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Quaternary Fault and Fold Database of the United States

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Southwest Reese River Valley fault (Class A) No. 1335

Last Review Date: 1998-07-22

citation for this record: **Sawyer, T.L., and Lidke, D.J., compilers, 1998, Fault number 1335, Southwest Reese River Valley 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 02:15 PM.**

Synopsis	This long down-to-the-east, normal fault bounds the eastern front of the Shoshone Mountains. Short scarps on piedmont-slope deposits in southern Reese River Valley and in Indian Valley, and relatively large fault facets along the curving front of the Shoshone Mountains from east of South Shoshone Peak northeast to about Elkhorn Canyon, provide evidence for Quaternary movement. Black Mountain is a Quaternary basaltic volcano between the Reese River and Indian Valley that appears to have erupted from within or near the fault zone. Reconnaissance photogeologic mapping of this fault and limited analysis of fault-facet morphology are the main sources of data.
Name comments	Refers to faults mapped by Dohrenwend and others (1992 #283; 1996 #2846) along the eastern front of the southern Shoshone

	Mountains. Some faults on the western side of Indian Valley were originally mapped by Vitaliano (1963 #2927); Bonham (1970 #2928) originally mapped and inferred the presence of the range front fault along the western side of Reese River Valley. dePolo (1998 #2845) referred to the northern part of the fault shown here as the Southwest Reese River Valley fault and the southern part as the Indian Valley fault. The fault extends from the south end of the Shoshone Mountains through the southern Reese River Valley and Indian Valley along the eastern front of the Shoshone Mountains to east of Upper Cole Camp Springs. **Fault ID:** Refers to faults that dePolo (1998 #2845) portrayed and labeled MI9 and T5.
County(s) and State(s)	LANDER 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 *Comments:* Location based on 1:250,000-scale map of Dohrenwend and others (1992 #283) and unpublished map of the Tonopah 1:250,000-scale map by J.C. Dohrenwend published at 1:100,000-scale by Dohrenwend and others (1996 #2846). Maps based on photogeologic analysis of 1:58,000-nominal-scale color-infrared photography transferred directly to 1:100,000-scale topographic quadrangle maps enlarged to scale of the photographs. The map was then reduced and compiled at 1:250,000-scale.
Geologic setting	This long echelon, down-to-the-east, normal fault bounds the eastern front of the Shoshone Mountains that form a gently northwest-tilted, horst block that began to be uplifted along the bounding normal faults [1334] and [1335] in the late Oligocene. However, the main period of uplift occurred in the late Pliocene and early Pleistocene (Ferguson and Cathcart, 1954 #2926; Bonham, 1970 #2928). The proximity of the Black Mountain volcano to the fault zone and its basaltic composition and age (Kleinhampl and Ziony, 1985 #2851) suggests that high-angle normal faulting is spatially associated with Quaternary volcanism. Although Black Mountain is a major promontory between the Reese River and Indian Valley, the drainage divide between the

	north-flowing Reese River and south-flowing Cloverdale Creek is a low (alluvial ?) divide on the floor of Indian Valley, which suggested structural drainage control to Ferguson and Cathcart (1954 #2926). According to Bonham (1970 #2928), Neogene offset along the fault is a minimum of about 900 m and may exceed 1800 m, based on offset of the early Miocene Toiyabe Quartz Latite.
Length (km)	73 km.
Average strike	N12°E
Sense of movement	Normal *Comments:* Bonham (1970 #2928) mapped and shows this section of the fault as a normal fault in his map and cross sections; he noted that this fault and other faults in this part of the Shoshone Range show evidence of only dip-slip movement. A relatively short, east-facing scarp at the north end of the range and the down-to-the-east, range front character of much of the fault (Dohrenwend and others, 1992 #283) also suggest that mostly normal, dip-slip offset has occurred along this section of the fault.
Dip	70–85° E. *Comments:* Not specifically reported, but probably steep. Bonham (1970 #2928) shows the fault dipping about 70–85° in his cross sections A-A', B-B', and C-C'.
Paleoseismology studies	
Geomorphic expression	Most of the fault is expressed as a sinuous, northeast-trending, range front fault that juxtaposes Quaternary deposits of the piedmont slope against bedrock of the Shoshone Range. At the north end, a short scarp is formed on late Pleistocene, piedmont-slope deposits (Dohrenwend and others, 1992 #283). Further south the fault has short scarps on high-level piedmont-slope deposits in southern Reese River Valley, and has scarps and spring alignments along the western edge of Indian Valley (Vitaliano, 1963 #2927; Dohrenwend and others, 1992 #283; 1996 #2846). dePolo (1998 #2845) reports a maximum preferred basal fault facet height of 158 m (134–183 m) for the northern part of the fault (his fault MI9) and 73 m (61–98 M) for the southern part of the fault (his fault T5).

Age of faulted surficial deposits	Scarps have been mapped on undifferentiated Pleistocene deposits in Reese Valley and in Indian Valley (Vitaliano, 1963 #2927; Dohrenwend and others, 1992 #283; 1996 #2846) and Quaternary movement is suspected on the southernmost part of the fault in the valley of Cloverdale Creek. Dohrenwend and others (1992 #283) mapped a short scarp on late Pleistocene (10–130 ka) deposits at the northern end of this section.
Historic earthquake	
Most recent prehistoric deformation	late Quaternary (<130 ka) *Comments:* Timing of the most recent prehistoric faulting event is not well constrained. Mapping by Dohrenwend and others (1996 #2846) show the northern part of the fault is late Pleistocene and the southern part Pleistocene. However, more detailed mapping by Dohrenwend and others (1992 #283) shows only short discontinuous scarps on Quaternary deposits along the range front and adjacent piedmont slope. Age-category assignment based on Dohrenwend and others (1996 #2846).
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 displacement rate of 0.288 mm/yr for the northern part of the fault and 0.171 mm/yr for the southern part based on an empirical relationship between his preferred maximum basal facet height and vertical displacement rate. The size of the facets (tens to hundreds of meters, as measured from topographic maps) indicates they are the result of many seismic cycles and thus, the derived rate reflects a long-term average. However, the late Quaternary characteristics of this fault (overall geomorphic expression, continuity of scarps, age of faulted deposits, etc.) suggest the rate during this period is of a slightly lesser magnitude. Accordingly, the less than 0.2 mm/yr slip-rate category has been assigned to this fault.
Date and Compiler(s)	1998 Thomas L. Sawyer, Piedmont Geosciences, Inc. David J. Lidke, U.S. Geological Survey

References	#2928 Bonham, H.F., Jr., 1970, Geologic map and section of a part of the Shoshone Mountains, Lander and Nye Counties, Nevada: Nevada Bureau of Mines and Geology Map 38, scale 1:62,500. #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. #2926 Ferguson, H.G., and Cathcart, S.H., 1954, Geology of the Round Mountain quadrangle: U.S. Geological Survey Geologic quadrangle Map GQ-40, scale 1:125,000. #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. #2927 Vitaliano, C.H., 1963, Cenozoic geology and section of the Ione quadrangle, Nye County, Nevada: U.S. Geological Survey Miscellaneous Field Studies Map MF-255, scale 1:62,500.