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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 south end of Tobin Range (Class A) No. 1145

Last Review Date: 2000-11-27

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Synopsis	These unnamed north-striking faults are a combination of piedmont-slope and range-front structures that may mark the eastern boundary of the northernmost part of the basin beneath Dixie Valley. Presumably they are all west-dipping normal faults. No published descriptions exist of their geomorphic expression. The southern faults are marked by aligned spring discharges, and surface relief along the fault traces could be the result of spring-mound construction. The northern part is marked by fault juxtaposition of Quaternary deposits against bedrock at a weakly defined topographic break in slope between the piedmont of northernmost Dixie Valley and the southernmost Tobin Range. This weakly defined break in slope has been characterized as a tectonically active, discontinuous, major range-front fault, despite its lack of many of the defining geomorphic features of such range fronts. There are no detailed studies, and fault recurrence

	time and slip rates are unknown. The last displacement event is estimated to be latest Pleistocene on the basis of reconnaissance photogeologic study indicating that some of the southern traces cut deposits or erosion surfaces of Holocene age.
Name comments	Refers to a prominent range-front fault (part of the Pleasant Valley fault system of dePolo, 1998 #2845) that extends south along the western base of the southernmost Tobin Range and an associated group of down-to-the-west piedmont-slope faults mapped by Wallace (1979 #203) and Dohrenwend and Moring (1991 #282) in the area between Dixie and Jersey Valleys to the south of the Tobin Range. **Fault ID:** Refers in part to fault WI17D (part of the Pleasant Valley fault system) of dePolo (1998 #2845).
County(s) and State(s)	PERSHING COUNTY, NEVADA
Physiographic province(s)	BASIN AND RANGE
Reliability of location	Good Compiled at 1:100,000 scale. *Comments:* Southern (piedmont) traces taken from 1:125,000-scale mapping of young fault scarps by Wallace (1979 #203) which was based mainly on field and photogeologic mapping on 1:60,000-scale aerial photos. Northern traces are taken from 1:250,000-scale map of Dohrenwend and Moring (1991 #282), which was produced by 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.
Geologic setting	The scattered traces comprising the southern part of these unnamed faults may mark the western boundary of the basin beneath Dixie Valley in an area where part of the total basin-bounding displacement is partially transferred northeast toward Jersey Valley. The northern part marks the western boundary between the southernmost Tobin Range and the northernmost arm of the basin beneath Dixie Valley. The range-bounding fault and associated piedmont scarps may be structurally continuous with the Tobin section of the Pleasant Valley fault zone [1629b], although they show no evidence of having been activated during

	the 1915 Pleasant Valley earthquake.
Length (km)	23 km.
Average strike	N12°E
Sense of movement	Normal *Comments:* No specific sip data reported; normal sense inferred from the north strike of faults in this generally east-west extension regime of the Basin and Range.
Dip Direction	W
Paleoseismology studies	
Geomorphic expression	No published detailed description exists of the geomorphic expression of these unnamed faults. Wallace (1979 #203) mapped the southern part as being marked by lineaments along which no fault scarps are preserved, whereas Dohrenwend and Moring (1991 #282) show a west-facing direction, presumably determined from scarps formed on Quaternary deposits or erosion surfaces. The southern faults are the sites of aligned spring discharges, and surface relief along the faults could result from spring-mound construction. The northern part of the fault is marked by juxtaposition of Quaternary deposits against bedrock at a weakly defined topographic break in slope between the piedmont of Dixie Valley and the Tobin Range. Dohrenwend and Moring (1991 #282) characterized this break as a tectonically active discontinuous major range-front fault, despite its lack of many of the defining geomorphic features typical of many such range fronts. The preferred maximum basal fault facet is reported as 98 m (73-122 m) by dePolo (1998 #2845).
Age of faulted surficial deposits	Dohrenwend and Moring (1991 #282) estimated, on the basis of reconnaissance photogeologic study, that the scarps in the south part are formed on deposits or erosion surfaces as young as Holocene (0-10 ka). No estimate was made for the northern part of the fault.
Historic earthquake	
Most recent prehistoric deformation	latest Quaternary (<15 ka) *Comments:* For the south part as based on the Dohrenwend and

	Moring (1991 #282), who mapped some of the southern traces as cutting deposits or erosion surfaces of Holocene age. No estimate was made for the northern part of the fault, which is herein considered to be of undifferentiated Quaternary (<1.6 Ma) age.
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 0.199 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. The late Quaternary characteristics of this fault (overall geomorphic expression, continuity of scarps, age of faulted deposits, etc.) support a low slip rate during this period. Accordingly, the less than 0.2 mm/yr slip-rate category has been assigned to this fault.
Date and Compiler(s)	2000 R. Ernest Anderson, U.S. Geological Survey, Emeritus
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. #282 Dohrenwend, J.C., and Moring, B.C., 1991, Reconnaissance photogeologic map of young faults in the Winnemucca 1° by 2° quadrangle, Nevada: U.S. Geological Survey Miscellaneous Field Studies Map MF-2175, 1 sheet, scale 1:250,000. #203 Wallace, R.E., 1979, Map of young fault scarps related to earthquakes in north-central Nevada: U.S. Geological Survey Open-File Report 79-1554, 2 sheet, scale 1:125,000.

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