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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.

unnamed faults at northern end of Big Smokey Valley (Class A) No. 1199

Last Review Date: 2000-10-05

citation for this record: **Lidke, D.J., compiler, 2000, Fault number 1199, unnamed faults at northern end of Big Smokey Valley, 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 discontinuous zone of north-striking faults is marked mainly by a few short faults that are present along the western flank of the northern Toquima Range and along the southwestern flank of the Simpson Park Mountains. These faults show apparent down-to-the-west stratigraphic offsets that place bedrock of these mountain ranges against Quaternary piedmont-slope deposits. At the northern end of Big Smoky Valley, sparse, west-facing scarps are present locally along these faults. There is evidence for at least one Quaternary faulting event that is no older than early Pleistocene and perhaps no older than late Pleistocene in age. The east-facing direction of scarps and the down-to-the-west stratigraphic offset along the faults, suggest mostly down-to-the-west Quaternary movement along this 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 and reconnaissance photogeologic mapping.
Name comments	Refers to discontinuous, northerly striking faults mapped by Stewart and McKee (1968 #4350; 1977 #4351) and Dohrenwend and others (1992 #283) north and east of the northern end of the Big Smoky Valley. These faults have not been named. This zone of faults extends discontinuously from just north of Rutherford Canyon, northward along the western flank of the northern end of the Toquima Range. Farther north, the faults cross the southern end of the Simpson Park Mountains, and extend to about 5 km west-northwest of Bates Mountain.
County(s) and State(s)	LANDER COUNTY, NEVADA
Physiographic province(s)	BASIN AND RANGE
Reliability of location	Good Compiled at 1:250,000 scale. *Comments:* Location is from 1:250,000-scale map of Dohrenwend and others (1992 #283) that shows mapping based on photogeologic analysis of 1:58,000-nominal-scale, color-infrared photography, which was transferred directly to 1:100,000-scale topographic maps enlarged to the scale of the photographs. The 1:100,000-scale fault maps were reduced and compiled at 1:250,000-scale for final publication.
Geologic setting	This discontinuous, north-striking zone of faults juxtaposes Tertiary and lesser amounts of Paleozoic bedrock of the Toquima Range and Simpson Park Mountains against Quaternary, piedmont-slope deposits of the Big Smoky Valley (Stewart and McKee, 1968 #4350; 1977 #4351; Dohrenwend and others, 1992 #283). Locally, west-facing scarps are present along the northwestern flank of the Toquima Range (Stewart and McKee, 1968 #4350; 1977 #4351). The faults that place bedrock against Quaternary deposits show down-to-the-west stratigraphic offset (Dohrenwend and others, 1992 #283) and, combined with the west-facing direction of Quaternary scarps, imply mostly down-to-the-west movement along faults of this zone. Quaternary faulting along this zone probably reflects some continued uplift of the Toquima Range and Simpson Park Mountains relative to the adjacent Big Smoky Valley. The fault zone has not been studied in

	detail, however, and other insights and estimates that concern Quaternary offsets have not been reported.
Length (km)	29 km.
Average strike	N6°E
Sense of movement	Normal *Comments:* Not specifically reported, however, the apparent down-to-the-west offsets shown by faults along the range-fronts and the west-facing direction of the fault scarps suggests mostly down-to-the-west offsets, which in this extensional regime probably reflects principally normal, dip-slip movement along westerly dipping faults.
Dip Direction	W *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	This zone of faults is expressed mostly by a few short and discontinuous faults that place bedrock against Quaternary piedmont-slope deposits (Stewart and McKee, 1968 #4350; 1977 #4351; Dohrenwend and others, 1992 #283). The fault zone is also locally expressed by a few west-facing scarps that are present on along the western flank of the northern part of the Toquima Range (Stewart and McKee, 1968 #4350; 1977 #4351; Dohrenwend and others, 1992 #283). Some scarps of probable Quaternary age are present entirely on Tertiary rock along the southern end of the Simpson Park Mountains (Dohrenwend and others, 1992 #283).
Age of faulted surficial deposits	Stewart and McKee (1968 #4350; 1977 #4351) mapped most of the faulted deposits as Pleistocene to Holocene alluvial fans. Dohrenwend and others (1992 #283) did not specifically assign ages to most of the faulted deposits along this zone. Their map, however, indicates that Quaternary deposits juxtapose bedrock and they did assign an early to middle and (or) late Pleistocene age to faulted deposits along one fault scarp of this zone.

Historic earthquake	
Most recent prehistoric deformation	undifferentiated Quaternary (<1.6 Ma) *Comments:* The timing of the most recent prehistoric faulting event is not tightly constrained. Based on reconnaissance photogeologic mapping, Dohrenwend and others (1992 #283) indicated that the most recent faulting event is no older than early Pleistocene (<1.6 Ma) and may be as young as late Pleistocene (<130 ka) in age.
Recurrence interval	
Slip-rate category	Less than 0.2 mm/yr *Comments:* Not reported; low slip rate selected on the basis of the faults geomorphic expression.
Date and Compiler(s)	2000 David J. Lidke, U.S. Geological Survey
References	#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. #4350 Stewart, J.H., and McKee, E.H., 1968, Geologic map of the southeastern part of Lander County, Nevada: U.S. Geological Survey Open-File Report 68-260, 2 sheets, scale 1:62,500. #4351 Stewart, J.H., and McKee, E.H., 1977, Geology and mineral deposits of Lander County, Nevada: Nevada Bureau of Mines and Geology Bulletin 88, 106 p., 3 pls.