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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.

Cameron graben and faults (Class A) No. 988

Last Review Date: 1997-02-06

Compiled in cooperation with the Arizona Geological Survey

citation for this record: **Pearthree, P.A., compiler, 1997, Fault number 988, Cameron graben and 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	Several northwest- to northeast-trending normal faults cut the erosion surface formed on Mesozoic rocks near the Little Colorado River. The faults are north of the main part of the Pliocene-Quaternary San Francisco volcanic field, but an outlying middle Pleistocene basalt that flowed down the Little Colorado River Gorge is vertically displaced by as much as 25 m. The trends of these faults range from north to northeast; they form a narrow graben and other linear depressions. Fault scarps and escarpments away from the Little Colorado River Gorge are quite gentle, suggesting that there has been little or no late Quaternary activity on these faults.

Name comments	First mapped and discussed by Reiche (1937 #2168), the faults and geology were later mapped by Akers and others (1962 #2161) and Ulrich and others (1984 #2157). The faults were grouped together and named the Cameron graben by Menges and Pearthree (1983 #2073).
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	These faults are located on the erosion surface cut on Mesozoic rocks in the Little Colorado River Valley. The faults cut Mesozoic bedrock, the middle Pleistocene Tappan basalt (510?70 ka), and possibly a high-level terrace gravel of the Little Colorado River. The Tappan basalt flow along the Little Colorado River may be downfaulted as much as 25 m in a narrow graben (Reiche, 1937 #2168).
Length (km)	11 km.
Average strike	N°26E
Sense of movement	Normal
Dip Direction	E; W
Paleoseismology studies	
Geomorphic expression	Graben escarpments near the Little Colorado River are quite high and fairly steep, but they may have been enhanced by stream erosion. Elsewhere, scarps on Mesozoic bedrock are fairly gentle.
Age of faulted surficial deposits	Mesozoic, middle Pleistocene
Historic earthquake	

Most recent prehistoric deformation	middle and late Quaternary (<750 ka) *Comments:* Substantial middle to late Quaternary activity is indicated by substantial reported displacement of middle Pleistocene basalt flow. The fault scarps do not have a sharp geomorphic expression, which suggests that most or all of the fault activity occurred during the middle Quaternary.
Recurrence interval	
Slip-rate category	Less than 0.2 mm/yr *Comments:* A low average long-term slip rate is suggested by about as much as 25 m of displacement of the middle Pleistocene Tappan basalt flow (510?70 ka).
Date and Compiler(s)	1997 Philip A. Pearthree, Arizona Geological Survey
References	#2161 Akers, J.P., 1962, Relation of faulting to the occurrence of ground water in the Flagstaff area, Arizona, *in* Geological Survey Research 1962: U.S. Geological Survey Professional Paper 450, p. B97-B100. #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. #2168 Reiche, P., 1937, Quaternary deformation in the Cameron district of the plateau province: American Journal of Science, v. 34, p. 128-138. #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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