

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](#).

Central Kaibab fault system (Class A) No. 993

Last Review Date: 1997-02-11

Compiled in cooperation with the Arizona Geological Survey

citation for this record: Pearthree, P.A., compiler, 1997, Fault number 993, Central Kaibab fault system, 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

Several normal faults cut the erosion surface formed on Paleozoic rocks along the highest part of the Kaibab Plateau, north of the Grand Canyon. Quaternary deposits are sparse in this area, but local deposition has occurred in shallow valleys along some of the faults. The overall trend of the Central Kaibab fault system is north, but individual faults trend north, northwest, northeast, and approximately east-west. Along the southern half of the fault system, faulting is expressed as fairly high, gentle, west-facing scarps formed on Paleozoic bedrock, with Quaternary deposits in linear valleys along their bases. Quaternary activity is possible on at least some of these faults based on their geomorphic expression, but it has not been conclusively demonstrated.

Name comments	Mapped and named by Huntoon (1974 #2176); some of the faults were mapped and described previously by Strahler (1948 #2177). The fault system includes the Central Kaibab-Demotte Park and Central Kaibab-Summit Valley fault sets of Menges and Pearthree (1983 #2073).
County(s) and State(s)	COCONINO COUNTY, ARIZONA
Physiographic province(s)	COLORADO PLATEAUS
Reliability of location	<p>Good Compiled at 1:250,000 scale.</p> <p><i>Comments:</i> Mapped on 1:130,000-scale aerial photos, transferred to 1:250,000-scale topographic base for digitization.</p>
Geologic setting	<p>These faults cut an erosion surface developed on Paleozoic rocks of the Kaibab Plateau, north of the Grand Canyon. Published, fairly detailed geologic mapping covers the southern part of this fault zone (Huntoon and others, 1976 #2174); the geology of the northern faults has not been mapped in detail. Down-to-the-west normal faulting may represent reactivation of west-dipping reverse faults at the cores of Laramide folds (Huntoon, 1974 #2176). The Central Kaibab faults cut Paleozoic bedrock; Quaternary alluvium has been deposited on the downthrown side of many of the faults, but no displacement of Quaternary alluvium has been documented.</p>
Length (km)	71 km.
Average strike	N2°E
Sense of movement	<p>Normal</p> <p><i>Comments:</i> Predominantly normal movement inferred from topography and regional geologic relations.</p>
Dip Direction	W; SW; NW
Paleoseismology studies	
Geomorphic expression	Predominantly west-facing graben escarpments are moderately high with fairly gentle slopes. Linear troughs covered by

	Quaternary alluvium are common on the western, downthrown sides of these faults.
Age of faulted surficial deposits	Paleozoic
Historic earthquake	
Most recent prehistoric deformation	undifferentiated Quaternary (<1.6 Ma) <i>Comments:</i> This timing estimate is very poorly constrained. The moderately strong geomorphic expression of the fault escarpments suggests that there may have been some Quaternary activity on this fault system.
Recurrence interval	
Slip-rate category	Less than 0.2 mm/yr <i>Comments:</i> Low slip-rate category assigned based on the lack of demonstrable evidence for Quaternary movement.
Date and Compiler(s)	1997 Philip A. Pearthree, Arizona Geological Survey
References	#2176 Huntoon, P.W., 1974, The post-Paleozoic structural geology of the eastern Grand Canyon, Arizona, <i>in</i> Breed, W.J., and Roat, E.C., eds., Geology of the Grand Canyon: Museum of Northern Arizona, Flagstaff, and the Grand Canyon Natural History Association, p. 82-115. #2174 Huntoon, P.W., Billingsley, G.H., Breed, W.J., Sears, J.W., Ford, T.D., Clark, M.D., Babcock, R.S., and Brown, E.H., 1976, Geologic map of the Grand Canyon National Park, Arizona: Grand Canyon Natural History Association (Grand Canyon, Arizona) and Museum of Northern Arizona (Flagstaff), 1 sheet, scale 1:62,500. #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.

#2177 Strahler, A.N., 1948, Geomorphology and structure of the West Kaibab fault and Kaibab, Arizona: Geological Society of America Bulletin, v. 59, no. 6, p. 513-540.

[Questions or comments?](#)

[Facebook](#) [Twitter](#) [Google](#) [Email](#)

[Hazards](#)

[Design](#) [Ground Motions](#) [Seismic Hazard Maps & Site-Specific Data](#) [Faults](#) [Scenarios](#)

[Earthquakes](#) [Hazards](#) [Data](#) [Education](#) [Monitoring](#) [Research](#)

[Home](#) [About Us](#) [Contacts](#) [Legal](#)