

ABSTRACT

THE STRUCTURE AND TECTONICS OF RABBIT HILL, MADERA COUNTY, CALIFORNIA

Rabbit Hill is located in the western foothills of the central Sierra Nevada, consists of Jurassic-age metamorphic rocks, and experienced three periods of deformation. The D_1 deformation, represented by the Nevadan orogeny, formed northwest-trending cleavage and tight, similar folds. The D_2 deformation, caused by the intrusion of the Bass Lake Tonalite, deformed the D_1 structures east of Rabbit Hill and formed incipient, spaced cleavage and open, circular folds. D_z deformation fractured the rocks of the Rabbit Hill area and may be related to the intrusion of the Sierra Nevada batholith. Rabbit Hill's structure and geology were used to evaluate three tectonic models. The arc collision arc, trench initiation, and forearc generation models predict that D_1 was caused by northeast directed stress, which is consistent with the stress direction from Rabbit Hill. The arc collision and forearc generation models correctly predict that Rabbit Hill's petrology is composed of sand and silt.

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