-14-70.

0.230 ± 0.000 ** # 8
KA/w.r./basalt Sunset Crater basalt Dalrymple, 1969
San Francisco volcanic field — Sunset Crater. Date is too old because of excess argon. The actual age of the flow is 1064-1065 A.D. Exact location not published. Sunset Crater West quad., CN county (35° 21.70', 111° 30.47'). L-3, K%= 0.7, #D69:1.

0.245 ± 0.037 # 9
KA/sani/rhyolite O'Leary Peak rhyolite Damon and others, 1974
San Francisco volcanic field — Contains sanidine phenocrysts approx. 2.5 cm in length. Forms a silicic dome. State III Tappan age group. O'Leary Peak quad., CN county (35° 23.83', 111° 31.60'). L-1, K%= 8.9, *Ar=7, #UAKA-71-08.

0.274 ± 0.050 # 10
KA/w.r./basalt Bernardino basalt Lynch, 1978
San Bernardino Valley -- Massive alkali-olivine basalt (basanite) on eroded edge of lava flow crossed by access road north of Cinder Hill. College Peaks quad., CH county (31° 26.92', 109° 17.46'). L-1, K%= 1.2, *Ar=8, #UAKA-75-109.

0.308 ± 0.070 # 11
KA/w.r./basalt Vent 0833 basalt Aubele and others, 1986
Springerville volcanic field — Picritic basalt. The youngest dated flow unit in the Springerville volcanic field. An earlier flow unit from the same vent was dated at 0.75 m.y. by Laughlin and others (1980). Springerville NW quad., AP county (34° 13.50', 109° 24.05'). L-1, K%= 0.8, *Ar=5, #UAKA-82-195.

0.486 ± 0.029 # 12
KA/w.r./basalt Turkey Mtn. flow Condit and Shafiqullah, 1985
Springerville volcanic field — Youngest flow dated in western part of Springerville volcanic field. Sponseller Mtn. quad., AP county (34° 10.25', 109° 52.08'). L-1, K%= 1.5, *Ar=80, #UAKA-82-184.

0.500 ± 0.110 # 13
KA/w.r./basalt **Deadman Wash basalt** Ulrich and others, 1984
San Francisco volcanic field — No analytical data reported. Generalized lat-lon. Wupatki SE quad., CN county (35° 31.29', 111° 17.83'). L-1, #U84:2.

0.529 ± 0.079 # 14
KA/w.r./basalt **Tappan Springs basalt** Damon and others, 1974
San Francisco volcanic field — Flow has been downcut 52-55 m by the Little Colorado River, has been cut by a NE-trending graben at Moenkopi Wash, and occupies a channel of ancestral Colorado River. Stage III Tappan age group. Cameron NW quad., CN county (35° 53.23', 111° 27.30'). L-1, K%= 1.2, *Ar=8, #UAKA-72-62.

0.530 ± 0.500 # 15
KA/w.r./basalt **Crater 416 basalt** Leventhal, 1972
San Francisco volcanic field — Near Deadman Wash northeast of Black Mtn. Strawberry Crater quad., CN county (35° 29.11', 111° 26.41'). L-1, K%= 1.2, *Ar=1, #JSL-72-8.

0.580 ± 0.900 # 16
KA/w.r./basalt **Crater 176 basalt** Leventhal, 1972
San Francisco volcanic field — Northwest of Merriam Crater. Merriam Crater quad., CN county (35° 21.06', 111° 18.70'). L-1, K%= 0.5, *Ar=1, #JSL-72-12.

0.580 ± 0.120 # 17
KA/w.r./basanite **San Carlos basanite** Bernatowicz, 1981
San Carlos area — Basanite host for samples PA-65G, PA-12, and PA-10. Generalized lat-lon. San Carlos quad., GI county (33° 20.57', 110° 28.12'). L-K, K%= 2.3, #PA-1.

0.649 ± 0.230 # 18
KA/w.r./basalt **Shadow Mtn. basalt** Damon and others, 1974
Cameron area — Shadow Mtn. One lobe of this flow has been cut by a graben. Stage II, Tappan age group. Cameron NW quad., CN county (35° 59.76', 111° 26.83'). L-1, K%= 0.4, *Ar=2, #UAKA-73-23.

0.670 ± 0.022 # 19
KA/w.r./quartz-olivine basalt **Vent 9626 basalt** Aubele and others, 1986
Springerville volcanic field -- One of the younger flows in the central part of the field, large in areal extent and suitable for correlation with numerous other units. Whiting Knoll quad., AP county (34° 8.90', 109° 34.85'). L-1, K%= 1.5, *Ar=33, #UAKA-82-197.

0.700 ± 0.100 # 20
KA/w.r./basalt **Vent 171 basalt** Damon and others, 1974
San Francisco volcanic field — Stage II, Tappan age group. Roden Crater quad., CN county (35° 23.05', 111° 20.22'). L-1, K%= 0.8, *Ar=7, #UAKA-73-123.

0.750 ± 0.130 # 21
KA/w.r./basalt **Springerville basalt** Laughlin and others, 1980
Springerville volcanic field — Basalt flow in road cut along Hwy. 260-666 between Springerville and St. Johns. Overlies flow AWL-05-77 (1.67 m.y.). Springerville NW quad., AP county (34° 14.00', 109° 23.00'). L-1, K%= 0.9, *Ar=5, #AWL-06-77.

0.800 ± 0.000 # 22
KA/w.r./rhyolite **San Francisco rhyolite** Ulrich and others, 1984
San Francisco volcanic field — San Francisco Mtn., northeast side. No analytical data reported. Generalized lat-lon. Sunset Crater West quad., CN county (35° 22.07', 111° 36.14'). L-2, #U84:1.

0.812 ± 0.059 # 23
KA/w.r./basalt **Woodhouse Mesa basalt** Damon and others, 1974
San Francisco volcanic field -- Woodhouse Mesa, one mile west of road, near Wupatki National Monument. IA stage, Woodhouse age group. Roden Crater quad., CN county (35° 29.25', 111° 22.02'). L-1, K%= 1.0, *Ar=18, #UAKA-73-153.

0.824 ± 0.040 # 24
KA/w.r./basalt **Springerville basalt** Laughlin and others, 1979
Springerville volcanic field — Olivine tholeiite basalt. Roadcut along U.S. Hwy. 60, 6.8 km east of Springerville. Same location as AWL-40-74 (2.94 m.y.). Coyote Hills quad., AP county (34° 8.49', 109° 12.59'). L-1, K%= 0.7, *Ar=24, #AWL-41-74.

0.840 ± 0.070 # 25
KA/w.r./basalt **Springerville basalt** Laughlin and others, 1980
Springerville volcanic field — From quarry in cinder cone 8175 on south side of U.S. Hwy. 60, northwest of Springerville. Whiting Knoll quad., AP county (34° 14.00', 109° 30.00'). L-1, K%= 1.2, *Ar=90, #AWL-04-77.

0.874 ± 0.130 # 26
KA/w.r./basalt **Kellam Ranch basalt** Damon and others, 1974
San Francisco volcanic field — IA stage, Woodhouse age group. Merriam Crater quad., CN county (35° 21.58', 111° 17.90'). L-1, K%= 0.9, *Ar=9, #UAKA-73-154.

0.880 ± 0.090 # 27
KA/w.r./basalt **Jackwood Pass basalt** Bryan, 1986
Chiricahua Mtns. — Small basalt outcrop about 1/2 mile north of the cinder cone at Jackwood Pass. Portal quad., CH county (31° 45.52', 109° 10.15'). L-1, K%= 1.8, *Ar=7, #UAKA-84-86.

0.881 ± 0.100 # 28
KA/biot/rhyolite **White Horse Hills rhyolite** Damon and others, 1974
San Francisco volcanic field — North of San Francisco Mtn. Stage I, Woodhouse age group. White Horse Hills quad., CN county (35° 23.40', 111° 42.20'). L-1, K%= 6.5, *Ar=9, #UAKA-73-114.

0.897 ± 0.140 # 29
KA/w.r./basalt **Wukoki basalt** Damon and others, 1974
San Francisco volcanic field -- Vesicular basalt from flow on Wupatki surface, near Wupatki National Monument. Stage II, Woodhouse age group. Wupatki SE quad., CN county (35° 30.02', 111° 19.32'). L-1, K%= 0.8, *Ar=8, #UAKA-73-119.

0.930 ± 0.080 # 30
KA/w.r./basalt **Peridot Mesa basalt** Shafiqullah and others, 1980
San Carlos area — Peridot Mesa. Xenolith-bearing basalt flow that predates 50 to 100 m of downcutting of modern Gila River. San Carlos quad., GI county (33° 20.57', 110° 28.12'). L-1, K%= 0.7, *Ar=12, #UAKA-77-33.

0.951 ± 0.300 # 31
KA/w.r./basalt **Lava Point basalt** Damon and others, 1974
San Francisco volcanic field — IA stage, Woodhouse age group. S P Mtn. quad., CN county (35° 39.87', 111° 31.23'). L-1, K%= 0.5, *Ar=3, #UAKA-73-116.

0.951 ± 0.084 # 32
KA/sani/rhyolite **Humphreys Peak rhyolite** Damon and others, 1974
San Francisco volcanic field — San Francisco Mtn. Holocrystalline, granular, riebeckite rhyolite intrusive, a relatively late phase in the San Francisco Mtn. sequence. Humphreys Peak quad., CN county (35° 19.67', 111° 40.00'). L-1, K%= 4.2, *Ar=9, #UAKA-72-74.

1.00 ± 0.10 # 33
KA/w.r./basalt **Bernardino basalt** Marvin and Cole, 1978
San Bernardino Valley — Basalt flow, west wall of Paramore Crater. Predates eruption of crater. Apache quad., CH county (31° 33.59', 109° 10.33'). L-2, K%= 1.7, *Ar=27, #72D6.

1.04 ± 0.05 # 34
KA/w.r./basalt **Vent 9711 basalt** Aubele and others, 1986
Springerville volcanic field — Aphyric basalt from vent 9711. Intermediate age and wide areal extent. Northeast-trending fissure vents of olivine-pyroxene erupted through this dated flow unit. Springerville NW quad., AP county (34° 12.55', 109° 26.88'). L-1, K%= 2.3, *Ar=33, #UAKA-82-196.

1.05 ± 0.04 # 35
KA/w.r./basalt **Vent 0727 basalt** Aubele and others, 1986
Springerville volcanic field -- From vent 0727. Olivine-pyroxene-plagioclase basalt flow that is upwarped by a major northwest trending fault that extends across the central and eastern parts of the field. Springerville NW quad., AP county (34° 14.79', 109° 28.70'). L-1, K%= 1.8, *Ar=45, #UAKA-82-193.

1.18 ± 0.18 # 36
KA/w.r./basalt **Lower Canyon basalt** McKee and others, 1968
Grand Canyon -- Western part. Olivine basalt. Colorado River has cut through the 168 m basalt dam plus 15 m of Paleozoic strata, which indicates only minor appreciable downcutting in the last million years. Vulcans Throne quad., MO county (36° 12.15', 113° 4.67'). L-1, K%= 0.9, *Ar=2, #PED-05-65.

1.19 ± 0.04 # 37
KA/w.r./picritic basalt **Cerro Hueco basalt** Aubele and others, 1986
Springerville volcanic field -- From vent 1633 in the central part of the field. One of the younger structurally deformed flows in the central part of the field. Cerro Hueco quad., AP county (34° 17.48', 109° 37.35'). L-1, K%= 1.4, *Ar=34, #UAKA-82-192.

1.28 ± 0.26 # 38
KA/w.r./basalt **Arlington basalt** Shafiqullah and others, 1980
Arlington Valley — North summit of Arlington Cone. Location AR-3 of Schoustra and others (1976). Arlington quad., MA county (33° 20.94', 112° 45.02'). L-1, K%= 0.7, *Ar=6, #UAKA-73-150.

1.30 ± 0.05 # 39
KA/w.r./olivine basalt Vernon basalt Aubele and others, 1986
Springerville volcanic field — One of the structurally warped, oldest flow units in the central part of the field. Vernon quad., AP county (34° 21.40', 109° 40.55'). L-1, K%= 0.8, *Ar=45, #UAKA-82-191.

1.35 ± 0.55 # 40
KA/w.r./basalt Gillespie basalt Shafiqullah and others, 1980
Arlington Valley -- Sample from near summit of Gillespie Cone. Location G-10 of Schoustra and others (1976). Spring Mtn. quad., MA county (33° 13.79', 112° 48.02'). L-1, K%= 0.8, *Ar=3, #UAKA-73-07.

1.47 ± 0.06 # 41
KA/w.r./basalt Gooseberry Creek basalt Condit and Shafiqullah, 1985
Springerville volcanic field -- Top flow of Gomez and Gooseberry Creeks. McNary quad., NA county (34° 2.30', 109° 51.57'). L-1, K%= 0.8, *Ar=67, #UAKA-82-96.

1.53 ± 0.21 # 42
KA/w.r./basalt Timber Mesa basalt Condit and Shafiqullah, 1985
Springerville volcanic field — Flow of Timber Mesa and vent near Porter Mountain. Lakeside quad., NA county (34° 11.22', 109° 57.75'). L-1, K%= 0.9, *Ar=69, #UAKA-80-131.

1.54 ± 0.02 # 43
KA/w.r./rhyolite Slate Mtn. rhyolite Damon and others, 1974
San Francisco volcanic field — From near top of Slate Mtn. Stage 1, Woodhouse age group. Latitude in original reference is incorrect. Kendrick Peak quad., CN county (35° 31.00', 111° 50.57'). L-1, K%= 3.8, *Ar=90, #UAKA-73-115.

1.56 ± 1.10 # 44
KA/biot/granite porphyry Marble Hill porphyry Damon and others, 1964
San Francisco volcanic field -- Generalized lat-lon. Additional data reported in Sabels (1960). White Horse Hills (?) quad., CN county (35° 25.00', 111° 42.00'). L-1, K%= 5.7, *Ar=6, #BES-58-85.

1.56 ± 0.05 # 45
KA/w.r./benmoreite Vent 9506 benmoreite Aubele and others, 1986
Springerville volcanic field — Near Wolf Mountain. One of the older and most differentiated rocks in the field, a dome intruding cinder of the same composition. Boundary Butte quad., AP county (34° 11.65', 109° 44.45'). L-1, K%= 2.1, *Ar=40, #UAKA-82-190.

1.61 ± 0.05 # 46
KA/w.r./latite Woody Mtn. Summit latite Damon and others, 1974
San Francisco volcanic field — Aphanitic latite near the Summit of Woody Mtn. Latite is younger than the Woody Mtn. basalt. Flagstaff West quad., CN county (35° 8.58', 111° 44.95'). L-1, K%= 3.2, *Ar=44, #UAKA-72-27.

1.65 ± 0.09 # 47
KA/w.r./basalt Vent 9335 basalt Condit and Shafiqullah, 1985
Springerville volcanic field -- Lakeside quad., NA county (34° 8.07', 109° 53.00'). L-1, K%= 0.8, *Ar=82, #UAKA-82-183.

1.67 ± 0.09 # 48
KA/w.r./basalt Springerville basalt Laughlin and others, 1980
Springerville volcanic field -- Basalt flow that caps mesa northwest of Springerville. Exposed in roadcut along Hwy. 260-666 north of Springerville. Springerville quad., AP county (34° 12.00', 109° 19.00'). L-1, K%= 0.6, *Ar=16, #AWL-05-77.

1.70 ± 0.40 # 49
KA/w.r./mantle xenolith San Carlos xenolith Bernatowicz, 1981
San Carlos area — Cooling age of mantle xenolith in host basanite. Generalized lat-lon. San Carlos quad., GI county (33° 20.57', 110° 28.12'). L-K, K%= 0.1, #PA-10.

1.72 ± 0.46 # 50
KA/w.r./basalt Midway Cone basalt Shafiqullah and others, 1980
Sentinel volcanic field — Midway Cone. Sample from first road cut west of the Painted Rock Mountains on Interstate 8. Also listed by Schoustra and others (1976). Sentinel quad., MA county (32° 53.40', 113° 4.10'). L-1, K%= 0.9, *Ar=5, #UAKA-73-05.

1.74 ± 0.15 # 51
KA/w.r./basalt Vent 9305 basalt Condit and Shafiqullah, 1985
Springerville volcanic field — Lakeside quad., NA county (34° 11.55', 109° 55.67'). L-1, K%= 1.1, *Ar=72, #UAKA-80-132.

1.76 ± 0.15 # 52
KA/w.r./basalt Corduroy Creek basalt Peirce and others, 1979
Carrizo Embayment — Corduroy Creek area. Basal olivine basalt flow above channel gravel, along State Hwy. 73. Date is redetermination on sample 1A (12.1 m.y.) of McKee and McKee (1972). Additional date of 1.90 m.y. from same outcrop. Limestone Canyon South quad., NA county (34° 2.09', 110° 14.25'). L-1, K%= 0.5, *Ar=15, #UAKA-75-52A.

1.78 ± 0.22 # 53
KA/w.r./basalt Show Low Creek basalt Condit and Shafiqullah, 1985
Springerville volcanic field — Composite flow-field of Show Low Creek. Indian Pine quad., NA county (34° 4.25', 109° 55.17'). L-1, K%= 0.8, *Ar=51, #UAKA-80-133.

1.83 ± 0.21 # 54
KA/w.r./basalt Bootleg Lake basalt Condit and Shafiqullah, 1985
Springerville volcanic field — Flow-field of Bootleg Lake. Indian Pine quad., NA county (34° 5.17', 109° 56.75'). L-1, K%= 1.7, *Ar=62, #UAKA-80-134.

1.89 ± 0.07 # 55
KA/w.r./basalt Amphitheatre basalt Damon and others, 1974
San Francisco volcanic field — Amphitheatre flow that overlies the palagonitic tuff of the Black Point flow. Stage IB, Woodhouse age group. S P Mtn. quad., CN county (35° 39.53', 111° 35.05'). L-1, K%= 1.1, *Ar=45, #PED-07-67.

1.90 ± 0.06 # 56
KA/w.r./basalt Corduroy Creek basalt Peirce and others, 1979
Carrizo Embayment -- Corduroy Creek. Basal olivine basalt flow that overlies channel gravel deposited by southward-flowing drainage. Limestone Canyon South quad., NA county (34° 2.09', 110° 14.25'). L-1, K%= 0.5, *Ar=44, #UAKA-74-136.

1.92 ± 0.42 # 57
KA/w.r./basalt Arlington basalt Shafiqullah and others, 1980
Arlington Valley — Arlington Cone, South Summit. Location AR-4 of Schoustra and others (1976). Hassayampa quad., MA county (33° 20.77', 112° 44.62'). L-1, K%= 0.9, *Ar=6, #UAKA-73-09.

1.98 ± 0.60 # 58
KA/w.r./basalt Lyman Lake basalt Aubele and others, 1986
Springerville volcanic field — One of the oldest flow units in the eastern part of the field, caps mesa west of the Little Colorado River. Lyman Lake quad., AP county (34° 21.65', 109° 24.08'). L-1, K%= 1.1, *Ar=48, #UAKA-82-194.

2.00 ± 0.30 ** # 59
KA/w.r./andesite Trigo Mtns. volcanics Weaver, 1982
Trigo Mtns. — Date is much too young for this flow. Picacho SW quad., LP county (33° 5.53', 114° 38.28'). L-7, K%= 5.5, *Ar=16, #2182.

2.00 ± 0.11 # 60
KA/w.r./basalt Show Low Creek basalt Condit and Shafiqullah, 1985
Springerville volcanic field -- Composite flow-field of Show Low Creek. Show Low North quad., NA county (34° 22.43', 110° 3.00'). L-1, K%= 0.6, *Ar=82, #UAKA-82-185.

2.05 ± 1.40 # 61
KA/w.r./basalt Sandy Point basalt (?) Damon and others, 1965
Lake Mead area — Columnar basalt flow exposed along SW part of Grand Wash Bay. Unit rests on Muddy Creek fanglomerate, and partly on fluvial gravels that are a possible Colorado River deposit. Possible equivalent of Sandy Point Lava. Iceberg Canyon quad., MO county (36° 12.30', 114° 1.00'). L-1, K%= 1.3, *Ar=3, #PED-09-65.

2.05 ± 0.10 # 62
KA/w.r./basalt Gooseberry Creek basalt Condit and Shafiqullah, 1985
Springerville volcanic field -- Basal flow-field of Gomez and Gooseberry Creeks. McNary quad., AP county (34° 2.25', 109° 51.53'). L-1, K%= 0.9, *Ar=79, #UAKA-82-95.

2.08 ± 0.18 # 63
KA/w.r./basalt Arlington basalt Shafiqullah and others, 1980
Arlington Valley — Arlington Cone, west flow. Location AR-1 of Schoustra and others (1976). Arlington quad., MA county (33° 20.73', 112° 46.14'). L-1, K%= 0.5, *Ar=16, #UAKA-73-149.

2.08 ± 0.48 # 64
KA/w.r./basalt Twin Springs basalt Hughes, 1978
Williams area — Near Twin Springs, low on southwest flank of Bill Williams Mtn. Youngest basalt in immediate area. Analytical data not published. Date attributed to McKee (personal comm.). Generalized lat-lon. Bill Williams Mtn. quad., CN county (35° 10.00', 112° 10.00'). L-3, C-?.

2.17 ± 0.20 # 65
FT/sphe/granodiorite xenolith **Hopi Buttes diatreme** Naeser, 1971
Hopi Buttes — Xenolith from the Coliseum monchiquite diatreme. Age is an average obtained from three grains and reflects annealing before or during the emplacement of the diatreme. Na Ah Tee Canyon quad., NA county (35° 23.00', 110° 8.20'). L-2, #HB2.

2.17 ± 0.39 # 66
FT/glas/air-fall tuff **111 Ranch tuff** Dickson and Izett, 1981
San Simon Valley — Water-reworked tuff in Plio-Pleistocene basin-fill sediments, W side of Dry Mtn., 4.7 km SSW of 111 Ranch. Dry Mtn. quad., GM county (32° 40.63', 109° 29.23'). L-2, #78W208.

2.17 ± 0.25 # 67
KA/w.r./basalt **Arlington basalt** Shafiqullah and others, 1980
Arlington Valley -- Arlington Cone, west flow. Location AR-6 of Schoustra and others (1976). Hassayampa quad., MA county (33° 20.03', 112° 43.80'). L-1, K%= 0.6, *Ar=11, #UAKA-73-152.

2.28 ± 0.21 # 68
KA/w.r./basalt **Arlington basalt** Shafiqullah and others, 1980
Arlington Valley — Arlington Cone, west Flow. Sample taken from drill core in boring PV-17. Location AR-2 of Schoustra and others (1976). Arlington quad., MA county (33° 20.96', 112° 45.98'). L-1, K%= 0.5, *Ar=13, #UAKA-73-151.

2.33 ± 0.24 # 69
FT/zirc/air-fall tuff **111 Ranch tuff** Dickson and Izett, 1981
San Simon Valley -- Water-reworked tuff in Plio-Pleistocene basin-fill sediments. N side of Dry Mtn., 2 km SE of 111 Ranch. Dry Mtn. quad., GM county (32° 42.30', 109° 27.75'). L-2, #78W211.

2.35 ± 0.31 # 70
KA/w.r./basalt **Segmiller Mtn. basalt** Damon and others, 1968
Shivwits Plateau — Segmiller Mtn., Main Street Valley. Stage IA flow that overlies Triassic Moenkopi Fm. Wolf Hole Mtn. West quad., MO county (36° 50.76', 113° 38.43'). L-1, K%= 0.9, *Ar=12, #PED-32-66.

2.40 ± 0.70 # 71
KA/biot/rhyodacite **Mt. Floyd rhyodacite** Nealey, 1980
Mt. Floyd area -- Mt. Floyd. flow. Analytical data not published. Material dated unknown, but assumed to be biotite. Date attributed to McKee (personal comm.). Mt. Floyd quad., CN county (35° 23.39', 112° 43.27'). L-3, C-?.

2.43 ± 0.38 # 72
FT/glas/air-fall tuff **111 Ranch tuff** Dickson and Izett, 1981
San Simon Valley -- Water-reworked tuff in Plio-Pleistocene basin-fill sediments. N side of Dry Mtn., 2 km SE of 111 Ranch. Dry Mtn. quad., GM county (32° 42.30', 109° 27.75'). L-2, #78W211.

2.43 ± 0.32 # 73
KA/w.r./olivine basalt **Black Point basalt** Damon and others, 1974
San Francisco volcanic field — Black Point. Flow dammed the Little Colorado River. Age indicates downcutting of 60 m per million years. Flow occurs on IB surface near Little Colorado River. Stage IB, Woodhouse age group. Wupatki NE quad., CN county (35° 40.33', 111° 20.65'). L-1, K%= 0.9, #PED-06-65.

2.44 ± 0.51 # 74
KA/w.r./basalt **Segmiller Mtn. basalt** Damon, unpub. data
Shivwits Plateau -- Segmiller Mtn. Stage IB flow that could be the same as PED-32-66 if flowed down IA slope. Wolf Hole Mtn. West quad., MO county (36° 50.76', 113° 38.55'). L-1, K%= 0.9, *Ar=5, #PED-33-66.

2.49 ± 0.24 # 75
KA/biot/rhyolite **Sitgreaves Peak rhyolite** Damon and others, 1974
San Francisco volcanic field -- Sitgreaves Peak. Tuffaceous unit. Stage I, Woodhouse age group. Updated from 3.8 m.y. date reported by Damon and others, 1964. Parks quad., CN county (35° 21.00', 111° 59.00'). L-1, K%= 5.5, *Ar=11, #BES-58-315.

2.58 ± 0.90 # 76
KA/w.r./basalt **Gila Bend basalt** Schoustra and others, 1976
Gila Bend Mtns. — Approximate lat-lon. Location GB-1. Woolsey Peak quad., MA county (33° 6.94', 112° 52.50'). L-5, K%= 1.2, *Ar=22, #R-2585.

2.59 ± 0.19 # 77
KA/glas/air-fall tuff **St. David Fm.** Scarborough, 1975
San Pedro Valley — Near Benson. Vitric gray, air-fall tuff, El Paso site. This tuff underlies the California Wash tuffs by several meters. McGrew Spring quad., CH county (31° 51.50', 110° 16.17'). L-1, K%= 3.4, *Ar=13, #UAKA-72-77.

2.60 ± 0.34 # 78
KA/glas/air-fall tuff St. David Fm. Scarborough, 1975
San Pedro Valley — Near Benson. Brown air-fall tuff in lacustrine facies of St. David Fm. McGrew Spring quad., CH county (31° 49.63', 110° 15.30'). L-1, K%= 1.7, *Ar=10, #RBS-35A-68.

2.63 ± 0.34 # 79
KA/w.r./basalt Mt. Logan basalt Damon, unpub. data
Uinkaret Plateau — South face of Mt. Logan. Mt. Logan quad., MO county (36° 21.09', 113° 12.10'). L-1, K%= 0.8, *Ar=14, #PED-43-66.

2.67 ± 0.96 # 80
FT/glas/air-fall tuff 111 Ranch tuff Dickson and Izett, 1981
San Simon Valley -- Water-reworked tuff in Plio-Pleistocene basin-fill sediments. W side of Dry Mtn., 4.5 km SSW of 111 Ranch. Dry Mtn. quad., GM county (32° 40.73', 109° 29.23'). L-2, #78W209.

2.67 ± 0.20 # 81
KA/w.r./basalt Gillespie basalt Shafiqullah and others, 1980
Arlington Valley — Gillespie Cone, east side. Location G-8 of Schoustra and others (1976). Spring Mtn. quad., MA county (33° 14.15', 112° 46.96'). L-1, K%= 0.5, *Ar=11, #UAKA-73-04.

2.78 ± 0.13 # 82
KA/sani/rhyodacite North Sugarloaf rhyodacite Damon and others, 1974
San Francisco volcanic field — North Sugarloaf Mtn. Rhyodacite with sanidine and quartz phenocrysts. Stage I, Woodhouse age group. O'Leary Peak quad., CN county (35° 22.70', 111° 36.70'). L-1, K%= 6.7, *Ar=27, #PED-15-70.

2.79 ± 1.00 # 83
KA/biot/rhyodacite North Sugarloaf rhyodacite Damon and others, 1974
San Francisco volcanic field — North Sugarloaf Mtn. Porphyritic rhyodacite. Stage I, Woodhouse age group. O'Leary Peak quad., CN county (35° 22.70', 111° 36.70'). L-1, K%= 6.0, *Ar=12, #BES-58-111.

2.87 ± 0.20 # 84
KA/w.r./basalt Virgin River basalt Best and others, 1980
Virgin River area — Older stage 1 flow. Littlefield quad., MO county (36° 50.63', 113° 35.40'). L-1, K%= 1.1, *Ar=20, #PED-31-66.

2.94 ± 0.14 # 85
KA/w.r./olivine basalt Springerville basalt Laughlin and others, 1979
Springerville volcanic field — Olivine tholeiite. Lowermost flow in roadcut along U.S. 60, 6.8 km east of Springerville. Also forms cliffs along east side of Little Colorado River. Coyote Hills quad., AP county (34° 8.49', 109° 12.59'). L-1, K%= 0.7, *Ar=18, #AWL-40-74.

3.05 ± 0.38 # 86
KA/glas/air-fall tuff St. David Fm. Scarborough, 1975
San Pedro Valley — Near Benson. Medium-grained air-fall tuff 20 cm thick and intercalated in lacustrine St. David Fm. Relationship to brown air-fall tuff is unknown. UAKA-71-32 is a recollection of this unit 180 m to north. McGrew Spring quad., CH county (31° 49.50', 110° 16.13'). L-1, K%= 4.7, *Ar=21, #RBS-32-68.

3.06 ± 0.08 # 87
KA/w.r./alkali basalt Springerville basalt Laughlin and others, 1979
Springerville volcanic field -- Alkali basalt flow that forms low cliffs on west side of Little Colorado River at margin of flood plain. Eager quad., AP county (34° 6.65', 109° 18.92'). L-1, K%= 0.8, *Ar=48, #AWL-42-74.

3.10 ± 0.70 # 88
FT/zirc/ash St. David Fm. Tahirkheli and Naeser, 1975
San Pedro Valley -- Reported in Johnson and others (1975). No analytical data published. McGrew Spring quad., CH county (31° 49.50', 110° 15.00'). L-2, #M78:123.

3.10 ± 0.90 # 89
KA/w.r./basalt Sentinel basalt Eberly and Stanley, 1978
Sentinel volcanic field — South of Agua Caliente. Agua Caliente quad., MA county (32° 56.10', 113° 18.08'). L-B, K%= 0.7, *Ar=6, #ES:106.

3.10 ± 0.40 # 90
KA/w.r./basalt Gillespie basalt Schoustra and others, 1976
Arlington Valley — Gillespie flow. Location G-3 of Schoustra and others (1976). Generalized Lat-Lon. Spring Mtn. quad., MA county (33o 14.00', 112° 47.00'). L-1, K%= 0.5, *Ar=9, #R-2641.

3.10 ± 0.60 # 91
KA/biot/tuff **Thirteenmile Rock Volcanics(?)** Luedke and Smith, 1976
Hackberry Mtn. area — Analytical data, location, and actual date not published, except as attributed to Ulrich and McKee (1976, written comm.) by Luedke and Smith (1978). Horner Mtn. (?) quad., YA county (34° 25.00', 111° 50.00'). L-3, C-?, #T07.

3.13 ± 0.39 # 92
KA/w.r./basalt dike **Amphitheatre dike** Damon and others, 1974
San Francisco volcanic field — Amphitheatre dike that intrudes palagonite tuff. Older basalt stage, Woodhouse age group. S P Mtn. quad., CN county (35° 39.50', 111° 34.85'). L-1, K%= 1.0, *Ar=15, #PED-07-70.

3.19 ± 0.11 # 93
KA/w.r./basalt **Warford Ranch basalt** Shafiqullah and others, 1980
Sentinel volcanic field -- Southernmost flow edge of agglutinate cone at Warford Ranch, northern end of Painted Rock Mountains. Flow rests on Gila River Gravels 30 m above the modern Gila River flood plain. Citrus Valley West quad., MA county (33° 1.10', 112° 59.89'). L-1, K%= 0.7, *Ar=30, #UAKA-77-04.

3.28 ± 0.27 # 94
KA/w.r./basalt **Arlington basalt** Shafiqullah and others, 1980
Arlington Valley -- Arlington Cone, southwestern flow. Location AR-3 of Schoustra and others (1976). Arlington quad., MA county (33° 19.67', 112° 45.60'). L-1, K%= 0.6, *Ar=14, #UAKA-73-03.

3.29 ± 0.12 # 95
KA/glas/air-fall tuff **111 Ranch tuff** Scarborough, 1975
San Simon Valley — North of Whitlock Mtns. 7-10 cm thick air-fall tuff, one of four tuff beds in the lacustrine sequence of the San Simon Valley. 1.5 km south of 111 Ranch. Mammalian fossils indicate a late Blancan age. Dry Mtn. quad., GM county (32° 42.22', 109° 28.08'). L-1, K%= 2.9, *Ar=21, #RBS-206-68.

3.30 ± 0.12 # 96
KA/w.r./basalt **Bernardino older basalt** Lynch, 1978
Pedregosa Mtns. — Lower basalt from the southwest projection of a prominent table north of Joe Glenn Ranch. Two lava flows are separated by 2 m of rhyolite-cobble gravel. Pedregosa Mtns. quad., CH county (31° 36.43', 109° 20.22'). L-1, K%= 1.1, *Ar=38, #UAKA-72-61.

3.40 ± 0.40 # 97
KA/w.r./olivine basalt **Gillespie basalt** Schoustra and others, 1976
Arlington Valley — Generalized lat-lon. Location G-5. Spring Mtn. quad., MA county (33° 13.70', 112° 50.00'). L-5, K%= 0.9, *Ar=7, #R-2637.

3.44 ± 0.40 # 98
KA/w.r./basalt **Sentinel basalt** Schoustra and others, 1976
Sentinel volcanic field -- Vesicular basalt. Generalized lat-lon. Sentinel (?) quad., MA county (32° 50.00', 113° 5.00'). L-5, K%= 0.7, *Ar=7, #R-2642.

3.47 ± 0.63 # 99
KA/w.r./basalt **Mt. Trumbull basalt** Best and others, 1980
Uinkaret Plateau -- Basal flow on Mount Trumbull. 3.67 m.y. date from treated fraction of same sample. Mt. Trumbull NW quad., MO county (36° 23.87', 113° 9.26'). L-1, K%= 0.8, *Ar=6, #PED-42-66.

3.50 ± 0.40 # 100
KA/w.r./olivine basalt **Gillespie basalt** Schoustra and others, 1976
Arlington Valley — Generalized lat-lon. Location G-14. Spring Mtn. quad., MA county (33° 13.70', 112° 49.00'). L-5, K%= 0.8, *Ar=8, #R-2634.

3.50 ± 0.20 # 101
KA/biot/dacite **Bill Williams dacite** Pugmire, 1977
Williams area -- Bill Williams Mtn., Finger Rock area. Analytical data not published. Date attributed to McKee (personal comm.). Bill Williams Mtn. quad., CN county (35° 11.89', 112° 12.66'). L-3, C-?.

3.53 ± 0.40 # 102
KA/w.r./olivine basalt **Gillespie basalt** Schoustra and others, 1976
Arlington Valley -- Generalized lat-lon. Location G-12. Spring Mtn. quad., MA county (33° 13.70', 112° 49.00'). L-5, K%= 0.9, *Ar=13, #R-2632.

3.60 ± 0.40 # 103
KA/w.r./olivine basalt **Gillespie basalt** Schoustra and others, 1976
Arlington Valley -- Generalized lat-lon. Location G-16. Spring Mtn. quad., MA county (33° 13.70', 112° 49.00'). L-5, K%= 0.9, *Ar=6, #R-2636.

3.60 ± 0.18 # 104
KA/w.r./basalt **Bundyville basalt** Damon, unpub. data
Uinkaret Plateau — Bundyville stage I basalt, adjacent to Hurricane fault on down-thrown block. Jones Hill quad., MO county (36° 24.49', 113° 17.50'). L-1, K%= 0.7, *Ar=18, #PED-40-66.

3.67 ± 0.09 # 105
KA/w.r./basalt **Mt. Trumbull basalt** Best and others, 1980
Uinkaret Plateau — Basal flow on Mount Trumbull. Treated sample. 3.47 m.y. date on untreated fraction of same sample. Mt. Trumbull NW quad., MO county (36° 23.86', 113° 9.27'). L-1, K%= 0.8, *Ar=44, #PED-42-66.

3.67 ± 0.12 # 106
KA/w.r./basalt **Springerville basalt** Laughlin and others, 1980
Springerville volcanic field -- Road cut along U.S. Hwy. 60, east of Springerville. Flow rests on gravel and overlies oxidized top of either an older flow or overrun lobe of same flow. Coyote Hills quad., AP county (34° 8.00', 109° 13.00'). L-1, K%= 1.2, *Ar=8, #AWL-07-77.

3.79 ± 0.46 # 107
KA/w.r./basalt **Sandy Point basalt** Shafiqullah and others, 1980
Lake Mead area -- South side of Sandy Point. Flow rests on Colorado River gravels. Date is redetermination of 2.6 m.y. date reported by Damon and others (1967). Sample PED-08-64. Meadview North quad., MO county (36° 6.54', 114° 6.44'). L-1, K%= 1.3, *Ar=10, #UAKA-64-08.

3.80 ± 0.11 # 108
KA/w.r./basalt **Grand Wash Bay basalt** Shafiqullah and others, 1980
Lake Mead area -- Columnar basalt flow in Grand Wash Bay. Rests on eroded Muddy Creek Fm. and fluvial gravels deposited by the Colorado River. Postdates major downcutting of 810 meters. Also reported in Damon and others (1978). Iceberg Canyon quad., MO county (36° 12.30', 114° 1.00'). L-1, K%= 1.3, *Ar=39, #UAKA-65-09.

3.87 ± 0.10 # 109
KA/w.r./basalt **Springerville basalt** Laughlin and others, 1980
Springerville volcanic field -- Roadcut along Hwy. 260-666 on road to Nutrioso, south of Springerville. Overlies gravels. Nelson Reservoir quad., AP county (34° 5.00', 109° 14.00'). L-1, K%= 0.6, *Ar=27, #AWL-03-77.

3.90 ± 0.40 # 110
KA/w.r./olivine basalt **Gillespie basalt** Schoustra and others, 1976
Arlington Valley — Generalized lat-lon. Location G-15. Spring Mtn. quad., MA county (33° 13.70', 112° 49.00'). L-5, K%= 0.9, *Ar=7, #R-2635.

4.10 ± 0.20 # 111
KA/biot/dacite **Bill Williams dacite** Pugmire, 1977
Williams area — Bill Williams Mtn., on hill southwest of Ski Run Road. Analytical data not published. Date attributed to McKee (personal comm.). Bill Williams Mtn. quad., CN county (35° 12.62', 112° 11.30'). L-3, C-?.

4.11 ± 0.43 # 112
KA/w.r./basalt **Hell Canyon basalt** Hughes, 1978
Williams area -- Hell Canyon, south of Bill Williams Mtn. Analytical data not published. Date attributed to McKee (personal comm.). Bill Williams Mtn. quad., CN county (35° 9.86', 112° 11.77'). L-3, C-?.

4.17 ± 0.39 # 113
KA/w.r./basalt dike **Hell Canyon basalt** Hughes, 1978
Williams area -- Coleman Knoll, south of Bill Williams Mtn. and Hell Canyon. Analytical data not published. Date attributed to McKee (personal comm.). Bill Williams Mtn. quad., CN county (35° 9.41', 112° 11.10'). L-3, C-?.

4.20 ± 0.00 # 114
KA/w.r./basalt **Bidahochi Fm.** Evernden and others, 1964
Hopi Buttes -- Trachybasalt separating upper and lower member of Bidahochi Fm. White Cone quad., NA county (35° 34.75', 110° 3.33'). L-9, K%= 1.4, *Ar=12, #KA-1027.

4.30 ± 0.40 # 115
KA/w.r./olivine basalt **Gillespie basalt** Schoustra and others, 1976
Arlington Valley -- Generalized lat-lon. Location G-13. Spring Mtn. quad., MA county (33° 13.70', 112° 49.00'). L-5, K%= 0.8, *Ar=14, #R-2633.

4.40 ± 0.20 # 116
KA/biot/rhyodacite **Mt. James rhyodacite** Nealey, 1980
Mt. Floyd area -- Mt. James dome. Analytical data not published. Material dated unknown, but assumed to be biotite. Date attributed to McKee (personal comm.). Mt. Floyd quad., CN county (35° 22.50', 112° 43.65'). L-3, C-?.

4.43 ± 0.45 # 117
KA/w.r./basalt **Volunteer Canyon basalt** Damon and others, 1974
Sycamore Canyon — Volunteer Canyon area. Top flow of a series of 8 flows. Flow is continuous with a dike that crosscuts the sequence of lava flows. Sycamore Point quad., CN county (35° 7.00', 111° 56.50'). L-1, K%= 0.6, *Ar=85, #UAKA-71-01.

4.46 ± 0.10 ** # 118
KA/plag/camptonite dike **Camptonite dike** Damon and others, 1967
Lake Mead area — Camptonite dike that has intruded Muddy Creek Fm. along U.S. Hwy. 93, south of Lake Mead. Dates on dike vary widely in age due to excess argon problems. Ringbolt Rapids quad., MO county (35° 59.33', 114° 39.27'). L-1, K%= 1.1, *Ar=99, #PED-06-66.

4.60 ± 0.20 # 119
KA/w.r./basalt **Verde Fm.** McKee and Anderson, 1971
Verde Valley — In Verde River channel, north of Clarkdale. Clarkdale quad., YA county (34o 49.70', 112° 2.75'). L-3, K%= 1.2, *Ar=5, #CD2.

4.60 ± 0.20 # 120
KA/w.r./basalt **Perkinsville Fm.** McKee and Anderson, 1971
Chino Valley -- Along upper Verde River, near Paulden. Chino Valley North quad., YA county (34° 52.15', 112° 28.20'). L-3, K%= 0.7, *Ar=9, #PA3.

4.60 ± 0.90 # 121
KA/w.r./basalt **Gila Bend basalt** Schoustra and others, 1976
Gila Bend Mtns. — Generalized lat-lon. Location GB-2. Woolsey Peak quad., MA county (33° 10.00', 112° 55.00'). L-5, K%= 0.8, *Ar=12, #R-2584.

4.70 ± 0.30 ** # 122
KA/kaer/camptonite dike **Camptonite dike** Armstrong, 1970
Lake Mead area — Dike that has intruded Muddy Creek Fm., 14 km southeast of Hoover Dam. Different lat-lon listed than dates reported by Damon and others (1969). Dates on dike vary widely. Ringbolt Rapids quad., MO county (35° 55.42', 114° 37.92'). L-D, K%= 1.5, *Ar=21, #A70:28.

4.73 ± 0.18 # 123
KA/w.r./basalt **Cottonwood basalt** Damon, unpub. data
Grand Wash area -- Top flow in Cottonwood sequence. Basal basalt flow dated at 6.87 m.y. Flows overlie Muddy-Creek-type clastic rocks. Original source of date uncertain. Date incorrectly attributed to Damon and others (1968) by Keith (1977). Cane Springs quad., MO county (36° 37.62', 113° 53.38'). L-1, K%= 0.7, *Ar=9, #PED-35-66.

4.75 ± 0.26 # 124
KA/w.r./basalt **Shivwits basalt** Best and others, 1980
Shivwits Plateau — Older Stage I flow. Poverty Spring quad., MO county (36° 25.84', 113° 33.50'). L-1, K%= 1.0, *Ar=17, #PED-39-66.

4.82 ± 0.61 # 125
KA/w.r./basalt **Hell Canyon basalt** Hughes, 1978
Williams area — Hell Canyon, south of Bill Williams Mtn. Analytical data not published. Date attributed to McKee (personal comm.). Bill Williams Mtn. quad., CN county (35° 8.96', 112° 12.91'). L-3, C-?.

4.86 ± 0.23 # 126
KA/w.r./basalt **Volunteer Canyon basalt** Damon and others, 1974
Sycamore Canyon — Volunteer Canyon. Fourth flow from the bottom in a sequence of eight flows. Flow underlies a 50 m-thick bedded tuff horizon. Sycamore Point quad., CN county (35° 7.00', 111° 56.50'). L-1, K%= 0.9, *Ar=41, #UAKA-71-03.

4.87 ± 0.20 # 127
KA/w.r./basalt **Perkinsville Fm.** McKee and Anderson, 1971
Chino Valley — Northwest of Perkinsville. Perkinsville quad., YA county (34° 54.55', 112° 12.65'). L-3, K%= 1.3, *Ar=36, #CD4.

4.96 ± 0.20 # 128
KA/w.r./basalt **Perkinsville Fm.** McKee and Anderson, 1971
Chino Valley — Northeast of Perkinsville. Sycamore Basin quad., YA county (34° 59.90', 112° 7.30'). L-3, K%= 1.0, *Ar=16, #CD7.

5.00 ± 0.40 # 129
KA/w.r./basalt **Muddy Creek Fm.** Anderson and others, 1972
Lake Mead area -- Southeast of Hoover Dam. Fortification Basalt Member. Crystalline interior of basalt lava. Ringbolt Rapids quad., MO county (35° 56.65', 114° 39.42'). L-6, K%= 1.2, *Ar=7, #BC405.

5.15 ± 0.17 # 130
KA/plag/dacite **Hell Canyon dacite** Hughes, 1978
Williams area — Hell Canyon, south of Bill Williams Mtn. Material dated not reported, but is probably plagioclase or biotite. Analytical data not published. Date attributed to McKee (personal comm.). Bill Williams Mtn. quad., CN county (35° 9.48', 112° 12.91'). L-3, C-?.

5.28 ± 0.13 # 131
KA/plag/basalt **Peridot Cove basalt** Shafiqullah and others, 1980
San Carlos area — Mineral dated is an anorthoclase megacryst. Sample from volcanic plug at Soda Springs, south of Peridot Cove, San Carlos Indian Reservation. Coolidge Dam quad., GI county (33° 14.90', 110° 32.40'). L-1, K%= 1.2, *Ar=61, #UAKA-75-30.

5.35 ± 0.30 ** # 132
KA/kaer/camptonite dike **Camptonite dike** Damon and others, 1967
Lake Mead area — Camptonite dike that has intruded Muddy Creek Fm. along U.S. Hwy. 93, southeast of Hoover dam. Kaersutite phenocrysts in interior of dike. Dates on dike vary widely due to excess argon problems. Ringbolt Rapids quad., MO county (35° 59.33', 114° 39.27'). L-1, K%= 1.6, *Ar=27, #PED-06-66.

5.35 ± 0.17 # 133
KA/glas/air-fall tuff **Quiburis Fm.** Scarborough, 1975
San Pedro Valley — Vitric tuff in lacustrine Quiburis Fm. Represents the oldest tuff layer in the lower San Pedro Valley. Preliminary date of 4.6 m.y. based on fewer analyses reported by Damon and others (1969). Clark Ranch quad., PN county (32° 39.17', 110° 32.87'). L-1, K%= 3.6, *Ar=27, #LDA-01-66.

5.40 ± 1.00 # 134
KA/w.r./basalt dike **Exxon Yuma-Federal No. 1 dike** Shafiqullah and others, 1980
Yuma Desert — Drill chips from 3120 to 3130 m in Exxon Yuma-Federal No. 1. Possibly an intrusion. South of Yuma quad., YU county (32° 29.00', 114° 44.00'). L-1, K%= 0.3, *Ar=5, #UAKA-74-120.

5.40 ± 0.60 ** # 135
KA/plag/basalt **Castaneda megacrystic basalt** Suneson and Lucchitta, 1983
Castaneda Hills — Other dates on same rock are slightly older. Castaneda Hills quad., MO county (34° 23.13', 113° 58.53'). L-3, K%= 0.5, *Ar=85, #CH-79.

5.40 ± 0.70 # 136
KA/biot/rhyodacite **Mt. Rushmore rhyodacite** Nealey, 1980
Mt. Floyd area — Mt. Rushmore dome. Analytical data not published. Material dated unknown, but assumed to be biotite. Date attributed to McKee (personal comm.). Crookton quad., CN county (35° 20.90', 112° 43.35'). L-3, C-?.

5.45 ± 1.11 # 137
KA/w.r./basalt **Muddy Creek Fm.** Damon, unpub. data
Grand Wash Cliffs -- Stage IC basalt on Muddy Creek-like clastic rocks, Grand Wash fault area. Cane Springs quad., MO county (36° 36.55', 113° 46.90'). L-1, K%= 0.8, *Ar=7, #PED-36-66.

5.50 ± 0.20 # 138
FT/zirc/tuff **Big Sandy Fm.** McFadden and others, 1979
McCracken Mtns. — Ash samples taken from the Big Sandy Formation. Age is an average of three separate samples. Beecher Canyon quad., MO county (34° 37.50', 113° 45.00'). L-A, #R1-R3.

5.50 ± 0.20 # 139
KA/w.r./olivine basalt **East Juniper Mtns. basalt** Goff and others, 1983
East Juniper Mtns. -- Eroded dike and cone complex at mouth of Big Chino Wash as it enters Big Chino Valley. Dike appears to be older than Mt. Floyd volcanics to northeast. Turkey Canyon NE quad., YA county (35° 10.00', 112° 50.00'). L-7, K%= 0.6, *Ar=14, #BA78-82.

5.54 ± 0.29 # 140
KA/glas/air-fall tuff **St. David Fm.** Scarborough, 1975
San Pedro Valley — Near Benson. 20 cm-thick air-fall tuff near California Wash. This is a recollection of same tuff as RBS-32-68 (3.05 m.y.), but 180 m to the north along strike. McGrew Spring quad., CH county (31° 49.52', 110° 16.13'). L-1, K%= 4.3, *Ar=32, #UAKA-71-32.

5.62 ± 0.19 # 141
KA/w.r./basalt **Cedar Ranch Mesa basalt** Damon and others, 1974
San Francisco volcanic field — Older stage basalt from Cedar Ranch Mesa. Ebert Mtn. quad., CN county (35° 32.40', 111° 45.17'). L-1, K%= 0.5, *Ar=33, #UAKA-73-155.

5.68 ± 0.20 # 142
KA/w.r./basalt **Verde Fm.** McKee and Anderson, 1971
Verde Valley — 13 km north of Camp Verde. Cornville quad., YA county (34° 43.05', 111° 54.28'). L-3, K%= 0.6, *Ar=9, #VV1.

5.69 ± 0.22 # 143
KA/glas/air-fall tuff **Verde Fm.** Scarborough, 1975
Verde Valley — Wingfeld Mesa. Air-fall tuff in upper Verde Fm. Stratigraphically 30-43 m below air-fall vitric tuff dated at 7.80 m.y. Camp Verde quad., YA county (34° 31.25', 111° 46.33'). L-1, K%= 4.2, *Ar=43, #UAKA-71-39.

5.70 ± 1.10 # 144
FT/apat/gabbro xenolith **Hopi Buttes diatreme** Naeser, 1971
Hopi Buttes — Xenolith from a small monchiquite diatreme. Apatite age reflects cooling of the diatreme during or subsequent to its emplacement. Indian Wells quad., NA county (35° 22.70', 110° 3.50'). L-2, #HB1.

5.70 ± 1.00 # 145
KA/plag/dacite **Bill Williams dacite** Pugmire, 1977
Williams area -- Summit of Bill Williams Mtn. Analytical data not published. Date attributed to McKee (personal comm.). Bill Williams Mtn. quad., CN county (35° 12.00', 112° 12.27'). L-3, C-?.

5.74 ± 0.15 # 146
KA/glas/air-fall tuff **Quiburis Fm.** Scarborough, 1975
San Pedro Valley -- Topmost tuff bed in Camel Canyon. Slightly older date of 5.92 m.y. has been determined from the basal bed of lacustrine sequence containing five other tuff beds. Peppersauce Wash quad., PN county (32° 37.35', 110° 37.25'). L-1, K%= 4.1, *Ar=42, #RBS-61F-68.

5.80 ± 0.74 ** # 147
KA/w.r./basalt **Arlington basalt** Schoustra and others, 1976
Arlington Valley — This date on olivine basalt probably too old. Same sample as UAKA-73-149, which yielded an age of 2.08 m.y. Arlington quad., MA county (33° 20.97', 112° 46.68'). L-5, K%= 0.6, *Ar=12, #R-2661.

5.84 ± 0.18 # 148
KA/w.r./basalt **Muddy Creek Fm.** Shafiqullah and others, 1980
Lake Mead area — Lowermost flow of the Fortification Hill Basalt Member. Predates downcutting by Colorado River. Also reported in Damon and others (1978). Hoover Dam quad., MO county (36° 2.80', 114° 39.60'). L-1, K%= 0.9, *Ar=39, #UAKA-74-138.

5.86 ± 0.14 # 149
KA/ /basalt **Florence basalt dike** Nason and others, 1982
Florence area — Unmineralized basalt dike from near the Poston Butte porphyry copper ore body. Lab, material dated, exact location, and analytical data not published. Florence quad., PN county (33° 3.75', 111° 25.00'). #N82:3.

5.88 ± 0.30 # 150
KA/w.r./basalt **Anderson Mesa basalt** Leventhal, 1972
San Francisco volcanic field — 9 m below top of upper flow near Ohio State University telescope, older basalt stage. Included in average age reported by Damon and others (1974). Lower Lake Mary quad., CN county (35° 6.90', 111° 33.33'). L-1, K%= 0.8, *Ar=48, #JSL-21-70.

5.90 ± 1.70 ** # 151
KA/biot/tuff **Black Mtns. tuff** Fugro, 1975
Black Mtns. -- Southern part. Date reported in Calzia and Morton (1980). Significance and actual location of date is uncertain. Boundary Cone quad., MO county (34° 56.47', 114° 27.95'). #RD-01.

5.92 ± 0.29 # 152
KA/glas/air-fall tuff **Quiburis Fm.** Scarborough, 1975
San Pedro Valley -- Medium-grained, light-gray tuff, 0.3 m thick, in Camel Canyon. Basal bed in a 24 m-thick lacustrine section containing 5 other tuff beds. Peppersauce Wash quad., PN county (32° 37.35', 110° 37.25'). L-1, K%= 4.2, *Ar=35, #RBS-61-68.

5.94 ± 0.34 # 153
KA/w.r./basalt **Middle Switzer Mesa basalt** Damon and others, 1974
San Francisco volcanic field — Older basalt stage. Flagstaff West quad., CN county (35° 12.05', 111° 37.57'). L-1, K%= 0.4, *Ar=21, #UAKA-73-118.

5.98 ± 0.70 ** # 154
KA/w.r./camptonite dike **Camptonite dike** Damon and others, 1967
Lake Mead area — Camptonite dike that intrudes Muddy Creek Formation along U.S. Hwy. 93, south of Lake Mead. Date on interior of dike. See other dates on same dike. Ringbolt Rapids quad., MO county (35° 59.33', 114° 39.27'). L-1, K%= 1.7, *Ar=12, #PED-06-66.

6.00 ± 1.00 # 155
KA/w.r./basalt **Muddy Creek Fm.** Armstrong, 1970
Lake Mead area — Fortification Hill Basalt Member, 24 km southeast of Hoover Dam on U.S. Hwy. 93. Black Canyon quad., MO county (35° 50.83', 114° 35.33'). L-D, K%= 0.7, *Ar=6, #A70:27.

6.03 ± 0.43 # 156
KA/w.r./basalt South Fork basalt Laughlin and others, 1980
Springerville volcanic field -- Mesa above South Fork campground, west of Springerville. Basal flow overlying gravel beds. Greer quad., AP county (34° 3.00', 109° 25.00'). L-1, K%= 1.3, *Ar=37, #AWL-08-77.

6.05 ± 0.91 # 157
KA/w.r./basalt Oak Creek switchback basalt Damon and others, 1974
Oak Creek Canyon -- Basal basalt flow in Hwy. 89 switchbacks, northern part of canyon. Older basalt stage. Mountainaire quad., CN county (35° 1.55', 111° 44.36'). L-1, K%= 1.0, *Ar=13, #PED-54-66.

6.07 ± 0.50 # 158
KA/w.r./basalt Woody Mtn. basalt Damon and others, 1974
San Francisco volcanic field -- Medium-gray, olivine-bearing basalt. Older basalt stage. Bellemont quad., CN county (35° 9.18', 111° 45.13'). L-1, K%= 0.6, *Ar=16, #UAKA-72-26.

6.13 ± 0.30 # 159
KA/w.r./basalt Rio de Flag Fm. McKee, 1973
San Francisco volcanic field -- Museum of Northern Arizona. Flagstaff West quad., CN county (35° 14.00', 111° 39.80'). L-3, C-?, K%= 0.4, *Ar=25.

6.20 ± 0.30 # 160
KA/w.r./basalt Shivwits basalt Lucchitta and McKee, 1975
Shivwits Plateau -- Basalt that overlies a sequence similar to "rim gravels". Date is interpreted to be a maximum age for Colorado River. Analytical data and location not reported. Location is from Haman (1985). Grand Gulch Bench quad., MO county (36° 17.62', 113° 48.67'). L-3, C-?, K%= 0.7, *Ar=27.

6.20 ± 1.80 # 161
KA/w.r./basalt Gillespie basalt (?) Eberly and Stanley, 1978
Arlington Valley -- Gillespie Dam. Spring Mtn. quad., MA county (33° 13.83', 112° 46.47'). L-B, K%= 0.6, *Ar=6, #ES:97.

6.20 ± 0.30 # 162
KA/w.r./olivine basalt East Juniper Mtns. basalt Goff and others, 1983
East Juniper Mtns. -- Basalt flow overlies Redwall Limestone. Turkey Canyon NE quad., YA county (35° 8.00', 112° 50.00'). L-7, K%= 1.2, *Ar=46, #BA78-90.

6.24 ± 1.00 # 163
KA/glas/air-fall tuff Verde Fm. Scarborough, 1975
Verde Valley -- Gypsum quarry. Tuff is chemical and stratigraphic equivalent of Wingfeld Mesa tuff. Camp Verde quad., YA county (34° 31.82', 111° 47.02'). L-1, K%= 4.1, *Ar=18, #UAKA-71-22.

6.26 ± 0.30 # 164
KA/w.r./basalt Perkinsville Fm. McKee and Anderson, 1971
Chino Valley -- Hell Canyon, north of Drake. Hell Point quad., YA county (34° 58.90', 112° 22.47'). L-3, K%= 1.0, *Ar=8, #PA2.

6.39 ± 0.30 # 165
KA/w.r./basalt Anderson Mesa basalt Damon and others, 1974
Anderson Mesa -- Upper unit of several basalt flows resting on Kaibab limestone near Ohio State Observatory. Older basalt stage. Lower Lake Mary quad., CN county (35° 6.90', 111° 33.33'). L-1, K%= 0.9, *Ar=20, #PED-15-64.

6.40 ± 0.25 # 166
KA/w.r./basalt Horse Mesa basalt Peirce and others, 1979
Dry Beaver Creek -- Basalt cap above gravels that overlie Supai Formation, southwest tip of Horse Mesa near jeep trail. Munds Mtn. quad., CN county (34° 46.00', 111° 42.83'). L-1, K%= 0.5, *Ar=27, #UAKA-77-72.

6.43 ± 0.34 # 167
KA/glas/air-fall tuff Quiburis Fm. Scarborough, 1975
San Pedro Valley -- 7.5 cm thick, medium- to fine-grained air-fall tuff representing extreme southern facies of Quiburis Fm. Redington quad., PM county (32° 27.58', 110° 28.00'). L-1, K%= 4.3, *Ar=47, #RBS-68-68.

6.55 ± 0.23 # 168
KA/w.r./basalt Slide Rock basalt Peirce and others, 1979
Oak Creek Canyon -- Basal basalt flow of 120 m-thick, flat-lying sequence above gravel that overlies Supai Fm., east wall of Oak Creek Canyon near Slide Rock Lodge. Munds Park quad., CN county (34° 56.17', 111° 44.53'). L-1, K%= 0.6, *Ar=27, #UAKA-77-75.

6.70 ± 1.10 # 169
KA/w.r./basalt Gila Bend basalt Schoustra and others, 1976
Gila Bend Mtns. — Location GB-3. Generalized lat-lon. Woolsey Peak (?) quad., MA county (33° 10.00', 112° 55.00'). L-5, K%= 0.7, *Ar=12, #R-2583.

6.78 ± 0.15 # 170
KA/w.r./basalt Dellenbaugh basalt Damon, unpub. data
Shivwits Plateau — Stage I flow on Dellanbaugh road. Castle Peak quad., MO county (36° 9.16', 113° 35.00'). L-1, K%= 0.7, *Ar=62, #PED-38-66.

6.80 ± 0.20 # 171
KA/w.r./basalt Castaneda megacrystic basalt Suneson and Lucchitta, 1979
Castaneda Hills -- Castaneda Hills quad., MO county (34° 25.05', 113° 53.55'). L-3, K%= 1.3, *Ar=38, #CH-92.

6.86 ± 0.16 # 172
KA/w.r./basalt Bidahochi Fm. Scarborough, 1975
Hopi Buttes -- South end of Roberts Mesa. Basalt on top of middle volcanic member of Bidahochi Fm. Basalt is well crystallized. White Cone quad., NA county (35° 37.77', 110° 5.92'). L-1, K%= 1.6, *Ar=64, #UAKA-73-133.

6.87 ± 0.20 # 173
KA/w.r./basalt Cottonwood basalt Best and others, 1980
Grand Wash area -- Basal flow that overlies Muddy Creek Fm. Cane Springs quad., MO county (36° 37.62', 113° 53.36'). L-1, K%= 0.6, *Ar=57, #PED-34-66.

7.03 ± 0.40 # 174
KA/w.r./basalt Long Point basalt McKee and McKee, 1972
Long Point area -- Second basalt flow above gravel near Long Point Dam. Generalized lat-lon. Tin House quad., CN county (35° 41.19', 112° 35.85'). L-3, K%= 0.5, *Ar=6, #MM:4A.

7.06 ± 0.49 # 175
KA/w.r./basalt Mount Dellenbaugh basalt Best and others, 1980
Shivwits Plateau — Mount Dellenbaugh. Mt. Dellenbaugh quad., MO county (36° 6.55', 113° 32.54'). L-1, K%= 1.0, *Ar=14, #PED-37-66.

7.40 ± 1.90 # 176
KA/w.r./basalt Thirteenmile Rock Volcanics McKee and Elston, 1980
Hackberry Mtn. area -- Horner Mtn. quad., YA county (34° 27.00', 111° 47.50'). L-3, K%= 0.7, *Ar=4, #B02.

7.46 ± 0.59 # 177
KA/w.r./basalt Bucket Mtn. basalt Shafiqullah and others, 1980
San Carlos area -- Middle of three flows at top of Bucket Mtn., southwest of San Carlos, 1 km south of Hwy. 70. Flows cap a pediment cut on Santa Teresa Granite. Modern alluvial surface is 90 m below this pediment. Bucket Mtn. quad., GI county (33° 19.03', 110° 33.99'). L-1, K%= 0.9, *Ar=15, #UAKA-76-130.

7.50 ± 0.20 # 178
KA/w.r./basalt Castaneda megacrystic basalt Suneson and Lucchitta, 1979
Castaneda Hills -- Castaneda Hills quad., MO county (34° 23.55', 113° 58.92'). L-3, K%= 1.6, *Ar=51, #CH-78.

7.50 ± 0.20 # 179
KA/w.r./basalt Castaneda megacrystic basalt Suneson and Lucchitta, 1979
Castaneda Hills -- Castaneda Hills quad., MO county (34° 27.73', 113° 56.18'). L-3, K%= 0.9, *Ar=40, #IL-CH-77-8.

7.64 ± 0.30 # 180
KA/w.r./basalt Shivwits basalt Lucchitta and McKee, 1975
Shivwits Plateau — Lowest basalt that rests on a low-relief surface cut on Permian rock. Date is interpreted to be a maximum age for the Colorado River. Location and analytical data not reported. Location is from Haman (1985). Whitmore Point SW quad., MO county (35° 5.32', 113° 28.42'). L-3, C-?, K%= 0.3, *Ar=22.

7.70 ± 0.50 # 181
KA/w.r./basalt Castaneda megacrystic basalt Suneson and Lucchitta, 1979
Castaneda Hills -- Castaneda Hills quad., MO county (34° 19.20', 113° 48.08'). L-3, K%= 0.6, *Ar=13, #CHSE-166.

7.70 ± 0.80 # 182
KA/w.r./andesite Thirteenmile Rock Volcanics McKee and Elston, 1980

Hackberry Mtn. area -- Horner Mtn. quad., YA county (34° 26.50', 111° 46.00'). L-3, K%= 1.5, *Ar=7, #A4A.

7.80 ± 0.23 # 183
KA/glas/air-fall tuff Verde Fm. Scarborough, 1975
Verde Valley -- Air-fall vitric tuff in upper part of Verde Fm. Wingfeld Mesa tuff. Horner Mtn. quad., YA county (34° 29.35', 111° 46.80'). L-1, K%= 3.7, *Ar=50, #UAKA-71-19.

7.90 ± 0.50 # 184
KA/biot/dacite tuff Thirteenmile Rock Volcanics McKee and Elston, 1980
Hackberry Mtn. area -- Hackberry Mtn. dacite. Horner Mtn. quad., YA county (34° 26.00', 111° 47.00'). L-3, K%= 5.5, *Ar=17, #T-1.

8.00 ± 0.30 # 185
KA/w.r./basalt Sycamore Canyon basalt McKee and Anderson, 1971
Sycamore Canyon -- Basalt on Mogollon Rim, northwest of Sycamore Creek. Sycamore Basin quad., YA county (34° 59.90', 112° 3.30'). L-3, K%= 0.7, *Ar=7, #CD6.

8.00 ± 0.50 # 186
KA/w.r./basalt Pipeline basalt Erickson and Drewes, 1984
Dos Cabezas Mtns. -- North of I-10 and west of Hwy. 666. No analytical data reported. Railroad Pass quad., CH county (32° 21.78', 109° 41.62'). L-2, #81D135.

8.00 ± 0.50 # 187
KA/w.r./rhyolite Mt. Hope rhyolite Simmons, 1986
Mohon Mtns. -- Mt. Hope area. Generalized lat-lon. Mt. Hope quad., CN county (34° 56.29', 113° 6.45'). L-5, K%= 2.8, *Ar=19, #MHS-8.

8.12 ± 0.64 # 188
KA/w.r./basalt Poston Butte basalt Shafiqullah and others, 1980
Florence area -- Olivine basalt at Poston Butte, intruded into or extruded within Gila-type gravels and conglomerates. Florence quad., PN county (33° 3.30', 111° 24.50'). L-1, K%= 1.3, *Ar=16, #UAKA-72-20.

8.15 ± 0.30 # 189
KA/w.r./basalt Oak Creek basalt McKee and McKee, 1972
Oak Creek Canyon -- Basalt flow that covers a gravel deposit in a large channel exposed in the east wall of canyon. Gravels represent several stages of deposition and are approximately 40 m thick with boulders as large as 1.2 m in diameter. Wilson Mtn. quad., CN county (34° 56.75', 111° 45.12'). L-3, K%= 0.5, *Ar=21, #MM:2A.

8.24 ± 0.21 # 190
KA/w.r./basalt Burro Creek basalt Shafiqullah and others, 1980
Burro Creek area -- Flow at base of relay tower in Burro Canyon, southwest of the Aquarius Mountains. Kaiser Spring quad., MO county (34° 32.40', 113° 26.40'). L-1, K%= 0.4, *Ar=70, #UAKA-74-81.

8.30 ± 2.20 # 191
KA/w.r./basalt Thirteenmile Rock Volcanics McKee and Elston, 1980
Hackberry Mtn. area -- Southeastern Verde Valley. Preliminary age of 6.4 m.y. listed in Elston and others (1974). Horner Mtn. quad., YA county (34° 27.00', 111° 47.50'). L-3, K%= 1.0, *Ar=3, #B01.

8.30 ± 0.50 # 192
KA/w.r./basalt Thirteenmile Rock Volcanics McKee and Elston, 1980
Hackberry Mtn. area -- Horner Mtn. quad., YA county (34° 27.00', 111° 47.50'). L-3, K%= 0.4, *Ar=17, #B05.

8.30 ± 0.80 # 193
KA/w.r./basalt Thirteenmile Rock Volcanics McKee and Elston, 1980
Hackberry Mtn. area -- Horner Mtn. quad., YA county (34° 27.00', 111° 47.40'). L-3, K%= 1.5, *Ar=8, #B03.

8.46 ± 0.22 # 194
KA/w.r./basalt Tablelands basalt Shafiqullah and others, 1980
Galiuro Mtns. -- Northern part. Flow caps the tablelands and unconformably overlies the Apsey Conglomerate on a surface of low relief. Predates 150 meter downcutting of the Gila River. Jerusalem Mtn. quad., PN county (33°0.96', 110° 36.34'). L-1, K%= 0.8, *Ar=59, #UAKA-75-57.

8.50 ± 1.30 # 195
KA/w.r./basalt Thirteenmile Rock Volcanics McKee and Elston, 1980
Hackberry Mtn. area -- Horner Mtn. quad., YA county (34° 26.00', 111° 47.50'). L-3, K%= 1.1, *Ar=6, #B-1.

8.50 ± 0.20 # 196
KA/w.r./basalt Osborne Wash Fm. Marvin and Dobson, 1979
Buckskin Mtns. -- Western part. Olivine basalt from upper flow unit. Same date as that listed in Calzia and Morton (1980) and attributed to W. J. Carr (1976, written comm.). Cross Roads quad., LP county (34° 11.00', 114° 13.50'). L-2, K%= 1.8, *Ar=73, #MWC-55-74.

8.50 ± 0.90 # 197
KA/w.r./basalt Mt. Hope basalt Simmons, 1986
Mohon Mtns. — Mt. Hope area. Generalized lat-lon. Mt. Hope quad., YA county (34° 56.56', 113° 6.45'). L-5, K%= 0.4, *Ar=8, #FT-5.

8.60 ± 0.30 # 198
KA/w.r./basalt Castaneda megacrystic basalt Suneson and Lucchitta, 1983
Bill Williams Mtns. — Parker Dam quad., MO county (34° 25.27', 114° 1.45'). L-3, K%= 1.0, *Ar=65, #MSMF.

8.60 ± 0.40 # 199
KA/k-sp/rhyolite Mt. Baldy rhyolite Merrill and Pewe, 1977
White Mtns. — Late-stage rhyolite flow from the top of Mt. Baldy. Generalized lat-lon. Location and analytical data not published. Mt. Ord quad., AP county (33° 54.28', 109° 33.71'). L-5, C-?, #F-1966.

8.66 ± 0.19 # 200
KA/w.r./basalt Amos Mtn. basalt Condit and Shafiqullah, 1985
Springerville volcanic field -- Hawaiite in upper flow-field of Amos Mountain. Indian Pine quad., NA county (34° 3.50', 109° 56.33'). L-1, K%= 3.3, *Ar=11, #UAKA-80-135.

8.66 ± 2.20 # 201
KA/w.r./tuff Hualapai tuff Blair and Armstrong, 1979
White Hills — Basaltic shards in air-fall tuff, lower part of Hualapai Limestone Member. Senator Mtn. quad., MO county (35° 55.53', 114° 25.02'). L-3, K%= 2.0, *Ar=7, #BA-1.

8.78 ± 0.22 # 202
KA/w.r./basalt Red Butte basalt Damon and others, 1974
Coconino Plateau — Basalt that caps a resistant bench of Red Butte. Presumably a slump block. Older basalt stage. Red Butte SE quad., CN county (35° 48.85', 112° 5.53'). L-1, K%= 1.0, *Ar=4, #UAKA-71-38.

8.80 ± 0.36 # 203
KA/w.r./basalt Burro Creek basalt Shafiqullah and others, 1980
Burro Creek area — Lowest exposed basalt flow, Burro Canyon. Sample collected from beneath highway bridge on U.S. Hwy. 93. Generalized lat-lon. Kaiser Spring quad., MO county (34° 32.52', 113° 26.70'). L-1, K%= 0.7, *Ar=31, #UAKA-74-82.

8.87 ± 0.26 # 204
KA/w.r./basalt Florence basalt Shafiqullah and others, 1980
Florence area — Basalt flow 300 meters south of Gila River channel, 7 km east of Florence. Flow cut by small high-angle fault. Flow lies on fine grained basin fill and is overlain by Gila River gravel. Flow interpreted to predate Gila River. Florence SE quad., PN county (33° 5.14', 111° 17.15'). L-1, K%= 1.2, *Ar=49, #UAKA-76-89.

8.90 ± 0.90 # 205
KA/w.r./basalt Post-Sheep Crossing Fm. basalt Merrill and Pewe, 1977
White Mtns. -- Basalt overlying Sheep Crossing Formation and early extrusives of Mt. Baldy volcano. Generalized lat-lon. Analytical data and location not published. Mt. Ord quad., AP county (33° 57.55', 109° 30.08'). L-5, C-?, #R-1162.

8.93 ± 0.23 # 206
KA/w.r./basalt Red Butte basalt Damon and others, 1974
Coconino Plateau -- Basalt from 3 m above the base of the flow capping Red Butte. The flow is on the Valencia Surface and is an older stage basalt. Red Butte SE quad., CN county (35° 49.17', 112° 5.38'). L-1, K%= 1.0, *Ar=38, #UAKA-71-37.

8.95 ± 0.98 # 207
KA/w.r./basalt Volunteer Canyon basalt Damon and others, 1974
Sycamore Canyon -- Volunteer Canyon. Lowermost flow in Volunteer Canyon flow series of eight flows. Overlies Kaibab Limestone and is cut by dikes of San Francisco volcanics. Sycamore Point quad., CN county (35° 7.00', 111° 56.50'). L-1, K%= 0.4, *Ar=13, #UAKA-71-04.

8.97 ± 0.19 # 208
KA/w.r./basalt Amos Mtn. basalt Condit and Shafiqullah, 1985
Springerville volcanic field -- Hawaiite in upper flow-field of Amos Mountain. Indian Pine quad., NA county (34° 2.97', 109° 55.83'). L-1, K%= 1.3, *Ar=39, #UAKA-80-136.

9.00 ± 1.20 # 209
KA/w.r./olivine basalt Squaw Peak basalt Goff and others, 1983
Juniper Mtns. — Youngest flow erupted from Squaw Peak. Flows are cut by numerous normal faults. Cross Mtn. NE quad., YA county (35° 12.00', 113° 6.00'). L-7, K%= 0.6, *Ar=14, #BA78-52A.

9.00 ± 0.80 # 210
KA/w.r./basalt Snap Point basalt Haman, 1985
Shivwits Plateau — Post-dates Grand Wash fault and erosional stripping to Kaibab Limestone. Overlies Tertiary stream channel gravels on top of the Upper Grand Wash Cliffs. Snap Canyon East quad., MO county (36° 10.38', 113° 48.67'). L-5, K%= 1.1, *Ar=29, #SP-80-1.

9.18 ± 0.28 # 211
KA/w.r./basalt Tule Mesa basalt Peirce and others, 1979
Black Hills — Flat-lying cap, Tule Mesa, west of Verde River fault zone. Verde Hot Springs quad., YA county (34° 20.57', 111° 42.50'). L-1, K%= 0.6, *Ar=37, #UAKA-73-162.

9.20 ± 0.20 # 212
KA/w.r./basalt Bill Williams basalt Suneson and Lucchitta, 1979
Castaneda Hills — Mesa capping basalt. Castaneda Hills quad., MO county (34° 16.63', 113° 59.65'). L-3, K%= 2.0, *Ar=40, #CH-111.

9.20 ± 0.30 # 213
KA/w.r./basalt Bill Williams basalt Suneson and Lucchitta, 1983
Artillery Mtns. — Mesa-capping basalt. Artillery Peak quad., MO county (34° 24.90', 113° 40.37'). L-3, K%= 1.9, *Ar=39, #AP-19.

9.20 ± 0.40 # 214
KA/w.r./basalt Thirteenmile Rock Volcanics McKee and Elston, 1980
Hackberry Mtn. area -- Horner Mtn. quad., YA county (34° 27.00', 111° 47.50'). L-3, K%= 0.5, *Ar=22, #B07.

9.30 ± 0.21 # 215
KA/w.r./olivine basalt Fossil Creek basalt Peirce and others, 1979
Fossil Creek Canyon -- Flat-lying top flow in 488 m-thick volcanic section on south side of canyon. Strawberry quad., GI county (34° 24.45', 111° 33.75'). L-1, K%= 1.3, *Ar=68, #UAKA-77-160.

9.30 ± 0.40 # 216
KA/k-sp/dacite tuff Thirteenmile Rock Volcanics McKee and Elston, 1980
Hackberry Mtn. area -- Hackberry Mtn. dacite. Horner Mtn. quad., YA county (34° 27.00', 111° 47.50'). L-3, K%= 1.1, *Ar=24, #T06.

9.53 ± 1.10 ** # 217
KA/w.r./camptonite dike Camptonite dike Damon and others, 1967
Lake Mead area -- Camptonite dike that has intruded Muddy Creek Fm. along U.S. Hwy. 93, southeast of Hoover dam. Chilled border of dike. Dates on dike vary greatly due to excess argon problems. Ringbolt Rapids quad., MO county (35° 59.33', 114° 39.27'). L-1, K%= 1.0, *Ar=30, #PED-06-66.

9.55 ± 0.38 # 218
KA/w.r./basalt Manganese Mesa basalt Shafiqullah and others, 1980
Artillery Mtns. -- Manganese Mesa. Flow overlies Chapin Wash Fm. Also reported by Shackelford (1980). Artillery Peak quad., MO county (34° 22.00', 113° 42.10'). L-1, K%= 1.3, *Ar=31, #UAKA-75-62.

9.60 ± 0.60 # 219
KA/w.r./basalt Osborne Wash Fm. (?) Fugro, 1975
Buckskin Mtns. -- Western part. Basalt below base of Bouse Fm. Reported in Calzia and Morton (1980). Black Peak quad., LP county (34° 13.32', 114° 5.63'). #RD-16.

9.62 ± 0.38 # 220
KA/w.r./basalt Big Sandy Fm. Shafiqullah and others, 1980
Burro Creek area — Interbedded with late Miocene sediments near horizon of fossil locality of Frick Museum Collection. Originally reported lat-lon or quadrangle (Dutch Flat SW) incorrect. Kaiser Spring (?) quad., MO county (34° 34.32', 113° 23.58'). L-1, K%= 1.4, *Ar=40, #UAKA-70-13.

9.66 ± 0.35 # 221
KA/w.r./basalt dike West Clear Creek dike Peirce and others, 1979
West Clear Creek — One-meter thick dike, north wall of West Clear Creek, 0.8 km east of Bull Pen Ranch. Walker Mtn. quad., YA county (34° 32.35', 111° 40.85'). L-1, K%= 1.0, *Ar=26, #UAKA-77-162.

9.73 ± 0.91 # 222
KA/w.r./basalt Red Butte basalt Damon and others, 1974
Coconino Plateau -- Basalt from 3 m above the base of the flow capping Red Butte. The flow is on the Valencia Surface and is an older stage basalt. Red Butte SE quad., CN county (35° 49.17', 112° 5.38'). L-1, K%= 1.0, *Ar=14, #UAKA-71-37.

9.80 ± 0.70 # 223
KA/horn/rhyodacite Picacho Butte rhyodacite Goff and others, 1983
Mt. Floyd area — Crest of Picacho Butte. Eroded hornblende rhyodacite dome surrounded by basalt flows of the Mt. Floyd volcanic field. Picacho Butte quad., YA county (35° 15.00', 112° 45.00'). L-7, K%= 0.9, *Ar=19, #F78-113.

9.86 ± 1.70 # 224
KA/w.r./basalt dike Roskruge Mtns. dike Bikerman, 1967
Roskruge Mtns. -- Cocoraque Butte quad., PM county (32° 12.57', 111° 22.23'). L-1, K%= 1.1, *Ar=22, #MB-17-64.

10.00 ± 0.30 # 225
KA/w.r./basalt Bill Williams basalt Armstrong and others, 1976
Buckskin Mtns. -- Western part, Black Mesa. Porphyritic, trachytic basalt from the base of widespread flows that form prominent mesas northeast of Parker. Monkeys Head quad., LP county (34° 15.42', 114°0.75'). L-D, K%= 0.7, *Ar=20, #YU-179-PW.

10.00 ± 0.70 # 226
KA/w.r./basalt Thirteenmile Rock Volcanics McKee and Elston, 1980
Hackberry Mtn. area -- Horner Mtn. quad., YA county (34° 27.00', 111° 47.50'). L-3, K%= 0.7, *Ar=2, #B08.

10.00 ± 0.70 # 227
KA/w.r./basalt Thirteenmile Rock Volcanics McKee and Elston, 1980
Hackberry Mtn. area -- Horner Mtn. quad., YA county (34° 27.00', 111° 47.52'). L-3, K%= 0.6, *Ar=13, #B09.

10.01 ± 0.23 # 228
KA/w.r./andesite Verde Hot Springs andesite Peirce and others, 1979
Verde Valley — Pink andesite near water level of Verde River. Verde Hot Springs quad., YA county (34° 21.41', 111° 42.50'). L-1, K%= 2.3, *Ar=76, #UAKA-73-83.

10.02 ± 0.35 # 229
KA/w.r./olivine basalt Malpais Mesa basalt Shafiqullah and others, 1980
Santa Maria area — Malpais Mesa, north end. Flow rests on horizontal fluvio-lacustrine silts, mudstones, marls, and tuffaceous sandstone. Malpais Mesa quad., YA county (34° 19.41', 113° 5.90'). L-1, K%= 0.5, *Ar=37, #UAKA-74-36.

10.14 ± 0.80 ** # 230
KA/plag/basalt Black Point basalt Damon and others, 1967
San Francisco volcanic field -- Black Point Mesa, near Little Colorado River. Age is anomalously old, due to excess argon. Whole-rock date on basalt is 2.4 m.y. Merriam Crater quad., CN county (35° 17.40', 111° 21.10'). L-1, K%= 0.2, *Ar=61, #PED-06-65P.

10.16 ± 0.22 # 231
KA/w.r./basalt Fossil Creek basalt Peirce and others, 1979
Fossil Creek Canyon — Flat-lying volcanic sequence, 383 m above canyon bottom. Strawberry quad., YA county (34° 24.45', 111° 34.37'). L-1, K%= 1.4, *Ar=75, #UAKA-73-161.

10.20 ± 0.40 # 232
KA/w.r./basalt Thirteenmile Rock Volcanics McKee and Elston, 1980
Hackberry Mtn. area -- Horner Mtn. quad., YA county (34° 26.50', 111° 45.50'). L-3, K%= 1.0, *Ar=25, #B11.

10.30 ± 0.40 # 233
KA/w.r./basalt cobble Slide Rock gravels McKee and McKee, 1972
Oak Creek Canyon — Near Slide Rock Bridge. Basalt cobble, 6 m below 8.1 m.y. flow. Wilson Mtn. quad., CN county (34° 56.75', 111° 45.12'). L-3, K%= 0.8, *Ar=28, #MM:2C.

10.30 ± 0.10 # 234
KA/sani/rhyolite dike Bill Williams Mtns. dike Suneson and Lucchitta, 1979
Bill Williams Mtns. — Dike contains abundant basalt xenoliths. Castaneda Hills quad., MO county (34° 18.83', 113° 59.30'). L-3, K%= 5.4, *Ar=22, #CHSW-158.

10.40 ± 0.40 # 235
KA/w.r./basalt Hickey Fm. McKee and Anderson, 1971
Agua Fria area — Northwest of Estler Peak. Estler Peak quad., YA county (34° 27.45', 112° 2.85'). L-3, K%= 0.5, *Ar=46, #MY8.

10.40 ± 0.80 # 236
KA/w.r./basalt Thirteenmile Rock Volcanics McKee and Elston, 1980
Hackberry Mtn. area -- Horner Mtn. quad., YA county (34° 24.00', 111° 45.50'). L-3, K%= 0.8, *Ar=11, #B10.

10.52 ± 0.61 # 237
KA/w.r./basalt Southwest Salt basalt Shafiqullah and others, 1980
Luke Basin — Drill chips from flow at 315 meter depth, Southwest Salt drill hole. Flow occurs near the top of a thick evaporite deposit. Bottom of evaporites not penetrated. Drill hole incorrectly identified as Goodyear Farms in original reference. El Mirage quad., MA county (33° 30.50', 112° 22.00'). L-1, K%= 0.9, *Ar=21, #UAKA-73-139.

10.57 ± 0.31 # 238
KA/w.r./basalt West Clear Creek basalt Peirce and others, 1979
West Clear Creek — Lower most exposed flow above buried Supai Fm., near Bull Pen Ranch gate. Walker Mtn. quad., YA county (34° 32.43', 111° 42.50'). L-1, K%= 1.1, *Ar=36, #UAKA-77-164.

10.64 ± 1.10 # 239
KA/w.r./basalt Muddy Creek Fm. Damon and others, 1967
Lake Mead area — Fortification Hill Basalt member. Lowest basalt on hill. Hoover Dam quad., MO county (36° 2.75', 114° 39.52'). L-1, K%= 1.1, *Ar=25, #PED-11-64.

10.70 ± 0.40 # 240
KA/w.r./basalt Hickey Fm. McKee and Anderson, 1971
Agua Fria area -- East of Cordes. Cordes Junction quad., YA county (34° 16.70', 112° 2.36'). L-3, K%= 0.7, *Ar=13, #MY6.

10.70 ± 0.50 ** # 241
KA/biot/quartz monzonite porphyry Moss Porphyry Thorson, 1971
Black Mtns. — Oatman area, dump of Moss Mine. Biotite-hornblende porphyry intruded into the middle volcanics and possibly the upper volcanics of the Oatman district. Date is too young, because U-Pb zircon date by Dewitt and Thorsen is 18.6 m.y. Oatman quad., MO county (35° 5.99', 114° 26.80'). K%= 6.2, *Ar=58, #MP-1.

10.70 ± 0.60 # 242
KA/biot/dacite tuff Thirteenmile Rock Volcanics McKee and Elston, 1980
Hackberry Mtn. area -- Horner Mtn. quad., YA county (34° 26.00', 111° 46.00'). L-3, K%= 5.5, *Ar=18, #T13.

10.80 ± 0.08 # 243
FT/zirc/air-fall tuff Rocks of Grand Wash trough Bohannon, 1984
Grand Wash area -- West of Grand Wash Cliffs. Stratigraphically below Hualapai Limestone. Iceberg Canyon quad., MO county (36° 7.62', 114° 1.59'). L-2, #B84:41.

10.80 ± 4.50 # 244
KA/w.r./basalt Goodyear Farms basalt Eberly and Stanley, 1978
Luke Basin — Basalt in Goodyear Farms water well at 469-487 m. Basalt overlies thick halite zone found in the Arizona Salt Co. and El Paso Natl. Gas Co. wells. El Mirage quad., MA county (33° 30.50', 112° 22.00'). L-B, K%= 0.5, *Ar=2, #ES:59.

10.85 ± 0.20 ** # 245
KA/glas/air-fall tuff Bidahochi Fm. Scarborough, 1975
Hopi Buttes — Vitric tuff lying in upper unit 5 of Bidahochi beds, about 8 m stratigraphically above basalt (UAKA-73-133) dated at 6.86 m.y. Date probably too old due to excess argon. White Cone quad., NA county (35° 38.02', 110° 4.90'). L-1, K%= 3.9, *Ar=69, #UAKA-73-137.

10.90 ± 0.60 # 246
KA/w.r./basalt Muddy Creek Fm. Theodore and others, 1982
Lake Mead area — Collected 6.8 km south of Temple Bar from lower of 2 flows below Hualapai limestone member of Muddy Creek Formation. Senator Mtn. quad., MO county (35° 59.90', 114° 17.67'). L-3, K%= 0.9, *Ar=17, #733C.

10.99 ± 1.30 # 247
KA/w.r./basalt Brawley Wash basalt Bikerman, 1967
Roskruge Mtns. -- Three Points quad., PM county (32° 5.83', 111° 19.28'). L-1, K%= 0.9, *Ar=28, #MB-07-64.

11.00 ± 0.30 # 248
KA/w.r./basalt Anderson Mine basalt Otton, 1982
Date Creek Basin area -- Olivine-clinopyroxene basalt from near base of flow capping the section at the Anderson Mine. Sample somewhat altered. Arrastra Mtn. SE quad., YA county (34° 18.50', 113° 17.12'). L-2, K%= 1.2, *Ar=68, #AP76-186A.

11.05 ± 0.28 # 249
KA/w.r./basalt Swisshelm Mtns. basalt Scarborough and Wilt, 1979
Sulphur Springs Valley -- Flow is intercalated into pre-basin-fill fanglomerate sequence that dips 4-8 degrees NE, is truncated to east by fault scarp of the northeast Swisshelm area, and is truncated to west by a high-angle, Basin and Range fault. Swisshelm Mtns. quad., CH county (31° 44.25', 109° 30.63'). L-1, K%= 1.4, *Ar=38, #UAKA-78-35.

11.10 ± 1.30 # 250
FT/zirc/air-fall tuff **Rocks of Grand Wash trough** Bohannon, 1984
Grand Wash area — West of Grand Wash Cliffs. Stratigraphically below the Hualapai Limestone. Iceberg Canyon quad., MO county (36° 7.62', 114° 1.59'). L-2, #B84:43.

11.30 ± 0.70 # 251
KA/w.r./basalt **Bill Williams basalt** Suneson and Lucchitta, 1983
Castaneda Hills — Mesa-capping basalt. Castaneda Hills quad., MO county (34° 21.13', 113° 48.43'). L-3, K%= 1.0, *Ar=74, #CHSE-135A.

11.30 ± 0.70 # 252
KA/biot/dacite tuff **Thirteenmile Rock Volcanics** McKee and Elston, 1980
Hackberry Mtn. area -- Horner Mtn. quad., YA county (34° 26.00', 111° 46.00'). L-3, K%= 5.0, *Ar=15, #T14.

11.30 ± 2.60 # 253
KA/w.r./basalt **Thirteenmile Rock Volcanics** McKee and Elston, 1980
Hackberry Mtn. area -- Horner Mtn. quad., YA county (34° 26.50', 111° 45.40'). L-3, K%= 0.5, *Ar=4, #B12.

11.30 ± 1.80 # 254
KA/w.r./basalt **Hickey Fm.** McKee and Elston, 1980
Hackberry Mtn. area -- Horner Mtn. quad., YA county (34° 24.50', 111° 50.00'). L-3, K%= 0.5, *Ar=7, #B23.

11.35 ± 0.50 # 255
KA/w.r./basalt **Hickey Fm.** McKee and Anderson, 1971
Agua Fria area -- Southeast of Estler Peak. Estler Peak quad., YA county (34° 22.85', 112°0.30'). L-3, K%= 0.8, *Ar=19, #MY7.

11.40 ± 0.50 # 256
KA/w.r./basalt **Sycamore Canyon basalt** McKee and McKee, 1972
Sycamore Canyon -- Second basalt flow above gravel, Mooney Trail. Generalized lat-lon. Sycamore Basin (?) quad., GI county (34° 55.00', 112° 3.00'). L-3, K%= 0.7, *Ar=34, #MM:3A.

11.40 ± 0.27 # 257
KA/w.r./basalt **Baker Butte basalt** Peirce and others, 1979
Tonto Segment -- Mogollon Rim. Flat-lying basalt sequence above Permian cliff makers at plateau edge, Baker Butte. Buckhead Mesa quad., YA county (34° 17.13', 111° 22.63'). L-1, K%= 0.7, *Ar=59, #UAKA-73-78.

11.40 ± 0.30 # 258
KA/w.r./basalt **Hickey Fm.** McKee and Elston, 1980
Hackberry Mtn. area -- Horner Mtn. quad., YA county (34° 24.50', 111° 50.00'). L-3, K%= 1.5, *Ar=40, #B25.

11.50 ± 0.80 # 259
KA/w.r./basalt **Hickey Fm.** McKee and Elston, 1980
Hackberry Mtn. area -- Horner Mtn. quad., YA county (34° 25.00', 111° 47.00'). L-3, K%= 0.6, *Ar=15, #B22.

11.50 ± 0.40 # 260
KA/w.r./basalt **Hickey Fm.** McKee and Elston, 1980
Hackberry Mtn. area -- Horner Mtn. quad., YA county (34° 25.00', 111° 47.00'). L-3, K%= 1.2, *Ar=31, #B24.

11.60 ± 1.20 # 261
FT/zirc/air-fall tuff **Rocks of Grand Wash trough** Bohannon, 1984
Grand Wash area -- West of Grand Wash Cliffs. Stratigraphically below the Hualapai Limestone. Iceberg Canyon quad., MO county (36° 7.62', 114° 1.59'). L-2, #B84:42.

11.60 ± 0.30 # 262
KA/w.r./basalt **Hickey Fm.** McKee and Elston, 1980
Hackberry Mtn. area -- Horner Mtn. quad., YA county (34° 26.00', 111° 46.50'). L-3, K%= 0.8, *Ar=41, #B17B.

11.60 ± 0.60 # 263
KA/w.r./basalt **Hickey Fm.** McKee and Elston, 1980
Hackberry Mtn. area -- Horner Mtn. quad., YA county (34° 25.00', 111° 47.00'). L-3, K%= 0.6, *Ar=18, #B18.

11.60 ± 0.02 # 264
KA/w.r./basalt **Hickey Fm.** McKee and Elston, 1980
Hackberry Mtn. area -- Horner Mtn. quad., YA county (34° 25.00', 111° 47.00'). L-3, K%= 1.2, *Ar=52, #B19.

11.70 ± 0.20 # 265
KA/biot/rhyolite **Castaneda Hills rhyolite** Suneson and Lucchitta, 1979
Castaneda Hills — Castaneda Hills quad., MO county (34° 27.47', 113° 58.72'). L-3, K%= 8.2, *Ar=54, #CHNW-155.

11.79 ± 0.20 ** # 266
KA/glas/air-fall tuff **St. David Fm.** Scarborough, 1975
San Pedro Valley — Near Benson. Vitric tuff in California Wash. Date is too old and should be about 2.5 m.y., based on other dates and faunal control. McGrew Spring quad., CH county (31° 49.50', 110° 16.13'). L-1, K%= 4.4, *Ar=75, #RBS-15-73.

11.80 ± 1.10 # 267
KA/w.r./basalt **Malpais Mesa basalt** Brooks, 1984
Santa Maria Mtns. — Basalt flow capping Malpais Mesa. No analytical data reported. Malpais Mesa quad., YA county (34° 19.55', 113° 5.62'). L-2, #100-77.

11.90 ± 0.50 # 268
KA/w.r./basalt **Hickey Fm.** McKee and Anderson, 1971
Black Hills — Mingus Mtn. Cottonwood quad., YA county (34° 41.95', 112° 7.25'). L-3, K%= 0.6, *Ar=36, #MM2.

12.00 ± 1.30 # 269
KA/w.r./basalt **Hickey Fm.** McKee and Elston, 1980
Hackberry Mtn. area -- Horner Mtn. quad., YA county (34° 26.00', 111° 46.00'). L-3, K%= 0.5, *Ar=10, #B15.

12.00 ± 1.20 # 270
KA/w.r./basalt **Hickey Fm.** McKee and Elston, 1980
Hackberry Mtn. area -- Horner Mtn. quad., YA county (34° 26.00', 111° 46.00'). L-3, K%= 0.8, *Ar=11, #B16.

12.00 ± 3.00 # 271
KA/w.r./mantle xenolith **San Carlos xenolith** Bernatowicz, 1981
San Carlos area -- Age of mantle xenolith in host basanite. Generalized lat-lon. San Carlos quad., GI county (33° 20.57', 110° 28.12'). L-K, K%= -.1, #PA-65G.

12.10 ± 0.60 ** # 272
KA/w.r./basalt **Corduroy Creek basalt** McKee and McKee, 1972
Carrizo Embayment — Basalt flow directly above channel-fill gravels, Corduroy Creek, southwest of Show Low. Date is too old. Peirce and others (1979) obtained dates of 1.76 m.y. on same sample and 1.90 m.y. on different sample of same basalt flow. Limestone Canyon South quad., NA county (34° 2.09', 110° 14.25'). L-3, K%= 0.6, *Ar=30, #MM:1A.

12.10 ± 0.40 # 273
KA/w.r./basalt **Buckhead Mesa basalt** Peirce and others, 1979
Payson area — Buckhead Mesa. Flat-lying basalt cap above gravel on Naco formation. Unit is younger than Diamond Rim Fault. Buckhead Mesa quad., GI county (34° 19.20', 111° 25.00'). L-1, K%= 0.4, *Ar=35, #UAKA-73-79.

12.10 ± 1.30 # 274
KA/w.r./basalt **Casner Mtn. basalt** Peirce and others, 1979
Sycamore Canyon -- Casner Mtn. Overlies probable rim gravel on Kaibab Limestone. Loy Butte quad., YA county (34° 57.88', 111° 59.13'). L-1, K%= 0.4, *Ar=18, #PED-29-66.

12.10 ± 0.30 # 275
KA/w.r./basalt dike **Date Creek Basin dike** Otton, 1982
Date Creek Basin area — Near Big Sandy River. Clinopyroxene basalt or basaltic andesite that intrudes Chapin Wash Fm. along east side of Big Sandy River. Artillery Peak quad., MO county (34° 21.65', 113° 30.97'). L-2, K%= 1.7, *Ar=52, #AP76-38.

12.19 ± 0.22 # 276
KA/w.r./basalt **Tule Wash basalt** Scarborough and Wilt, 1979
Big Sandy Valley — Basalt flow along eastern margin of valley. Contained within a section of sedimentary rocks and pyroclastics that are faulted against Precambrian granites and are pedimented and overlain by basin-fill sedimentary rocks. Tule Wash quad., MO county (34° 48.15', 113° 32.93'). L-1, K%= 0.6, *Ar=72, #UAKA-78-45.

12.30 ± 0.20 # 277
KA/w.r./basalt **Mount Davis Volcanics** Anderson and others, 1972
Lake Mead area — 1.3 mi southeast of Hoover Dam. Hoover Dam quad., MO county (36°0.08', 114° 43.30'). L-6, K%= 1.9, *Ar=71, #BC412.

12.40 ± 0.10 # 278
KA/w.r./basalt-basaltic andesite **Castaneda qtz-bearing basalt** Suneson and Lucchitta, 1979
Castaneda Hills -- Castaneda Hills quad., MO county (34° 27.02', 113° 56.17'). L-3, K%= 1.5, *Ar=54, #CH-58B.

12.40 ± 0.20 # 279
KA/sani/rhyolite **Aubrey Peak rhyolite** Suneson and Lucchitta, 1979
Aubrey Peak area — Rhyolite lava flow. Castaneda Hills quad., MO county (34° 25.05', 113° 49.80'). L-3, K%= 7.6, *Ar=60, #CHNE-153.

12.40 ± 0.10 # 280
KA/sani/rhyolite **Castaneda Hills rhyolite** Suneson and Lucchitta, 1979
Castaneda Hills -- Rhyolite intrudes quartz-bearing basalt CH-26. Castaneda Hills quad., MO county (34° 22.67', 113° 48.67'). L-3, K%= 8.5, *Ar=86, #CHNE-151.

12.50 ± 0.50 # 281
KA/w.r./basalt cobble **Slide Rock gravels** McKee and McKee, 1972
Oak Creek Canyon — Near Slide Rock Bridge. Basalt cobble 18 m below 8.15 m.y. flow. Lat-lon from Peirce and others (1979). Wilson Mtn. quad., CN county (34° 56.75', 111° 45.12'). L-3, K%= 0.5, *Ar=28, #MM:2E.

12.60 ± 0.10 # 282
KA/sani/rhyolite **Potts Mtn. rhyolite** Suneson and Lucchitta, 1979
Artillery Mtns. — Potts Mtn. Artillery Peak quad., MO county (34° 22.20', 113° 43.73'). L-3, K%= 9.5, *Ar=76, #AP-04A.

12.70 ± 0.10 # 283
KA/sani/rhyolite **Castaneda Hills rhyolite** Suneson and Lucchitta, 1979
Castaneda Hills -- Rhyolite intrudes trachyandesite and Peach Springs Tuff. Castaneda Hills quad., MO county (34° 26.70', 113° 59.50'). L-3, K%=10.0, *Ar=72, #CHNW-156.

12.70 ± 0.30 # 284
KA/phlo/lamprophyre **Hoover Dam lamprophyre** Smith, 1986
Hoover Dam area — Near Fortification Hill. Hoover Dam quad., MO county (36° 3.21', 114° 39.11'). L-1, K%= 6.3, *Ar=60, #UAKA-85-38.

12.80 ± 0.30 # 285
KA/w.r./basalt **Castaneda qtz-bearing basalt** Otton, 1982
Date Creek Basin area — Near Big Sandy River. Flow rests unconformably on Chapin Wash Fm. along east side of the Big Sandy River. Artillery Peak quad., MO county (34° 21.87', 113° 31.92'). L-2, K%= 0.9, *Ar=52, #AP76-37.

12.87 ± 0.60 # 286
KA/w.r./basalt cobble **Slide Rock gravels** McKee and McKee, 1972
Oak Creek Canyon — Near Slide Rock Bridge. Basalt cobble 9 m below 8 m.y. basalt flow. Lat-lon from Peirce and others (1979). Wilson Mtn. quad., CN county (34° 57.75', 111° 45.12'). L-3, K%= 0.3, *Ar=21, #MM:2D.

12.90 ± 0.80 # 287
KA/w.r./olivine basalt **Nogales Fm.** Marvin and others, 1973
Santa Cruz Valley — Near Atascosa Mtns. Pena Blanca Lake quad., SC county (31° 27.00', 111° 3.50'). L-2, K%= 1.0, *Ar=69, #M73:50.

12.90 ± 0.30 # 288
KA/w.r./basalt **Date Creek Basin basalt** Otton, 1982
Date Creek Basin area -- Olivine-pyroxene basalt or basaltic andesite flow that rests unconformably on Chapin Wash Fm. Palmerita Ranch quad., MO county (34° 20.00', 113° 27.78'). L-2, K%= 2.0, *Ar=39, #AP76-40.

12.90 ± 0.60 # 289
KA/w.r./basalt **Osborne Wash Fm.** Marvin and Dobson, 1979
Buckskin Mtns. -- Western part, at Headgate Rock, 2 km northeast of Parker. Lower basalt of Lake Moovalia in Osborne Wash Fm. Also listed by Calzia and Morton (1980) and attributed to W. J. Carr (1978, written comm.). Parker quad., LP county (34° 10.00', 114° 16.50'). L-2, K%= 0.7, *Ar=49, #MWC-56-74.

12.93 ± 0.60 # 290
KA/sani/ash-flow tuff **Recortado tuff** Bikerman, 1967
Roskruge Mtns. — Vitrophyre. Also listed by Damon and Bikerman (1967). Cocoraque Butte quad., PM county (32° 10.73', 111° 21.40'). L-1, K%= 5.2, *Ar=30, #MB-03-64.

12.96 ± 0.40 # 291
KA/sani/ash-flow tuff **Recortado tuff** Bikerman, 1967
Roskruge Mtns. — Distal end of flow. Cocoraque Butte quad., PM county (32° 9.35', 111° 21.35'). L-1, K%= 5.1, *Ar=69, #MB-02-67.

13.00 ± 0.50 # 292
KA/w.r./basalt **Bill Williams basalt** Suneson and Lucchitta, 1979
Castaneda Hills -- Mesa-capping basalt. Castaneda Hills quad., MO county (34° 16.50', 113° 52.12'). L-3, K%= 1.0, *Ar=33, #CHSE-164.

13.10 ± 1.60 # 293
KA/w.r./basalt Hickey Fm. Shafiqullah and others, 1980
Black Hills — Flow caps Government Hill and Black Hills. PED-28-66. Middle Verde quad., YA county (34° 32.11', 111° 56.23'). L-1, K%= 1.5, *Ar=11, #UAKA-66-28.

13.10 ± 0.10 # 294
KA/sani/rhyolite Castaneda Hills rhyolite Suneson and Lucchitta, 1979
Castaneda Hills — Castaneda Hills quad., MO county (34° 23.82', 113° 55.20'). L-3, K%= 9.9, *Ar=85, #CHNW-159.

13.10 ± 2.20 # 295
KA/w.r./basalt Hickey Fm. McKee and Elston, 1980
Hackberry Mtn. area -- Horner Mtn. quad., YA county (34° 25.00', 111° 47.00'). L-3, K%= 0.6, *Ar=5, #B21.

13.10 ± 0.20 # 296
KA/w.r./basalt Bill Williams basalt Suneson and Lucchitta, 1979
Castaneda Hills -- Mesa-capping basalt. Castaneda Hills quad., MO county (34° 29.52', 113° 59.87'). L-3, K%= 1.1, *Ar=55, #CH-47.

13.19 ± 0.29 # 297
KA/w.r./basalt Santa Maria basalt Scarborough and Wilt, 1979
Date Creek Basin area -- Near Santa Maria River. Flow is 3 m thick and overlies coarse-grained sedimentary rocks and uranium-bearing, deformed lake beds containing lignitic units. Lake beds range between 30-60 m in thickness and dip 10 degrees south. Arrastra Mtn. SE quad., YA county (34° 18.18', 113° 16.62'). L-1, K%= 1.1, *Ar=62, #UAKA-77-70.

13.20 ± 0.80 # 298
KA/w.r./basalt Hickey Fm. Shafiqullah and others, 1980
Black Hills — On Mingus Mtn. Road above Haywood Spring. PED-09-67. Hickey Mtn. quad., YA county (34° 42.00', 112° 8.40'). L-1, K%= 0.6, *Ar=30, #UAKA-67-09.

13.30 ± 2.10 # 299
KA/w.r./basalt Cobweb Basalt Eberly and Stanley, 1978
Artillery Mtns. -- Artillery Peak quad., MO county (34° 19.28', 113° 36.20'). L-B, K%= 1.5, *Ar=14, #ES:86.

13.40 ± 0.20 # 300
KA/w.r./basalt Mount Davis Volcanics Anderson and others, 1972
Lake Mead area -- South end of cape on Fire Mtn. Fire Mtn. quad., MO county (35° 40.68', 114° 38.48'). L-6, K%= 0.9, *Ar=42, #BC424.

13.40 ± 0.50 # 301
KA/w.r./basalt Hickey Fm. McKee and Anderson, 1971
Prescott area — Northeast of Prescott. Prescott quad., YA county (34° 34.73', 112° 26.35'). L-3, K%= 1.0, *Ar=26, #PR3.

13.42 ± 0.80 ** # 302
KA/feld/air-fall tuff A Mtn. air-fall tuff Bikerman and Damon, 1966
Tucson Mtns. -- Sentinel Peak. Tuff overlies a conglomerate that overlies A Mtn. basaltic andesite unit. Date is on feldspar and glass and is too young. Date on just feldspar from same sample is 27.4 m.y. Tucson quad., PM county (32° 12.78', 110° 59.32'). L-1, K%= 5.9, *Ar=46, #PED-01-62.

13.47 ± 0.50 # 303
KA/w.r./basalt Hickey Fm. McKee and Anderson, 1971
Agua Fria area -- West of Cordes. Cleator quad., YA county (34° 18.35', 112° 11.15'). L-3, K%= 0.9, *Ar=33, #MY5.

13.50 ± 0.30 # 304
KA/w.r./olivine basalt Vulture mesa-capping basalt Rehrig and others, 1980
Vulture Mtns. -- Mesa-capping olivine basalt that rests on partially indurated gravel. Flow dips 13 degrees to the northeast, and lies above steeply tilted older volcanics. Vulture Mtns. quad., MA county (33° 58.00', 112° 51.10'). L-1, K%= 0.9, *Ar=40, #UAKA-72-43.

13.60 ± 0.50 ** # 305
KA/w.r./K-rich volcanic Artillery Fm. Otton, 1982
Artillery Mtns. -- Altered, ultrapotassic rhyolite welded tuff from 200 m above the base of the Artillery Fm. Interbedded with green altered tuff and conglomerate. This is a minimum age, because same flow yielded a 19.9 m.y. whole-rock age. Artillery Peak quad., MO county (34° 21.44', 113° 34.95'). L-2, K%= 6.8, *Ar=15, #AP78-02.

13.60 ± 0.34 # 306
KA/w.r./basalt dike Daisy Mtn. dike Scarborough and Wilt, 1979
New River area -- Dike intrusive into faulted and folded, mid-Tertiary basalts, tuffs, clastics, and calcareous beds. The section contains uranium mineralization. Daisy Mtn. quad., MA county (33° 54.25', 112° 3.50'). L-1, K%= 0.9, *Ar=39, #UAKA-78-43.

13.70 ± 0.50 # 307
KA/w.r./basalt Hickey Fm. McKee and Anderson, 1971
Black Hills -- Mingus Mtn. Hickey Mtn. quad., YA county (34° 42.20', 112° 8.50'). L-3, K%= 0.5, *Ar=11, #MM1.

13.70 ± 0.30 # 308
KA/w.r./basalt-basaltic andesite Castaneda qtz-bearing basalt Suneson and Lucchitta, 1979
Castaneda Hills -- This is intruded by CHNE-151. Castaneda Hills quad., MO county (34° 22.13', 113° 49.24'). L-3, K%= 1.9, *Ar=50, #CH-26.

13.70 ± 0.20 # 309
KA/sani/rhyolite Bill Williams Mtns. rhyolite Suneson and Lucchitta, 1983
Bill Williams Mtns. -- Castaneda Hills quad., MO county (34° 27.75', 113° 57.82'). L-3, K%= 9.4, *Ar=58, #CHNW-154.

13.75 ± 0.33 # 310
KA/w.r./basalt Beavertail Butte basalt Peirce and others, 1979
Dry Beaver Creek -- Beavertail Butte. Basalt is faulted and is at a higher elevation and lateral to UAKA-77-76 (15.4 m.y.). Sedona quad., YA county (34° 45.52', 111° 47.47'). L-1, K%= 0.6, *Ar=53, #UAKA-77-77.

13.80 ± 0.50 # 311
KA/w.r./basalt Hickey Fm. McKee and Anderson, 1971
Prescott area -- Near Glassford Hill, northeast of Prescott. Prescott quad., YA county (34° 34.75', 112° 22.50'). L-3, K%= 1.3, *Ar=24, #PR2.

13.80 ± 1.00 # 312
KA/w.r./andesite Cross Roads andesite Woodward-McNeill, 1974
Buckskin Mtns. -- Western part, near Parker. Date listed in Calzia and Morton (1980). Cross Roads quad., LP county (34° 10.88', 114° 13.63'). #F-1.

13.80 ± 0.70 # 313
KA/w.r./andesite Peacock Mtns. volcanics Goff and others, 1983
Peacock Mtns. area -- Black Mesa, east of Peacock Mtns. Flow overlies Peach Springs Tuff. Generalized lat-lon. Tin Mtn. NW quad., MO county (35° 10.00', 113° 40.00'). L-7, K%= 2.3, *Ar=28, #F78-64.

13.90 ± 0.50 # 314
KA/w.r./basalt Hickey Fm. McKee and Anderson, 1971
Bradshaw Mtns. -- Big Bug Mesa. Poland Junction quad., YA county (34° 23.60', 112° 21.75'). L-3, K%= 0.7, *Ar=50, #MU2.

13.90 ± 0.30 # 315
KA/w.r./basalt Dry Beaver Creek basalt Shafiqullah and others, 1980
Verde Valley -- Dry Beaver Creek. Flow overlies unconsolidated gravels, 0.4 km west of a tributary to Dry Beaver Creek. PED-55-66. Lake Montezuma quad., YA county (34° 44.10', 111° 47.01'). L-1, K%= 0.7, *Ar=17, #UAKA-66-55.

13.90 ± 0.30 # 316
KA/w.r./trachyte Exxon State 14-1 volcanics Shafiqullah and others, 1980
Palomas Plain -- Near Hyder. Potassic trachyte from drill chips at 675 to 690 m, Exxon Arizona State 14-1 drill hole. Unit is 20 meters above crystalline basement rocks and may represent a sill or dike. Hyder NE quad., YU county (33° 8.00', 113° 21.00'). L-1, K%= 5.6, *Ar=77, #UAKA-74-118.

14.00 ± 0.60 # 317
KA/biot/granite Wilson Ridge granite Anderson and others, 1972
Black Mtns. -- Hoover Dam quad., MO county (36° 2.62', 114° 38.88'). L-5, K%= 6.9, *Ar=51, #BC305.

14.00 ± 0.32 # 318
KA/w.r./basalt Aguila Mtns. basalt Shafiqullah and others, 1980
Aguila Mtns. -- Flow caps broad mesa at north end of range. Mesa is cut by several vertical faults striking N35W. Beneath lava is a bedded, weakly indurated volcaniclastic unit. Aguila Mtns. quad., YU county (32° 38.45', 113° 20.57'). L-1, K%= 1.4, *Ar=76, #UAKA-79-55.

14.10 ± 0.70 # 319
KA/w.r./basalt Osborne Wash Fm. Fugro, 1975
Buckskin Mtns. — Western part, Black Peak, SW of Osborne Wash. Date listed in Calzia and Morton (1980). Black Peak quad., LP county (34° 7.47', 114° 12.68'). #RD-21.

14.14 ± 0.60 # 320
KA/w.r./basalt Picture Rocks basalt Rehrig, 1986
Florence area — Generalized lat-lon. Florence SE quad., PN county (33°0.31', 111° 17.50'). L-1, K%= 1.4, *Ar=31, #UAKA-72-20.

14.23 ± 0.47 # 321
KA/w.r./basalt Hackberry Mesa basalt Scarborough, 1981
Superstition Mtns. — Hackberry Mesa. Flat-lying flow that unconformably overlies silicic extrusive rocks of the Superstition volcanics that dip 20-30 degrees to the northeast. Mormon Flat Dam quad., MA county (33° 30.72', 111° 25.00'). L-1, K%= 0.7, *Ar=23, #UAKA-80-129.

14.25 ± 0.50 # 322
KA/sani/ash-flow tuff Recortado tuff Bikerman, 1967
Roskruge Mtns. — Other dates are slightly younger. Also reported by Damon and Bikerman (1964). Cocoraque Butte quad., PM county (32° 10.73', 111° 21.40'). L-1, K%= 5.2, *Ar=87, #MB-03-64.

14.32 ± 0.60 # 323
KA/w.r./basalt Hickey Fm. McKee and Anderson, 1971
Black Hills -- Near Jerome. Clarkdale quad., YA county (34° 45.33', 112° 7.05'). L-3, K%= 1.4, *Ar=29, #CD1.

14.40 ± 0.60 # 324
KA/w.r./basalt Long Point basalt McKee and McKee, 1972
Long Point area — Near Long Point Dam. Flow directly overlies gravels that are are interlayered with arkosic sand, silt and clay. Many highly rounded pebbles are reworked Shinarump Cong. Generalized lat-lon. Tin House quad., CN county (35° 41.19', 112° 35.85'). L-3, K%= 0.8, *Ar=18, #MM:4B.

14.40 ± 0.70 # 325
KA/w.r./basalt Growler volcanics Gray and Miller, 1984
Growler Mtns. — 3 km north of Temporal Pass. Plateau-forming flows that are the youngest volcanics erupted prior to Basin and Range deformation. Extruded locally from small cinder cones. Growler Peak quad., PM county (32° 18.16', 113° 3.50'). L-3, K%= 0.5, *Ar=14, #81AM204.

14.40 ± 0.70 # 326
KA/w.r./basaltic andesite Growler volcanics Gray and others, 1985
Growler Mtns. — Porhyritic basaltic andesite. Sample from near the exposed top of unit. No analytical data reported. Generalized lat-lon. Growler Peak quad., PM county (32° 18.70', 113° 2.38'). L-3, #G85:1.

14.45 ± 7.00 ** # 327
KA/biot/dacite tuff Hickey Fm. Damon and others, 1964
Hackberry Mtn. area -- Middle unit of Hickey Formation. Very early K-Ar date (Arizona-Lamont) reported in Sabels (1960) as 14.3 +/- 10%. Generalized lat-lon. Hackberry Mtn. (?) quad., YA county (34° 26.50', 111° 45.50'). L-1, K%= 5.1, *Ar=9, #BES-58-282.

14.51 ± 0.20 # 328
KA/w.r./basaltic andesite Vulture volcanics Shafiqullah and others, 1980
Vulture Mtns. — South end. Flow overlies volcaniclastic conglomerate and dips 20 degrees southeast. Wickenburg SW quad., MA county (33° 48.20', 112° 44.80'). L-1, K%= 2.2, *Ar=79, #UAKA-73-11.

14.60 ± 0.40 # 329
KA/w.r./basalt Wet Beaver Creek basalt Peirce and others, 1979
Wet Beaver Creek — Near Campground. Nearly flat-lying basalt cap overlying gravel above Supai Fm. Casner Butte quad., YA county (34° 40.17', 111° 41.97'). L-1, K%= 0.5, *Ar=41, #UAKA-77-168.

14.63 ± 1.10 # 330
KA/w.r./basalt Blue Mtn. basalt Damon and others, 1968
Hualapai Plateau -- Aubrey Valley area, Blue Mtn. Flow overlies the Blue Mtn. gravels. Grand Canyon Caverns quad., CN county (35° 35.90', 113° 13.33'). L-1, K%= 1.7, *Ar=23, #PED-30-66.

14.64 ± 0.37 # 331
KA/w.r./basalt Horseshoe Dam basalt Scarborough and Wilt, 1979
Lower Verde area — Near Horseshoe Dam. Volcanic-sedimentary sequence is > 615 m thick, is tilted 10-20 degrees SW, and is in fault contact with younger basin-fill mudstone to the southwest. Basalt flows are overlain by conglomerate, tuffs, and marls. Horseshoe Dam quad., MA county (33° 58.87', 111° 42.70'). L-1, K%= 0.5, *Ar=38, #UAKA-78-38.

14.67 ± 0.35 # 332
KA/w.r./basalt **Sugarloaf Mesa basalt** Scarborough and Wilt, 1979
New River area — Flow is 9-15 m below the top of Sugarloaf Mesa. About a dozen flows cap the mesa and overlie a basalt-tuff sequence. About 10 % mafic minerals removed before analysis. Longitude in original reference is in error. New River Mesa quad., MA county (33° 54.72', 111° 57.78'). L-1, K%= 0.8, *Ar=24, #UAKA-78-36.

14.70 ± 0.30 ** # 333
KA/biot/ash-flow tuff **Big Dome Fm.** Banks and others, 1972
Ray area -- East of Ray. Ash-flow tuff interbedded in clastics and conglomerates of the Big Dome Fm. that overlie the Apache Leap tuff. Hornblende date on same sample is slightly older. Kearny quad., PN county (33° 6.15', 110° 55.65'). L-3, K%= 6.6, *Ar=31, #B72:22B.

14.70 ± 0.60 # 334
KA/w.r./basalt **Sycamore Canyon basalt** McKee and McKee, 1972
Sycamore Canyon -- Mooney Trail. Basalt flow directly above gravel unit that is 35 m thick with clasts up to 5 cm in diameter and composed of angular pebbles and some Tertiary volcanic clasts. Generalized lat-lon. Sycamore Basin quad., CN county (34° 55.00', 112° 3.00'). L-3, K%= 0.4, *Ar=20, #MM:3B.

14.74 ± 2.41 # 335
KA/w.r./basaltic andesite **Three Points basaltic andesite** Bikerman, 1967
Roskruge Mtns. -- Three Points quad., PM county (32° 7.45', 111° 19.76'). L-1, K%= 1.9, *Ar=23, #MB-13-64.

14.78 ± 0.40 # 336
KA/w.r./andesite **Bartlett Dam andesite** Shafiqullah and others, 1980
Lower Verde area — Near Bartlett Dam. Pyroxene andesite flow that caps unconsolidated clastic sediments that contain intercalated ash flows. Entire section strikes N30W, dips 35 southeast. Sample from the north side of Verde River near dam. Bartlett Dam quad., MA county (33° 48.54', 111° 39.50'). L-1, K%= 1.4, *Ar=58, #UAKA-77-151.

14.81 ± 0.79 # 337
KA/w.r./basalt **Skull Mesa basalt** Scarborough and Wilt, 1979
New River area — Skull Mesa. Flow is fine-grained with abundant olivine, and is 10 m above the base of flows that cap Skull Mesa. Basal contact with underlying tuff sequence is concealed by 40 m of talus. Flow may correlate with UAKA-78-36. New River Mesa quad., MA county (33° 55.42', 111° 55.18'). L-1, K%= 0.4, *Ar=16, #UAKA-77-106.

14.90 ± 0.30 # 338
KA/w.r./K-rich volcanic **Picacho Peak volcanics (?)** Eberly and Stanley, 1978
Picacho Basin — Exxon State (74) No. 1. Ultrapotassic trachyte, near top of 185 m-thick volcanic sequence, depth of 2823-2924 m. Also reported by Shafiqullah and others (1976), but without analytical data. Average of UAKA-73-140 and UAKA-74-87. Eloy North quad., PN county (32° 45.00', 111° 30.00'). L-1, #UAKA-73-140.

14.94 ± 0.33 # 339
KA/biot/rhyolite **Gabarina Hill rhyolite** Christman, 1978
Sierra Prieta -- Copper Basin area, on Gabarina Hill, west of Copper Basin Wash. Groom Creek quad., YA county (34° 29.67', 112° 29.91'). L-1, K%= 7.6, *Ar=27, #UAKA-76-26.

15.00 ± 0.30 # 340
KA/w.r./basalt **Mount Davis Volcanics** Anderson and others, 1972
Black Mtns. -- Northern part. South flank of Mt. Davis. Mt. Davis quad., MO county (35° 31.70', 114° 37.50'). L-6, K%= 1.2, *Ar=73, #BC409B.

15.00 ± 1.10 # 341
KA/biot/trachyandesite **Hickey Fm.** Krieger and others, 1971
Verde Valley — Along Verde fault, near Jerome. Cottonwood quad., YA county (34° 44.48', 112° 6.42'). L-3, K%= 6.0, *Ar=61, #A-43.

15.00 ± 0.50 # 342
KA/biot/latite **Milk Creek Fm.** McKee and Anderson, 1971
Wagoner area -- Walnut Grove quad., YA county (34° 18.40', 112° 34.75'). L-3, K%= 5.9, *Ar=31, #K3.

15.01 ± 0.42 # 343
KA/w.r./basalt **Hot Rock basalt** Shafiqullah and others, 1980
Belmont Mtns. — Hot Rock Hill. Lowermost lava flow, which overlies poorly consolidated gravel beds that dip 10 to 25 degrees southeast. Also reported by Schoustra and others (1976). Belmont Mtns. quad., MA county (33° 35.14', 112° 52.83'). L-1, K%= 0.6, *Ar=53, #UAKA-73-10.

15.10 ± 0.34 ** # 344
KA/w.r./K-rich volcanic **Picacho Peak volcanics** Shafiqullah and others, 1976
Picacho Basin — Exxon drill hole, 2341-2345 m below sea level. K-rich volcanic near top of 185 m-thick volcanic sequence that is underlain by conglomerate, and overlain by conglomerate, 1825 m of anhydrite, and 710 m of clastics and anhydrite. Picacho Reservoir quad., PN county (32° 46.00', 111° 30.50'). L-1, K%= 8.3, *Ar=71, #UAKA-73-140.

15.10 ± 0.10 # 345
KA/sani/rhyolite **Castaneda Hills rhyolite** Suneson and Lucchitta, 1979
Castaneda Hills — Rhyolite dome intruding poorly consolidated conglomerate. Castaneda Hills quad., MO county (34° 27.15', 113° 48.72'). L-3, K%= 8.4, *Ar=46, #CHNE-152.

15.20 ± 0.50 # 346
KA/biot/latite **Milk Creek Fm.** McKee and Anderson, 1971
Wagoner area — Walnut Grove quad., YA county (34° 18.95', 112° 31.80'). L-3, K%= 7.2, *Ar=53, #K2.

15.39 ± 0.45 # 347
KA/w.r./basalt **Ajo volcanics** Shafiqullah and others, 1980
Gu Vo Hills -- Papago Indian Reservation. Nearly horizontal basalt flow in sequence that overlies rhyolitic flows of Organ Pipe Cactus National Monument. Diaz Peak quad., PM county (31° 55.35', 112° 32.84'). L-1, K%= 1.5, *Ar=47, #UAKA-72-41.

15.39 ± 0.40 # 348
KA/w.r./basalt **Black Canyon basalt** Scarborough and Wilt, 1979
Union Hills area -- Black Canyon Shooting Range. Mesa-capping basalt that unconformably overlies 92 m of fluvial sediments, including dolomitic beds and pyroclastic rocks. Biscuit Flat quad., MA county (33° 48.70', 112° 8.87'). L-1, K%= 0.6, *Ar=50, #UAKA-78-44.

15.40 ± 0.80 # 349
FT/zirc/ash-flow tuff **Superstition Tuff** Stuckless and Sheridan, 1971
Superstition Mtns. -- Superstition Tuff, Canyon Lake member. A quartz latite ash-flow tuff, the uppermost member of the formation. Mormon Flat Dam quad., MA county (33° 31.50', 111° 24.17'). L-2, #AP234.

15.40 ± 2.10 # 350
KA/w.r./basalt **Hickey Fm.** Eberly and Stanley, 1978
Agua Fria area -- Flow overlies white tuff and clastics, near Hutch Mesa. Squaw Creek Mesa quad., MA county (34° 4.33', 112° 6.50'). L-B, K%= 0.4, *Ar=16, #ES:64.

15.40 ± 2.20 # 351
KA/w.r./basalt **Batamote Andesite** Eberly and Stanley, 1978
Growler Mtns. -- Flow in Batamote Andesite that overlies Daniels Conglomerate. Growler Peak quad., PM county (32° 18.33', 113°0.43'). L-B, K%= 0.9, *Ar=15, #ES:109.

15.40 ± 0.40 # 352
KA/w.r./basalt **Beavertail Butte basalt** Peirce and others, 1979
Dry Beaver Creek -- Beavertail Butte. Basalt overlies gravels that rest on Supai Fm. Sedona quad., YA county (34° 45.05', 111° 47.32'). L-1, K%= 0.6, *Ar=57, #UAKA-77-76.

15.40 ± 0.20 # 353
KA/sani/air-fall tuff **Patsy Mine Volcanics (?)** Theodore and others, 1982
White Hills -- Welded rhyolite ash-flow tuff from large tectonic block along Salt Creek Wash. Suggests correlation with middle part of Patsy Mine Volcanics or lower part of Mt. Davis Volcanics. Garnet Mtn. quad., MO county (35° 52.00', 114° 7.00'). L-3, K%= 7.0, *Ar=77, #728A.

15.43 ± 0.34 # 354
KA/plag/rhyolite tuff **Superstition volcanics** Scarborough, 1981
Superstition Mtns. — Unwelded rhyolite ash-flow tuff 6 m above level of Saguaro Lake, upstream from the mouth of Cottonwood Creek. The tuff is from a series of silicic pyroclastics that underlie an extensive fanglomerate. Mormon Flat Dam quad., MA county (33° 33.80', 111° 27.78'). L-1, K%= 1.7, *Ar=47, #UAKA-80-128.

15.50 ± 0.60 # 355
KA/biot/granite **Wilson Ridge granite** Anderson and others, 1972
Black Mtns. — Northern part. West flank of Wilson Ridge. Hoover Dam quad., MO county (36° 2.62', 114° 38.62'). L-5, K%= 7.5, *Ar=38, #BC303.

15.52 ± 0.54 # 356
KA/w.r./andesite **Batamote Andesite** Shafiqullah and others, 1980
Batamote Mtns. -- Northeast of Ajo. Fine-grained basaltic andesite that overlies Childs Latite. Ajo quad., PM county (32° 25.63', 112° 48.25'). L-1, K%= 2.2, *Ar=37, #UAKA-72-64.

15.53 ± 0.39 # 357
KA/w.r./basaltic andesite **Superstition volcanics** Shafiqullah and others, 1980
Goldfield Mtns. — Basaltic andesite hill flanked by flat-lying gravel containing clasts of mid-Tertiary volcanic rocks and older metamorphic and granitic rocks. Stewart Mtn. quad., MA county (33° 36.68', 111° 33.27'). L-1, K%= 1.1, *Ar=69, #UAKA-77-146.

15.62 ± 0.35 # 358
KA/w.r./basalt **Black Butte basalt** Scarborough and Wilt, 1979
Vulture Mtns. — Black Butte. Basalt flow overlying thin bedded, partly calcareous, uranium-bearing siltstone-claystone and lower volcanics that contain UAKA-78-48 (20 m.y.). Aguila quad., MA county (33° 50.76', 113° 1.87'). L-1, K%= 1.1, *Ar=69, #UAKA-78-31.

15.63 ± 4.80 # 359
KA/w.r./andesite **Sasco andesite** Eastwood, 1970
Silver Bell Mtns. — Samaniego Hills. Andesite has subhedral, white feldspar phenocrysts (2-4 mm.) set in a black aphanitic vesicular ground mass. Overlies Samaniego andesite. Samaniego Hills quad., PN county (32° 32.95', 111° 28.25'). L-1, K%= 3.5, *Ar=7, #RLE-20-68.

15.71 ± 0.40 # 360
KA/w.r./rhyolite **Ajo volcanics** Shafiqullah and others, 1980
Gu Vo Hills — Papago Indian Reservation. Uppermost rhyolite flow. Overlies Childs Latite. Diaz Peak quad., PM county (31° 57.30', 112° 33.08'). L-1, K%= 4.1, *Ar=65, #UAKA-72-40.

15.77 ± 0.32 ** # 361
KA/w.r./K-rich volcanic **Bullard andesite** Scarborough and Wilt, 1979
Harcuvar Mtns. — Bullard Peak. From a thick K-metasomatized andesite, breccia, and ash-flow tuff sequence that dips to the southwest and is juxtaposed against brecciated mylonitic gneiss of the Harcuvar Mtns. along the Bullard detachment fault. Smith Peak quad., YA county (34° 2.97', 113° 17.08'). L-1, K%= 4.1, *Ar=92, #UAKA-78-49.

15.82 ± 0.50 # 362
KA/horn/quartz latite intrusion **Mineral Mtn. quartz latite** Theodore and others, 1978
Mineral Mtn. area — Intrusion emplaced into water-laid tuff and sedimentary rocks. Biotite date on same sample is 17.4 m.y. Mineral Mtn. quad., PN county (33° 7.50', 111° 10.00'). L-3, K%= 0.8, *Ar=39, #M76:15.

15.90 ± 0.80 # 363
FT/sphe/ash-flow tuff **Superstition Tuff** Stuckless and Sheridan, 1971
Superstition Mtns. -- Superstition Tuff, Canyon Lake member. A quartz latite ash-flow tuff, uppermost member of the formation. Mormon Flat Dam quad., MA county (33° 31.50', 111° 24.17'). L-2, #AP234.

15.90 ± 2.80 ** # 364
KA/plag/olivine basalt **Osborne Wash Fm.** Davis and others, 1982
Buckskin Mtns. -- Western part. Lat-lon from Calzia and Morton (1980), who attributed date to Barry (1979). Large atmospheric Ar correction. Cross Roads quad., LP county (34° 11.00', 114° 14.00'). L-7, K%= 0.6, *Ar=7, #1882.

15.90 ± 0.00 # 365
KA/biot/rhyolite **Estes Canyon rhyolite** Tosdal and others, 1986
Ajo Range -- Flows are aphyric to porphyritic and locally zeolitized along the margins. No analytical data reported. Generalized lat-lon. Mt. Ajo quad., PM county (32° 1.59', 112° 42.53'). L-3, #T86:2.

16.10 ± 0.40 ** # 366
KA/w.r./K-rich dike **Vulture dike** Rehrig and others, 1980
Vulture Mtns. — Vertical dike that intrudes tilted volcanic section. Rock contains small phenocrysts in a reddish-brown aphanitic matrix. Same sample as UAKA-71-35A (16.2 m.y.), but was acid leached. Probably metasomatised. Vulture Mtns. quad., MA county (33° 53.40', 112° 49.00'). L-1, K%= 8.1, *Ar=72, #UAKA-71-35B.

16.10 ± 0.40 ** # 367
KA/w.r./K-rich volcanic **Vulture volcanics** Rehrig and others, 1980
Vulture Mtns. -- From 2 m above the sole of low-angle fault, structurally above UAKA-72-53, which is rhyolite cataclasite within gouge zone along the fault. Probably metasomatized. Vulture Mtns. quad., MA county (33° 53.80', 112° 48.40'). L-1, K%= 8.1, *Ar=60, #UAKA-76-16.

16.10 ± 0.70 # 368
KA/w.r./andesite **Ajo volcanics** Gray and Miller, 1984
Ajo Range — Young, mesa-capping andesite in western Ajo Range. Kino Peak quad., PM county (32° 4.50', 112° 46.00'). L-3, K%= 2.4, *Ar=55, #AK2100.

16.10 ± 0.50 # 369
KA/biot/latite **Hells Gate latite** Kortemeier and others, 1986
Hieroglyphic Mtns. — Castle Hot Springs volcanic field. Unit is at top of silicic volcanic sequence and is overlain by tilted fanglomerates. No analytical data reported. Generalized lat-lon. Governors Peak quad., YA county (33° 58.17', 112° 21.48'). L-7, #3-3-4.

16.10 ± 0.00 # 370
KA/biot/rhyolite **Estes Canyon rhyolite** Tosdal and others, 1986
Ajo Range — Flows are aphyric to porphyritic and locally zeolitized along the margins. No analytical data reported. Generalized lat-lon. Mt. Ajo quad., PM county (32° 1.59', 112° 42.53'). L-3, #T86:3.

16.12 ± 0.41 # 371
KA/w.r./andesite **Cabeza Prieta volcanics** Shafiqullah and others, 1980
Cabeza Prieta Mtns. — Lowest agglomeratic flow unit on Cabeza Prieta Peak. Clasts over 1 meter in diameter are common in this 40 meter-thick unit that rests on a steep erosion surface cut on Gunnery Range Granite, preserving a fossil desert topography Cabeza Prieta Peak quad., YU county (32° 17.19', 113° 48.61'). L-1, K%= 1.3, *Ar=70, #UAKA-74-122.

16.14 ± 0.75 # 372
KA/w.r./basaltic andesite **Osborne Wash Fm.** Shafiqullah and others, 1980
Buckskin Mtns. — Western part. Uppermost flow on top of Black Peak near Parker. 200 meters of flow is exposed. Sample PED-07-68. Black Peak quad., LP county (34° 7.20', 114° 13.28'). L-1, K%= 1.7, *Ar=23, #UAKA-68-07.

16.16 ± 0.95 # 373
KA/w.r./basaltic andesite **Osborne Wash Fm.** Shafiqullah and others, 1980
Buckskin Mtns. -- Western part, near Parker. Interbedded with Osborn Wash Fanglomerates near Parker. PED-06-68. Cross Roads quad., LP county (34° 10.64', 114° 13.15'). L-1, K%= 1.8, *Ar=25, #UAKA-68-06.

16.20 ± 0.50 ** # 374
KA/w.r./K-rich dike **Vulture dike** Rehrig and others, 1980
Vulture Mtns. — Vertical dike that contains small feldspar phenocrysts in a reddish-brown aphanitic matrix. Dike intrudes tilted volcanic sequence. Same sample as UAKA-71-35B (16.1 m.y.), which was acid leached. Possibly metasomatised. Vulture Mtns. quad., MA county (33° 53.40', 112° 49.00'). L-1, K%= 8.7, *Ar=31, #UAKA-71-35A.

16.20 ± 0.00 # 375
KA/w.r./basalt **Whitlock basalt** Richter and others, 1981
Whitlock Mtns. -- Basalt flows that cap higher elevations in the north-central part of quadrangle. No analytical data reported. Whitlock Mtns. NE quad., GM county (32° 41.21', 109° 22.43'). L-1, #R81:A.

16.28 ± 0.40 # 376
KA/w.r./basalt **Artillery Fm.** Shafiqullah and others, 1980
Artillery Mtns. -- Basalt flow interbedded with coarse sedimentary rocks beneath a landslide megabreccia of Precambrian gneiss (so-called Artillery thrust). Artillery Peak quad., MO county (34° 21.00', 113° 37.00'). L-1, K%= 1.1, *Ar=82, #UAKA-74-04.

16.30 ± 0.30 ** # 377
KA/w.r./K-rich volcanic **Vulture volcanics** Rehrig and others, 1980
Vulture Mtns. -- Porphyritic, tuffaceous latite (also referred to as rhyolite). Rock is somewhat altered, possibly K-metasomatized, so this is a minimum age. Vulture Mtns. quad., MA county (33° 53.80', 112° 48.40'). L-1, K%= 7.6, *Ar=51, #UAKA-72-13.

16.30 ± 0.00 # 378
KA/w.r./rhyolite **Sleeping Buffalo Rhyolite** Creasey and others, 1983
Ray area — Arnett Member of Sleeping Buffalo Rhyolite. Teapot Mtn. quad., PN county (33° 14.40', 111° 7.00'). L-3, K%= 3.4, *Ar=33, #C83:2.

16.30 ± 0.60 # 379
KA/biot/granite **Milkweed Canyon granite** Stauffer, 1979
Hualapai Mtns. — Milkweed Canyon SW quad., MO county (35° 33.67', 113° 44.75'). L-5, K%= 6.0, *Ar=26, #B-3367.

16.40 ± 31.90 # 380
KA/w.r./andesitic tuff **Exxon Yuma-Federal No. 1 volc.** Eberly and Stanley, 1978
Yuma Desert -- From cuttings at 2,194 - 2,224 m in Exxon Yuma-Federal No. 1. South of Yuma quad., YU county (32° 29.00', 114° 44.50'). L-B, K%= 0.2, *Ar=1, #ES:115.

16.46 ± 0.50 # 381
KA/biot/granodiorite **Bouse Hills granodiorite** Shafiqullah and others, 1980
Bouse Hills — Eastern part. Mid-Tertiary (?) granodiorite stock. Utting quad., LP county (33° 58.10', 113° 49.80'). L-1, K%= 6.2, *Ar=45, #UAKA-73-127.

16.50 ± 1.30 # 382
FT/zirc/rhyolite dike **Geronimo Head Fm.** Stuckless and Sheridan, 1971
Superstition Mtns. -- Rhyolite dike cutting flows in the upper part of the Geronimo Head Formation. Mormon Flat Dam quad., MA county (33° 32.25', 111° 26.75'). L-2, **#AP27A.**

16.50 ± 0.20 # 383
KA/w.r./basalt **Castaneda Hills basalt** Suneson and Lucchitta, 1979
Castaneda Hills -- Upper part of trachybasalt, alkali olivine basalt, and trachyandesite sequence that underlies Peach Springs Tuff (16.9 m.y.). Castaneda Hills quad., MO county (34° 26.08', 113° 58.95'). L-3, K%= 2.0, *Ar=73, **#CH-61.**

16.54 ± 0.60 # 384
KA/w.r./basaltic andesite dike **Exxon State 32-1 volcanics** Eberly and Stanley, 1978
Tucson Basin -- Basaltic andesite located at 2895-2898 m in Exxon State (32) No. 1 well. Interpreted to be an intrusive body. ES:24 Tucson SE quad., PM county (32° 4.08', 110° 49.51'). L-1, K%= 2.6, *Ar=57, **#UAKA-72-70.**

16.57 ± 0.35 # 385
KA/w.r./basaltic andesite **Box Canyon andesite** Scarborough and Wilt, 1979
Wickenburg Mtns. -- Hassayampa River, Box Canyon. Flow in a 152-244 m-thick, andesite-conglomerate sequence that dips 30-40 degrees NE. Volcanics are cut by southwest-dipping faults and overlain by fluvial arkosic red beds. Sam Powell Peak quad., YA county (34° 2.72', 112° 43.60'). L-1, K%= 1.8, *Ar=91, **#UAKA-79-66.**

16.60 ± 0.80 # 386
FT/zirc/quartz latite **Geronimo Head Fm.** Stuckless and Sheridan, 1971
Superstition Mtns. -- Quartz latite lava. Overlies last rhyolite ash flow in the Geronimo Head Formation. Weavers Needle quad., MA county (33° 29.25', 111° 20.00'). L-2, **#AP200.**

16.60 ± 1.10 # 387
FT/sphe/quartz latite **Geronimo Head Fm.** Stuckless and Sheridan, 1971
Superstition Mtns. -- Quartz latite lava. Overlies last rhyolite ash flow in the Geronimo Head Formation. Weavers Needle quad., MA county (33° 29.25', 111° 20.00'). L-2, **#AP200.**

16.60 ± 1.80 ** # 388
FT/zirc/K-rich volcanic **Picacho Peak volcanics** Brooks, 1986
Picacho Peak -- Date is discordant with 20.74 m.y. whole-rock K-Ar age for the same rocks. Fission-track age indicates a post-eruptive thermal event, probably related to regional K-metasomatism and detachment faulting. No analytical data reported. Newman Peak quad., PN county (32° 39.85', 111° 23.37'). L-2.

16.60 ± 1.60 ** # 389
KA/sani/rhyolite tuff **Rhyolite Canyon Fm.** Damon and Bikerman, 1964
Chiricahua Mtns. -- Welded tuff. Date is too young, probably because of alteration and large grain size (20-35 mesh) of sanidine analyzed. Additional sanidine dates on same sample are 25 to 27 m.y. Also reported in Marjaniemi (1969). Cochise Head quad., CH county (32°0.40', 109° 18.70'). L-1, K%= 5.8, *Ar=59, **#PED-12-62A.**

16.60 ± 0.00 # 390
KA/plag/basalt **Whitlock basalt** Richter and others, 1981
Whitlock Mtns. -- Basalt flows that cap higher elevations in the north-central part of quadrangle. No analytical data reported. Whitlock Mtns. NE quad., GM county (32° 41.21', 109° 22.43'). L-1, **#R81:A.**

16.63 ± 0.35 # 391
KA/w.r./basaltic andesite **Hieroglyphic volcanics** Scarborough and Wilt, 1979
Hieroglyphic Mtns. -- Lake Pleasant. Flow is one of many exposed along road around west side of lake and is interbedded with tuffaceous sedimentary rocks that dip 30 degrees to the east. Governors Peak quad., YA county (33° 53.78', 112° 17.97'). L-1, K%= 1.9, *Ar=86, **#UAKA-78-40.**

16.68 ± 0.50 # 392
KA/sani/rhyolite tuff **Geronimo Head Fm.** Stuckless and Sheridan, 1971
Superstition Mtns. -- Uppermost ash flow in Geronimo Head Fm., a series of rhyolite ash flows and epiclastic breccia. Horse Mesa Dam quad., MA county (33° 31.25', 111° 20.00'). C-?, K%= 7.1, *Ar=80, **#AP-215.**

16.70 ± 1.10 # 393
KA/w.r./basaltic andesite **Vulture volcanics** Rehrig and others, 1980
Vulture Mtns. -- Basaltic andesite or trachyandesite from the basal unit of andesitic volcanic sequence. Vulture Mtns. quad., MA county (33° 56.90', 112° 50.00'). L-1, K%= 2.0, *Ar=13, **#UAKA-72-60.**

16.70 ± 0.80 # 394
KA/horn/andesite **Bates Mtns. andesite** Gray and Miller, 1984
Bates Mtns. -- Andesite that overlies Childs Latite. Kino Peak quad., PM county (32° 4.75', 112° 58.00'). L-3, K%= 0.4, *Ar=20, **#AK2087.**

16.87 ± 0.42 # 395
KA/w.r./basaltic andesite Palo Verde volcanics Shafiqullah and others, 1980
Palo Verde Hills -- Basaltic andesite flow encountered at 100 m depth in a drill hole at Palo Verde Nuclear Generating Station, east of the Palo Verde Hills. Also reported by Schoustra and others (1976). Arlington quad., MA county (33° 21.77', 112° 51.99'). L-1, K%= 1.5, *Ar=72, #UAKA-73-94.

17.00 ± 2.10 ** # 396
FT/apat/quartz monzonite Tortolita Quartz Monzonite Creasey and others, 1977
Tortolita Mtns. -- Fine-grained, slightly foliated hypidiomorphic granular quartz monzonite. Date reflects cooling of middle Tertiary pluton. Oro Valley quad., PM county (32° 27.50', 110° 58.00'). L-2, #ML-105.

17.10 ± 2.70 ** # 397
FT/apat/rhyodacite McLendon Peak rhyodacite Brooks, 1984
Santa Maria Mtns. -- Sample also yields a K-Ar biotite age of 22.1 m.y., and a zircon fission-track age of 19.2 m.y. No analytical data reported. Date Creek Ranch NW quad., YA county (34° 13.65', 113° 10.80'). L-2, #A3.

17.10 ± 0.40 ** # 398
KA/w.r./K-rich cataclasite Vulture volcanics Rehrig and others, 1980
Vulture Mtns. -- Gouge zone at sole of low-angle fault. Possibly K-metasomatized. Vulture Mtns. quad., MA county (33° 53.80', 112° 48.40'). L-1, K%= 5.8, *Ar=88, #UAKA-75-53.

17.10 ± 0.50 # 399
KA/plag/basalt Aubrey turkey track porphyry Davis and others, 1982
Aubrey Hills -- Turkey-track or jackstraw basalt that intrudes Copper Basin Formation and also ocurrs as flows. Lat-lon from Calzia and Morton (1980), who attributed date to Barry (1979). Standard Wash quad., MO county (34° 24.75', 114° 13.50'). L-7, K%= 7.2, *Ar=49, #1872.

17.10 ± 0.00 # 400
KA/biot/rhyolite Estes Canyon rhyolite Tosdal and others, 1986
Ajo Range -- Flows are aphyric to porphyritic and locally zeolitized along the margins. No analytical data reported. Generalized lat-lon. Mt. Ajo quad., PM county (32° 1.59', 112° 42.53'). L-3, #T86:4.

17.15 ± 0.50 # 401
KA/sani/ash-flow tuff Kingman tuff Damon and others, 1966
Kingman area -- Kingman quad., MO county (35° 12.17', 114° 3.75'). L-1, K%= 7.1, *Ar=89, #PED-08-65.

17.17 ± 1.70 ** # 402
KA/biot/ash-flow tuff Apache Leap Tuff Damon and others, 1962
Globe-Miami area -- Sample was altered and age is too young (compare with 19 and 20 m.y. dates from same unit). Generalized lat-lon. Inspiration (?) quad., GI county (33° 24.00', 110° 53.00'). L-1, C-?, K%= 7.0, *Ar=56, #PED-04-59.

17.24 ± 0.43 # 403
KA/w.r./basalt Plomosa mesa-capping basalt Shafiqullah and others, 1980
Plomosa Mtns. -- Black Mesa. Mesa-capping olivine basalt flow that dips 5 deg south and overlies unconsolidated gravel on erosion surface cut on a rhyolite breccia (UAKA-74-38), thereby establishing a lower limit on age of major tilting. Quartzsite quad., LP county (33° 35.27', 114° 2.01'). L-1, K%= 1.3, *Ar=73, #UAKA-74-37.

17.30 ± 0.50 # 404
KA/biot/volcanic rock Kofa volcanics Dahm and Hankins, 1982
Kofa Mtns. -- Southern part. Basal unit of gently tilted sequence of volcanic flows and ash-flow tuffs. Generalized lat-lon. Analytical data and location not published. Kofa Butte quad., YU county (33° 18.00', 113° 56.03'). L-7.

17.30 ± 0.20 # 405
KA/biot/tuff Teapot Mtn. older tuff Creasey and others, 1983
Ray area -- Older tuff overlain by Sleeping Buffalo Rhyolite. Teapot Mtn. quad., PN county (33° 8.53', 111° 3.40'). L-3, K%= 3.4, *Ar=85, #C83:4.

17.30 ± 0.40 # 406
KA/sani/rhyolite Tollgate Wash rhyolite Richter and others, 1983
Peloncillo Mtns. -- South of Tollgate Wash. High-silica, flow-laminated rhyolite. No analytical data reported. Guthrie quad., GM county (32° 49.18', 109° 23.95'). L-1, #R83:J.

17.35 ± 0.36 ** # 407
KA/w.r./K-rich volcanic Aguila Ridge volcanics Scarborough and Wilt, 1979
Aguila Ridge -- K-metasomatized, welded ash-flow tuff that overlies arkose and underlying crystalline rocks. Tuff underlies lithic tuff and andesite (UAKA-78-49). Units dip variably southwest. Date is too young; 24 m.y. biotite date on same unit. Date Creek Ranch SW quad., YA county (34° 2.35', 113° 9.60'). L-1, K%= 7.9, *Ar=88, #UAKA-78-30.

17.40 ± 1.00 # 408
KA/w.r./basalt **Picacho Peak volcanics (?)** Eberly and Stanley, 1978
Picacho Basin — Basalt from 2,792-2,807 m in Exxon (74) No. 1. Picacho Reservoir quad., PN county (32° 46.00', 111° 30.50'). L-B, K%= 7.6, *Ar=43, #ES:05.

17.40 ± 0.50 # 409
KA/biot/quartz latite intrusion **Mineral Mtn. quartz latite** Theodore and other, 1978
Mineral Mtn. area — Intrusion emplaced into bedded tuff and sedimentary rocks. Hornblende date on same sample is slightly younger. Mineral Mtn. quad., PN county (33° 7.50', 111° 10.00'). L-3, K%= 7.3, *Ar=64, #M76:15.

17.40 ± 0.50 # 410
KA/w.r./rhyolite **Ajo volcanics** Shafiqullah and others, 1980
Ajo Range — Organ Pipe Cactus National Monument. Flow-banded rhyolite that overlies Childs Latite. Mount Ajo quad., PM county (32° 4.03', 112° 42.53'). L-1, K%= 6.5, *Ar=62, #UAKA-72-42.

17.40 ± 0.90 # 411
KA/w.r./basalt **Iron Mountain basalt** Haman, 1985
Hualapai Plateau — Overlies Tertiary stream-channel gravels that are probably time equilivents to the Buck and Doe conglomerate. Flow is pre-faulting along the southwestern margin of the Hualapai Plateau and post-development of major embayments into it Garnet Mtn. quad., MO county (35° 50.60', 114° 1.42'). L-1, K%= 1.7, *Ar=27, #IM-83-1.

17.45 ± 0.50 # 412
KA/sani/ash-flow tuff **Kingman tuff** Damon and others, 1966
Kingman area — Kingman quad., MO county (35° 12.17', 114° 3.75'). L-1, K%= 7.1, *Ar=63, #PED-08-65.

17.46 ± 0.36 # 413
KA/w.r./rhyolite **Superstition volcanics** Scarborough, 1981
Superstition Mtns. — Northeastern part. Rhyolite flow that overlies lahars, tuffs, and andesites, and appears to cap several mesas. Horse Mesa Dam quad., MA county (33° 34.78', 111° 19.60'). L-1, K%= 4.5, *Ar=91, #UAKA-80-127.

17.50 ± 1.00 # 414
KA/biot/rhyodacite tuff **San Manuel Fm. (?)** Berry and others, 1976
Tortilla Mtns. -- Rhyodacite tuff bed near the top of a tuffaceous sandstone in Ripsey Wash sequence, probably correlative with San Manuel Fm. Kearny quad., PN county (33° 2.10', 110° 59.40'). L-3, #12-100.

17.50 ± 0.70 # 415
KA/w.r./rhyolite **Sleeping Buffalo Rhyolite** Creasey and others, 1983
Ray area -- Sleeping Buffalo Rhyolite. Teapot Mtn. quad., PN county (33° 12.15', 111° 7.35'). L-3, K%= 3.4, *Ar=34, #C83:3.

17.50 ± 0.00 ** # 416
KA/biot/mylonite **Harcuvar mylonite** Rehrig, 1982
Harcuvar Mtns. — Near Bullard Peak. This age suggests that cooling or deformation from detachment faulting lasted into the middle Miocene. Analytical data and exact location not published. Smith Peak quad., YA county (34° 4.38', 113° 16.31'). L-5, #R82:2.

17.56 ± 0.37 # 417
KA/w.r./basaltic andesite **Tempe Butte basaltic andesite** Scarborough and Wilt, 1979
Phoenix Mtns. area — Tempe Buttes. Gray-black basaltic andesite flow, approx. 24 m above base of hill on west Tempe Butte. Overlies fine-grained, sedimentary rocks that are presumably part of Papago Park sequence. Tempe quad., MA county (33° 25.68', 111° 56.04'). L-1, K%= 2.4, *Ar=77, #UAKA-78-34.

17.60 ± 0.30 # 418
KA/horn/ash-flow tuff **Big Dome Fm.** Banks and others, 1972
Ray area -- Ash-flow tuff interbedded in clastics and conglomerates of the Big Dome Formation. Unconformably overlies Apache Leap Tuff. Biotite from same sample is younger. Kearny quad., PN county (33° 6.15', 110° 55.65'). L-3, K%= 0.6, *Ar=29, #B72:22H.

17.60 ± 0.60 ** # 419
KA/w.r./dacite flow **Arrastra Mtn. volcanics** Otton, 1982
Date Creek Basin area — Biotite-hornblende-pyroxene-plagioclase dacite flow from older volcanic section northwest of Anderson Mine. Stratigraphically below section with Early Miocene fauna, and below sample AP76-35 (19.2 m.y.), so date is too young. Arrastra Mtn. SE quad., MO county (34° 20.09', 113° 19.85'). L-2, K%= 3.1, *Ar=17, #AP76-32.

17.71 ± 0.43 # 420
KA/sani/rhyolite ash-flow tuff Mt. McDowell volcanics Shafiqullah and others, 1980
Mt. McDowell area -- Tuff overlies trachyte breccia UAKA-77-148 (18.01 m.y.) and reddish fanglomerate, near confluence of Salt and Verde Rivers. Granite Reef Dam quad., MA county (33° 32.15', 111° 41.12'). L-1, K%= 9.3, *Ar=84, #UAKA-77-149.

17.72 ± 0.37 # 421
KA/w.r./basaltic andesite Pyramid Peak basaltic andesite Scarborough and Wilt, 1979
Cave Creek area -- In a volcanic and clastic sequence near Pyramid Peak. In apparent fault contact with Precambrian slates and mica schist to the west. Daisy Mtn. quad., MA county (33° 53.24', 112° 4.12'). L-1, K%= 1.6, *Ar=70, #UAKA-78-42.

17.81 ± 0.52 # 422
KA/horn/andesite dike Cabeza Prieta volcanics Shafiqullah and others, 1980
Cabeza Prieta Mtns. -- Southern end. North end of a 1.5 km-long vertical andesite dike that strikes ENE and cuts Gunnery Range Granite. Three circular pipes of similar rock occur nearby. Dike and pipes are probably conduits for Cabeza Prieta volcanics Cabeza Prieta Peak quad., YU county (32° 14.71', 113° 50.66'). L-1, K%= 0.4, *Ar=48, #UAKA-76-41.

17.90 ± 0.70 # 423
KA/w.r./basalt Palo Verde volcanics Shafiqullah and others, 1980
Palo Verde Hills -- Porphyrytic basalt flow from the uppermost unit of the volcanic sequence. Also reported by Schoustra and others, 1976. Arlington quad., MA county (33° 21.20', 112° 51.10'). L-1, K%= 1.3, *Ar=30, #UAKA-73-32.

17.90 ± 0.70 ** # 424
KA/feld/gneiss Buckskin Mtns. augen gneiss Wilkins and Heidrick, 1982
Buckskin Mtns. -- Copper Penny area. Mylonitic granodiorite augen gneiss from drill core, 73 m below Whipple-Buckskin detachment fault. Cooling age. Swansea quad., LP county (34° 10.20', 113° 53.82'). L-5, K%= 9.9, *Ar=45, #NS-08-262.

17.98 ± 0.43 # 425
KA/biot/latite porphyry Hieroglyphic volcanics Shafiqullah and others, 1980
Buckhorn Mtns. -- Northwest of Hieroglyphic Mtns. Latite porphyry that overlies basement rocks. Rocks are locally hydrothermally altered and sulfide-bearing. Copperopolis quad., YA county (34° 1.17', 112° 26.13'). L-1, K%= 7.3, *Ar=55, #UAKA-72-71.

18.00 ± 0.00 # 426
PB/zirc/granite Times Porphyry DeWitt and Thorson, in press
Black Mtns. -- Southern part. A single -325 mesh zircon fraction yields a model lower intercept age of 18 m.y. using the upper intercept of 1670 m.y. from the Moss Porphyry. Oatman quad., MO county (35° 4.00', 114° 26.70'). L-2, #4-16-84-6.
PB/PB = 0.00 ± 0.00 238U/PB = 137.00 ± 5.00 235U/PB = 253.00 ± 5.00 TH/PB = 0.00 ± 0.00

18.00 ± 0.00 # 427
KA/biot/rhyodacite tuff San Manuel Fm. Krieger, 1974b
Tortilla Mtns. -- Rhyodacite tuff bed in Ripsey Wash sequence, which is probably equivalent to San Manuel Fm. Analytical data not published. Crozier Peak quad., PN county (32° 58.75', 110° 56.75'). L-3, C-?.

18.00 ± 7.20 # 428
KA/w.r./basalt Painted Rock basalt Eberly and Stanley, 1978
Painted Rock Mtns. -- Citrus Valley West quad., MA county (33° 1.05', 112° 59.97'). L-B, K%= 0.7, *Ar=5, #ES:100.

18.01 ± 0.43 ** # 429
KA/w.r./K-rich volcanic Mt. McDowell volcanics Shafiqullah and others, 1980
Mt. McDowell area -- Ultrapotassic, purple-red flow that is autobrecciated and overlies reddish fanglomerates. Probably metasomatized. Granite Reef Dam quad., MA county (33° 32.18', 111° 41.12'). L-1, K%=10.7, *Ar=93, #UAKA-77-148.

18.05 ± 0.80 # 430
KA/w.r./basalt Cerro Prieto basalt Eastwood, 1970
Silver Bell Mtns. -- Samaniego Hills. Dark reddish-brown vesicular olivine basalt with plagioclase and clinopyroxene. Samaniego Hills quad., PN county (32° 31.00', 111° 26.33'). L-1, K%= 0.8, *Ar=38, #RLE-27-67.

18.15 ± 0.44 # 431
KA/w.r./basalt Superstition volcanics Shafiqullah and others, 1980
Goldfield Mtns. -- Part of a fractured and structurally disturbed volcanic sequence that overlies a tilted fanglomerate-conglomerate unit. Clastic unit strikes N30W, and dips 20 degrees southwest. Stewart Mtn. quad., MA county (33° 33.54', 111° 34.78'). L-1, K%= 1.0, *Ar=83, #UAKA-77-144.

18.20 ± 0.40 ** # 432
KA/biot/K-rich dike Vulture dike Rehrig and others, 1980
Vulture Mtns. -- Porphyritic rhyolite (?) dike that cuts lowest basaltic andesite flows and the underlying Precambrian basement rocks. Possibly K-metasomatized. Vulture Mtns. quad., MA county (33° 56.80', 112° 50.40'). L-1, K%= 6.0, *Ar=56, #UAKA-72-44.

18.23 ± 1.50 # 433
KA/w.r./basalt Austin Peak basalt Young and McKee, 1978
Aquarius Mtns. -- Meath Spring quad., MO county (35° 4.72', 113° 29.92'). L-3, K%= 0.9, *Ar=13.

18.26 ± 3.10 # 434
KA/w.r./basalt Superstition volcanics Damon and others, 1969
Superstition Mtns. -- Younger basalt in Black Mesa Caldera. Mormon Flat Dam quad., MA county (33° 31.43', 111° 28.03'). L-1, K%= 1.5, *Ar=11, #PED-14-68.

18.30 ± 4.00 ** # 435
FT/apat/ash-flow tuff Aguila Ridge volcanics Brooks, 1984
Aguila Ridge -- Near southeast end of Aguila Ridge, eastern Harcuvar Mtns. Sample also yields a K-Ar biotite age of 23.9 m.y., and a zircon fission-track age of 18.6 m.y. No analytical data reported. Date Creek Ranch SE quad., YA county (34°0.93', 113° 6.92'). L-2, #191-79.

18.30 ± 0.60 # 436
KA/plag/andesite Childs Latite Gray and Miller, 1984
Crater Range -- Porphyritic andesite that caps mesa 1.2 km W of AZ highway 85. Midway quad., MA county (32° 32.75', 112° 53.50'). L-3, K%= 1.0, *Ar=38, #81AM57.

18.31 ± 0.46 # 437
KA/w.r./basalt Superstition volcanics Shafiqullah and others, 1980
Goldfield Mtns. -- North end of Saguaro Lake. Overlain by a poorly welded ash-flow tuff that contains pumice and rhyolite chips. Lithology is similar to UAKA-77-144 (18.15 m.y.). Stewart Mtn. quad., MA county (33° 34.53', 111° 31.54'). L-1, K%= 1.1, *Ar=62, #UAKA-77-145.

18.31 ± 0.42 # 438
KA/w.r./basaltic andesite Kofa volcanics Shafiqullah and others, 1980
Kofa Mtns. -- Highest mesa-forming flow that is flat-lying and provides a minimum age of tilting. Kofa Butte quad., LP county (33° 29.00', 113° 53.00'). L-1, K%= 1.8, *Ar=61, #UAKA-73-108.

18.35 ± 0.38 # 439
KA/biot/granite Wood Camp Canyon granite Shafiqullah and others, 1980
Superior area -- Reevis Canyon. Aplitic granite associated with disseminated pyrite in the stock and adjacent wall rocks. Picketpost Mtn. quad., PN county (33° 21.75', 111° 7.67'). L-1, K%= 7.6, *Ar=77, #UAKA-73-109.

18.38 ± 0.50 # 440
KA/biot/rhyolite Artillery Fm. Gassaway, 1977
Artillery Mtns. -- Glassy rhyolite flows in upper part of formation at Eagle Point. Artillery Peak quad., MO county (34° 24.84', 113° 40.32'). L-7, C-?, K%= 5.3, *Ar=45, #KA-1236.

18.40 ± 0.50 # 441
KA/biot/dacite Picketpost Mtn. dacite Shafiqullah and others, 1980
Superior area -- Picketpost Mtn. Dacite flow that forms the top of Picketpost Mtn. Sample PED-11-65. Picketpost Mtn. quad., PN county (33° 15.30', 111° 9.40'). L-1, K%= 7.2, *Ar=73, #UAKA-65-11.

18.40 ± 0.90 # 442
KA/plag/basalt Sand Tank volcanics Gray and Miller, 1984
Sand Tank Mtns. -- Porphyritic basalt in plateau area in northern Sand Tank Mtns. Part of a thick sequence of flows in northern part of area. May be a minimum age based on geologic considerations. Gila Bend quad., MA county (32° 49.50', 112° 31.00'). L-3, K%= 0.7, *Ar=50, #82AM61.

18.50 ± 2.40 ** # 443
FT/apat/quartz monzonite Tortolita Quartz Monzonite Creasey and others, 1977
Tortolita Mtns. -- Fine-grained, slightly foliated hypidiomorphic granular quartz monzonite. Date reflects cooling of middle Tertiary pluton. Biotite from this sample yields a 22.7 m.y. K-Ar age. Ruelas Canyon quad., PM county (32° 28.00', 111° 2.00'). L-2, #RC-25.

18.50 ± 2.00 # 444
KA/w.r./basaltic andesite dike Exxon State 32-1 volcanics Eberly and Stanley, 1978
Tucson Basin -- Located at 2972-3002 m level in Exxon State (32)-1 well. Interpreted to be an intrusive body. Tucson SE quad., PM county (32° 4.08', 110° 49.51'). L-B, K%= 2.4, *Ar=18, #ES:24.

18.60 ± 4.00 # 445
PB/zirc/granite Moss Porphyry DeWitt and Thorson, in press
Black Mtns. —Southern part. Three zircon fractions define a concordia with an upper intercept of 1673 m.y. Evidence of inherited zircons.-400 mesh fraction yields a thorogenic lead age that is in close agreement with the lower intercept of the concordi Oatman quad., MO county (35° 5.98', 114° 26.80'). L-2, #4-16-84-5.

18.60 ± 1.00 ** # 446
FT/zirc/ash-flow tuff Aguila Ridge volcanics Brooks, 1984
Aguila Ridge — Near southeast end of Aguila Ridge, eastern Harcuvar Mtns. Sample also yields a K-Ar biotite age of 23.9 m.y., and an apatite fission-track age of 18.3 m.y. No analytical data reported. Date Creek Ranch SE quad., YA county (34°0.93', 113° 6.92'). L-2, #191-79.

18.60 ± 0.90 # 447
KA/biot/quartz latite Gold Road Latite Thorson, 1971
Black Mtns. — West of Oatman. Highest flow of Gold Road latite on south side of Gold Road fault. Unit rests on the eroded upper surface of Antelope quartz latite (19.2 m.y.). Oatman quad., MO county (35° 2.00', 114° 24.00'). K%= 6.5, *Ar=62, #385.

18.60 ± 1.50 # 448
KA/horn/trachybasalt Artillery Fm. Wilkins and Heidrick, 1982
Buckskin Mtns. — Copper Penny area. Top of Artillery Fm. From drill core, 30 m above Whipple-Buckskin detatchment fault. Swansea quad., LP county (34° 9.82', 113° 52.33'). L-5, K%= 0.5, *Ar=16, #NS-06-95.

18.60 ± 0.00 # 449
KA/w.r./basalt Pitahaya Canyon basalt Tosdal and others, 1986
Ajo Range -- Exposed only at the head of Pitahaya Canyon. Basalt interstratified with pebble to cobble conglomerate, volcaniclastic sandstone, and siltstone. No analytical data reported. Generalized lat-lon. Mt. Ajo quad., PM county (32° 6.25', 112° 41.60'). L-3, #T86:1.

18.70 ± 0.44 ** # 450
KA/w.r./K-rich volcanic Mt. McDowell volcanics Shafiqullah and others, 1980
Mt. McDowell area — Boulder of autobrecciated, purple-red volcanic contained within a reddish fanglomerate that underlies flow breccia UAKA-77-148 (18.01 m.y.). Fanglomerate also contains clasts of older crystalline rocks. Probably K-metasomatized. Granite Reef Dam quad., MA county (33° 32.43', 111° 41.24'). L-1, K%= 9.3, *Ar=96, #UAKA-77-147.

18.70 ± 0.30 # 451
KA/w.r./basalt Castaneda Hills basalt Suneson and Lucchitta, 1983
Castaneda Hills — Referred to as older basalt. Castaneda Hills quad., MO county (34° 28.57', 113° 58.00'). L-3, K%= 1.9, *Ar=62, #CH-49.

18.70 ± 0.50 # 452
KA/sani/rhyolite Ajo volcanics Gray and Miller, 1984
Growler Mtns. — Porphyritic rhyolite in southern Growler Mtns. Overlain by the Childs Latite. Kino Peak quad., PM county (32° 7.80', 112° 58.00'). L-3, K%= 4.7, *Ar=73, #AK2091.

18.70 ± 0.60 # 453
KA/w.r./rhyolite Spring Valley rhyolite Kortemeier and others, 1986
Hieroglyphic Mtns. — Castle Hot Springs volcanic field. One of lower flow-banded rhyolite flows in section. Referred to as Garfias rhyolite. No analytical data reported. Generalized lat-lon. Governors Peak quad., YA county (33° 55.88', 112° 20.78'). L-7, #3-3-3.

18.76 ± 0.60 # 454
KA/sani/rhyodacitic tuff Peach Springs Tuff Damon and others, 1964
Hualapai Plateau -- Peach Springs. Light-gray, sanidine-bearing, ash-flow tuff that contains large pumice inclusions and numerous basaltic xenoliths. Overlies basalts and gravels that contain clasts of Precambrian and Paleozoic rocks. Peach Springs quad., MO county (35° 34.50', 113° 25.47'). L-1, K%= 7.3, *Ar=93, #PED-27-63.

18.80 ± 1.50 # 455
KA/plag/dacite Picketpost Mtn. dacite Shafiqullah and others, 1980
Superior area -- Picketpost Mtn. Dacite flow that forms the top of Picketpost Mtn. Sample PED-11-65. Picketpost Mtn. quad., PN county (33° 15.30', 111° 9.40'). L-1, K%= 0.5, *Ar=14, #UAKA-65-11.

18.85 ± 0.60 # 456
KA/biot/quartz latite tuff Geronimo Head Fm. Stuckless and Sheridan, 1971
Superstition Mtns. — Dogie Spring middle member of the Superstition tuff, intercalated in Geronimo Head Fm. Weavers Needle quad., MA county (33° 28.00', 111° 15.50'). C-?, K%= 7.3, *Ar=56, #AP-205.

18.90 ± 1.40 # 457
KA/w.r./rhyolite Road Runner Rhyolite Creasey and others, 1983
Ray area — Unconformably overlies Sleeping Buffalo Rhyolite. Teapot Mtn. quad., PN county (33° 13.43', 111° 7.12'). L-3, K%= 3.4, *Ar=22, #C83:1.

18.92 ± 0.60 # 458
KA/horn/latite Cordes latite McKee and Anderson, 1971
Agua Fria area — Latite dome north of Cordes. Cleator quad., YA county (34° 21.00', 112° 11.50'). L-3, K%= 0.8, *Ar=29, #MY1.

19.00 ± 1.20 # 459
KA/plag/dacite dike Castle Dome dike Logan and Hirsch, 1982
Castle Dome Mtns. — Dacite porphyry dike in SE section of dike swarm. Castle Dome Mtns. quad., YU county (33° 2.10', 114° 9.85'). L-7, K%= 4.5, *Ar=28, #CD-2.

19.10 ± 0.70 ** # 460
KA/w.r./ash-flow tuff Patsy Mine Volcanics Anderson and others, 1972
Black Mtns. -- Northern part. West flank of range. Densely welded, mildly altered ash-flow tuff. 23.4 m.y. date on sanidine from same sample. Black Canyon quad., MO county (35° 46.62', 114° 36.05'). L-2, K%= 4.8, *Ar=82, #BC309.

19.10 ± 0.40 # 461
KA/sani/rhyolite pyroclastic flow Gila Box rhyolite Richter and others, 1983
Peloncillo Mtns. — Gila Box. Unit occurs within conglomerate of Bonita Creek and upper andesites. No analytical data reported. Guthrie quad., GM county (32° 54.70', 109° 27.59'). L-1, #R83:A.

19.20 ± 4.00 ** # 462
SR/w.r./aplite Catalina granite Hoelle, 1976
Santa Catalina Mtns. — Isochron constructed from two aplite dike samples in the Catalina Granite and a fine-grained border granite sample. Age is too young. See Keith and others (1980) for interpretation of data. Sri=0.7116+/-0.0001, 3 pts. Oracle quad., PM county (32° 30.00', 110° 51.00'). L-1, #35-39-73.

19.20 ± 1.40 ** # 463
FT/zirc/rhyodacite McLendon Peak rhyodacite Brooks, 1984
Santa Maria Mtns. -- Sample also yields a K-Ar biotite age of 22.1 m.y., and an apatite fission-track age of 17.1 m.y. No analytical data reported. Date Creek Ranch NW quad., YA county (34° 13.65', 113° 10.80'). L-2, #A3.

19.20 ± 0.90 # 464
KA/biot/quartz latite Antelope quartz latite Thorson, 1971
Black Mtns. -- Oatman area, near Hwy., east of Sitgreaves Pass. Glassy, medium-gray, biotite-hornblende quartz latite from lowest flow of Antelope Rhyolite, which rests directly on the eroded surface of the upper Gold Road latite. Mt. Nutt quad., MO county (35° 2.30', 114° 21.60'). K%= 6.5, *Ar=62, #558A.

19.20 ± 0.47 # 465
KA/w.r./basalt Lookout Mtn. basalt Shafiqullah and others, 1980
Phoenix Mtns. area — Lowermost basalt flow near the summit of Lookout Mtn., north of Phoenix. Sunnyslope quad., MA county (33° 37.40', 112° 2.70'). L-1, K%= 1.3, *Ar=75, #UAKA-74-149.

19.20 ± 0.70 # 466
KA/w.r./basaltic andesite Chapin Wash Fm. Otton, 1982
Date Creek Basin area — Olivine-pyroxene basaltic andesite with plagioclase phenocrysts. Flow from Chapin Wash Fm., stratigraphically below section bearing early Miocene fauna at the Anderson Mine. Palmerita Ranch quad., MO county (34° 18.49', 113° 22.88'). L-2, K%= 1.9, *Ar=20, #AP76-35.

19.20 ± 0.40 ** # 467
KA/biot/granite Telegraph Pass Granite Reynolds, 1985
South Mtns. -- Cooling age on 22-25-m.y.-old pluton. Also reported by Reynolds and others (1986). Lone Butte quad., MA county (33° 20.48', 112° 4.87'). L-1, K%= 7.2, *Ar=72, #UAKA-73-110.

19.24 ± 0.42 # 468
KA/sani/rhyolite Superstition volcanics Scarborough, 1981
Superstition Mtns. -- Willow Springs Canyon. Anorthoclase sanidine dated from flow-banded rhyolite that occurs in homoclinally tilted section. Unit may be related to units in the Goldfield Mtns. Mormon Flat Dam quad., MA county (33° 31.95', 111° 29.88'). L-1, K%= 1.5, *Ar=69, #UAKA-80-126.

19.30 ± 2.70 ** # 469
FT/apat/granite Wilderness granite Creasey and others, 1977
Santa Catalina Mtns. -- Mylonitically foliated, gneissic two-mica granite of early Tertiary age. Agua Caliente Hill quad., PM county (32° 22.00', 110° 43.00'). L-2, #GGN-S1.

19.40 ± 0.47 # 470
KA/biot/tuff Geothermal Kinetics volcanics Shafiqullah and others, 1980
Higley Basin — Poorly welded pyroclastic rock in drill core from 2400-2420 m depth of Geothermal Kinetics drill hole. Flow probably correlates with rhyolitic volcanics in the Superstition-Superior area. Higley quad., MA county (33° 17.00', 111° 41.30'). L-1, K%= 6.9, *Ar=84, #UAKA-74-130.

19.40 ± 0.40 # 471
KA/w.r./andesite Guthrie Peak andesite Richter and others, 1983
Peloncillo Mtns. -- West side of range, north of highway. No analytical data reported. Guthrie quad., GM county (32° 52.67', 109° 22.51'). L-1, #R83:C.

19.41 ± 0.47 # 472
KA/biot/rhyolite Plomosa volcanics Shafiqullah and others, 1980
Plomosa Mtns. -- Rhyolite tuff-vitrophyre breccia, part of tilted and deformed sequence that underlies unconsolidated gravel and basalt at Black Mesa. Provides an older age for deformation in this area. Quartzsite quad., LP county (33° 35.16', 114° 2.49'). L-1, K%= 7.4, *Ar=82, #UAKA-74-38.

19.50 ± 0.30 # 473
KA/w.r./rhyolite to rhyodacite Kofa volcanics Dahm and Hankins, 1982
Kofa Mtns. -- Polaris Mtn. area. Rhyolite to rhyodacite lava flows and ash flow tuff, North Star mine area, southern Kofa Mtns. Generalized lat-lon. Analytical data and location not published. Kofa Butte quad., YU county (33° 18.01', 113° 58.29'). L-7.

19.50 ± 0.60 # 474
KA/biot/rhyolite Sauceda volcanics Gray and Miller, 1984
Sauceda Mtns. — Porphyritic rhyolite. Rhyolite flows overlie porphyritic basalt. Source region is in Sauceda Mtns. Hat Mtn. quad., MA county (32° 34.16', 112° 35.85'). L-3, K%= 7.3, *Ar=71, #81AG239.

19.52 ± 0.56 # 475
KA/w.r./andesite Palo Verde volcanics Shafiqullah and others, 1980
Palo Verde Hills -- Andesite flow tilted 50 to 70 degrees. Also reported by Schoustra and others (1976). Arlington quad., MA county (33° 26.00', 112° 57.00'). L-1, K%= 2.3, *Ar=51, #UAKA-73-21.

19.58 ± 0.88 # 476
KA/w.r./basaltic andesite Palo Verde volcanics Shafiqullah and others, 1980
Palo Verde Hills — Dike in middle Tertiary volcanic rocks. Also reported by Schoustra and others (1976). Arlington quad., MA county (33° 25.60', 112° 53.26'). L-1, K%= 2.1, *Ar=27, #UAKA-73-30.

19.58 ± 0.53 # 477
KA/biot/granodiorite White Tanks Mtns. granodiorite Shafiqullah and others, 1980
White Tank Mtns. -- West end. Pluton is probably middle Tertiary. White Tank Mtns. quad., MA county (33° 36.90', 112° 37.60'). L-1, K%= 6.6, *Ar=44, #UAKA-73-14.

19.60 ± 0.60 # 478
KA/horn/rhyodacite Plomosa volcanics Miller and McKee, 1971
Plomosa Mtns. — Rhyodacite that unconformably overlies thrust faults and is cut to the south by N70W-trending faults with apparent right-lateral, strike-slip movement. Quartzsite quad., LP county (33° 35.17', 114° 2.63'). L-3, K%= 0.8, *Ar=36, #QQ.

19.60 ± 0.90 # 479
KA/w.r./basalt Palo Verde volcanics Schoustra and others, 1976
Arlington Valley — Gillespie Dam area. Olivine basalt, northwest of Gillespie Dam, location G-2. Spring Mtn. quad., MA county (33° 14.30', 112° 50.00'). L-5, K%= 1.8, *Ar=29, #R-2640.

19.60 ± 1.30 # 480
KA/biot/granite Little Ajo Mtns. granite McDowell, 1971
Little Ajo Mtns. — Medium-grained, equigranular quartz monzonite that is highly altered. Pluton is middle Tertiary or else was overprinted by a middle Tertiary thermal event. Hornblende date on same sample is 20.1 m.y. Ajo quad., PM county (32° 21.92', 112° 52.88'). L-A, K%= 4.7, *Ar=21, #L-844.

19.60 ± 5.90 # 481
KA/plag/rhyolitic tuff Trigo Mtns. volcanics Weaver, 1982
Trigo Mtns. — Northeastern part of range. Mule Wash quad., LP county (33° 23.05', 114° 23.05'). L-7, K%= 0.6, *Ar=7, #2186.

19.70 ± 2.80 ** # 482
FT/apat/granite El Tiro biotite granite Banks and others, 1978a
Silver Bell Mtns. — Leucocratic Laramide quartz monzonite. Reduced age. Rock unit formerly known as Silver Bell alaskite, it yields a 72 m.y. U-Pb zircon age. Vaca Hills quad., PM county (32° 24.59', 111° 33.00'). L-2, #VHNE-169N.