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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.

Peavine Peak fault zone (Class A) No. 1644

Last Review Date: 2003-06-22

citation for this record: **Sawyer, T.L., compiler, 2003, Fault number 1644, Peavine Peak 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 02:35 PM.**

Synopsis	This distributed northwest-striking fault zone consists of a prominent short range-front fault bounding northeast flank of Peavine Peak, subparallel left-stepping predominantly piedmont faults along southern margin of Lemmon Valley, and intra basin faults bounding a low ridge, an apparently uplifted horst, separating Cold Springs Valley from southern Upper Long Valley; Peavine Mountain is a domical fold uplifted more than 600 m along the range-front fault. Fault zone may be related to the Petersen Mountain fault [1640] to north. Reconnaissance photogeologic mapping and regional geologic mapping are the sources of data.
Name comments	Refers to faults mapped by Slemmons (1968, unpublished Reno 1:250,000-scale map), Bingler (1974 #2425), Szecsody (1983 #2625), Bell (1984 #105), Bell and Garside (1987 #3605), and Greene and others (1991 #3487) on northeast flank and piedmont

	slope of Peavine Peak and extending northwest along low hills between Cold Springs Valley and Upper Long Valley to the California-Nevada state line. Ichinose and others (1997 #3606) referred to the fault as the Peavine Peak fault zone. **Fault ID:** Refers to fault number R3 (North Peavine Mountain fault) of dePolo (1998 #2845).
County(s) and State(s)	WASHOE COUNTY, NEVADA
Physiographic province(s)	CASCADE-SIERRA MOUNTAINS BASIN AND RANGE
Reliability of location	Good Compiled at 1:100,000 scale. *Comments:* Fault locations are based on 1:24,000-scale maps of Bell and Garside (1987 #3605), Bingler (1974 #2425), and Szecsody (1983 #2625).
Geologic setting	This distributed northwest-striking fault zone has a prominent short range-front fault along northeast flank of Peavine Peak, subparallel left-stepping predominately piedmont faults along southern margin of Lemmon Valley, and intra basin faults separate Cold Springs Valley from southern Upper Long Valley along an apparently uplifted horst composed of Tertiary basin-fill deposits (Slemmons, 1968, unpublished Reno 1250,000-scale map; Bingler, 1974 #2425; Szecsody, 1983 #2625; Bell, 1984 #105; Bell, 1987 #3605; Greene and others, 1991 #3487). Fault zone may be related to the Last Chance fault to the west in California (Ichinose and others, 1997 #3606) and to the Petersen Mountain fault [1640] to north, based on distribution on young faulting in region (*e.g.*, Jennings, 1994 #2878). Peavine Mountain is a domical fold uplifted more than 600 m by down-to-the-northeast normal displacement on the range-front fault (Bonham, 1969 #2999).
Length (km)	15 km.
Average strike	N°34W
Sense of movement	Normal *Comments:* Normal sense of movement from Bell and Garside (1987 #3605) Bingler (1974 #2425), Szecsody (1983 #2625), and

	Greene and others (1991 #3487).
Dip Direction	NE
Paleoseismology studies	Site 1644-1 consists of two closely spaced trenches (Ramelli and others, 2003 #6906) that suggest at least four Holocene earthquakes; the six radiocarbon ages from the trenches are not in correct stratigraphic order. The oldest ages in the trenches are 5540±100 and 6220±100 yr BP. Displacement is interpreted to be 2:1 vertical to horizontal with a total of about 7 m of vertical displacement.
Geomorphic expression	The range-front fault is expressed by the steep escarpment along the northeast front of Peavine Peak, distinct single (?) and compound scarps on late Quaternary alluvial-fan deposits adjacent to range front, and less distinct scarps on bedrock and (or) colluvial deposits on flank of range. The piedmont and related faults locally bound graben and are expressed as moderately dissected scarps on middle Pleistocene to Holocene alluvial-fan and landslide deposits and as dissected rounded scarps bounding and crossing low bedrock hills east of Peavine Peak. Intrabasin faults are marked by some scarps and spring alignments along the margins and across the low horst block (Bingler, 1974 #2425; Bell, 1981 #2875, 1984 #105; Szecsody, 1983 #2625; Bell and Garside, 1987 #3605). dePolo (1998 #2845) reports a maximum preferred basal fault facet height of 85 m (61–110 m).
Age of faulted surficial deposits	Holocene; middle to late Pleistocene; Quaternary; Tertiary. The range-front and piedmont faults displace undifferentiated Quaternary, middle to late Pleistocene, and Holocene alluvial-fan, landslide and apparently beach deposits (Bell, 1981 #2875, 1984 #105; Szecsody, 1983 #2625; Bell and Garside, 1987 #3605). Locally these deposits are juxtaposed against Mesozoic bedrock and Tertiary sedimentary rocks (Bell and Garside, 1987 #3605).
Historic earthquake	
Most recent prehistoric deformation	latest Quaternary (<15 ka) *Comments:* Holocene time for the range-front fault and nearby piedmont faults is based on detailed field mapping (Bell and Garside, 1987 #3605) and reconnaissance photogeologic mapping (Slemmons, 1964, unpublished Reno 1:250,000-scale map).

Recurrence interval	
Slip-rate category	Between 1.0 and 5.0 mm/yr *Comments:* Based on Ramelli and others (2003 #6906) oblique displacement in less than 6.2 k.y. suggest that the rate of slip is greater than 1 mm/yr. dePolo (1998 #2845) assigned a reconnaissance vertical slip rate of 0.184 mm/yr based on an empirical relationship between his preferred maximum basal facet height and vertical slip 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 slip rate reflects a long-term average.
Date and Compiler(s)	2003 Thomas L. Sawyer, Piedmont Geosciences, Inc.
References	#2875 Bell, J.W., 1981, Quaternary fault map of the Reno 1° by 2° quadrangle, Nevada-California: U.S. Geological Survey Open-File Report 81-982, 62 p., http://pubs.er.usgs.gov/publication/ofr81982. #105 Bell, J.W., 1984, Quaternary fault map of Nevada—Reno sheet: Nevada Bureau of Mines and Geology Map 79, 1 sheet, scale 1:250,000. #3605 Bell, J.W., and Garside, L.J., 1987, Geologic map Verdi quadrangle: Nevada Bureau of Mines and Geology Map 4Gg, scale 1:24,000. #2425 Bingler, E.C., 1974, Earthquake hazards map, Reno Folio: Nevada Bureau of Mines and Geology Environmental Series, scale 1:24,000. #2999 Bonham, H.F., 1969, Geology and mineral deposits of Washoe and Storey Counties, Nevada: Nevada Bureau of Mines and Geology Bulletin 70, 140 p., 1 pl., 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. #1367 dePolo, C.M., Anderson, J.G., dePolo, D.M., and Price,

J.G., 1997, Earthquake occurrence in the Reno-Carson City urban corridor: Seismological Research Letters, v. 68, p. 401-412.

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#3606 Ichinose, G.A., Smith, K.D., and Anderson, J.G., 1997, Source parameters of the 15 November 1995 Border Town, Nevada, earthquake sequence: Bulletin of the Seismological Society of America, v. 87, no. 3, p. 652-667.

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#6906 Ramelli, A.R., dePolo, C.M., and Bell, J.W., 2003, Paleoseismic studies of the Peavine Peak fault: Technical report to U.S. Geological Survey, Reston, Virginia, under Contract 01HQGR0167, 14 p.

#2625 Szecsody, G.C., 1983, Earthquake hazards map, Reno NW quadrangle: Nevada Bureau of Mines and Geology Earthquake Hazards Map 4Di, scale 1:24,000.