Jump to Navigation

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.

Island Park Caldera Rim faults (Class B) No. 619

Last Review Date: 1994-01-18

Compiled in cooperation with the Idaho Geological Survey

citation for this record: **Haller, K.M., compiler, 1994, Fault number 619, Island Park Caldera Rim faults, 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 03:03 PM.**

Synopsis	The only comprehensive study of these faults to date is described by Gilbert and others (1983 #434).
Name comments	The earliest use of the name for these faults was possibly by Gilbert and others (1983 #434). **Fault ID:** Referred to as "Island Park caldera boundary fault" in Stickney and Bartholomew (written commun. 1992 #556).
County(s) and	FREMONT COUNTY, IDAHO

State(s)	FREMONT COUNTY, IDAHO
Physiographic province(s)	COLUMBIA PLATEAU MIDDLE ROCKY MOUNTAINS
Reliability of location	Poor Compiled at 1:400,000 scale. *Comments:* Location based on 1:400,000-scale (approx.) map of Gilbert and others (1983 #434), map has no topography. Many of the rim faults are buried and locations are inferred. Island Park caldera shown on 1:250,000-scale map of Mitchell and Bennett (1979 #652) is slightly smaller than shown here.
Geologic setting	Curvilinear and short linear scarps probably related to volcanic collapse with predominantly down-to-center movement.
Length (km)	38 km.
Average strike	N45°W
Sense of movement	Normal *Comments:* (Gilbert and others, 1983 #434)
Dip	
Paleoseismology studies	
Geomorphic expression	Only faults along the western side of the caldera are expressed at the surface as large topographic scarps on bedrock.
Age of faulted surficial deposits	Early Quaternary Mesa Falls Tuff (1.2 Ma), and Big Bend Ridge rhyolite (>1.2 but <2 Ma); 2 short scarps shown on middle Quaternary Gerrit basalt (195 ka) (Gilbert and others, 1983 #434).
Historic earthquake	
Most recent prehistoric deformation	undifferentiated Quaternary (<1.6 Ma) *Comments:* Gilbert and others (1983 #434) document that the western rim faults offset the Mesa Falls Tuff (1.2 Ma), but movement on these faults probably ceased or slowed considerably prior to the emplacement of the Gerrit basalt (195 ka) that buries most of the rim faults. Mesa Falls Tuff erupted from the area of

	the Island Park caldera and collapse was related to that eruption (Christiansen and Blank, 1972 #649).
Recurrence interval	
Slip-rate category	Less than 0.2 mm/yr *Comments:* Geologic evidence suggests no obvious displacement of 195-ka Gerrit basalt. Gilbert and others (1983 #434) estimate that a total offset of up to 5 ft (1.5 m) may not be detected, and thus a maximum slip rate of 0.01 mm/yr is possible for the past 195 k.y. Comparison of 1923 second-order and 1960 first-order leveling data indicates subsidence on the order of 1 mm/yr in this area for this time interval (Reilinger and others, 1977 #479); however, Gilbert and others (1983 #434) caution the use of this data.
Date and Compiler(s)	1994 Kathleen M. Haller, U.S. Geological Survey
References	#649 Christiansen, R.L., and Blank, H.R., Jr., 1972, Volcanic stratigraphy of the Quaternary rhyolite plateau in Yellowstone National Park: U.S. Geological Survey Professional Paper 729-B, 18 p. #434 Gilbert, J.D., Ostenaa, D., and Wood, C., 1983, Seismotectonic study Island Park Dam and Reservoir, Minidoka Project, Idaho-Wyoming: U.S. Bureau of Reclamation Seismotectonic Report 83-1, 37 p., 6 pl. #652 Mitchell, V.E., and Bennett, E.H., compilers, 1979, Geologic map of the Ashton quadrangle, Idaho: Idaho Bureau of Mines and Geology Geologic Map Series, Ashton 2° quadrangle, 1 sheet, scale 1:250,000. #479 Reilinger, R.E., Citron, G.P., and Brown, L.D., 1977, Recent vertical crustal movements from precise leveling data in southwestern Montana, western Yellowstone National Park, and the Snake River Plain: Journal of Geophysical Research, v. 82, p. 5349-5359. #556 Stickney, M.C., and Bartholomew, M.J., 1992 written commun., Preliminary map of late Quaternary faults in western Montana (digital data): Montana Bureau of Mines and Geology

	(digital version of MBMG Open-File Report 186), 1 pl., scale 1:500,000.

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