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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.

Continental Divide fault (Class B) No. 2145

Last Review Date: 2016-04-22

Compiled in cooperation with the New Mexico Bureau of Geology & Mineral Resources

citation for this record: **Machette, M.N., and Jochems, A.P., compilers, 2016, Fault number 2145, Continental Divide 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 03:01 PM.**

Synopsis	Little is known about this northeast-trending suspect fault; it reportedly forms a low but prominent scarp on Quaternary basalts of the North Plains lava field. The trend of the feature is parallel to a string of eruptive basalt cones that occupy the center of the field, which suggests that movement on the fault may be controlled by volcanism and deeper-seated crustal structures. No detailed studies have been conducted to determine the timing of movement or amount of offset of the basalt. Some authors have suggested that the scarp may be the result of volcanic processes, but its association with a mapped bedrock fault supports an interpretation of a tectonic origin.

Name comments	This suspect fault extends along the Continental Divide from about 3 km south of New Mexico State Highway 36 to 5 km north of Peñasco Lakes. Although unnamed by Anderson (1986 #1281), who first mapped it, Levish and others (1992 #1715) named it for its near coincidence with the Continental Divide.
County(s) and State(s)	CIBOLA COUNTY, NEW MEXICO
Physiographic province(s)	COLORADO PLATEAUS
Reliability of location	Good Compiled at 1:24,000 scale. *Comments:* Trace from 1:100,000-scale geologic map of the Fence Lake quadrangle compiled by Anderson (1986 #1281) and 1:24,000-scale geologic map of the Techado 7.5' quadrangle (Arkell, 1984 #7422) combined with accurate placement using photogrammetric methods.
Geologic setting	This northeast-trending feature appears to offset the southern part of the North Plains lava field and is parallel to eruptive basalt cones that occupy the center of the field. These cones mark the southwestern trace of the Jemez lineament, which is one of many northeast-trending crustal structures that control the location of young volcanism within and outside of the northern Rio Grande rift in New Mexico. The southern end of the feature is mapped as cutting the Miocene (?) Fence Lake Formation (Anderson, 1986 #1281). If this association is not a spatial coincidence, it would support a tectonic origin.
Length (km)	17 km.
Average strike	N20°E
Sense of movement	Normal *Comments:* As reported by Anderson (1986 #1281).
Dip Direction	SE *Comments:* Although no dips are reported, the general direction is inferred from a southeast-facing escarpment.
Paleoseismology	

studies	
Geomorphic expression	Fault forms a scarp of 2–3 m height (Orin Anderson, written commun., 1997) on basalts of the North Plains lava field. Levish and others (1992 #1715) argued that the scalloped appearance of the escarpment suggests it is a volcanic flow margin and not a fault.
Age of faulted surficial deposits	This feature appears to offset Quaternary basalts according to Anderson (1986 #1281). The Jaralosa Draw lobe (flow), which extends west from the North Plains lava field and has also been called the Fence Lake flow, has a K-Ar age of 1.38±0.29 Ma (Laughlin and West, 1976 #7420). Other basalt flows in the North Plains field have returned Ar-Ar ages of approximately 0.6-0.7 Ma (Laughlin and others, 1993 #7421), consistent with the seemingly young appearance of cinder cones such as at Chimney Hill.
Historic earthquake	
Most recent prehistoric deformation	undifferentiated Quaternary (<1.6 Ma) *Comments:* Timing poorly controlled. Based on presence of scarp on early to perhaps middle Quaternary basalt.
Recurrence interval	
Slip-rate category	Less than 0.2 mm/yr *Comments:* Low slip rate estimated from presence of scarp of 2–3 m height (Orin Anderson, written commun., 1997) on early to perhaps middle Quaternary basalt.
Date and Compiler(s)	2016 Michael N. Machette, U.S. Geological Survey, Retired Andrew P. Jochems, New Mexico Bureau of Geology & Mineral Resources
References	#1281 Anderson, O.J., compiler, 1986, Geologic map of Fence Lake, New Mexico 1:100,000 metric sheet: New Mexico Bureau of Mines and Mineral Resources Open-File Report 220, 4 p. pamphlet, 4 sheets, scale 1:100,000. #7422 Arkell, B., 1984, Geology and coal resources of the Techado quadrangle, Catron and Cibola Counties, New Mexico:

	New Mexico Bureau of Mines and Mineral Resources Open-File Report 221, 21 p., 2 pl., scale 1:24,000. #7420 Laughlin, A.W., and West, F.G., 1976, The Zuni Mountains, New Mexico, as a potential dry hot rock geothermal energy site: U.S. Energy Research and Development Administration, Los Alamos Scientific Laboratories Informal Report LA-3197-MS, 13 p. #7421 Laughlin, A.W., Perry, F.V., Damon, P.E., Shafiqullah, M., WoldeGabriel, G., McIntosh, W., Harrington, C.D., Wells, S.G., and Drakos, P.G., 1993, Geochronology of Mount Taylor, Cebollita Mesa, and Zuni-Bandera volcanic fields, Cibola County, New Mexico: New Mexico Geology, v. 16, no. 4, p. 81–92. #1715 Levish, D.R., Vetter, U.R., Ake, J.P., and Piety, L.A., 1992, Seismotectonic study for Black Rock Dam, Bureau of Indian Affairs, Pueblo of Zuni, New Mexico: Bureau of Reclamation Seismotectonic Report 92-3, 62 p.