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ROTATION OF SUB-DOMAINS WITHIN THE TRANSVERSE RANGES PROVINCE: SOCKEYE FIELD, SANTA BARBARA CHANNEL, CALIFORNIA

Observed fault patterns, fold trends, and fracture distributions found within, and adjacent to, a large fault bounded tectonic block at the eastern margin of the Santa Barbara Channel, can be explained by progressive clockwise rotation. Through going sub-parallel NE-SW trending faults bound the Sockeye block. This block includes the eastern end of Santa Cruz Island, the entirety of the Sockeye oil field and continues northeasterly to the Oakridge fault. Structural trends within both the Sockeye field and eastern Santa Cruz Island are sub-parallel. The fault defining the southeastern edge of the Sockeye block, here named the Anacapa Passage fault, accommodated approximately 7000' of left lateral slip, integral to 30deg clockwise rotation of the Sockeye block. This deformation is defined by older folds and faults at Sockeye field striking N50W offset from similar Hueneme field structures that strike N80W. Along the eastern coast of Santa Cruz Island, fold trends on either side of the Anacapa Passage fault also display this same sense of displacement. Additional NE-SW trending blocks appear to be accommodating compressive stress by left-lateral displacement along intervening faults, concomitant with clockwise rotation of the blocks. These block rotations, in part, allow north-south shortening and west directed extension in the southeastern Santa Barbara Channel. This structural evolution has implications for the boundary between the Transverse Ranges and Peninsular Ranges.