

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](#).

O'Brien Creek fault (Class A) No. 704

Last Review Date: 1996-03-04

Compiled in cooperation with the Montana Bureau of Mines and Geology

citation for this record: Haller, K.M., compiler, 1996, Fault number 704, O'Brien Creek 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 02:02 PM.

Synopsis	Virtually nothing is known about the Quaternary history of this fault. It is not known if scarps on alluvium are present. Its history of Quaternary displacement is inferred from equivocal relations at one location.
Name comments	Source of name is probably Gibson (1948 #1030), who showed the fault as extending from the northern shores of Savage Lake northward to the edge of the mapped area. Fault extends from near the 90° bend in O'Brien Creek near Yaak Mountain south to northern shores of Savage Lake. Fault ID: Refers to northern part of fault number 125 of Witkind (1975 #317).

County(s) and State(s)	LINCOLN COUNTY, MONTANA
Physiographic province(s)	NORTHERN ROCKY MOUNTAINS
Reliability of location	Poor Compiled at 1:250,000 scale. <i>Comments:</i> Based on poorly located fault shown on 1:125,000-scale geologic map of Gibson (1948 #1030); northern part of fault is from Witkind (1975 #317) and shows fault extending northwestward to edge of map area; this part of the trace not included because evidence for Quaternary movement is not documented. O'Brien Creek fault not shown on compilation of 1? x 2? Kalispell sheet by Harrison and others (1983 #1032).
Geologic setting	High-angle, down-to-west, normal fault bounding the mountain front facing O'Brien Creek. Witkind (1975 #317) considered this fault, the basin-bounding part of the Bull Lake fault [702], and Savage Lake fault [703] as a single feature. This interpretation is not supported by recent work; thus, we depict the faults as originally mapped.
Length (km)	15 km.
Average strike	N23°W
Sense of movement	Normal <i>Comments:</i> (Gibson, 1948 #1030)
Dip Direction	SW
Paleoseismology studies	
Geomorphic expression	Scarps on alluvium are not known.
Age of faulted surficial deposits	Unknown. Location of fault shown at or near bedrock-alluvium contact (Johns, 1970 #896).
Historic earthquake	
Most recent	undifferentiated Quaternary (<1.6 Ma)

prehistoric deformation	<i>Comments:</i> Gibson (1948 #1030) did not suggest recent movement on this fault as he did for the "related" faults [702 and 703] to the south. However, Witkind (1975 #317) included this as a Quaternary structure based on the description of the fault by Pardee (1950 #46). No recent work has been conducted to quantify the timing of the most recent movement on this fault, which we depict here as Quaternary.
Recurrence interval	
Slip-rate category	Less than 0.2 mm/yr <i>Comments:</i> Inferred low slip rate based on absence of data that indicate late Quaternary slip.
Date and Compiler(s)	1996 Kathleen M. Haller, U.S. Geological Survey
References	#1030 Gibson, R., 1948, Geology and ore deposits of the Libby quadrangle, Montana: U.S. Geological Survey Bulletin 956, 131 p., 2 pls. #1032 Harrison, J.E., Cressman, E.R., and Whipple, J.W., 1983, Preliminary geologic and structure maps of part of the Kalispell 1° x 2° quadrangle, Montana: U.S. Geological Survey Open-File Report 83-502, 6 p. pamphlet, 2 sheets, scale 1:250,000. #896 Johns, W.M., 1970, Geology and mineral deposits of Lincoln and Flathead Counties, Montana: Montana Bureau of Mines and Geology Bulletin 79, 182 p., 3 pls., scale approx. 1:125,000. #46 Pardee, J.T., 1950, Late Cenozoic block faulting in western Montana: Geological Society of America Bulletin, v. 61, p. 359-406. #317 Witkind, I.J., 1975, Preliminary map showing known and suspected active faults in western Montana: U.S. Geological Survey Open-File Report 75-285, 36 p. pamphlet, 1 sheet, scale 1:500,000.

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