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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.

Sinbad Valley graben (Class B) No. 2285

Last Review Date: 1998-06-25

Compiled in cooperation with the Utah Geological Survey and the Colorado Geological Survey

citation for this record: **Widmann, B.L., compiler, 1998, Fault number 2285, Sinbad Valley graben, 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 03:02 PM.**

Synopsis	The Sinbad Valley graben lies between the Uncompahgre Plateau and Paradox Valley, which is a similarly formed collapsed salt anticline. The graben formed along the collapsed crest of a salt-cored anticline that developed in response to salt migration and dissolution beneath the area (Cater, 1970 #2672). Williams (1964 #2789) indicated a few of the faults associated with the graben offset Quaternary deposits. Fault scarps are present along the north margin of the graben and minor folds and faults are reportedly found on Quaternary deposits within the graben (Shoemaker, 1956 #2744). The faults may not extend to seismic

	depths, thus they are herein considered to be Class B structures.
Name comments	The Sinbad Valley anticline is a salt-cored structure; the collapsed crest is defined by the Sinbad Valley graben. Multiple northwest-trending and arcuate faults, along with a few minor folds, are associated with this graben. Five faults are in Colorado, and four faults are in Utah. Hecker (1993 #642) includes the faults in Sinbad Valley with those in Paradox Valley to the south, but Widmann and others (1998 #3441) described the faults in Colorado separately. Sinbad Ridge defines the southwest margin of the collapse area, whereas Sewemup Mesa defines the northeast margin. This structure's name was assigned by Widmann and others (1998 #3441). **Fault ID:** Part of fault number 18-6 of Hecker (1993 #642) and fault number Q35 of Widman and others (1998 #3441).
County(s) and State(s)	GRAND COUNTY, UTAH MESA COUNTY, COLORADO MONTROSE COUNTY, COLORADO
Physiographic province(s)	COLORADO PLATEAUS
Reliability of location	Good Compiled at 1:250,000 scale. *Comments:* The Sinbad Valley graben was mapped at a scale of 1:24,000 by Shoemaker (1956 #2744), 1:62,500 by Cater (1970 #2672), 1:250,000 by Williams (1964 #2789), and 1:500,000 by Anderson and Miller (1979 #4494). The trace used herein is generalized from Williams (1964 #2789).
Geologic setting	The Sinbad Valley anticline is a salt-cored structure with a collapsed crest, which is defined by the Sinbad Valley graben. Formation of the anticline is believed to be controlled by major subsurface faults that displace bedrock beneath the salt-bearing Paradox Formation. However, the faults may not extend to seismic depths, thus they are herein considered to be Class B structures. The graben is a collapse feature that formed in response to salt migration and dissolution beneath the area. Faults associated with the graben are generally high-angle and downthrown primarily to the northeast; a few faults are downthrown to the southwest

	(Shoemaker, 1956 #2744; Cater, 1970 #2672). Sinbad Ridge defines the southwest margin of the collapse area, while Sewemup Mesa defines the northeast margin.
Length (km)	32 km.
Average strike	N50°W
Sense of movement	Normal
Dip Direction	NE; SW
Paleoseismology studies	
Geomorphic expression	Prominent fault scarps are present along the north flank of the collapsed graben (Cater, 1970 #2672) and small faults and folds are found in Quaternary deposits elsewhere in the Sinbad Valley (Shoemaker,1956 #2744).
Age of faulted surficial deposits	Williams (1964 #2789, scale 1:250,000) mapped Quaternary alluvial and eolian deposits as offset by a few of the faults associated with the Sinbad Valley graben. However, more detailed mapping by Shoemaker (1956 #2744, 1:24,000 scale) and Cater (1970 #2672, 1:62,500 scale) show that the faults are concealed by Quaternary deposits. Shoemaker (1956 #2744) reported small faults and folds in Quaternary deposits, but did not specifically map any such features.
Historic earthquake	
Most recent prehistoric deformation	undifferentiated Quaternary (<1.6 Ma) *Comments:* Williams (1964 #2789) mapped Quaternary deposits as being offset by some of the faults associated with the Sinbad Valley graben. Although Shoemaker (1956 #2744) and Cater (1970 #2672) did not map any faulted Quaternary deposits, accompanying text by Shoemaker stated that small folds and faults were present within the graben. He postulated that the presence of these features in Quaternary deposits indicates recent collapse and readjustment of the system. Therefore, the most recent paleoevent on the Sinbad Valley graben is herein assumed to have occurred during the Quaternary.
Recurrence	

interval	
Slip-rate category	Less than 0.2 mm/yr *Comments:* Widmann and others (1998 #3441) placed this structure within the <0.2 mm/yr slip-rate category.
Date and Compiler(s)	1998 Beth L. Widmann, Colorado Geological Survey
References	#4494 Anderson, L.W., and Miller, D.G., 1979, Quaternary fault map of Utah: Long Beach, California, Fugro, Inc, 35 p. pamphlet, scale 1:500,000. #2672 Cater, F.W., Jr., 1970, Geology of the salt anticline region in southwestern Colorado, with a section on stratigraphy by F.W. Cater and L.C. Craig: U.S. Geological Survey Professional Paper 637, 80 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. #2744 Shoemaker, E.M., 1956, Geology of the Roc Creek quadrangle, Colorado: U.S. Geological Survey Geologic quadrangle Map GQ-83. #3441 Widmann, B.L., Kirkham, R.M., and Rogers, W.P., 1998, Preliminary Quaternary fault and fold map and database of Colorado: Colorado Geological Survey Open-File Report 98-8, 331 p., 1 pl., scale 1:500,000. #2789 Williams, P.L., 1964, Geology, structure, and uranium deposits of the Moab quadrangle, Colorado and Utah: U.S. Geological Survey Miscellaneous Geologic Investigations I-360.