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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.**

## Stong fault (Class B) No. 2021

**Last Review Date: 2016-07-26**

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

***citation for this record:*** **Kelson, K.I., and Jochems, A.P., compilers, 2016, Fault number 2021, Stong 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 02:24 PM.**

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| **Synopsis** | The Stong fault forms a 1-km-wide graben in the late Tertiary Servilleta Basalt of the Taos Plateau volcanic field, along the western margin of the southern San Luis basin. The fault has 5–20 m of displacement in Pliocene rocks. |
| **Name comments** | The Stong fault was mapped but not named by Machette and Personius (1984 #1113) and Personius and Machette (1984 #1124). The Stong fault is informally named herein for the nearby abandoned village of Stong located on Highway 285 about 33 km south of Tres Piedras. The Stong fault consists of two parallel, northwest-trending faults that extend along the western margin of the San Luis Basin northeast of Stong. A short, west-dipping fault |

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| | 3 km to the east of the graben is included due to its similar orientation and displacement of Pliocene basalt. |
| **County(s) and State(s)** | TAOS COUNTY, NEW MEXICO |
| **Physiographic province(s)** | SOUTHERN ROCKY MOUNTAINS |
| **Reliability of location** | Good<br>Compiled at 1:24,000 scale.<br><br>*Comments:* Fault trace from 1:24,000-scale map of Aby (2008 #7579) and analysis of aerial photographs using stereogrammetric methods. The Stong fault was also mapped by Machette and Personius (1984 #1113) at a scale of 1:250,000 based on field reconnaissance and analysis of aerial photography. |
| **Geologic setting** | The Stong fault lies in the southwestern San Luis basin, and is probably related to minor deformation along the hinged western margin of this east-tilted asymmetric rift basin. |
| **Length (km)** | 8 km. |
| **Average strike** | N24°W |
| **Sense of movement** | Normal |
| **Dip Direction** | E; W |
| **Paleoseismology studies** | |
| **Geomorphic expression** | The faults have moderate geomorphic expression on the southern Taos Plateau, where resistant Pliocene Servilleta Basalt is exposed in east- and west-facing scarps. |
| **Age of faulted surficial deposits** | Machette and Personius (1984 #1113) and Personius and Machette (1984 #1124) map a total of 5–20 m of vertical separation of Servilleta Basalt across the Stong fault. Regionally, this unit has been dated at 2.3–4.8 Ma (K-Ar; Lipman and Mehnert, 1979 #1169). Locally, the Servilleta Basalt yield an Ar-Ar age of about 4.6 Ma along Comanche Rim in the Taos Junction 7.5-minute quadrangle to the south (Appelt, 1998 #7540; Aby, 2008 #7579). |
| **Historic** | |

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| **earthquake** | |
| **Most recent prehistoric deformation** | undifferentiated Quaternary (<1.6 Ma)<br><br>*Comments:* Machette and Personius (1984 #1113) and Personius and Machette (1984 #1124) suggested that the most-recent movement occurred during the early Pleistocene. However, the youngest local age for the offset Servilleta Basalt is about 4.6 Ma (Appelt, 1998 #7540; Aby, 2008 #7579), and there is no clear evidence of faulting on younger surficial deposits It is unknown whether the fault has ruptured in the Quaternary. |
| **Recurrence interval** | |
| **Slip-rate category** | Less than 0.2 mm/yr<br><br>*Comments:* Low slip-rate category is assigned based on 5–20 m displacement (Machette and Personius, 1984 #1113; Personius and Machette, 1984 #1124) of the 2.3–4.8 Ma Servilleta Basalt (Lipman and Mehnert, 1979 #1169; Appelt, 1998 #7540). |
| **Date and Compiler(s)** | 2016<br>Keith I. Kelson, William Lettis & Associates, Inc.<br>Andrew P. Jochems, New Mexico Bureau of Geology & Mineral Resources |
| **References** | #7579 Aby, S., 2008, Geologic map of the Servilleta Plaza 7.5-minute quadrangle, Rio Arriba and Taos Counties, New Mexico: New Mexico Bureau of Geology and Mineral Resources, Open-File Geologic Map 182, scale 1:24,000.<br><br>#7540 Appelt, R.M., 1998, $^{40}Ar/^{39}Ar$ geochronology and volcanic evolution of the Taos Plateau volcanic field, northern New Mexico and southern Colorado: Socorro, New Mexico Institute of Mining and Technology, unpublished M.S. thesis, 58 p.<br><br>#1169 Lipman, P.W., and Mehnert, H.H., 1979, The Taos Plateau volcanic field, northern Rio Grande rift, New Mexico, *in* Riecker, R.E., ed., Rio Grande rift—Tectonics and magmatism: Washington, D.C., American Geophysical Union, p. 289-311.<br><br>#1113 Machette, M.N., and Personius, S.F., 1984, Map of Quaternary and Pliocene faults in the eastern part of the Aztec 1° by 2° quadrangle and the western part of the Raton 1° by 2° |

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| | quadrangle, northern New Mexico: U.S. Geological Survey Miscellaneous Field Studies Map MF-1465-B, 1 sheet, scale 1:250,000.<br><br>#1124 Personius, S.F., and Machette, M.N., 1984, Quaternary and Pliocene faulting in the Taos Plateau region, northern New Mexico, *in* Baldridge, W.S., Dickerson, P.W., Riecker, R.E., and Zidek, J., eds., Rio Grande rift—Northern New Mexico: New Mexico Geological Society, 35th Field Conference, October 11-13, 1984, Guidebook, p. 83–90. |