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Maverick Springs Range fault zone (Class A) No. 1709

Last Review Date: 2000-06-28

citation for this record: **Rowley, P.C., Anderson, R.E., and Redsteer, M.H., compilers, 2000, Fault number 1709, Maverick Springs Range fault zone, 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 02:26 PM.**

Synopsis	This fault zone consists mostly of down-to-the-west, north-, north-northeast-, and north-northwest-striking, parallel and aligned, block-bounding normal faults that occupy a broad zone in the Elko quadrangle and continuing southward another 5 km in the Ely quadrangle. Most faults bound the west side of the Maverick Springs Range, but some are apparently graben faults along the range front. The bedrock escarpment along the range is subdued, discontinuous, deeply eroded and apparently not very active. Some faults are within or on the east side of the range and another extends north into Ruby Valley. The displaced sediments and/or surfaces are locally as young as late Pleistocene (<130 ka). One short fault north of the Maverick Springs Range may cut deposits or surfaces as young as Holocene. Based on the inferred ages of displaced sediment, the latest time of displacement appears to be late Pleistocene, although some Holocene

	displacement is possible.
Name comments	Name adapted from Schell (1981 2843; 1981 #2844) who referred to a series of parallel and aligned faults as the Maverick Springs Range faults. He mapped the faults as either Pleistocene or indeterminate age along the west and east sides of the Maverick Springs Range and in Ruby Valley to the west. Barnhard (1985 #428) referred to the main strand of this fault zone, as well as additional faults 8 km northwest of it, as the southern Ruby Valley fault zone. As compiled here, the fault zone extends from Ruby Wash north of the Maverick Springs Range south to within about 1 km of Julian Well at the southern end of Ruby Valley in the Ely 1?x2? quadrangle. Additional faults and lineaments included herein are shown by Dohrenwend and others (1991 #286), with some faults that continue south into the Ely 1?x2? quadrangle for 5 kilometers along the western margin of the Tognini Mountains. **Fault ID:** Referred to as fault 111 by Schell (1981 2843; 1981 #2844) and as faults EK7A and EK7B by dePolo (1998 #2845).
County(s) and State(s)	ELKO COUNTY, NEVADA WHITE PINE COUNTY, NEVADA
Physiographic province(s)	BASIN AND RANGE
Reliability of location	Good Compiled at 1:100,000 scale. *Comments:* The southern part of the fault zone was compiled from the 1:250,000 map by Shell (1981 #2843; 1981 #2844) which was prepared by photographic reduction of maps at 1:62,500 scale. This, in turn, were prepared from photogeologic compilation using color aerial photos at scale of about 1:25,000, followed by field reconnaissance. The north part of the fault was compiled from 1:250,000 photogeologic reconnaissance map of Dohrenwend and others (1991 #286), which was produced by analysis of 1:58,000-nominal-scale color-infrared photography transferred directly to 1:100,000-scale topographic quadrangle maps enlarged to the scale of the photographs.
Geologic setting	As compiled here, the Maverick Springs Range fault zone consists of scattered, continuous to discontinuous faults with diverse trends. Most are down to the west and appear to bound the Maverick Springs Range and basin beneath Ruby Valley and,

	although not characterized as such by Dohrenwend and others (1991 #286), they appear to be range-bounding structures. Some faults are apparently block-bounding structures within the Maverick Springs Range. The northernmost part consists of piedmont faults south of Ruby Wash, defining the eastern margin of the Ruby Valley. Some faults in the Elko quadrangle are down to the east and appear to form graben along the west base of the Maverick Springs Range. The northernmost fault may be a continuation of that pattern north of the Maverick Springs Range into Ruby Valley. Bedrock exposed by faulting in the Ely quadrangle consists of folded and deformed Paleozoic rock capped by Tertiary volcanic and intrusive rocks (Hose and Blake, 1976 #4341).
Length (km)	38 km.
Average strike	N15°E
Sense of movement	Normal
Dip Direction	W
Paleoseismology studies	
Geomorphic expression	The west-facing bedrock escarpment of the Maverick Springs Range is rather gentle, discontinuous, irregular, and deeply incised, suggesting a relatively inactive range front. Along part of the range, "Scarps are preserved as isolated, highly dissected short segments locally buried by alluvium" (Barnhard, 1985 #428). Dohrenwend and others (1991 #286) mapped both block-bounding faults as placing bedrock against Quaternary sediment or faults cutting Quaternary sediment and/or surfaces. In the Ely quadrangle, the fault is marked by an abrupt change in relief that coincides with the eastern margin of the Tognini Mountains along the eastern margin of Ruby Valley.
Age of faulted surficial deposits	According to Schell (1981 2843; 1981 #2844), the fault zone displaces rock as old as Paleozoic and sediment as young as that comprising "intermediate-age alluvial fans" (15-700 ka); it is overlain by unfaulted "young-age alluvial fan" deposits (<15 ka). Schell (1981 2843; 1981 #2844) interpreted the fault zone to be late Pleistocene in terms of youngest movement. Mapping by Hose and Blake (1976 #4341) in the Ely quadrangle shows the fault cutting Paleozoic, Tertiary, and Quaternary deposits.

	Although not examined in the field by Barnhard (1985 #428), he also inferred the age of latest movement on the zone to be late Pleistocene. On the basis of photogeologic reconnaissance, Dohrenwend and others (1991 #286) interpreted the sediments and/or surfaces that are displaced to be as young as late Pleistocene; some structurally-related lineaments to the east of the main fault are mapped as being on sediments and/or surfaces as young as Holocene.
Historic earthquake	
Most recent prehistoric deformation	late Quaternary (<130 ka) *Comments:* Timing of faulting based on inferred age of displaced Quaternary sediments by Schell (1981 2843; 1981 #2844), Barnhard (1985 #428), and Hose and Blake (1976 #4341). Dohrenwend and others (1991 #286) also considered the latest movement on the fault zone to be late Pleistocene.
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 entire fault (EK7A, EK7B) 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 Peter C. Rowley, U.S. Geological Survey, Retired R. Ernest Anderson, U.S. Geological Survey, Emeritus Margaret Hisa Redsteer, U.S. Geological Survey
References	#428 Barnhard, T.P., 1985, Map of fault scarps formed in unconsolidated sediments, Elko 1° x 2° quadrangle, Nevada and Utah: U.S. Geological Survey Miscellaneous Field Studies Map MF-1791, 1 sheet, 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. #286 Dohrenwend, J.C., Schell, B.A., and Moring, B.C., 1991, Reconnaissance photogeologic map of young faults in the Elko 1° by 2° quadrangle, Nevada and Utah: U.S. Geological Survey Miscellaneous Field Studies Map MF-2179, 1 sheet, scale 1:250,000. #2480 Dohrenwend, J.C., Schell, B.A., and Moring, B.C., 1992, Reconnaissance photogeologic map of young faults in the Ely 1° by 2° quadrangle, Nevada and Utah: U.S. Geological Survey Miscellaneous Field Studies Map MF-2181, 1 sheet, scale 1:250,000. #4341 Hose, R.K., and Blake, M.C., Jr., 1976, Geology and mineral resources of White Pine County, Nevada: Nevada Bureau of Mines and Geology Bulletin 85, 105 p. #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.

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