

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](#).

Cove Fort fault zone (Class B) No. 2491

Last Review Date: 2004-07-01

Compiled in cooperation with the Utah Geological Survey

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Synopsis	Poorly understood complex zone of normal and strike-slip, middle and late Quaternary faults in and around the Cove Fort volcanic field zone. Intragraben structural patterns recorded in the Cove Fort volcanic field may be similar to deformation within other, generally alluvial-filled, basins of the Great Basin. Alternatively, the faults may result from local forces related to volcanic eruption. Thus, without further information on the tectonic importance of these faults, we consider them to be Class B structures.
Name	Fault ID: Refer to fault number 0 2 in Hecker (1992 #642)

comments	Fault ID: Refers to fault number 9-2 in Hecker (1993 #042).
County(s) and State(s)	BEAVER COUNTY, UTAH MILLARD COUNTY, UTAH
Physiographic province(s)	BASIN AND RANGE
Reliability of location	Good Compiled at 1:250,000 scale. <i>Comments:</i> Mapped or discussed by Clark (1977 #4553), Anderson and Bucknam (1979 #518), Steven and Morris (1983 #4554), Oviatt (1991 #4552), Anderson and Barnhard (1992 #612), Hintze and Davis (2003 #6741), and Hintze and others (2003 #6756). Fault traces from 1:250,000 scale mapping of Anderson and Bucknam (1979 #518) and 1:50,000 scale mapping of Steven and Morris (1983 #4554).
Geologic setting	Complex zone of normal and strike-slip faulting in and around the Cove Fort volcanic field. Intragraben structural patterns recorded in the Cove Fort volcanic field may be similar to deformation within other, generally alluvial-filled, basins of the Great Basin (Clark, 1977 #4553). Alternatively, the faults may result from local forces related to volcanic eruption (Steven and Morris, 1983 #4554). Thus, without further information on the tectonic importance of these faults, we consider them to be Class B structures.
Length (km)	21 km.
Average strike	N21°E
Sense of movement	Normal, Left lateral, Right lateral <i>Comments:</i> Faults in Oligocene bedrock northeast of the Cove Fort volcanic field show evidence for a mixture of left- and right-lateral strike slip, as well as normal-dip slip, with a predominance of left-lateral displacement (at least 150 m on one fault). This pattern of slip is similar to that in the area of the Clear Creek downwarp and Dry Wash fault [2496] to the east (Anderson and Barnhard, 1992 #612).
Dip	60° NE. <i>Comments:</i> Assuming fault-plane dips of 60°, Clark (1977 #4553)

	calculated 7.5 m per km of east-west extension across the Cove Fort volcanic field.
Paleoseismology studies	
Geomorphic expression	A 4.3-m-high alluvial scarp southeast of the Cove Fort flows is probably pre-Holocene (Anderson and others, 1978 #4548). Scarps within the middle Pleistocene Cove Fort volcanic field generally have 5-20 m and locally as much as 60 m of vertical displacement (Clark, 1977 #4553). Middle Pleistocene tephras displaced across a fault marked by a subdued scarp along the eastern boundary of the Cove Fort graben show at least 18-20 m of middle to late Pleistocene vertical stratigraphic separation (Anderson, 1980 #4566).
Age of faulted surficial deposits	Quaternary deposits and basalts, middle Pleistocene tephras.
Historic earthquake	
Most recent prehistoric deformation	middle and late Quaternary (<750 ka) <i>Comments:</i> Scarps on middle Pleistocene basalt flows are displaced generally vertically 5-20 m to as much as 60 m (Clark, 1977 #4553). Middle Pleistocene tephras displaced across a fault marked by a subdued scarp along the eastern boundary of the Cove Fort graben show at least 18-20 m of vertical stratigraphic separation (Anderson, 1980 #4566). These relations demonstrate recurrent faulting during the middle and late Quaternary. Faults on trend with those in the Cove Fort volcanic field are likely part of the same zone of faulting and are inferred to date from less than 500 ka (Anderson and Barnhard, 1992 #612).
Recurrence interval	
Slip-rate category	Less than 0.2 mm/yr <i>Comments:</i> Scarps on middle Pleistocene basalt flows are locally displaced as much as 60 m (Clark, 1977 #4553). This amount of offset in rocks that are considered to be roughly 500 ka indicates that some of the faults may have low long-term slip rates.

<p>Date and Compiler(s)</p>	<p>2004 Bill D. Black, Utah Geological Survey Michael D. Hylland, Utah Geological Survey Suzanne Hecker, U.S. Geological Survey</p>
<p>References</p>	<p>#4566 Anderson, R.E., 1980, The status of seismotectonic studies of southwestern Utah, <i>in</i> Andriese, P.D., ed., Earthquake hazards along the Wasatch and Sierra-Nevada frontal fault zones: U.S. Geological Survey Open-File Report 80-801, p. 519-547.</p> <p>#612 Anderson, R.E., and Barnhard, T.P., 1992, Neotectonic framework of the central Sevier Valley area, Utah, and its relationship to seismicity, <i>in</i> Gori, P.L., and Hays, W.W., eds., Assessment of regional earthquake hazards and risk along the Wasatch front, Utah: U.S. Geological Survey Professional Paper 1500, p. F1-F47.</p> <p>#518 Anderson, R.E., and Bucknam, R.C., 1979, Map of fault scarps in unconsolidated sediments, Richfield 1° x 2° quadrangle, Utah: U.S. Geological Survey Open-File Report 79-1236, 15 p. pamphlet, 1 sheet, scale 1:250,000.</p> <p>#4548 Anderson, R.E., Bucknam, R.C., and Hamblin, W.K., 1978, Road log to the Quaternary tectonics of the Intermountain seismic belt between Provo and Cedar City, Utah: Geological Society of America, Rocky Mountain Section Annual Meeting, Provo, Utah, Field Trip no. 8, 50 p.</p> <p>#4553 Clark, E.E., 1977, Late Cenozoic volcanic and tectonic activity along the eastern margin of the Great Basin, <i>in</i> the proximity of Cove Fort, Utah: Brigham Young University Geology Studies, v. 24, pt.1, p. 87-114.</p> <p>#642 Hecker, S., 1993, Quaternary tectonics of Utah with emphasis on earthquake-hazard characterization: Utah Geological Survey Bulletin 127, 157 p., 6 pls., scale 1:500,000.</p> <p>#6741 Hintze, L.F., and Davis, F.D., 2003, Geology of Millard County, Utah: Utah Geological Survey Bulletin 133, 305 p.</p> <p>#6756 Hintze, L.F., Davis, F.D., Rowley, P.D., Cunningham, C.G., Steven, T.A., and Willis, G.C., 2003, Geologic map of the Richfield 30' x 60' quadrangle, southeast Millard County and parts of Beaver, Piute, and Sevier Counties, Utah: Utah Geological Survey Map 195, scale 1:100,000.</p>

#4552 Oviatt, C.G., 1991, Quaternary geology of the Black Rock Desert, Millard County, Utah: Utah Geological and Mineral Survey Special Studies 73, 23 p., scale 1:100,000.

#4554 Steven, T.A., and Morris, H.T., 1983, Geologic map of the Cove Fort quadrangle, west-central Utah: U.S. Geological Survey Miscellaneous Investigations Map I-1481, scale 1:50,000.

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