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.

Sour Creek dome faults (Class B) No. 758

Last Review Date: 1998-03-19

citation for this record: **Pierce, K.L., compiler, 1998, Fault number 758, Sour Creek dome 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 02:02 PM.**

Synopsis	The Sour Creek resurgent dome probably rose within a hundred thousand years or so after the 630-ka Lava Creek Tuff was erupted. Although, they probably have not moved since 130 ka. These faults are considered Class B because they are probably related to local uplift of the resurgent Sour Creek dome, rather than deep seated tectonic (crustal) movement.
Name comments	Associated with magmatic uplift of the Sour Creek resurgent dome.
County(s) and State(s)	PARK COUNTY, WYOMING
Physiographic province(s)	MIDDLE ROCKY MOUNTAINS
Reliability of location	Good Compiled at 1:125,000 scale.

	Comments: Mapped at 1:62,500 scale by Christiansen and Blank (1975 #2269). Fault traces were recompiled at 1:125,00 scale on a topographic base map
Geologic setting	These faults are associated with the Sour Creek resurgent dome, one of two resurgent domes within the 630-ka Yellowstone caldera. They were formed as part of resurgent dome volcano-magmatic process.
Length (km)	15 km.
Average strike	N31°W
Sense of movement	Normal
Dip Direction	All *Comments:* Faults within the dome trend both NW and NE, with the NW set being older and more continuous (U.S. Geological Survey, 1972 #639; Christiansen and Blank, 1975 #2269; Christiansen, 2001 #1784). NW-striking set dips to SW and NE; NE-striking set dips to NW and SE.
Paleoseismology studies	
Geomorphic expression	Well-expressed scarps on rhyolite bedrock of Lava Creek Tuff, but no scarps are present on surficial materials.
Age of faulted surficial deposits	Offsets 630-ka Lava Creek Tuff.
Historic earthquake	
Most recent prehistoric deformation	middle and late Quaternary (<750 ka) *Comments:* Activity probably closer to 630-ka caldera eruption than to present. Christiansen (2001 #1784) argues that their activity was probably over by about 130 ka.
Recurrence interval	

	Comments: No scarps are known on surficial materials and thus no known post-glacial (<15 ka) offset. Faulting may have ceased prior to 130 ka (Christiansen, 2001 #1784).
Slip-rate category	Less than 0.2 mm/yr *Comments:* These faults are either inactive or much less active than time of resurgent doming in the caldera, which probably occurred within about hundred thousand years or so of the 630-ka Lava Creek Tuff eruption. Northeast-trending faults may have the youngest activity.
Date and Compiler(s)	1998 Kenneth L. Pierce, U.S. Geological Survey, Emeritus
References	#1784 Christiansen, R.L., 2001, The Quaternary and Pliocene Yellowstone Plateau volcanic field of Wyoming, Idaho, and Montana: U.S. Geological Survey Professional Paper 729-G, 145 p., 3 pls., scale 1:125,000. #2269 Christiansen, R.L., and Blank, H.R., 1975, Geologic map of the Canyon Village quadrangle, Yellowstone National Park, Wyoming: U.S. Geological Survey Geologic quadrangle Map GQ-1192, scale 1:62,500. #639 U.S. Geological Survey, 1972, Geologic map of Yellowstone National Park: U.S. Geological Survey Miscellaneous Geologic Investigations I-711, 1 sheet, scale 1:125,000.