Jump to Navigation

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.

Antelope Peak fault (Class A) No. 1203

Last Review Date: 2000-11-03

citation for this record: **Lidke, D.J., compiler, 2000, Fault number 1203, Antelope Peak 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 02:17 PM.**

Synopsis	This north-northwest-striking fault zone is characterized by faults along the northeastern range-front of the Monitor Range that displace bedrock of the range against Quaternary, piedmont-slope deposits of the Antelope Valley. According to photogeologic mapping , the fault appears to consist of northern and southern parts that are not connected by faults or fault-related features at the surface. These apparent northern and southern parts of the fault zone, however, may be connected at depth beneath Pleistocene and Holocene fan deposits that probably postdate the latest movement along the fault. Locally, east-facing scarps are present on Quaternary, piedmont-slope deposits along both the northern and southern parts of the fault zone. There is evidence along the fault zone for at least one Quaternary faulting event that is no older than early Pleistocene and possibly no older than late Pleistocene in age. Down-to-the-east stratigraphic offsets along the range-front faults, as well as the easterly facing direction of the scarps, consistently imply mostly down-to-the-east, Quaternary movement along the fault zone. The fault zone has not

	been studied in detail, however, and little is actually known with certainty about its nature, character, and movement history. The principal sources of data consist of geologic mapping, photogeologic mapping supplemented by some field verification, reconnaissance photogeologic mapping, and reconnaissance geomorphic study of fault scarps and basal fault facets.
Name comments	Refers to north-northwest-striking faults that were mapped by Kleinhampl and Ziony (1985 #2851), Schell (1981 #2844), and Dohrenwend and others (1992 #283) along the northeastern flank of the Monitor Range. Schell (1981 #2844) mapped and referred to the northern part of this fault as the Antelope Peak fault. dePolo (1998 #2845) portrayed and referred to both the northern and southern parts of this fault as the Northwestern Monitor Range Fault zone. The earlier name of Schell (1981 #2844), Antelope Peak fault, is used here for both the northern and southern parts of the fault. The fault extends discontinuously from about Cabin Spring, northwestward along the northeastern flank of the Monitor Range and west edge of the Antelope Valley, to about 5 km northeast of Antelope Peak. **Fault ID:** Refers to faults that Schell (1981 #2844) mapped and labeled 3, and refers to faults that dePolo (1998 #28450.003) portrayed and labeled as MI21.
County(s) and State(s)	NYE COUNTY, NEVADA EUREKA COUNTY, NEVADA
Physiographic province(s)	BASIN AND RANGE
Reliability of location	Good Compiled at 1:250,000 scale. *Comments:* Location based on 1:250,000-scale maps of Schell (1981 #2844) and Dohrenwend and others (1992 #283). Mapping by Schell (1981 #2843; 1981 #2844) included field verification, but was based primarily on photogeologic analysis of 1:24,000-scale, color, aerial photography that was supplemented by analysis of some, 1:60,000-scale, black-and-white, aerial photography: faults identified on the aerial photographs were transferred by inspection to 1:62,500-scale topographic maps that were photographically reduced to 1:250,000-scale for final compilation of the faults on 1:250,000-scale topographic maps. Mapping by Dohrenwend and others (1992 #283) was based on

	photogeologic analysis of 1:58,000-nominal-scale, color-infrared photography transferred directly to 1:100,000-scale topographic maps enlarged to the scale of the photographs; these maps were then reduced and compiled at 1:250,000-scale.
Geologic setting	This north-northwest-striking fault zone is marked by discontinuous rang-front front faults and some scarps that are present along the northeastern flank of the Monitor Range (Schell, 1981 #2844; Dohrenwend and others, 1992 #283). According to Kleinhampl and Ziony (1985 #2851), Tertiary volcanic rocks compose more than 90% of the Monitor Range and the range is a westward-tilted fault block that was elevated by movement along normal faults, such as the Antelope Peak fault, present along the east front of the range. The Antelope Peak fault shows down-to-the-east stratigraphic offset that displaces Tertiary and some Paleozoic bedrock of the Monitor Range against Quaternary fan deposits and alluvium of the western piedmont-slope of the adjacent Antelope Valley. The northern part of the fault extends nearly to the north end of the Monitor Range, whereas the southern part of the fault appears terminate at the south end of the Antelope Valley, where the Monitor and Antelope Ranges are essentially joined (Dohrenwend and others, 1992 #283). The Antelope Peak fault and the Antelope Range fault zone [1204] are range-front fault zones along the Monitor and Antelope Ranges, respectively, and these faults outline most of the Antelope Valley that is between these two ranges (Schell, 1981 #2844; Dohrenwend and others, 1992 #283). A few east-facing fault scarps are present on Quaternary piedmont-slope deposits along the Antelope Valley fault (Schell, 1981 #2844; Dohrenwend and others, 1992 #283). The down-to-the-east stratigraphic offsets shown along the range-front faults, as well as the easterly facing direction of the scarps, suggest principally down-to-the-east Quaternary movement along the fault zone that may be related to continued Quaternary down-dropping and adjustment of the Antelope Valley relative to the adjacent Monitor and Antelope Ranges.
Length (km)	41 km.
Average strike	N9°W
Sense of movement	Normal *Comments:* Not specifically reported, however, the apparent down-to-the-east offsets along the range-front faults and the

	predominantly easterly facing direction of scarps suggest principally down-to-the-east offsets along faults of this zone, which in this extensional regime probably reflects principally normal, dip-slip movement along easterly dipping faults.
Dip Direction	E *Comments:* Not reported, but probably steep, based on dip measurements of other Quaternary faults in localities nearby and elsewhere in the Basin and Range Province.
Paleoseismology studies	
Geomorphic expression	The north-northwest-striking Antelope Peak fault is marked at the surface by northern and southern parts, and both parts are characterized by subtly expressed range-front faults and sparse fault scarps (Schell, 1981 #2844; Dohrenwend and others, 1992 #283; dePolo, 1998 #2845). The northern and southern parts of the fault are not connected at the surface, but they may be connected at depth beneath Quaternary fan deposits and alluvium (dePolo, 1998 #2845). The range-front faults show down-to-the-east stratigraphic offset and the scarps are east-facing features (Schell, 1981 #2844; Dohrenwend and others, 1992 #283). dePolo (1998 #2845) reported that basal fault facets are absent along the range-front of the Monitor Range adjacent to the fault.
Age of faulted surficial deposits	Dohrenwend and others (1992 #283) assigned a broad age range of early to middle and (or) late Pleistocene to faulted deposits along scarps of the northern and southern parts of the fault zone. Schell (1981 #2844) reported an age range 15-700 ka for the youngest faulted fan deposits, and he suggests that these deposits probably are no older than 200 ka.
Historic earthquake	
Most recent prehistoric deformation	middle and late Quaternary (<750 ka) *Comments:* The timing of the most recent prehistoric faulting event is not tightly constrained. Reconnaissance photogeologic mapping by Dohrenwend and others (1992 #283) indicates that the most recent prehistoric faulting event is no older than early Quaternary (<1.5 Ma) in age. Photogeologic mapping and some field verification by Schell (1981 #2844) implies that the most

	recent faulting event is no older than middle Quaternary (<750 ka), and may be as young as late Quaternary in age (<130 ka).
Recurrence interval	
Slip-rate category	Less than 0.2 mm/yr *Comments:* No detailed data exists to determine slip rates for this fault. dePolo (1998 #2845) assigned a reconnaissance vertical slip rate of 0.01 mm/yr for the fault based on the presence of scarps on alluvium and the absence of basal facets. The late Quaternary characteristics of this fault (overall geomorphic expression, continuity of scarps, age of faulted deposits, etc.) support a low slip rate. Accordingly, the less than 0.2 mm/yr slip-rate category has been assigned to this fault.
Date and Compiler(s)	2000 David J. Lidke, U.S. Geological Survey
References	#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. #283 Dohrenwend, J.C., Schell, B.A., and Moring, B.C., 1992, Reconnaissance photogeologic map of young faults in the Millett 1° by 2° quadrangle, Nevada: U.S. Geological Survey Miscellaneous Field Studies Map MF-2176, 1 sheet, scale 1:250,000. #2851 Kleinhampl, F.J., and Ziony, J.I., 1985, Geology of Northern Nye County, Nevada: Nevada Bureau of Mines and Geology Bulletin 99A, 172 p. #4363 Lehner, R.E., Tagg, K.M., Bell, M.M., and Roberts, R.J., 1961, Preliminary geologic map of Eureka County, Nevada: U.S. Geological Survey Mineral Investigations Field Studies Map MF-178, 1 sheet, scale 1:250,000. #2843 Schell, B.A., 1981, Faults and lineaments in the MX Sitting Region, Nevada and Utah, Volume I: Technical report to U.S. Department of [Defense] the Air Force, Norton Air Force Base, California, under Contract FO4704-80-C-0006, November 6, 1981, 77 p.

	#2844 Schell, B.A., 1981, Faults and lineaments in the MX Siting Region, Nevada and Utah, Volume II: Technical report to U.S. Department of [Defense] the Air Force, Norton Air Force Base, California, under Contract FO4704-80-C-0006, November 6, 1981, 29 p., 11 pls., scale 1:250,000.