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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.

Stumble fault (Class A) No. 1046

Last Review Date: 1998-01-22

citation for this record: **Anderson, R.E., compiler, 1998, Fault number 1046, Stumble 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 02:20 PM.**

Synopsis	The Stumble fault extends north along the west base of the southern Groom Range, where it appears to be a range-bounding fault. Farther north, it veers west from the range and divides into several separate traces in the northeast-most part of Emigrant Valley. Thus, it is only partly a range-front fault that separates the Groom Range on the east from the basin beneath Emigrant Valley. There are no published descriptions of the scarps along the Stumble fault, and categorization of lineaments and scarps along entire fault trace is based on photogeologic mapping. No reliable estimates of recurrence or slip rate can be made.
Name comments	Name adapted by Piety (1995 #915) from mapping by Ekren and others (1977 #1036). Referred to as the Western Groom Range fault by dePolo (1998, #2845). **Fault ID:** Referred to as STM by Piety (1995 #915) and fault C3 by dePolo (1998, 2845).

County(s) and State(s)	LINCOLN COUNTY, NEVADA
Physiographic province(s)	BASIN AND RANGE
Reliability of location	Good Compiled at 1:100,000 scale. *Comments:* Location based on 1:100,000-scale photogeologic compilation by Reheis (1992 #1604). The location of the fault shown on the Lincoln County geologic map (Ekren and others, 1977 #1036) is not in close agreement with that based on photogeology (Reheis, 1992 #1604).
Geologic setting	The Stumble fault extends north from near the northwest corner of Groom Lake, where its trace is in the alluvial flats of Emigrant Valley, along the west base of the southern Groom Range, where it appears to be a range-bounding fault. Farther to the north, it veers westward away from the range base and divides into several separate traces in the northeast-most part of Emigrant Valley; the eastern strand may represent the northern continuation of the main fault.
Length (km)	29 km.
Average strike	N4°E
Sense of movement	Normal *Comments:* Normal movement is indicated by Reheis (1992 #1604).
Dip Direction	W *Comments:* Probably steep to west on single-trace main part of fault, possibly some antithetic steep east dip on one or more of the northern splays.
Paleoseismology studies	
Geomorphic expression	There are no published descriptions of the scarps along the Stumble fault. Only along 1 km of the nearly 30 km of the main fault is the trace mapped as a prominent lineament or scarp in Quaternary deposits (Reheis, 1992 #1604). The remainder of

	main fault is expressed as lineaments in bedrock at west base of main bedrock ridge of the Groom Range or as a fault in Quaternary deposits identified from previous mapping (Ekren and others, 1977 #1036). Previous geologic maps at scale 1:250,000 either do not show a fault at the west base of the Groom Range (Tschanz and Pampeyan, 1970 #1682) or show it as buried by (or inferred in) surficial deposits of Quaternary and Tertiary age (Ekren and others, 1977 #1036). Therefore, a Quaternary age is not well established for most of this fault. Symbols marking down side of northern splays suggest a graben directly west of north extreme of main fault (Reheis, 1992 #1604). dePolo (1998 #2845) reports a maximum preferred basal fault facet height of 73 m (61-98 m).
Age of faulted surficial deposits	Quaternary
Historic earthquake	
Most recent prehistoric deformation	undifferentiated Quaternary (<1.6 Ma) *Comments:* Although timing of most recent event is not well constrained, Reheis (1992 #1604) suggests a Quaternary time based on reconnaissance photogeologic mapping.
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 0.171 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. Accordingly, the less than 0.2 mm/yr slip-rate category has been assigned to this fault.
Date and Compiler(s)	1998 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. #1036 Ekren, E.B., Orkild, P.P., Sargent, K.A., and Dixon, G.L., 1977, Geologic map of Tertiary rocks, Lincoln County, Nevada: U.S. Geological Survey Miscellaneous Investigations Map I-1041, 1 sheet, scale 1:250,000. #915 Piety, L.A., 1995, Compilation of known and suspected Quaternary faults within 100 km of Yucca Mountain, Nevada and California: U.S. Geological Survey Open-File Report 94-112, 404 p., 2 pls., scale 1:250,000. #1604 Reheis, M.C., 1992, Aerial photographic interpretation of lineaments and faults in late Cenozoic deposits in the Cactus Flat and Pahute Mesa 1:100,000 quadrangles and the western parts of the Timpahute Range, Pahranagat Range, Indian Springs, and Las Vegas 1:100,000 quadrangles, Nevada: U.S. Geological Survey Open-File Report 92-193, 14 p., 3 pls., scale 1:100,000. #1682 Tschanz, C.M., and Pampeyan, E.H., 1970, Geology and mineral deposits of Lincoln County, Nevada: Nevada Bureau of Mines and Geology Bulletin 73, 188 p.