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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.

Cactus Flat fault (Class A) No. 1090

Last Review Date: 1998-12-16

citation for this record: **Anderson, R.E., compiler, 1998, Fault number 1090, Cactus Flat 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 02:19 PM.**

Synopsis	The Cactus Flat fault is based on photogeologic mapping by Reheis (1992 #1604). It strikes mostly north, slightly oblique to the axial trend of Cactus Flat. Northern splays of the fault strike more to the north-northeast and parallel fold axes identified photogeologically. The fault is mostly marked by west-facing scarps and by lineaments on Quaternary deposits and surfaces. Apparently, where the trace enters the axial region of Cactus Flat, the uplifted block east of the scarps has caused drainage diversion and sediment capture for materials transported westward from the Kawich Range. In that sense, the fault separates Cactus Flat from the basin of Mud Lake to the west. Deformation along the fault has been interpreted to be late Pleistocene in age.
Name comments	Name taken from Piety (1995 #915) who renamed it from the Cactus Flat lineament of Reheis (1992 #1604). dePolo (1998 #2845) also referred to it as the Cactus Flat fault. North-striking,

	fault-related features that express the Cactus Flat fault were mapped by Reheis (1992 #1604), but not by Dohrenwend and others (1992 #289). Not included in this compilation is a 20-km-long, north-northwest-striking south part mapped photogeologically by Reheis (1992 #1604) on the basis of lineaments or scarps on Tertiary deposits. That south part parallels other Tertiary faults within and on the southwest flank of the Cactus Range, none of which are known to have a Quaternary history. The south end of the Cactus Flat fault is about 5 km northeast of Cactus Spring and the fault extends north from there along the west side of Cactus Flat to about 15 km east of the Monitor Hills where it terminates in the valley near 38 degrees N latitude. **Fault ID:** Fault referred to as CF by Piety (1995 #915), and portrayed as G18 by dePolo (1998 #2845).
County(s) and State(s)	NYE COUNTY, NEVADA
Physiographic province(s)	BASIN AND RANGE
Reliability of location	Good Compiled at 1:100,000 scale. *Comments:* Traces are from Reheis (1992 #1604) who mapped the traces on 1:60,000 and 1:80,000 aerial photos and transferred them by inspection to a 1:100,000 scale topographic map.
Geologic setting	The fault strikes north, slightly oblique to the north-northwest trend of Cactus Flat in which it is located. There are some splays, especially in its north part, that strike north-northeast. Also, the northern traces lie parallel to folds that are interpreted from aerial photos (Reheis, 1992 #1604). The entire extent of the fault is in low-relief terrain, and most scarps face west. The fault probably is best considered a basin interior fault, inasmuch as it is located in a valley and not associated with range fronts. Because little or nothing is known of its dip, dip direction, or slip sense, its structural/tectonic significance and relation to other faults are not known. dePolo (1998 #2845) showed the central part of the fault as a strike-slip fault; however, it could also be principally a normal or reverse fault, or even and oblique-slip fault.
Length (km)	29 km.

Average strike	N13°E
Sense of movement	Normal *Comments:* The interpretation by Reheis (1992 #1604) that drainage diversion and sediment capture in the axial part of Cactus Flat is related to late Pleistocene displacement on the Cactus Flat fault is consistent with normal down-to-the-west displacement. However, the relationship of the fault to folds mapped along the northern fault traces by Reheis (1992 #1604) is not known. The folds, if contemporaneous with faulting, could signify reverse displacement, in which case the fault would dip to the east. The folds might also be related to strike-slip movement on the fault as suggested by dePolo (1998 #2845), in which case the fault may be essentially vertical but could locally dip steeply to either the east or west.
Dip Direction	Unknown *Comments:* Reheis (1992 #1604) shows the fault as having both east- and west-facing scarps in its north part and primarily west-facing scarps in its south part. This contrast in facing direction could suggest an overall steep dip.
Paleoseismology studies	
Geomorphic expression	According to Reheis (1992 #1604), about 78% of the total trace compiled here is expressed as "topographic lineament, shown either bounding a linear range front or, rarely, within bedrock". Neither a range front nor bedrock are found along the fault (Ekren and others, 1971 #1505; Cornwall, 1972 #1482), suggesting an erroneous characterization. Reheis (1992 #1604) decorated the traces with ticks suggesting the presence of both east- and west-facing scarps, but most of the scarps face west. The remaining 22% of the traces are mapped as weak to moderately expressed lineaments or scarps in Quaternary deposits (Reheis, 1992 #1604). The fault was not shown in a reconnaissance photogeologic compilation of Quaternary faults (1:250,000 scale) by Dohrenwend and others (1992 #289) or on geologic maps (Ekren and others, 1971 #1505; Cornwall, 1972 #1482), suggesting it is not well expressed.
Age of faulted	Unknown; Cornwall (1972 #1482) mapped surficial deposits in

surficial deposits	this area as Quaternary in age and Ekren and others (1971 #1505) mapped them as Quaternary and Tertiary in age. On the basis of photogeology, Reheis (1992 #1604) interpreted the deposits faulted in the northern part of Cactus Flat to be late Pleistocene in age.
Historic earthquake	
Most recent prehistoric deformation	late Quaternary (<130 ka) *Comments:* Inferred to be late Pleistocene by Reheis (1992 #1604) on the basis of (1) a northern playa is ponded abruptly against the backslope of the main scarp, as are other smaller playas, (2) small drainages flow along or are diverted by left-stepping scarps on Quaternary deposits, and (3) the lack of pluvial shorelines in the area of the Cactus Flat playas may indicate that in pre-late Pleistocene time this playa-bearing basin was contiguous with the Mud Lake basin to the west, and indicate that these basins were later separated by late Pleistocene offset along the Cactus Flat fault.
Recurrence interval	
Slip-rate category	Less than 0.2 mm/yr *Comments:* The interpretation by Reheis (1992 #1604) regarding pre-late Pleistocene sedimentation patterns implies that playas in northern Cactus Flat were structurally separated from the Mud Lake basin by late Pleistocene displacement on the Cactus Flat fault. If this interpretation is correct, the slip rate could be higher than 0.2 mm/yr. Alternatively, some of the displacement and redistribution of sedimentation patterns could be associated with folding, the axes of which lie subparallel to the traces of the northern part of the Cactus Flat fault (Reheis, 1992 #1604). In the absence of more definitive information, the late Quaternary characteristics of this fault (overall geomorphic expression, continuity of scarps, age of faulted deposits, etc.) suggest 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	#1482 Cornwall, H.R., 1972, Geology and mineral deposits of southern Nye County, Nevada: Nevada Bureau of Mines and Geology Bulletin 77, 49 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. #289 Dohrenwend, J.C., Schell, B.A., McKittrick, M.A., and Moring, B.C., 1992, Reconnaissance photogeologic map of young faults in the Goldfield 1° by 2° quadrangle, Nevada and California: U.S. Geological Survey Miscellaneous Field Studies Map MF-2183, 1 sheet, scale 1:250,000. #1505 Ekren, E.B., Anderson, R.E., Rogers, C.L., and Noble, D.C., 1971, Geology of the northern Nellis Air Force Base Bombing and Gunnery Range, Nye County, Nevada: U.S. Geological Survey Professional Paper 651, 91 p., 1 pl., scale 1:125,000. #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.