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Quaternary Fault and Fold Database of the United States

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Maynard Lake fault (Class A) No. 1122

Last Review Date: 1999-07-07

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Synopsis	The Maynard Lake fault is the longest of the faults of the Pahranagat shear zone, a zone composed of northeast-striking faults with left-lateral displacement. It is complex structurally. Its central part cuts across bedrock and is partially buried by late Tertiary strata and thus lacks a Quaternary displacement history. Its northeast part forms the extreme south margin of Delamar Valley and has a late Pleistocene history of normal-sinistral slip. Its southwest part, also with an estimated late Pleistocene history, bounds the north extreme of the Sheep Range structural block. There are no detailed studies, and data needed to determine slip rate and recurrence are not reported.
Name comments	Name taken from Schell, (1981 #2844). Referred to as Pahranagat fault system by dePolo (1998 #2845). **Fault ID:** Referred to as fault #32 by Schell, (1981 #2844).

	Referred to as fault C14A by dePolo (1998 #2845).
County(s) and State(s)	LINCOLN COUNTY, NEVADA
Physiographic province(s)	BASIN AND RANGE
Reliability of location	Good Compiled at 1:250,000 scale. *Comments:* Trace of main fault taken from Schell (1981 #2844) who compiled it at 1:250,000 from study of black and white aerial photos, probably at scale of about 1:60,000. Traces of faults north of main trace taken from unpublished 1:250,000-scale map by J.C. Dohrenwend in the Delamar Lake area published at 1:1,000,000 scale (Dohrenwend and others, 1996 #2846); field verification was not conducted. Northeast part of fault was mapped at 1:24,000 by Scott and others (1990 #1554) and Scott and others (1993 #3837), and those traces agree well with those shown by Schell (1981 #2844).
Geologic setting	The Maynard Lake fault is one of several northeast-striking predominantly left-lateral faults making up the Pahranagat shear zone of Tschanz and Pampeyan (1970 #1682). The main faults in the zone, from north to south, are Arrowhead Mine, Buckhorn, and Maynard Lake. The Maynard Lake fault projects to the southwest across the north end of the Sheep Range, but that part is not known to have a history of Quaternary displacement. However, dePolo (1998 #2845) included that southwesterly extension in his western Sheep Range fault zone (his fault C14B). The Kane Springs Wash fault [1123] could be considered part of the Pahranagat shear zone (Ekren and others, 1977 #1036). From northeast to southwest, the Maynard Lake fault passes from the southeast extreme of Delamar Valley through bedrock ridges that extend northwest from the Delamar Mountains to the north-most boundary of the Sheep Range, making it a structurally complex fault. Its Quaternary displacement history may reflect this complexity. The western Sheep Range fault zone of dePolo (1998 #2845) is not included here as an extension of the Maynard Lake fault with Quaternary displacement. According to Jayko (1990 #1553) exposed normal and strike-slip faults in this area are controlled by subjacent detachment faults that limit their depth extent.

Length (km)	25 km.
Average strike	N35°E
Sense of movement	Normal *Comments:* Normal dip slip is assumed for Quaternary displacement on the Maynard Lake fault despite it being part of a zone of left-slip faults (Schell, 1981 #2844). However, this assumption is not based on field study. Field mapping by Scott and others (1993 #3837) shows the fault as normal sinistral where it cuts late Pleistocene deposits. Also, Byron (1995 #4704) described contractional structures associated with a splay of the Maynard Lake fault. Structures include a reverse fault, a left-lateral fault, an oblique-slip fault, and east-trending folds. The reverse fault cuts undated Tertiary-Quaternary alluvium and could have a Quaternary history. These structures are interpreted to be kinematically compatible with strike-slip on the main Maynard Lake fault (Byron, 1995 #4704).
Dip Direction	NW; V *Comments:* Not reported, probably steep; direction probably northwest to vertical.
Paleoseismology studies	
Geomorphic expression	Based on study of black and white aerial photos at assumed scale of 1:60,000, Schell (1981 #2844, p. 53, Table A2) reports a minor scarp in Pahranagat Valley and a lack of evidence for Quaternary scarps along the remainder of the fault. No description of the geomorphic expression based on field study is reported.
Age of faulted surficial deposits	Scott and others (1990 #3865) show northeast part of fault at the south extreme of Delamar Valley cutting the alluvium of Jumbo Wash estimated to be of late Pleistocene age. The minor scarp in Pahranagat Valley is developed on intermediate-age alluvium (estimated to range in age from 15-700 ka, mostly 15-200 ka, Schell, 1981 #2844). In an unpublished map by J.C. Dohrenwend published at 1:1,000,000 scale (Dohrenwend and others, 1996 #2846), the northeast part of the main fault and other faults to the north are estimated, on the basis of photogeologic reconnaissance, to be formed on surfaces or deposits of early to middle and (or) late Pleistocene age (0.01-1.6 Ma).

Historic earthquake	
Most recent prehistoric deformation	late Quaternary (<130 ka) *Comments:* Late Pleistocene was estimated by Schell (1981 #2844) as the probable age of last displacement based on the minor scarp in Pahranagat Valley. He states that the remainder of the fault shows no evidence of Quaternary movement. However, Scott and others (1990 #3865) show the northeast part of fault cutting late Pleistocene deposits and buried by alluvium estimated to be early Holocene and late Pleistocene in age, consistent with the estimate made by Schell (1981 #2844).
Recurrence interval	
Slip-rate category	Less than 0.2 mm/yr *Comments:* No reliable estimate can be made; low value is inferred from knowledge of slip rates on other Pleistocene faults in the Basin and Range province.
Date and Compiler(s)	1999 R. Ernest Anderson, U.S. Geological Survey, Emeritus
References	#4704 Byron, B., 1995, Local contraction along the Pahranagat shear system, Southeastern Nevada, *in* Maldonado, F., and Nealey, L.D., eds., Geologic studies in the basin and range—Colorado Plateau transition in Southeastern Nevada, Southwestern Utah, and Northwestern Arizona, 1995: U.S. Geological Survey Bulletin 2153, p. 255-264. #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. #2846 Dohrenwend, J.C., Schell, B.A., Menges, C.M., Moring, B.C., and McKittrick, M.A., 1996, Reconnaissance photogeologic map of young (Quaternary and late Tertiary) faults in Nevada, *in* Singer, D.A., ed., Analysis of Nevada's metal-bearing mineral resources: Nevada Bureau of Mines and Geology Open-File Report 96-2, 1 pl., scale 1:1,000,000. #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. #1553 Jayko, A.S., 1990, Shallow crustal deformation in the Pahranagat area, southern Nevada, *in* Wernicke, B.P., ed., Basin and Range extensional tectonics near the latitude of Las Vegas, Nevada: Geological Society of America Memoir 176, p. 213-236. #2844 Schell, B.A., 1981, Faults and lineaments in the MX Siting Region, Nevada and Utah, Volume II: Technical report to U.S. Department of [Defense] the Air Force, Norton Air Force Base, California, under Contract FO4704-80-C-0006, November 6, 1981, 29 p., 11 pls., scale 1:250,000. #1554 Scott, R.B., 1990, Tectonic setting of Yucca Mountain, southwest Nevada, *in* Wernicke, B.P., ed., Basin and Range extensional tectonics near the latitude of Las Vegas, Nevada: Geological Society of America Memoir 176, p. 251-282. #3865 Scott, R.B., Page, W.R., and Swadley, W.C., 1990, Preliminary geologic map of the Delamar 3 NW quadrangle, Lincoln County, Nevada: U.S. Geological Survey Open-File Report 90-405. #3837 Scott, R.B., Swadley, W.C., and Novak, S.W., 1993, Geologic map of the Delamar Lake quadrangle, Lincoln County, Nevada: U.S. Geological Survey Geologic quadrangle Map GQ-1730, 1 sheet, scale 1:24,000. #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.