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Quaternary Fault and Fold Database of the United States

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Santa Ynez fault zone, South Branch section (Class A) No. 87c

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Synopsis	**General:** Other than the basic geologic map location from Dibblee (1950 #5977; 1966 #5978) and a few other local studies, very little is known about most of this fault zone. Paleoseismic studies have been done in only two localities--the Alegria Canyon site along the Santa Ynez, South Branch section [87c] and the Rancho San Marcos site near the assigned section boundary between the Santa Ynez, Western section [87b] and Santa Ynez, Eastern sections [87d]. Although the latter study site, demonstrating Holocene displacement, is tentatively placed in the Santa Ynez, Eastern section [87d], the majority of this section (especially in Ventura County) is very poorly studied with respect to recency of activity. The South Branch is a little better known as a result of investigations in the late 1970's and early 1980's for a proposed Liquefied Natural Gas (LNG) facility (Envicom, 1978 #5981; Yerkes and others, 1980 #5993; Rice and others, 1981

	#5986) as well as an earlier study cited by Hart (1978 #5983). **Sections:** This fault has 4 sections.
Name comments	**General:** **Section:** Section name is taken from the Santa Ynez, South Branch. Santa Ynez, South Branch section [87c] extends from the coast about 4 km west of Highway 101 northeast to its intersection with the Santa Ynez Western section [87b]. **Fault ID:** Refers to numbers 301 (Pacifico fault), 320 (Santa Ynez fault) and 321 (Santa Ynez fault, south branch) of Jennings (1994 #2878) and number 44 (Santa Ynez fault) of Ziony and Yerkes (1985 #5931).
County(s) and State(s)	SANTA BARBARA COUNTY, CALIFORNIA
Physiographic province(s)	PACIFIC BORDER
Reliability of location	Poor Compiled at 1:750,000 scale. *Comments:* Location digitized from 1:750,000 map of Jennings (1994 #2878).
Geologic setting	Santa Ynez fault, an east-west structure along the north side of the Santa Ynez and Topatopa Ranges, is largely responsible for the uplift of these ranges (Dibblee, 1982 #5980). The fault has several kilometers of vertical displacement but also a strong, but unknown sinistral component (Dibblee, 1982 #5980); fault (along with Santa Ynez River fault) is modeled to accommodate clockwise rotation of the Transverse Ranges (Hornafius and others, 1986 #5922).
Length (km)	This section is 14 km of a total fault length of 148 km.
Average strike	N47°E (for section) versus N83°E (for whole fault)
Sense of movement	Reverse *Comments:* Yerkes and others (1980 #5993).
Dip	60°

	Comments: at shoreline (Yerkes and others, 1980 #5993)
Paleoseismology studies	Site 87c-1, Alegria Canyon: several trenches excavated in 1970 and partially re-excavated in 1977 exposed faulted stream terrace of inferred Holocene age and late-Pleistocene marine terrace; age control based on terrace elevation and relative soil development (Envicom, 1978 unpublished studies cited by Hart, 1978 #5983; Yerkes and others, 1980 #5993).
Geomorphic expression	seafloor scarp (Yerkes and others, 1980 #5993).
Age of faulted surficial deposits	Possible Holocene stream terrace and late Pleistocene marine terrace at Alegria Canyon (Yerkes and others, 1980 #5993).
Historic earthquake	
Most recent prehistoric deformation	late Quaternary (<130 ka) *Comments:* Timing of most recent event based on displacement of inferred Holocene stream terrace (Yerkes and others, 1980 #5993).
Recurrence interval	10 k.y. *Comments:* Envicom (1978 #5981) report refers to possibility of "numerous episodes of movement since approximately 40,000 to 50,000"; although "numerous" is not clarified. The consultants infer that Holocene movement may have occurred, implying a recurrence of less than 10 k.y.
Slip-rate category	Between 0.2 and 1.0 mm/yr *Comments:* Slip-rate range of 0.2 to more than 0.6 mm/yr from Clark and others (1984 #2876) is vertical component only from offset fluvial gravels; Yerkes and others (1980 #5993) suggest that the vertical to lateral ratio may be close to 1.7:1.
Date and Compiler(s)	2000 Jerome A. Treiman, California Geological Survey
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