

Sequence Stratigraphic Interpretation of the Finlay Formation (Albian, Lower Cretaceous), Rimrock Escarpment, Hudspeth County, Texas

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While hydrocarbon exploration fostered research on the Albian Fredericksburg Group in central and northern Texas, less research has been done on its Albian equivalent to the west. This study establishes a new, high-resolution stratigraphic stratotype of the Albian Finlay Formation in the Rimrock escarpment in Hudspeth County, Texas. It can be used in addition to Brunson's (1954) unpublished stratotype profile from the Finlay Mountains to the south of the study area. Profiles measured along the Rimrock escarpment allow a cross-sectional overview of facies development through time. The proposed depositional model includes a succession from ramp to shallow water platform deposits.

The Finlay shelf, which developed in the Middle Albian at the northeastern margin of the Chihuahuan trough, developed in its early stage a ramp profile, with broad, gradational facies belts. Sediments were deposited in layercake fashion as broad sheets which can be traced over kilometers. Gray, nodular to wavy bedded, massive limestone layers are intercalated with marls, which are commonly gray to brownish gray in color. These marly units represent periodic incursions of clay during shallowing events. The Upper Finlay Formation developed on a carbonate platform regime. Muddy rudist biostromes and patch reefs in this area are characteristic for inner platform areas, whereas barrier forming, reef building organisms from the platform margin are reported from the Indio Mountains and other areas farther to the south.

A high-resolution carbonate sequence stratigraphic framework has been developed for the Finlay Formation. Two third-order sequences within the Finlay Formation were identified, spanning 1.5 million years in a period of time ranging from 100.5 to 99.0 million years. These third-order sequences can be correlated to the new Cretaceous sequence chronostratigraphy chart of Hardenbol et al. (1998). They resemble the major early Middle Albian sequence boundary Al 5 (Cox-Finlay boundary) and the minor middle Albian boundary Al 6. Al 5 is proposed to be correlative to the Paluxy Sand and Walnut Clay boundary within the middle Albian Fredericksburg Group in central and northern Texas.