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Quaternary Fault and Fold Database of the United States

As of January 12, 2017, the USGS maintains a limited number of metadata fields that characterize the Quaternary faults and folds of the United States. For the most up-to-date information, please refer to the interactive fault map.

Maverick Butte faults (Class A) No. 976

Last Review Date: 1997-02-04

Compiled in cooperation with the Arizona Geological Survey

citation for this record: **Pearthree, P.A., compiler, 1997, Fault number 976, Maverick Butte faults, in Quaternary fault and fold database of the United States: U.S. Geological Survey website, https://earthquakes.usgs.gov/hazards/qfaults, accessed 12/14/2020 03:11 PM.**

Synopsis	The Maverick Butte faults form a moderately high, west-facing escarpment and a shorter, lower, east-facing escarpment on Pliocene and middle Pleistocene basalt along the northwestern flank of San Francisco Mountain. The fault has had recurrent movement since at least the early Quaternary, with at least 18 m of total displacement since about 750 ka. This amount of displacement indicates that the Maverick Butte faults are among the most active middle and late Quaternary faults in north-central Arizona. However, the fault scarp formed on basalt is only moderately steep, which suggests that this fault has not ruptured recently. The age of youngest fault activity is poorly constrained.

Name comments	Mapped and named the Kendrick Peak fault by Menges and Pearthree (1983 #2073); investigated and renamed the Maverick Butte faults by Pearthree and others (1996 #2153). The geology of the area was geologic mapped by Wolfe and others (1987 #2160).
County(s) and State(s)	COCONINO COUNTY, ARIZONA
Physiographic province(s)	COLORADO PLATEAUS
Reliability of location	Good Compiled at 1:250,000 scale. *Comments:* Trace mapped at 1:50,000 scale; transferred to 1:250,000-scale topographic base map.
Geologic setting	The faults are located in the northwestern part of the Pliocene-Quaternary San Francisco volcanic field, on the lower flank of San Francisco Mountain. There are no other Quaternary faults in the immediate vicinity. These northeast- and north-trending faults cut Pliocene volcanic rocks and two lowermost middle Pleistocene basalt flows; the younger of these flows has been dated at 660?110 ka (Wolfe and others, 1987 #2160).
Length (km)	4 km.
Average strike	N26°E
Sense of movement	Normal *Comments:* Inferred from surface displacement and regional relations.
Dip Direction	NW; E
Paleoseismology studies	
Geomorphic expression	The fault forms a moderately high (<20-m-high), northwest-facing escarpment and a shorter, lower, east-facing scarp on Quaternary and Pliocene basalt flows. The scarps join to form a low promontory at the north end of the fault zone. Scarp slopes are moderate and have maximum slopes of about 17?.
Age of faulted	

surficial deposits	Pliocene, early to middle Pleistocene basalt flows
Historic earthquake	
Most recent prehistoric deformation	middle and late Quaternary (<750 ka) *Comments:* Substantial displacement of lowermost middle Pleistocene basalt (660?110 ka) indicates that this fault has been active during or since the middle Pleistocene. Scarp slopes are only moderately steep and no displacement of late Quaternary alluvium has been documented, so it is not clear that the fault has ruptured during the late Quaternary.
Recurrence interval	
Slip-rate category	Less than 0.2 mm/yr *Comments:* A low long-term slip rate is inferred based on at least 18 m of displacement of a lowermost middle Pleistocene (660?110 ka) basalt flow.
Date and Compiler(s)	1997 Philip A. Pearthree, Arizona Geological Survey
References	#2073 Menges, C.M., and Pearthree, P.A., 1983, Map of neotectonic (latest Pliocene-Quaternary) deformation in Arizona: Arizona Geological Survey Open-File Report 83-22, 48 p., scale 1:500,000. #2153 Pearthree, P.A., Vincent, K.R., Brazier, R., and Hendricks, D.M., 1996, Plio-Quaternary faulting and seismic hazard in the Flagstaff area, northern Arizona: Arizona Geological Survey Bulletin 200, 40 p., 2 pls. #2160 Wolfe, E.W., Ulrich, G.E., Holm, R.F., Moore, R.B., and Newhall, C.G., 1987, Geologic map of the central part of the San Francisco volcanic field, north-central Arizona: U.S. Geological Survey Miscellaneous Field Studies Map MF-1959, 86 p. pamphlet, 2 sheets, scale 1:50,000.