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Quaternary Fault and Fold Database of the United States

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Drum Mountains fault zone (Class A) No. 2432

Last Review Date: 1999-10-01

Compiled in cooperation with the Utah Geological Survey

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Synopsis	Complex zone of multiple, subparallel, west- and east-dipping normal faults on the eastern side of the Drum Mountains in central Utah. The fault zone cuts lacustrine deposits related to the Provo shoreline level of Lake Bonneville. It shows evidence for Holocene activity and has been trenched, studied in outcrop and been the subject of a seismic-reflection study.
Name comments	**Fault ID:** Refers to fault number 8-1 of Hecker (1993 #642).
County(s) and State(s)	JUAB COUNTY, UTAH MILLARD COUNTY, UTAH

Physiographic province(s)	BASIN AND RANGE
Reliability of location	Good Compiled at 1:250,000 scale. *Comments:* Mapped or discussed by Bucknam and Anderson (1979 #517), Allmendinger and others (1983 #405), Anderson (1983 #4971), Colman and Watson (1983 #334), Crone (1983 #552), Crone and Harding (1984 #551), Hanks and others (1984 #337), Anderson and Barnhard (1986 #895), Pierce and Colman (1986 #53), Oviatt (1989), and Hintze and Davis (in preparation #4539). Fault traces from mapping of Bucknam and Anderson (1979 #517) and Oviatt (1989 #381).
Geologic setting	North-trending fault zone along the eastern margins of the Drum and Little Drum Mountains in central Utah. The fault zone contains numerous north-trending, subparallel, en-echelon fault traces in a wide, elongate area tens of kilometers long and wide. The Drum Mountains are in the southern Thomas Range, easternmost of three north-trending mountain ranges in western Utah (including the Confusion and House Ranges). Bedrock in the mountains is mainly Cambrian sedimentary and Tertiary volcanic rocks. Unconsolidated deposits in the valley are mainly lake sediments and alluvium.
Length (km)	52 km.
Average strike	N7°W
Sense of movement	Normal
Dip Direction	E; W
Paleoseismology studies	Site [2433-1]. A.J. Crone (U.S. Geological Survey) excavated a long trench across 7.2 m high scarps below the Provo level of Lake Bonneville. The trenching revealed evidence for one or more displacement events that resulted in 5.7 m of net stratigraphic offset of gravels that are considered to be <14 ka (Anderson, 1983 #4971; A.J. Crone, oral commun., 2002). A shallow seismic-reflection profile across the scarps shows a network of steeply dipping faults (many of which are not associated with scarps) and substantial, recurrent displacement (Crone and Harding, 1984 #551). Crone's (1983 #552) study of scarp-related soil development and stratigraphy indicate an early

	Holocene age for the scarps. Faulted Provo shoreline features provide a maximum age for the scarps of 13.5 ka (Crone, 1983 #552).
Geomorphic expression	Multiple, north-south-trending, subparallel normal fault scarps along the eastern base of the Drum Mountains. Scarps range in height from 0.7 to 7.3 m, and average 2.4 m. Oviatt (1989 #381) indicates net displacement is difficult to determine because major faults across the zone have both down-to-the-east and down-to-the-west displacement. The surface projection of a west-dipping, low-angle detachment (Allmendinger and others, 1983 #405) coincides with scarps at the south end of the zone. A channel pattern anomaly suggestive of uplift affects a broad (35-km-long) reach of the Sevier River south of the fault zone (Anderson and Barnhard, 1992 #612). Morphometric scarp analyses by Pierce and Colman (1986 #53) yielded a scarp age of 9 ka. Earlier modeling, uncorrected for height dependency in age estimates, yielded scarp ages of from 5 to 5.6 ka (Colman and Watson, 1983 #334; Hanks and others, 1984 #337). Empirical studies of scarp morphology as a function of age were conducted by Bucknam and Anderson (1979 #332) and Sterr (1985 #351).
Age of faulted surficial deposits	Early(?) Holocene alluvium and latest Pleistocene lacustrine deposits and loess.
Historic earthquake	
Most recent prehistoric deformation	latest Quaternary (<15 ka) *Comments:* Early Holocene timing based primarily on morphometric data.
Recurrence interval	
Slip-rate category	Less than 0.2 mm/yr
Date and Compiler(s)	1999 Bill D. Black, Utah Geological Survey Michael D. Hylland, Utah Geological Survey Suzanne Hecker, U.S. Geological Survey
References	#405 Allmendinger, R.W., Sharp, J.W., Von Tish, D., Serpa, L.,

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