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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.

Concho fault (Class A) No. 1014

Last Review Date: 1998-02-13

Compiled in cooperation with the Arizona Geological Survey

citation for this record: **Pearthree, P.A., compiler, 1998, Fault number 1014, Concho fault, 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 02:21 PM.**

Synopsis	The Concho fault is a generally northwest-trending, discontinuous system of probable sinistral and oblique-normal slip faults that cuts the northeastern part of the Pliocene-Pleistocene Springerville volcanic field in east-central Arizona. The faults are on the erosion surface cut on Mesozoic rocks that slopes northeast from the Colorado Plateaus margin to the Little Colorado River. Faults displace Mesozoic bedrock and upper Pliocene to lower Pleistocene basalt flows in a down-to-the-northeast sense. Sinistral slip is inferred for the central part of the fault where there is minimal topographic relief; conversely, oblique normal and sinistral slip is inferred for the southern part of the fault. An early Pleistocene cinder cone has been displaced vertically about 30 m by the fault; along the northern part of the fault, there is a

	graben with fairly steep sides. The faults have probably been active in the middle or late Quaternary, but the age of youngest movement is not well constrained.
Name comments	Mapped and named by Crumpler and others (1994 #2101). A subsidiary fault along the northern part of the fault zone was mapped and grouped with a few faults of the Vernon [1016] and Coyote Wash [1015] faults; this group was called the "St. Johns fault set" by Menges and Pearthree (1983 #2073). The general geology was mapped by Crumpler and others (1994 #2101).
County(s) and State(s)	APACHE COUNTY, ARIZONA
Physiographic province(s)	COLORADO PLATEAUS
Reliability of location	Good Compiled at 1:250,000 scale. *Comments:* Mapped at 1:250,000-scale on topographic base map.
Geologic setting	The Concho fault zone trends generally northwest along the northeastern margin of the Pliocene-Pleistocene Springerville volcanic field in east-central Arizona. The faults are on the Mogollon Slope, an erosion surface cut on Mesozoic rocks that slopes north from the Colorado Plateaus margin to the Little Colorado River. Faults cut Pliocene to lower Pleistocene (0.9-1.3 Ma) volcanic rocks and Mesozoic bedrock. Along the northern part of the fault, an early Pleistocene cinder cone is vertically displaced about 30 m in a graben.
Length (km)	39 km.
Average strike	N37°W
Sense of movement	Normal *Comments:* Oblique normal and left-lateral movement is inferred for this fault on the basis of fault geometry, the narrowness of the zone of deformation, orientations of subsidiary structures, and regional relations. Oblique movement with a strong normal component is inferred for the southern part of the fault, and mainly sinistral slip is inferred for the central part of the fault. The northern end of the fault merges with a east-facing monocline, suggesting local compression there (Crumpler and

	others, 1994 #2101).
Dip Direction	NE *Comments:* Inferred from surface displacement.
Paleoseismology studies	
Geomorphic expression	Faulting is expressed as low to moderately high, fairly subdued, northeast-facing scarps formed Pliocene-Pleistocene basalt flows along the main fault. Throughout the fault zone, the pattern of surface faulting is complex; multiple short fault scarps are common. The slopes of a graben along the northern part of the fault are affected very little by erosion, implying that the fault has been active during the middle or late Quaternary (Crumpler and others, 1994 #2101); no morphologic scarp data has been reported. In addition, Pleistocene basalt flows have been tilted and deformed adjacent to the main fault zone and by several subsidiary folds.
Age of faulted surficial deposits	Mesozoic, Pliocene, early Pleistocene
Historic earthquake	
Most recent prehistoric deformation	middle and late Quaternary (<750 ka) *Comments:* Lower Pleistocene volcanic rocks are displaced by these faults. No faulting of alluvium has been documented.
Recurrence interval	
Slip-rate category	Less than 0.2 mm/yr *Comments:* A lower Pleistocene cinder cone (750 ka to 1.6 Ma) has been vertically displaced 30 m. These data yield a low minimum long-term slip rate.
Date and Compiler(s)	1998 Philip A. Pearthree, Arizona Geological Survey
References	#2101 Crumpler, L.S., Aubeler, J.C., and Condit, C.D., 1994,

	Volcanoes and neotectonic characteristics of the Springerville volcanic field, Arizona, *in* Chamberlin, R.M., Kues, B.S., Cather, S.M., Barker, J.M., and McIntosh, W.C., eds., Mogollon Slope, west-central New Mexico and east-central Arizona: New Mexico Geological Society, 45th Annual Field Conference, Guidebook, p. 147-164. #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.