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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.

Campo Grande fault (Class A) No. 902

Last Review Date: 1994-08-27

Compiled in cooperation with the Texas Bureau of Economic Geology

citation for this record: **Collins, E., compiler, 1994, Fault number 902, Campo Grande 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 composed of en echelon scarps in southeastern part of the Hueco basin. Reconnaissance studies of scarp morphology and detailed mapping of faulted and unfaulted Quaternary and Pliocene deposits are the sources of data. Three trenches and two hillside excavations across this fault have been described by Collins and Raney (1990 #842).
Name comments	Named by Strain (1966 #864). Fault extends from northeast of Tornillo, Texas, southeast to area 4 km north of Finley, Texas.
County(s) and State(s)	EL PASO COUNTY, TEXAS HUDSPETH COUNTY, TEXAS
Physiographic	

Physiographic province(s)	BASIN AND RANGE
Reliability of location	Good Compiled at 1:250,000 scale. *Comments:* Location based on 1:250,000-scale map mostly compiled from 1:24,000-scale maps of Collins and Raney (1994 #868; 1994 #869; 1994 #870; 1994 #871). Fault also mapped by Albritton and Smith (1965 #840), Strain (1966 #864), Sergent Hauskins & Beckwith Consulting Geotechnical Engineers (1989 #874), and Collins and Raney (Collins and Raney, #842; 1991 #846; 1993 #852).
Geologic setting	This down-to-southwest fault bounds the deepest part of the southeastern Hueco basin. Collins and Raney (1991 #841; 1993 #852; 1994 #853) have described three possible sections to the fault based on surface map pattern (geometry) and determinations of basin-fill and bedrock displacements from seismic-reflection data. However, only the southeast part of the fault has been studied in detail on the ground and thus the fault is considered as a simple structure.
Length (km)	45 km.
Average strike	N51°W
Sense of movement	Normal *Comments:* Not studied in detail, although along the southeast part of fault high-angle grooves on fault planes within Pliocene and early Pleistocene basin-fill deposits suggest dip-slip movement (Collins and Raney, 1990 #842).
Dip	60°–89° SW *Comments:* Fault dip measured in outcrops and excavations of Pliocene-Pleistocene sediment and interpreted from seismic data.
Paleoseismology studies	Two hillside excavations and three trenches across southeast part of the fault have been described by Collins and Raney (1990 #842). These exposures were studied in conjunction with shallow augering, field mapping, and morphologic analysis of scarps. In summary, their work shows a pattern of recurrent movement whereby successively younger units have lesser amounts of

	displacement. On the downdropped block of one fault strand, calcic soil horizons (0.5–1.0 m thick; stage III morphology) are offset vertically 1–2 m each indicating at least five episodes of movement, deposition, and surface stabilization since 0.4–0.6 Ma. The maximum vertical offset during the most recent faulting event was about 1 m.
Geomorphic expression	Locally, the fault forms distinct but eroded scarps that are 1.5–11 m high. Much of the fault"s surface trace is dissected, eroded, or covered by eolian sand (Collins and Raney, 1990 #842; 1991 #846; 1993 #852). The southeast part of the fault is most distinct and best exposed due to large arroyos that cross the fault. Most or possibly all of the northwest and central parts of fault are covered by windblown sand.
Age of faulted surficial deposits	Pleistocene and Pliocene deposits are faulted. Along the southeast part of the fault, the youngest deposits displaced are middle to upper Pleistocene (Collins and Raney, 1990 #842; 1991 #846; 1993 #852), whereas some upper Pleistocene and Holocene deposits are unfaulted.
Historic earthquake	
Most recent prehistoric deformation	late Quaternary (<130 ka) *Comments:* The age of the youngest faulted deposits, and hence youngest paleoevent, was estimated from the development of calcic soils along the southeast part of the fault (Collins and Raney, 1990 #842; 1991 #846). Middle-upper Pleistocene deposits are vertically displaced as much as 3 m, whereas upper Pleistocene-Holocene deposits are not faulted.
Recurrence interval	50–100 k.y. (<500 ka) *Comments:* Collins and Raney (1993 #852) estimated that the average recurrence interval of large surface rupturing earthquakes since middle Pleistocene may be as great as 50–100 k.y. for the southeastern part of the fault. These values are based on (a) their estimate of five large-displacement (1- to 2-m-high) surface offset since middle Pleistocene time, (b) the assumption that faulted middle Pleistocene deposits are 250–500 ka (although they may be 400–500 ka on the basis of their 1- to 1.5-m thick, stage IV morphology calcic soils), and (c) 10 m of throw measured on

	middle Pleistocene deposits.
Slip-rate category	Less than 0.2 mm/yr *Comments:* Maximum average displacement rate since middle Pleistocene time is less than 0.2 mm/yr based on 10 m of vertical displacement of middle Pleistocene deposits for southeast part of fault (Collins and Raney, 1993 #852).
Date and Compiler(s)	1994 E.W. Collins, Bureau of Economic Geology, The University of Texas at Austin
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