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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.

Hidden Tank fault zone (Class A) No. 970

Last Review Date: 1997-01-07

Compiled in cooperation with the Arizona Geological Survey

citation for this record: **Pearthree, P.A., compiler, 1997, Fault number 970, Hidden Tank fault zone, 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	This northwest-trending normal fault zone is located near the northwestern margin of the Pliocene-Quaternary San Francisco volcanic field. Faulting is expressed as a fairly low, southwest-facing fault scarp and shallow grabens formed on lower and middle Pleistocene volcanic rocks and Paleozoic bedrock. The fault may not have been active during the late Quaternary, because fault scarps are quite gentle and late Quaternary alluvium on graben floors and valleys of drainages that intersect the fault zone is not faulted.
Name comments	Mapped by Menges and Pearthree (1983 #2073), who grouped this fault zone with others in the area as the Double Top fault set.

	This particular fault zone was named and differentiated from other faults in the area by Pearthree and others (1996 #2153); the geology of this area was 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	This is one of several fault zones located near the northwestern margin of the Pliocene-Quaternary San Francisco volcanic field, on the erosion surface cut onto Paleozoic rocks between the Colorado Plateau margin and the Grand Canyon. The Hidden Tank faults displace Paleozoic bedrock and lower Pleistocene basalt by about 10 m, and middle Pleistocene basalt by about 2 m.
Length (km)	10 km.
Average strike	N41°W
Sense of movement	Normal *Comments:* Predominantly normal movement is inferred from topographic and regional relations.
Dip Direction	SW; NE
Paleoseismology studies	
Geomorphic expression	The principal fault scarp formed on Paleozoic bedrock and lower Pleistocene basalt is moderately high (about 10 m), moderately steep (15? to 20?), and southwest-facing. Along the southern one-third of the fault zone, a scarp of similar size and morphology exists on the southwestern margin of a 750-m-wide trough. Near the southern end of the principal fault scarp, a gentle (about 10?), 2.5-m-high fault scarp is formed on a middle Pleistocene basalt flow. Farther north, a much narrower (about 50-m-wide) trough exists on lower Quaternary volcanic rock along the main fault

	zone.
Age of faulted surficial deposits	Paleozoic, early and middle Pleistocene
Historic earthquake	
Most recent prehistoric deformation	middle and late Quaternary (<750 ka) *Comments:* Lower and middle Pleistocene basalt flows are displaced, but there is no definitive evidence of late Quaternary activity.
Recurrence interval	
Slip-rate category	Less than 0.2 mm/yr *Comments:* A low slip rate is inferred based on about 2.5 m of displacement of a middle Pleistocene (500 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.

Questions or comments?

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