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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.

Rye Patch fault (Class A) No. 1359

Last Review Date: 2000-08-18

citation for this record: **Lidke, D.J., and Sawyer, T.L., compilers, 2000, Fault number 1359, Rye Patch 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 02:05 PM.**

Synopsis	This distributed zone of north- to northeast-striking faults extends along floor of Little Smoky Valley approximately parallel to axis of the valley and it includes faults that juxtapose bedrock against Quaternary, piedmont deposits as well as scarps developed on the piedmont deposits. The principal sources of data consist of geologic mapping and photogeologic mapping supplemented by some field verification.
Name comments	Refers to fault zone present in the central part of the Little Smoky Valley that was originally mapped and named by Schell (1981 #2844) and later mapped by Dohrenwend and others (1992 #283; Dohrenwend and others, 1996 #2846). Hose (1983 #4362) and Kleinhampl and Ziony (1985 #2851) also mapped some faults of this zone. dePolo (1998 #2845) showed and referred to the fault as the Little Smoky Valley fault zone, however, the original Rye Patch fault name of Schell (1981 #2844) is retained here. The

	fault extends northward from east of the north end of the Park Range, along the floor of Little Smoky Valley, to a few kilometers north of the Nye-Eureka County line. **Fault ID:** Refers to fault 62 on Plates A2 and A7 in Schell (1981 #2844) and refers to fault MI25 of dePolo (1998 #2845).
County(s) and State(s)	EUREKA COUNTY, NEVADA NYE 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), Dohrenwend and others (1992 #283; 1996 #2846). 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; 1996 #2846) 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 distributed zone of north- to northeast-striking faults extends along floor of Little Smoky Valley and strikes nearly parallel to the axis of the valley. Hose (1983 #4362) and Kleinhampl and Ziony (1985 #2851) mapped some faults of the zone that juxtapose Paleozoic and Tertiary rocks against Quaternary alluvial and colluvial deposits of the piedmont. Schell (1981 #2844), Dohrenwend and others (1992 #283; 1996 #2846) mapped more faults of the zone that juxtapose bedrock against Quaternary deposits and mapped numerous scarps and linear features that collectively define the Rye Patch fault. Stratigraphic relations across some of the faults as well as the east-facing direction of most scarps, suggest mostly down-to-the east offsets along faults of the zone. There is abundant evidence for Quaternary movement

	along the fault, however, it has not been studied in detail and estimates of offsets along individual faults, or along the entire fault zone, have not been reported.
Length (km)	27 km.
Average strike	N13°E
Sense of movement	Normal *Comments:* Not specifically reported, however, east-facing scarps on piedmont deposits, as well as down-to-the-east faults that juxtapose bedrock against Quaternary deposits, consistently indicate down-to-the-east fault offsets, which in this extensional regime probably reflects principally normal, dip-slip movement along easterly dipping faults.
Dip Direction	E
Paleoseismology studies	
Geomorphic expression	The Rye Patch fault is a zone of deformation that is expressed by faults that displace Pleistocene piedmont deposits against Paleozoic bedrock, and expressed by scarps and some linear features on Pleistocene piedmont deposits of the Little Smoky Valley (Schell, 1981 #2844; Dohrenwend and others, 1992 #283; 1996 #2846). Most of the scarps are east facing features, however, the presence of some west-facing scarps (Schell, 1981 #2844), may indicate the presence of horst and graben structures along the fault zone.
Age of faulted surficial deposits	Dohrenwend and others (1992 #283; 1996 #2846) assigned a Pleistocene age to most of the faulted deposits. On his maps (plates A2 and A7), Schell (1981 #2844) likewise assigned a Pleistocene age to faults of this zone.
Historic earthquake	
Most recent prehistoric deformation	undifferentiated Quaternary (<1.6 Ma) *Comments:* Although the timing of the most recent prehistoric faulting event is not well constrained, Dohrenwend and others (1992 #283; 1996 #2846) and Schell (1981 #2844) agree on a Pleistocene time based on photogeologic mapping and field reconnaissance of scarp morphology.

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 Thomas L. Sawyer, Piedmont Geosciences, Inc.
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. #2846 Dohrenwend, J.C., Schell, B.A., Menges, C.M., Moring, B.C., and McKittrick, M.A., 1996, Reconnaissance photogeologic map of young (Quaternary and late Tertiary) faults in Nevada, *in* Singer, D.A., ed., Analysis of Nevada's metal-bearing mineral resources: Nevada Bureau of Mines and Geology Open-File Report 96-2, 1 pl., scale 1:1,000,000. #4362 Hose, R.K., 1983, Geologic map of the Cockalorum Wash quadrangle, Eureka and Nye Counties, Nevada: U.S. Geological Survey Miscellaneous Investigations Map I-1410, 1 sheet, scale 1:31,680. #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.

	#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.