

# 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](#).

## Bellemont fault (Class A) No. 955

Last Review Date: 1997-01-02

### Compiled in cooperation with the Arizona Geological Survey

*citation for this record:* Pearthree, P.A., compiler, 1997, Fault number 955, Bellemont 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 03:13 PM.

#### Synopsis

The Bellemont fault forms a low to moderately high, west-facing escarpment on Paleozoic bedrock, and Quaternary basalt and alluvium. The fault has had recurrent movement at least through the Pliocene and Quaternary; it has had at least 45 m of late Cenozoic displacement and about 12 m of displacement since about 500 ka. Maximum surface rupture displacements are probably about 1.5-3 m for each event. The youngest fault rupture probably occurred during the late Pleistocene, because fault scarps formed on alluvium and basalt are gentle, and Holocene to uppermost Pleistocene alluvium is not faulted, which indicates that this fault has not ruptured in the Holocene, but it probably has ruptured during the late Pleistocene.

<b>Name comments</b>	Mapped and named by Menges and Pearthree (1983 #2073), later mapped in more detail by Pearthree and others (1996 #2153). The geologic map of this area was published by Wolfe and others (1987 #2158).
<b>County(s) and State(s)</b>	COCONINO COUNTY, ARIZONA
<b>Physiographic province(s)</b>	COLORADO PLATEAUS
<b>Reliability of location</b>	Good Compiled at 1:250,000 scale.  <i>Comments:</i> Trace mapped at 1:50,000 scale, transferred to 1:250,000-scale topographic base map.
<b>Geologic setting</b>	The Bellemont fault is located in the southwestern part of the Pliocene-Quaternary San Francisco volcanic field, on the erosion surface cut on Paleozoic rocks near the edge of the Colorado Plateau. This fault is part of a group of northeast- and west-northwest-trending faults that cut Paleozoic bedrock and Pliocene to middle Quaternary basalt flows just north of the Mogollon Rim, west and southwest of Flagstaff.
<b>Length (km)</b>	11 km.
<b>Average strike</b>	N28°E
<b>Sense of movement</b>	Normal  <i>Comments:</i> Inferred from surface displacement and fault trench exposures.
<b>Dip</b>	70°-75° W  <i>Comments:</i> Dips were observed in a trench across the fault.
<b>Paleoseismology studies</b>	Site 955-1. Detailed geologic mapping, topographic surveying, evaluation of well logs, and interpretation of trench excavated across fault (Pearthree and others, 1996 #2153). These studies reveal at least 45 m of late Cenozoic normal displacement across the fault; 25-40 m of post 4-Ma displacement; and 12 m of middle and late Quaternary displacement. Trenching revealed evidence for several large surface ruptures, the youngest having about 2 m of vertical displacement, but no significant constraints on the time

	of youngest rupture were obtained.
<b>Geomorphic expression</b>	The fault forms a low to moderately high (<20 m), west-northwest facing escarpment on Quaternary basalt flows and alluvium and Paleozoic bedrock. This escarpment forms the eastern margin of two small sedimentary basins, where faulting has periodically ponded the south- and east-flowing regional drainage system. Fault scarps are gentle; several-meter-high alluvial scarps have maximum slope angles of 8 degrees.
<b>Age of faulted surficial deposits</b>	Paleozoic, Pliocene, early Pleistocene and middle Pleistocene basalt flows, and middle to late Pleistocene alluvium.
<b>Historic earthquake</b>	
<b>Most recent prehistoric deformation</b>	late Quaternary (<130 ka) <i>Comments:</i> Timing constraints on the youngest paleoevent are weak. A middle to late Pleistocene alluvial fan is faulted, but scarps formed on alluvium and on weathered basalt flows are not steep, suggesting that the youngest rupture occurred quite awhile ago. Holocene to latest Pleistocene deposits are not faulted.
<b>Recurrence interval</b>	<i>Comments:</i> Recurrence intervals are unknown but could be 40-130 k.y. for the past 300-700k.y. The estimate is based on 12 m of displacement in the past 300 to 700 k.y. and an estimated 1.5-3 m of displacement per event.
<b>Slip-rate category</b>	Less than 0.2 mm/yr <i>Comments:</i> A low long-term (average) slip rate is inferred based on 12 m displacement of a middle Pleistocene (300 to 700 ka) basalt flow.
<b>Date and Compiler(s)</b>	1997 Philip A. Pearthree, Arizona Geological Survey
<b>References</b>	#2073 Menges, C.M., and Pearthree, P.A., 1983, Map of neotectonic (latest Pliocene-Quaternary) deformation in Arizona: Arizona Geological Survey Open-File Report 83-22, 48 p., scale 1:500,000.

#2153 Pearthree, P.A., Vincent, K.R., Brazier, R., and Hendricks, D.M., 1996, Plio-Quaternary faulting and seismic hazard in the Flagstaff area, northern Arizona: Arizona Geological Survey Bulletin 200, 40 p., 2 pls.

#2158 Wolfe, E.W., Ulrich, G.E., and Newhall, C.G., 1987, Geologic map of the northwest part of the San Francisco volcanic field, north-central Arizona: U.S. Geological Survey Miscellaneous Field Studies Map MF-1957, 2 sheets, scale 1:50,000.

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