Jump to Navigation

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 fault set offshore of Queets River (Class A) No. 582

Last Review Date: 2003-09-03

citation for this record: **McCrory, P.A., compiler, 2003, Fault number 582, unnamed fault set offshore of Queets River, 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 03:04 PM.**

Synopsis	The unnamed fault set offshore of Queets River, occurs north of a broad convergent zone associated with a major forearc block boundary. In this region, late Cenozoic structures trend sub-parallel to the continental slope, consistent with contraction related to subduction (McCrory and others, 2002 #5864). This group of faults contains nearshore traces and a trace further offshore that are considered a fault set rather than a fault zone because the series of intervening faults apparently do not disrupt the late Quaternary datum or the seafloor. The nearshore fault zone bounds an anticlinal fold.
Name comments	Wolf and others (1997 #6305) first mapped the western portion of this set of faults offshore of Queets River based on sparse seismic reflection data collected by the USGS and University of

	Washington on 3 cruises between 1967 and 1977. McCrory and others (2002 #5864) revised the orientation and location of these fault strands and mapped the eastern portion of the fault set based on new USGS high-resolution seismic reflection data (Foster and others, 1999 #6317; 1999 #6318) and sidescan-sonar data (McCrory and others, 2003 #6324) collected in 1998. The location and interpretation of recent activity on late Cenozoic offshore faults previously mapped (Grim and Bennett, 1969 #6320; Wagner and others, 1986 #5670) have been superceded by these more recent publications (McCrory and others, 2002 #5864). Faults of this unnamed set form a broad north-northwest-trending series of fault traces in the offshore region west and northwest of the mouth of Queets River.
County(s) and State(s)	JEFFERSON COUNTY, WASHINGTON (offshore)
Physiographic province(s)	PACIFIC BORDER (offshore)
Reliability of location	Good Compiled at 1:250,000 scale. *Comments:* Fault-trace locations are based on mapping of McCrory and others (2002 #5864) from seismic reflection profiles with a 5-km spacing. No public data are available to evaluate possible continuation of the fault strands to the northwest or southwest.
Geologic setting	North of Cape Elizabeth, structures shift progressively from an east-northeast orientation to a north-northwest orientation across a 6-km-wide area. North-northwest-striking faults of the unnamed fault set offshore of Queets River, occur north of that shift in orientations, and these north-northwest-striking faults on the continental shelf north of the Raft River generally do not project onshore; rather, they tend to lie offshore subparallel the coastline. The north-northwest orientation of structures in this region is consistent with subduction-related contraction, perhaps driven by interplate coupling far from the deformation front (McCrory and others, 2002 #5864). Some faults of this set and some faults to the south show evidence of ongoing contraction, disrupt the late Pleistocene erosional unconformity, and offset the seafloor. Some of these faults also elevate Neogene bedrock to the seafloor. For example, a fault about 20 km west of the Queets River (plate 2I, shot point 9000 in McCrory and others, 2002 #5864) disrupts the

	seafloor and underpins local bedrock outcrops along the seafloor. Where north-northwest-striking faults of this region extend onshore, they displace late Quaternary marine-terrace deposits (McCrory, 1996 #6321; McCrory and others, 2002 #5864) along thrust and reverse faults that have offsets of as much as 0.5-m, with cumulative offsets up to 2 m.
Length (km)	33 km.
Average strike	N31°W
Sense of movement	Thrust *Comments:* Seismic reflection data suggest significant, or pure, dip-slip offset for the long western strand of this fault set (McCrory and others, 2002 #5864). Movement on that fault strand and the other strands is inferred to be thrust or reverse because of the faults are associated with offshore anticlines or with thrust and reverse faults and anticlines mapped nearby onshore. The actual fault planes of offshore faults, however, cannot be resolved with available seismic reflection data.
Dip Direction	SW *Comments:* Seismic reflection data implies down-to-the-northeast dip-slip offset for the long western strand of this fault set (plate 2I in McCrory and others, 2002 #5864); the other strands do not have specified offsets. These offshore fault strands are inferred to be thrust or reverse faults, based on this limited evidence for dip-slip offset and their association with mapped thrust and reverse faults and anticlines nearby (McCrory and others, 2002 #5864). The offset described above, therefore suggests that the long western fault strand dips to the southwest, perhaps at a low-moderate angle (<45?). The vertical exaggeration of seismic reflection data, however, precludes accurate determination of fault dip (all strands with dips >30? appear to have vertical dips).
Paleoseismology studies	
Geomorphic expression	Fault strands are marked at the seafloor surface by elevated and exposed bedrock; the long western strand deforms the seafloor.
Age of faulted surficial	Bedrock where exposed along the seafloor is pre-Quaternary based on correlation to nearby petroleum well (Palmer and

deposits	Lingley, 1989 #6327). In some areas, bedrock is overlain by younger, faulted seafloor deposits that may be as young as Holocene in age, however these seafloor deposits have not been dated directly.
Historic earthquake	
Most recent prehistoric deformation	latest Quaternary (<15 ka) *Comments:* Latest Quaternary (<20 ka) for the long western strand; disruption of the seafloor along this strand (plate 2I in McCrory and others, 2002 #5864) could be as young as Holocene, however the sediments exposed on the seafloor have not been dated directly. Quaternary (< 1.8 Ma) for two eastern strands; other strands have unspecified, but possible Quaternary activity. Age estimates for offshore faults are based on offset or deformation of: (1) the seafloor, considered less than 20 ka; (2) a late Pleistocene erosional surface, estimated to have been cut between 150 and 20 ka; or (3) an early-middle Pleistocene unconformity cut at either 600 ka or 900 ka (McCrory and others, 2002 #5864). Herein these strands are assigned to latest Quaternary, Quaternary, and Quaternary(?) age categories, even though the upper age limits of these categories are <15 ka, <1.6 Ma, and <1.6 Ma(?), respectively.
Recurrence interval	
Slip-rate category	Less than 0.2 mm/yr *Comments:* No information has been reported pertaining to rates of slip for these faults. Based mostly on this lack of information, a conservative rate of less than 0.2 mm/yr is tentatively assigned herein.
Date and Compiler(s)	2003 Patricia A. McCrory, U.S. Geological Survey
References	#6317 Foster, D.S., McCrory, P.A., Danforth, W.W., and O?Brien, T.J., 1999, Archive of chirp subbottom data collected during USGS cruise MCAR 98008 (M3-98-WO) Washington shelf, 24 June-5 July, 1998: U.S. Geological Survey Open-File Report 99-591, 2 CD-ROM set. #6318 Foster, D.S., McCrory, P.A., Danforth, W.W., and O?Brien, T.J., 1999, Archive of boomer and sparker subbottom data

collected during USGS cruise MCAR 98008 (M3-98-WO) Washington shelf, 24 June-5 July, 1998: U.S. Geological Survey Open-File Report 99-592, 3 CD-ROM set.

#6320 Grim, unpublished M.S. thesis, and Bennett, L.C., Jr., 1969, Shallow seismic profiling of the continental shelf off Grays Harbor, Washington: Seattle, University of Washington, Department of Oceanography Special Report 41, p. 72-92.

#6321 McCrory, P.A., 1996, Tectonic model explaining divergent contraction directions along the Cascadia margin, Washington: Geology, v. 24, p. 929-932.

#6324 McCrory, P.A., Danforth, W.W., O?Brien, T.F., and Foster, D.S.,, 2003, Archive of the sidescan-sonar data and DGPS navigation data collected during USGS cruise 98008; Washington shelf, 24 June-5 July, 1998: U.S. Geological Survey Open-File Report 01-507, 2 DVD-ROM set.

#5864 McCrory, P.A., Foster, D.S., Danforth, W.W., and Hamer, M.R., 2002, Crustal deformation at the leading edge of the Oregon Coast Range block, offshore Washington (Columbia River to Hoh River): U.S. Geological Survey Professional Paper 1661-A, 47 p., 2 pls.

#6327 Palmer, S.P., and Lingley, W.S., Jr., 1989, An assessment of the oil & gas potential of the Washington outer continental shelf: Seattle, University of Washington, Washington Sea Grant Program WSG 89-2, 83 p.

#5670 Wagner, H.C., Batatian, L.D., Lambert, T.M., and Tomson, J.H., 1986, Preliminary geologic framework studies showing bathymetry, locations of geophysical tracklines and exploratory wells, sea-floor geology and deeper geologic structures, magnetic contours, and inferred thickness of Tertiary rocks on the continental shelf and upper continental slope off southwestern Washington between latitudes 46° N and 48°30'N and from the Washington coast to 125°20'W: Washington State Department of Natural Resources Open-File Report 86-1, 8 p., 6, scale 1:250,000.

#6305 Wolf, S.C., Hamer, M.R., and McCrory, P.A., 1997, Quaternary geologic investigations on the inner shelf offshore northern Oregon-southern Washington: U.S. Geological Survey

	Open-File Report 97-677, 4 sheets, scale 1:500,000.