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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.

Mead Slope fault (Class A) No. 1009

Last Review Date: 1997-05-09

Compiled in cooperation with the Arizona Geological Survey

citation for this record: **Pearthree, P.A., compiler, 1997, Fault number 1009, Mead Slope 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 02:19 PM.**

Synopsis	The Mead Slope fault is a very high angle fault with reverse and probably left-lateral strike-slip components of movement. It cuts lower and uppermost Quaternary deposits on the piedmont below Fortification Hill on the eastern side of Lake Mead, and evidently continues some distance to the northeast beneath Lake Mead. Oblique slip on the fault is suggested by the surface expression of faulting on the Quaternary fan surfaces, which is primarily linear troughs with minimal net vertical displacement. In addition, several other northeast-trending faults in the Lake Mead region have substantial late Cenozoic left-lateral displacement. Late Cenozoic basin deposits are displaced at least 70 m vertically across the Mead Slope fault, but there is no basis for estimating

	the long-term slip rate or recurrence intervals. The youngest faulting event occurred in the late Pleistocene to early Holocene.
Name comments	Mapped and named the Mead Slope fault by Longwell (1936 #2092; 1963 #2093); detailed mapping and investigations were conducted by Anderson and O'Connell (1993 #1440).
County(s) and State(s)	MOHAVE COUNTY, ARIZONA
Physiographic province(s)	BASIN AND RANGE
Reliability of location	Good Compiled at 1:250,000 scale. *Comments:* The on-land portion of the fault zone is mapped at 1:24,000-scale; extension of the fault zone to the northeast is inferred from Longwell (1936 #2092); transferred to 1:250,000-scale topographic map.
Geologic setting	The Mead Slope fault is a very high angle fault with reverse and probably left-lateral strike-slip components of movement. It is located on the piedmont slope below Fortification Hill, a basalt capped mesa on the eastern side of Lake Mead. The fault evidently continues some distance to the northeast beneath Lake Mead. Oblique slip on the fault is likely, because several other northeast-trending faults in the Lake Mead region have substantial late Cenozoic left-lateral displacement. Late Cenozoic basin deposits are displaced at least 70 m vertically across the Mead Slope fault (Anderson and O'Connell, 1993 #1440), and deformation of Pleistocene deposits is well documented.
Length (km)	7 km.
Average strike	N44°E
Sense of movement	Reverse *Comments:* Very high-angle reverse movement is inferred from stratigraphic exposures and the near vertical dip of the fault (Longwell, 1963 #2093). Possible left-lateral movement is inferred from the near vertical fault dip, the linearity of the fault trace, variable geomorphic expression of the fault along strike, and regional relationships.

Dip Direction	SE; V *Comments:* Near vertical, as determined from fault exposure (Longwell, 1963 #2093).
Paleoseismology studies	
Geomorphic expression	Linear troughs and down-to-the-northwest scarps are formed on all Pleistocene to early Holocene alluvial-fan deposits on the piedmont. However, no profiles of alluvial fault scarps have been surveyed.
Age of faulted surficial deposits	Miocene, early to middle Pleistocene, late Pleistocene to early Holocene. Age estimates for Quaternary deposits are based on soil development and regional correlations.
Historic earthquake	
Most recent prehistoric deformation	latest Quaternary (<15 ka) *Comments:* Detailed geologic mapping of the fault zone and soil descriptions by Anderson and O'Connell (1993 #1440) indicates Quaternary deposits estimated to be late Pleistocene to early Holocene in age are faulted, so the youngest event is likely to be less than 15 ka. Late Holocene deposits in channels and low overbank areas are not faulted.
Recurrence interval	
Slip-rate category	Less than 0.2 mm/yr *Comments:* Lower Pleistocene and uppermost Pleistocene to early Holocene deposits are faulted, but the amount of vertical displacement of these deposits generally is minimal and no quantitative estimates of strike-slip offset have been made (Anderson and O'Connell, 1993 #1440). Nevertheless, the fault is probably in the <0.2 mm/yr category on the basis of slip rates on other Quaternary faults in the region. Further study of offset features is needed to calculate slip rates.
Date and Compiler(s)	1997 Philip A. Pearthree, Arizona Geological Survey
References	#1440 Anderson, L.W., and O'Connell, D.R., 1993,

	Seismotectonic study of the northern portion of the lower Colorado River, Arizona, California, and Nevada: U.S. Bureau of Reclamation Seismotectonic Report 93-4, 122 p., 3 sheets. #2092 Longwell, C.R., 1936, Geology of the Boulder Reservoir floor, Arizona-Nevada: Geological Society of America Bulletin, v. 47, no. 9, p. 1393-1476. #2093 Longwell, C.R., 1963, Reconnaissance geology between Lake Mead and Davis Dam, Arizona-Nevada: U.S. Geological Survey Professional Paper 374-E, 51 p., 1 pl., scale 1:125,000.