

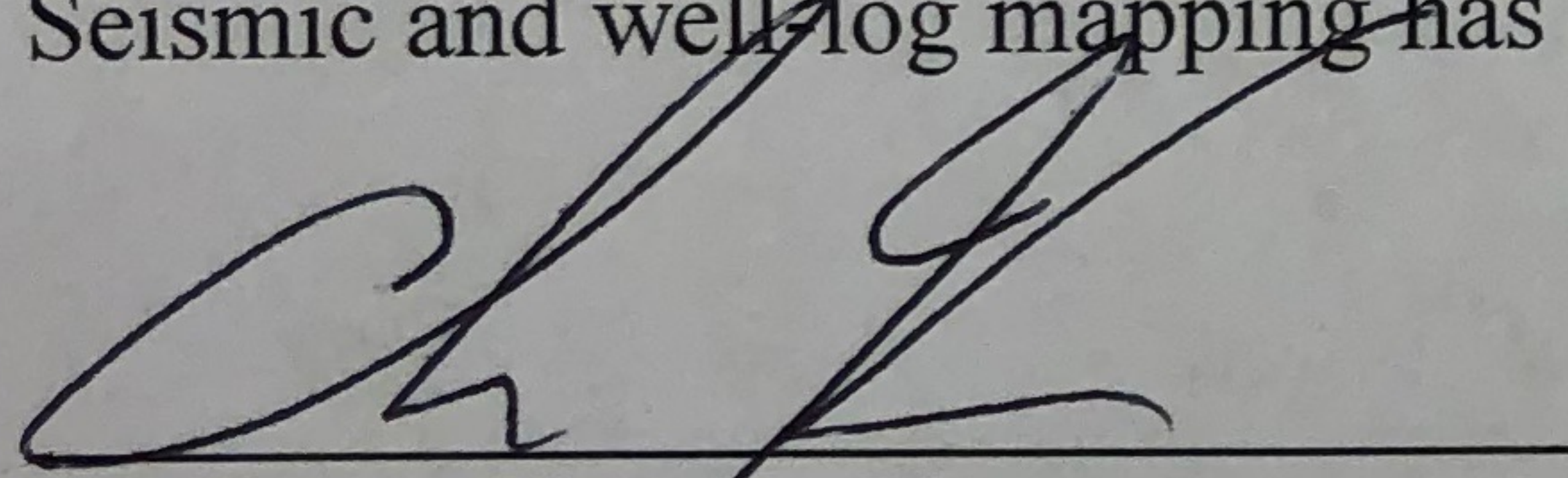
Wolfcampian Shelf-to-Basin Stratigraphic Framework of the Central Basin Platform and Midland Basin, Andrews County, Texas

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ABSTRACT

The Wolfcampian (299-280 Ma) Hueco Formation of the eastern Central Basin Platform and equivalent Midland Basin allochthonous deposits are important reservoirs and exploration targets. Despite drilling activity, the impact of icehouse climate and tectonic pulses on the subequatorial Hueco carbonates has frustrated attempts to link shelf and basinal deposition. This study provides context for the deepwater elements within the basinal Hueco by examining core-based vertical facies successions, wireline log and seismic-derived stratal architecture and sedimentation patterns, and isopachs, along a contemporaneous shelf to basin depositional profile. Where available, fusulinid biostratigraphic control provided by BP geoscientists from the North Cowden, Midland Farms, and Mabree field areas, provided constraints on correlations.

500 m (1,400 ft) of core were described from the Midland Farms Deep 132, 101, 135, and 74, the Midland Farms Unit 13-S and AX-5, the Midland Farms Operating 3, and the Fasken Fee AL-910 and BI-307 wells. Shelf-to-basin correlations were made using a series of wireline log profiles covering 22 km E-W by 28 km N-S tract. Comparison with seismic profiles provided further constraints, but a challenging depth-correction for the seismic made comparisons difficult in the slope to platform transition. Cores from Midland Farms Deep field include Lower Hueco phylloid algal-*Tubiphytes* reefal buildup facies that transition upwards into Upper Hueco upward-shallowing bioclastic-oolitic detrital facies with intercalated mudstones at the mid-Wolfcamp unconformity. A facies architecture reorganization took place across the mid-Wolfcamp unconformity and is linked to a basinal transition from Lower Hueco equivalent (Upper Wolfcamp C) debris flows and mudstones to a mid-Wolfcamp equivalent carbonate megabreccia to an Upper Hueco equivalent debris-poor calcareous shale (Lower Wolfcamp B). Seismic and well log mapping has identified depocenters shelf to basin.



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