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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.

Rocker fault (Class A) No. 669

Last Review Date: 1994-05-17

Compiled in cooperation with the Montana Bureau of Mines and Geology

citation for this record: **Haller, K.M., compiler, 1994, Fault number 669, Rocker 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 02:04 PM.**

Synopsis	Preliminary reconnaissance studies have been conducted along some of the fault. Little information has been published concerning the nature, timing, or extent of displacement on the fault, but one trench was excavated on the southern part of the fault.
Name comments	Name is from Johns and others (1982 #259). Bartholomew and Stickney (1987 #9) and Stickney and others (1987 #295) referred to the southern part of this fault as the Divide fault because of change in trend. We use the earlier name here. The fault extends from about 6 km north of Highway 90 (west of Butte) southward to about 5 km southeast of Camp Creek.

	Fault ID: Refers to number 71 (unnamed fault along east side Deer Lodge Pass-Divide Creek) and number 81 (unnamed fault along east side Melrose valley) of Witkind (1975 #317), and number 25 (Rocker fault) of Johns and others (1982 #259).
County(s) and State(s)	MADISON COUNTY, MONTANA SILVER BOW COUNTY, MONTANA
Physiographic province(s)	NORTHERN ROCKY MOUNTAINS
Reliability of location	Poor Compiled at 1:250,000 scale. *Comments:* Trace of fault from 46° N. to 45°45' N. is from 1:24,000-scale geologic map of Smedes (1967 #574), but fault is approximately located on original source. The location of the northern and southern parts of the fault are inferred from the local topography and constrained by the trace on the 1:500,000-scale map of Witkind (1975 #317) and generalized on the approximately 1:70,000-scale map of Ostenaa and Wood (1990 #318).
Geologic setting	High-angle, down-to-the-west, range-front normal fault bounding the east side of Divide Creek valley. Amount of structural throw is unpublished.
Length (km)	43 km.
Average strike	N0°E
Sense of movement	Normal *Comments:* (Johns and others, 1982 #259)
Dip Direction	W
Paleoseismology studies	Trench 669-1, located about 200 m north of Moose Creek, was excavated across projection of fault in 1986 (Bartholomew and Stickney, 1987 #9). Trench showed no evidence of late Quaternary (<130 ka) offset (Bartholomew and Stickney, 1987 #9).
Geomorphic expression	Range front has aligned spurs that are slightly oversteepened at their bases and are separated by narrow valleys (Pardee, 1950 #46).

Age of faulted surficial deposits	unknown, fault coincides with the bedrock-alluvium contact or is buried by Quaternary deposits (Ruppel and others, 1993 #646). Pardee (1950 #46) reports that Tertiary lake beds are faulted.
Historic earthquake	
Most recent prehistoric deformation	undifferentiated Quaternary (<1.6 Ma) *Comments:* Trenching studies do not preclude Quaternary movement. However, they do exclude the possibility of Pleistocene movement reported by Johns and others (1982 #259). Pierce and Morgan (1992 #539) indicate that this fault was active during the Tertiary but do not preclude Quaternary movement. Because details are lacking, the fault is included in this compilation. Due to the lack of agreement in the timing of the most recent movement, a Quaternary age is assigned here.
Recurrence interval	
Slip-rate category	Less than 0.2 mm/yr *Comments:* Inferred low slip rate is based on the absence of scarps on upper Quaternary deposits and faulted late Quaternary deposits in the trench.
Date and Compiler(s)	1994 Kathleen M. Haller, U.S. Geological Survey
References	#9 Bartholomew, M.J., and Stickney, M.C., 1987, Late Quaternary faulting in southwestern Montana: Geological Society of America Abstracts with Programs, v. 19, p. 258-259. #259 Johns, W.M., Straw, W.T., Bergantino, R.N., Dresser, H.W., Hendrix, T.E., McClernan, H.G., Palmquist, J.C., and Schmidt, C.J., 1982, Neotectonic features of southern Montana east of 112°30' west longitude: Montana Bureau of Mines and Geology Open-File Report 91, 79 p., 2 sheets. #318 Ostenaa, D., and Wood, C., 1990, Seismotectonic study for Clark Canyon Dam, Pick-Sloan Missouri Basin Program, Montana: U.S. Bureau of Reclamation Seismotectonic Report 90-4, 78 p., 1 pl. #46 Pardee, J.T., 1950, Late Cenozoic block faulting in western

	Montana: Geological Society of America Bulletin, v. 61, p. 359-406. #539 Pierce, K.L., and Morgan, L.A., 1992, The track of the Yellowstone hot spot—Volcanism, faulting, and uplift, *in* Link, P.K., Kuntz, M.A., and Platt, L.B., eds., Regional geology of eastern Idaho and western Wyoming: Geological Society of America Memoir 179, p. 1-53, 1 pl. #646 Ruppel, E.T., O'Neill, J.M., and Lopez, D.A., 1993, Geologic map of the Dillon 1° x 2° quadrangle, Idaho and Montana: U.S. Geological Survey Miscellaneous Investigations Map I-1803-H, 1 sheet, scale 1;250,000. #574 Smedes, H.W., 1967, Preliminary geologic map of the Butte South quadrangle, Montana: U.S. Geological Survey Open-File Report 67-203, 5 pls., scale 1:24,000. #295 Stickney, M.C., Bartholomew, M.J., and Wilde, E.M., 1987, Trench logs across the Red Rock, Blacktail, Lima Reservoir, Georgia Gulch, Vendome and Divide faults, Montana: Geological Society of America Abstracts with Programs, v. 19, p. 336-337. #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.