GEOLOGY AND FRACTURE PATTERN ANALYSIS OF CENTRAL WESTERN WILLIAMSON COUNTY, TEXAS

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ABSTRACT

Cretaceous rocks of the Comanche Series, Fredericksburg and Trinity divisions, crop out in the area of study. These beds are alternating massive and argillaceous limestones, nodular limestones, and marls. The changes in litology were found to affect joint orientation and density, and changes in thickness of beds affected joint density.

A total of 4, 083 joints were measured mainly in the Walnut Formation and the Glen Rose Limestones. Almost all of these joints are in the sets trending N. 30°-50°E., N. 0°-20° E., N. 20°-50° W., and N. 70° W.-N. 80° E.

The Balcones fault zones lies immediately to the east of the map area. Three joint sets (n. 30°-50° E., N. 0°-20° E., and N. 20°-50° W.) and faults in the area are related to its extensional stress system.

The dominant joint set is east-west. It is belived to be related to a tear fault in a thrust plate of the Ouachita fold belt which underlies the area. The Round Rock Syncline is developed over the tear fault and localizes the jointing resulting from the fault.