Jump to Navigation

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.

Oak Creek North fault zone (Class A) No. 980

Last Review Date: 1997-01-31

Compiled in cooperation with the Arizona Geological Survey

citation for this record: **Pearthree, P.A., compiler, 1997, Fault number 980, Oak Creek North 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	A major north- to northeast-trending, down-to-the-east normal fault bounds the west side of Oak Creek Canyon and continues north to the southern flank of the San Francisco Mountains. There evidently has been no Quaternary activity along the southern two-thirds of this fault, because Miocene basalt is displaced about 120 m, but Pliocene volcanic rocks are not displaced. However, along the northernmost 5 km of the fault, lower Pleistocene volcanic rocks are displaced by less than 25 m. There is no definitive evidence of middle or late Quaternary displacement.
Name comments	Originally mapped and named by Menges and Pearthree (1983 #2073); later misnamed the Oak Creek Canyon North fault zone

	by Pearthree and others (1996 #2153). The general geology of the area was mapped by Ulrich and others (1984 #2157).
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 1:100,000 scale; transferred to 1:250,000-scale topographic base map.
Geologic setting	The Oak Creek North fault zone extends from an area of extensive upper Miocene volcanic rocks on the south into the southern part of the Pliocene-Quaternary San Francisco volcanic field. Upper Pliocene volcanic rocks are not displaced along the southern and central parts of the fault. Along the northern part of the fault, which is within the San Francisco volcanic field, upper Miocene and lower Pleistocene volcanic rocks are displaced about 25 m.
Length (km)	7 km.
Average strike	N21°E
Sense of movement	Normal *Comments:* Predominantly normal movement is inferred from topographic relations.
Dip Direction	E; SE
Paleoseismology studies	
Geomorphic expression	A moderately high, east-facing escarpment is formed on Miocene and lower Pleistocene volcanic rocks. The escarpment has a moderate slope angle.
Age of faulted surficial deposits	Late Miocene, early Pleistocene
Historic	

earthquake	
Most recent prehistoric deformation	undifferentiated Quaternary (<1.6 Ma) *Comments:* Upper Miocene rocks are displaced, but Pliocene rocks are not displaced along the southern two-thirds of the fault zone. Lower Pleistocene volcanic rocks are displaced along the northernmost 5 km of the fault zone. The moderately sharp geomorphic expression of the fault escarpment is consistent with Quaternary fault activity, but no definitive evidence of middle or late Quaternary faulting has been documented.
Recurrence interval	
Slip-rate category	Less than 0.2 mm/yr *Comments:* A low long-term slip rate is inferred based on about 25 m of displacement of 1.0-1.6 Ma basalt.
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. #2157 Ulrich, G.E., Billingsley, G.H., Hereford, R., Wolfe, E.W., Nealey, L.D., and Sutton, R.L., 1984, Maps showing geology, structure, and uranium deposits of the Flagstaff 1° by 2° quadrangle, Arizona: U.S. Geological Survey Miscellaneous Investigations Map I-1446, 2 sheets, scale 1:250,000.

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