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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.

Mine Mountain fault (Class A) No. 1066

Last Review Date: 1998-04-09

citation for this record: **Anderson, R.E., compiler, 1998, Fault number 1066, Mine Mountain 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 02:18 PM.**

Synopsis	The Mine Mountain fault is one of several northeast-striking faults with known or suspected normal-sinistral displacement in and near the southern part of the Nevada Test Site. The total fault length as indicated by its buried or bedrock traces is as much as 20 km. However, the part of this fault with known Quaternary displacement appears to be restricted to 3-km-long trace of the fault to the west of Mid Valley.
Name comments	Name applied by Carr (1984 #1472) to a northeast-striking fault or fault zone that passes through Mid Valley between Yucca Flat on the northeast and Jackass Flats on the southwest. Mine Mountain is the low series of hills located to the northeast of Mid Valley, along the northeast projection of the older, longer fault trace.,Name applied by Carr (1984 #1472) to a northeast-striking fault or fault zone that passes through Mid Valley between Yucca Flat on the northeast and Jackass Flats on the southwest. Mine

	Mountain is the low series of hills located to the northeast of Mid Valley, along the northeast projection of the older, longer fault trace. **Fault ID:** Referred to as fault DV4 dePolo (1998 #2845).
County(s) and State(s)	NYE COUNTY, NEVADA
Physiographic province(s)	BASIN AND RANGE
Reliability of location	Poor Compiled at 1:100,000 scale. *Comments:* There is much diversity in the trace of the Mine Mountain fault as depicted in published maps and illustrations (Ekren and Sargent, 1965 #1509; Orkild, 1968 #1506; Cornwall, 1972 #1482; Carr, 1974 #1469; Barnes and others, 1982 #1441; Carr, 1984 #1472). Geologic maps (Ekren and Sargent, 1965 #1509; Orkild, 1968 #1506; Cornwall, 1972 #1482; Frizzell and Shulters, 1990 #1037) show the fault in pre-Quaternary strata, but buried in areas of Quaternary deposits. The total fault length as indicated by its buried or bedrock traces is as much as 20 km. However, the part of this fault with known Quaternary displacement appears to be restricted to as little as the 3 km trace along the southeastern flank of Shoshone Mountain (Reheis and Noller, 1991 #1195). That is the part shown in the present compilation. The reliability of that location is good, having been mapped at scale of 1:100,000 from aerial photos at 1:60,000 scale.
Geologic setting	The Mine Mountain fault is one of four main faults that are part of the 30- to-60-km-wide Spotted Range-Mine Mountain structural zone (SRMM), which is characterized by northeast-striking, left-lateral faults that have relatively small amounts of displacement (p. 9 in Carr, 1974 #1470; p. 56 in Carr, 1984 #1472). The other three faults in the SRMM are the Cane Spring fault [1067], the Rock Valley fault [1065], and the Wahmonie fault [1068]. These faults have been interpreted to be "first-order structures that form a conjugate system with the northwest-striking, right-lateral faults of the Las Vegas Valley shear zone" (Barnes and others, 1982 #1441).
Length (km)	3 km.

Average strike	N40°E
Sense of movement	Normal *Comments:* Shown as a normal fault (Frizzell and Shulters, 1990 #1037), a sinistral normal fault (Reheis and Noller, 1991 #1195), and characterized as a sinistral fault (Carr, 1984 #1472). Displacement inferred to be oblique by Piety (1995 #915). Normal/sinistral sense reported herein is based on field studies reported in a summary of northeast-trending faults of the Spotted Range-Mine Mountain structural zone (TRW Environmental Safety Systems Inc., 1998 #3907). No exposures of the Mine Mountain fault were found, so its displacement sense is uncertain.
Dip Direction	SE
Paleoseismology studies	
Geomorphic expression	Part of a 3-km-long trace along the southeast flank of Shoshone Mountain is shown as a lineament, and other parts as a weakly or moderately expressed lineament or scarp (Reheis and Noller, 1991 #1195). In a summary of northeast-trending faults making up the SRMM (TRW Environmental Safety Systems Inc., 1998 #3907), no lineaments or other expression of Quaternary faulting along the Mine Mountain fault were recognized in fan deposits graded to Yucca Valley. Also, along Mine Mountain, the fault is characterized as very old with no erosional nick, scarp, or other declivity to mark it clearly. Reconnaissance along and across the southern alluvial flank of Shoshone Mountain, and examination of aerial photos of that area, revealed evidence of complex faulting, but no evidence of late Quaternary displacement or any scarps on alluvium or any transcurrent fault trace in alluvium that extends southwest of Mine Mountain.
Age of faulted surficial deposits	The weakly to moderately expressed scarp or lineament along Shoshone Mountain is shown as developed on surfaces on Quaternary deposits and as a topographic lineament along a range front or in bedrock (Reheis and Noller, 1991 #1195).
Historic earthquake	
Most recent prehistoric deformation	undifferentiated Quaternary (<1.6 Ma) *Comments:* Although timing of most recent event is not well

	constrained, a Quaternary time is suspected based on reconnaissance photogeologic mapping of Reheis and Noller (1991 #1195).
Recurrence interval	
Slip-rate category	Less than 0.2 mm/yr *Comments:* No short term data is available. However, a low long term (post mid-Miocene) rate is indicated on the basis of 1 km of left-lateral displacement of volcanic tuffs that erupted between 11.5 Ma and 13.5 Ma (Orkild, 1968 #1506; Carr, 1984 #1472). Using this data, the average long-term apparent slip rate since late Tertiary time is 0.07 to 0.09 mm/yr (Piety, 1995 #915). Accordingly, the less than 0.2 mm/yr slip-rate category has been assigned to this fault.
Date and Compiler(s)	1998 R. Ernest Anderson, U.S. Geological Survey, Emeritus
References	#1441 Barnes, H., Ekren, E.B., Rodgers, C.L., and Hedlund, D.C., 1982, Geologic and tectonic maps of the Mercury quadrangle, Nye and Clark Counties, Nevada: U.S. Geological Survey Miscellaneous Investigations Map I-1197, 1 sheet, scale 1:24,000. #1469 Carr, W.J., 1974, Late Cenozoic tectonic history of Nevada Test Site region: Geological Society of America Abstracts with Programs, no. 3, p. 152. #1470 Carr, W.J., 1974, Summary of tectonic and structural evidence for stress orientation at the Nevada Test Site: U.S. Geological Survey Open-File Report 74-176, 53 p. #1472 Carr, W.J., 1984, Regional structural setting of Yucca Mountain, southwestern Nevada, and late Cenozoic rates of tectonic activity in parts of the southwestern Great Basin, Nevada and California: U.S. Geological Survey Open-File Report 84-854, 114 p. #1482 Cornwall, H.R., 1972, Geology and mineral deposits of southern Nye County, Nevada: Nevada Bureau of Mines and Geology Bulletin 77, 49 p., 1 pl., scale 1:250,000. #2845 dePolo, C.M., 1998, A reconnaissance technique for

estimating the slip rate of normal-slip faults in the Great Basin, and application to faults in Nevada, U.S.A.: Reno, University of Nevada, unpublished Ph.D. dissertation, 199 p.

#1509 Ekren, E.B., and Sargent, K.A., 1965, Geologic map of the Skull Mountain quadrangle, Nye County, Nevada: U.S. Geological Survey Geologic quadrangle Map GQ-387, 1 sheet, scale 1:24,000.

#1037 Frizzell, V.A., Jr., and Shulters, J., 1990, Geologic map of the Nevada Test Site, southern Nevada: U.S. Geological Survey Miscellaneous Investigations Map I-2046, 1 sheet, scale 1:100,000.

#1506 Orkild, P.P., 1968, Geologic map of the Mine Mountain quadrangle, Nye County, Nevada: U.S. Geological Survey Geologic quadrangle Map GQ-746, 1 sheet, scale 1:24,000.

#915 Piety, L.A., 1995, Compilation of known and suspected Quaternary faults within 100 km of Yucca Mountain, Nevada and California: U.S. Geological Survey Open-File Report 94-112, 404 p., 2 pls., scale 1:250,000.

#1195 Reheis, M.C., and Noller, J.S., 1991, Aerial photographic interpretation of lineaments and faults in late Cenozoic deposits in the eastern part of the Benton Range 1:100,000 quadrangle and the Goldfield, Last Chance Range, Beatty, and Death Valley Junction 1:100,000 quadrangles, Nevada and California: U.S. Geological Survey Open-File Report 90-41, 9 p., 4 sheets, scale 1:100,000.

#3907 TRW Environmental Safety Systems Inc., 1998, Civilian radioactive waste management system management and operating contractor, Book 1-Section 3.2, Regional geological setting, Yucca Mountain site description, Draft A: Technical report to U.S. Department of Energy, North Las Vegas, Nevada, under Contract DE-AC08-91RW00134, April 1998.

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