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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.

unnamed faults on Tygh Ridge (Class B) No. 850

Last Review Date: 2002-12-09

citation for this record: **Personius, S.F., compiler, 2002, Fault number 850, unnamed faults on Tygh Ridge, 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 03:16 PM.**

Synopsis	The faults on Tygh Ridge are east-west-trending reverse or thrust faults that paral the trend of Tygh Ridge and the Tygh Ridge anticline; these structures deform Mi rocks of the Columbia River Basalt Group and younger Miocene volcaniclastic sedimentary rocks near the southern margin of the Yakima fold belt. The faults or Tygh Ridge were originally mapped as a down-to-the-north normal faults, but lat maps show these faults as south- and/or north-dipping reverse or thrust faults; the sharp north-trending jog near the village of Tygh Valley may be related to right-la strike-slip faulting between north and south dipping reverse or thrust faults. No evidence of fault scarps on Quaternary deposits has been described along these fa Herein we classify these faults as Class B structures until further studies are cond
Name comments	Faults associated with the Tygh Ridge anticline have been mapped by numerous authors (Waters, 1968 #3755; Newcomb, 1970 #3761; Swanson and others, 1981 #3496; Bela, 1982 #3584; Geomatrix Consultants Inc., 1990 #3550; Pezzopane, 1

	#3544; Sherrod and Scott, 1995 #3495; Sherrod and Smith, 2000 #5165).
County(s) and State(s)	WASCO COUNTY, OREGON
Physiographic province(s)	COLUMBIA PLATEAU
Reliability of location	Good Compiled at 1:100,000 and 1:250,000 scale. *Comments:* Location of fault from ORActiveFaults (http://www.oregongeology.org/arcgis/rest/services/Public/ORActiveFaults/MapS downloaded 06/02/2016) attributed to 1:100,000-scale mapping of Sherrod and S (1995 #3495) and 1:250,000-scale mapping of Swanson and others (1981 #3496)
Geologic setting	The faults near Tygh Ridge are east-west-trending reverse or thrust faults that par the trend of Tygh Ridge and the Tygh Ridge anticline; these structures deform Mi rocks of the Columbia River Basalt Group and younger Miocene volcaniclastic sedimentary rocks near the southern margin of the Yakima fold belt (Waters, 196 #3755; Newcomb, 1970 #3761; Swanson and others, 1981 #3496; Bela, 1982 #3 Walker and MacLeod, 1991 #3646; Pezzopane, 1993 #3544; Sherrod and Scott, 1 #3495; Sherrod and Smith, 2000 #5165).
Length (km)	26 km.
Average strike	N83°E
Sense of movement	Reverse, Right lateral *Comments:* The faults near Tygh Ridge were originally mapped as down-to-the-n normal faults (Waters, 1968 #3755; Newcomb, 1970 #3761), but later maps show faults as south- and/or north-dipping reverse or thrust faults (Swanson and others #3496; Bela, 1982 #3584; Pezzopane, 1993 #3544; Sherrod and Scott, 1995 #349 the sharp north-trending jog near the village of Tygh Valley may be related to rigl lateral strike-slip faults (Swanson and others, 1981 #3496; Bela, 1982 #3584) tha be tear faults between a south-dipping reverse or thrust fault to the west and a nor dipping reverse or thrust fault to the east (Pezzopane, 1993 #3544; Weldon and ot 2002 #5648).
Dip Direction	S; N
Paleoseismology studies	
Geomorphic expression	Weldon and others (2002 #5648) observed lineaments across Quaternary deposits 1:100,000-scale DEMs of the area, but no other evidence of Quaternary faulting l

	been described.
Age of faulted surficial deposits	The faults near Tygh Ridge offsets Miocene rocks of the Columbia River Basalt G and younger Miocene volcaniclastic sedimentary rocks (Waters, 1968 #3755; Swa and others, 1981 #3496; Bela, 1982 #3584; Walker and MacLeod, 1991 #3646; Sherrod and Scott, 1995 #3495; Sherrod and Smith, 2000 #5165). No evidence of faulting in Quaternary deposits has been described along these structures.
Historic earthquake	
Most recent prehistoric deformation	undifferentiated Quaternary (<1.6 Ma) *Comments:* No evidence of Quaternary displacement has been documented along faults near Tygh Ridge. D.R. Sherrod (pers. commun., 1989, in Geomatrix Consu Inc., 1990 #3550) indicated that latest movement on the Tygh Valley faults predat Pliocene, but Pezzopane (1993 #3544) and subsequent compilations (Geomatrix Consultants Inc., 1995 #3593; Madin and Mabey, 1996 #3575; Weldon and others 2002 #5648) classify these faults as active in the Quaternary (<1.6–1.8 Ma). Here classify these faults as Class B structures until further studies are conducted.
Recurrence interval	
Slip-rate category	Less than 0.2 mm/yr *Comments:* No slip data are available for the faults near Tygh Ridge, but the lack significant evidence of Quaternary displacement suggests low rates of Quaternary
Date and Compiler(s)	2002 Stephen F. Personius, U.S. Geological Survey
References	#3584 Bela, J.L., 1982, Geologic and neotectonic evaluation of north-central Ore The Dallas 1 x 2 quadrangle: State of Oregon, Department of Geology and Miner Industries Geologic Map Series GMS-27, 2 sheets, scale 1:250,000. #3550 Geomatrix Consultants, Inc., 1990, Seismotectonic evaluation of Wasco D site: Technical report to U.S. Department of Interior, Bureau of Reclamation, Den under Contract 6-CS-81-07310, 115 p., 2 pls., scale 1:250,000. #3593 Geomatrix Consultants, Inc., 1995, Seismic design mapping, State of Oreg Technical report to Oregon Department of Transportation, Salem, Oregon, under Contract 11688, January 1995, unpaginated, 5 pls., scale 1:1,250,000. #3575 Madin, I.P., and Mabey, M.A., 1996, Earthquake hazard maps for Oregon: of Oregon, Department of Geology and Mineral Industries Geological Map Series

GMS-100, 1 sheet.

#3761 Newcomb, R.C., 1970, Tectonic structure of the main part of the basalt of Columbia River Group Washington, Oregon, and Idaho: U.S. Geological Survey Miscellaneous Geologic Investigations I-587, 1 sheet, scale 1:500,000.

#3544 Pezzopane, S.K., 1993, Active faults and earthquake ground motions in Or Eugene, Oregon, University of Oregon, unpublished Ph.D. dissertation, 208 p.

#3495 Sherrod, D.R., and Scott, W.E., 1995, Preliminary geologic map of the Mo Hood 30 by 60 minute quadrangle, northern Cascade Range, Oregon: U.S. Geolo Survey Open-File Report 95-219, 28 p., 1 pl., scale 1:100,000.

#5165 Sherrod, D.R., and Smith, J.G., 2000, Geologic map of upper Eocene to Holocene volcanic and related rocks of the Cascade Range, Oregon: U.S. Geolog Survey Geologic Investigations Map I-2569, 2 sheets, scale 1:500,000.

#3496 Swanson, D.A., Anderson, J.L., Camp, V.E., Hooper, P.R., Taubeneck, W.I and Wright, T.L., 1981, Reconnaissance geologic map of the Columbia River Bas Group, northern Oregon and western Idaho: U.S. Geological Survey Open-File R 81-797, 35 p., 5 pls., scale 1:250,000.

#3646 Walker, G.W., and MacLeod, N.S., 1991, Geologic map of Oregon: U.S. Geological Survey, Special Geologic Map, 2 sheets, scale 1:500,000.

#3755 Waters, A.C., 1968, Reconnaissance geologic map of the Dufur quadrangl Hood River, Sherman, and Wasco Counties, Oregon: U.S. Geological Survey Miscellaneous Geologic Investigations I-556, 1 sheet, scale 1:125,000.

#5648 Weldon, R.J., Fletcher, D.K., Weldon, E.M., Scharer, K.M., and McCrory, 2002, An update of Quaternary faults of central and eastern Oregon: U.S. Geolog Survey Open-File Report 02-301 (CD-ROM), 26 sheets, scale 1:100,000.