

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](#).

Spotted Range faults (Class A) No. 1056

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Synopsis

The Spotted Range faults are down to the west and either bound the Spotted Range on the west or bound a large block directly west of the western part of the Spotted Range. These northerly striking range- and block-bounding faults along about 30 km of the western side of the Spotted Range have moderate to good geomorphic expression as scarps or lineaments on Quaternary deposits, lending confidence to their classification as Quaternary faults on the basis of photogeologic interpretation. However, a recent unpublished geologic map of the 1:100,000-scale Indian Springs quadrangle by P.L. Guth and J.C. Yount shows unfaulted Quaternary deposits across the trace of the Spotted Range faults. The estimated range in age of those deposits is early to late Pleistocene and possibly Holocene. This mapping raises some question about the validity of photogeologic interpretations of Quaternary faulting, or the recency of their activity.

Name comments	<p>Name applied by Piety (1995 #915) to a group of faults in the western part of the Spotted Range that form a 30-km-long gently concave west arc that reflects a regional pattern of oroclinal bending in the ranges north of Las Vegas Valley (Albers, 1967 #2922; Ekren, 1968 #1504; Stewart and others, 1968 #1655). Eastern fault traces in the group are characterized by Reheis (1992 #1604) as bedrock lineaments or scarps. Because these lack compelling evidence of Quaternary displacement, they are not included with the present compilation.</p> <p>Fault ID: Equivalent, in part, to fault SPR of Piety (1995 #915).</p>
County(s) and State(s)	<p>CLARK COUNTY, NEVADA LINCOLN COUNTY, NEVADA</p>
Physiographic province(s)	<p>BASIN AND RANGE</p>
Reliability of location	<p>Good Compiled at 1:100,000 scale.</p> <p><i>Comments:</i> Trace compiled by Reheis (1992 #1604) at 1:100,000 scale from aerial photos at 1:60,000 and 1:80,000 scales. Faults not shown on regional maps at 1:250,000 scale (Ekren, 1977 #1036; Tschanz and Pampeyan, 1970 #1682; Longwell and others, 1965 #4694).</p>
Geologic setting	<p>Faults are down to the west and either bound the Spotted Range on the west or bound a large block directly west of the western part of the Spotted Range (Reheis, 1992 #1604). The western trace that bounds the separate block is conspicuously straight and about 12 km long. The eastern main trace is concave westward and about 30 km long.</p>
Length (km)	<p>29 km.</p>
Average strike	<p>N14°E</p>
Sense of movement	<p>Normal</p> <p><i>Comments:</i> Since the main fault bends from north strikes in its north part to northwest in its south part, the displacement sense may change accordingly from normal dip slip to oblique left dip slip (Ekren, 1968 #1504).</p>
Dip Direction	<p>W</p>

Paleoseismology studies	
Geomorphic expression	The range-front fault has been shown by Dohrenwend and others (1991 #288) as juxtaposing Quaternary alluvium against bedrock, but not as a major range-front fault. Such a fault would be significantly less extensive and fault scarps would be substantially lower, shorter, and less continuous than those along a major range-front fault (Dohrenwend and others, 1991 #288). About 30 percent of the total trace length is characterized as lineaments or scarps on bedrock, but significant parts of the remaining traces are characterized as moderately to well expressed lineaments or scarps on Quaternary deposits (Reheis, 1992 #1604), giving a high level of confidence in the assignment of Quaternary activity to these faults.
Age of faulted surficial deposits	Quaternary
Historic earthquake	
Most recent prehistoric deformation	undifferentiated Quaternary (<1.6 Ma) <i>Comments:</i> A recent unpublished geologic map of the 1:100,000-scale Indian Springs quadrangle by P.L. Guth and J.C. Yount shows Quaternary deposits across the trace of the Spotted Range faults to be unfaulted. The estimated range in age of those deposits is early to late Pleistocene and possibly Holocene. This mapping raises some question about the validity of photogeologic interpretations of Quaternary faulting, or the recency of their movement. Further studies are needed to better define the time of most recent movement.
Recurrence interval	
Slip-rate category	Less than 0.2 mm/yr <i>Comments:</i> Although no data are available on offset amounts or height or shape of scarps to guide slip-rate estimate. Reheis characterized significantly long portions of the traces (totaling about 10 km) as being moderately to strongly expressed as scarps or lineaments in Quaternary deposits. Such expression, gleaned from 1:60,000 scale or smaller aerial photos, could be consistent

with a slip rate approaching or greater than 0.2 mm/yr. However, the question about the validity of photogeologic interpretations of Quaternary faulting raised by unpublished mapping suggests that the slip rate is less than 0.2 mm/yr, otherwise the faulting would be more extensive on Quaternary deposits. Without further detailed studies, or at least documentation of the size of scarps on certain ages of Quaternary deposits, we assign the lowest slip-rate category to the fault.

**Date and
Compiler(s)**

1998
R. Ernest Anderson, U.S. Geological Survey, Emeritus

References

#288 Dohrenwend, J.C., Menges, C.M., Schell, B.A., and Moring, B.C., 1991, Reconnaissance photogeologic map of young faults in the Las Vegas 1° by 2° quadrangle, Nevada, California, and Arizona: U.S. Geological Survey Miscellaneous Field Studies Map MF-2182, 1 sheet, scale 1:250,000.

#1504 Ekren, E.B., 1968, Geologic setting of Nevada Test Site and Nellis Air Force Range, *in* Eckel, E.B., ed., Nevada Test Site: Geological Society of America Memoir 110, p. 11-19.

#4694 Longwell, C.R., Pampeyan, E.H., Bowyer, B., and Roberts, R.J., 1965, Geology and mineral deposits of Clark County, Nevada: Nevada Bureau of Mines and Geology Bulletin 62, 218 p., 16 pls.

#915 Piety, L.A., 1995, Compilation of known and suspected Quaternary faults within 100 km of Yucca Mountain, Nevada and California: U.S. Geological Survey Open-File Report 94-112, 404 p., 2 pls., scale 1:250,000.

#1604 Reheis, M.C., 1992, Aerial photographic interpretation of lineaments and faults in late Cenozoic deposits in the Cactus Flat and Pahute Mesa 1:100,000 quadrangles and the western parts of the Timpahute Range, Pahrnagat Range, Indian Springs, and Las Vegas 1:100,000 quadrangles, Nevada: U.S. Geological Survey Open-File Report 92-193, 14 p., 3 pls., scale 1:100,000.

#1655 Stewart, J.H., Albers, J.P., and Poole, F.G., 1968, Summary of regional evidence for right-lateral displacement in the western Great Basin: Geological Society of America Bulletin, v. 79, p. 1407-1413.

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