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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.

Amargosa fault (Class A) No. 905

Last Review Date: 1994-08-02

Compiled in cooperation with the Texas Bureau of Economic Geology

citation for this record: **Collins, E., compiler, 1994, Fault number 905, Amargosa fault, 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 03:14 PM.**

Synopsis	Fault forms a series of distinct and continuous, fresh-appearing range-front scarps. Reconnaissance studies of scarp morphology and mapping of faulted Quaternary deposits are the sources of data. Trench investigations have not been conducted.
Name comments	Name from Barnes and others (1989 #855) and Keaton and others (1989 #856). Fault extends along northeastern margin of the Amargosa Range (Sierra de la Amargosa) and adjacent ranges in Mexico from a point 20 km south of Tornillo, Texas, southeastward to about 30 km south of old Fort Quitman, Texas. The fault lies entirely within Mexico.
County(s) and	CHIHUAHUA, MEXICO

State(s)	CHIHUAHUA, MEXICO
Physiographic province(s)	
Reliability of location	Good Compiled at 1:250,000 scale. *Comments:* Location based on 1:250,00-scale map compiled from aerial photographs and 1:10,000- to 1:50,000-scale maps of Collins and Raney (1991 #846; 1993 #852). Other maps of fault include those by Muehlberger and others (1978 #854), Woodward and others (1978 #986), Henry and others (1985 #866), Sergent Hauskins & Beckwith Consulting Geotechnical Engineers (1989 #874), and Collins and Raney (1991 #846; 1993 #852).
Geologic setting	Down-to-northeast, range-front fault bounds the northeast side of Sierra de San Ignacio, Sierra de la Amargosa, and Sierra San Jose del Prisco (Collins and Raney, 1991 #846; 1994 #853). This fault is probably one of the major structures that control the southwestern margin of the Hueco basin at this latitude.
Length (km)	68 km.
Average strike	N43°E
Sense of movement	Normal *Comments:* Not studied in detail; sense of movement inferred from topographic expression.
Dip	75° to 80° NE *Comments:* Dip based on outcrops of faulted Pliocene-Pleistocene sediment (Collins and Raney, 1991 #846).
Paleoseismology studies	
Geomorphic expression	Distinct scarps are commonly between 2.8 and 32 m high. Scarps on older Quaternary deposits are considerably larger than on younger deposits, indicating a long history of recurrent movement on the fault. Maximum scarp-slope angles are commonly between 19? and 27?, suggesting late Pleistocene or Holocene(?) movement.

Age of faulted surficial deposits	Mostly Quaternary and Pliocene alluvium and basin-fill sediment; locally Cretaceous bedrock is faulted against younger basin-fill and alluvium. Deposits at least as young as upper Pleistocene are faulted and aerial photographic studies indicate that, locally, scarps are present on deposits of possible Holocene age (Collins and Raney, 1991 #846; 1993 #852).
Historic earthquake	
Most recent prehistoric deformation	latest Quaternary (<15 ka) *Comments:* Upper Pleistocene age for youngest faulted deposits was estimated from the development of calcic soils. Mapping from aerial photographs indicates deposits of possible Holocene age are faulted (Collins and Raney, 1991 #846; 1993 #852).
Recurrence interval	20–40 k.y. (<500 ka) *Comments:* Collins and Raney (1993 #852) estimated the approximate range of average recurrence interval for large surface ruptures since middle Pleistocene may be as great as 20-40 k.y. These values are based on (a) their estimate of the number of large-displacement (1- to 2-m) surface ruptures since middle Pleistocene time, (b) the assumption that faulted middle Pleistocene deposits are approximately 250–500 ka (although deposits are probably 400–500 ka on the basis of calcic soils 1- to 1.5-m thick having stage IV morphology), and (c) more than 24 m of measured throw on middle Pleistocene deposits.
Slip-rate category	Less than 0.2 mm/yr *Comments:* Average slip rate on northwest part of the Amargosa fault since middle Pleistocene is probably less than or equal to 0.2 mm/yr based on more than 24 m of throw on middle Pleistocene deposits (Collins and Raney, 1993 #852). Youngest middle Pleistocene time (about 130 ka) was used to estimate average slip rate.
Date and Compiler(s)	1994 E.W. Collins, Bureau of Economic Geology, The University of Texas at Austin
References	#855 Barnes, J.R., Shlemon, R.J., and Slemmons, D.B., 1989, The Amargosa fault—A previously unstudied major active fault in northern Chihuahua, Mexico, *in* Engineering geology of mountain and plain: Association of Engineering Geologists, 32nd Annual

Meeting, Vail, Colorado, October 1-6, 1989, Abstracts and Program, p. 50.

#846 Collins, E.W., and Raney, J.A., 1991, Tertiary and Quaternary structure and paleotectonics of the Hueco basin, trans-Pecos Texas and Chihuahua, Mexico: The University of Texas at Austin, [Texas] Bureau of Economic Geology Geological Circular 91-2, 44 p.

#852 Collins, E.W., and Raney, J.A., 1993, Late Cenozoic faults of the region surrounding the Eagle Flat study area, northwestern trans-Pecos Texas: Technical report to Texas Low-Level Radioactive Waste Disposal Authority, under Contract IAC(92-93)-0910, 74 p.

#853 Collins, E.W., and Raney, J.A., 1994, Impact of late Cenozoic extension on Laramide overthrust belt and Diablo Platform margins, northwestern trans-Pecos Texas, *in* Ahlen, J., Peterson, J., and Bowsher, A.L., eds., Geologic activities in the 90s: New Mexico Bureau of Mines and Mineral Resources Bulletin 150, p. 71-81.

#866 Henry, C.D., Gluck, J.K., and Bockoven, N.T., 1985, Tectonic map of the Basin and Range province of Texas and adjacent Mexico: The University of Texas at Austin, [Texas] Bureau of Economic Geology Miscellaneous Map 36, 1 sheet, scale 1:500,000.

#856 Keaton, J.R., Shlemon, R.J., Slemmons, D.B., Barnes, J., and Clark, D.G., 1989, The Amargosa fault—A major late Quaternary intraplate structure in northern Chihuahua, Mexico: Geological Society of America Abstracts with Programs, v. 21, no. 6, p. 148.

#854 Muehlberger, W.R., Belcher, R.C., and Goetz, L.K., 1978, Quaternary faulting in trans-Pecos Texas: Geology, v. 6, p. 337-340.

#874 Sergent Hauskins & Beckwith Consulting Geotechnical Engineers, 1989, Preliminary geologic and hydrologic evaluation of the Fort Hancock Site (NTP-S34), Hudspeth County, Texas, for the disposal of low-level radioactive waste: Technical report to Hudspeth County, Texas, Hudspeth County Conservation and Reclamation District No. 1, Hudspeth County Underground Water

	Conservation District No. 1, El Paso, Texas, 5-30-5-31 p. #986 Woodward, L.A., Callender, J.F., Seager, W.R., Chapin, C.E., Gries, J.C., Shaffer, W.L., and Zilinski, R.E., 1978, Tectonic map of Rio Grande rift region in New Mexico, Chihuahua, and Texas, *in* Hawley, J.W., ed., Guidebook to Rio Grande rift in New Mexico and Colorado: New Mexico Bureau of Mines and Mineral Resources Circular 163, 1 pl., scale 1:1,000,000.