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## **Stratigraphic Framework and Exploration Potential of Sligo Formation Carbonates (Lower Cretaceous) in South Texas**

Based principally on seismic-stratal geometries, Sligo Formation carbonates which range up to approximately 1000 m in thickness, comprise two complete '3rd'-order sequences and the transgressive phase of a younger '3rd'-order sequence in an 22,000+ km<sup>2</sup> area that includes parts of Webb, La Salle, and McMullen Counties, Texas.

The two complete '3rd'-order Sligo sequences and an older Hosston sequence form a transgressive-regressive '2nd'-order sequence. The architecture and facies mosaics of each of the '3rd'-order sequences were influenced by available accommodation space, driven by thermal subsidence, eustasy, and paleotopography (mostly the result of tectonism, including salt movement, and inherited paleodepositional topography). In general, the oldest sequence (Sequence 20, Hosston) largely fills in pre-existing accommodation space, most of which was tectonically controlled, with little evidence of significant progradation. The oldest Sligo sequence (Sequence 30) continued to fill pre-Sligo topography, but its architecture is aggradational to progradational. The influence of inherited structural paleotopography is not as important for the youngest complete Sligo sequence (Sequence 40), which is strongly progradational and has a well-developed shelf-margin buildup. The onset of Sequence 50 to the top of the Sligo marks the initial flooding of the next 2nd-order sequence, and this succession is retrogradational.

Viable Sligo exploration plays in this area include the 'Structural Hingeline Play', which produces from packstones and grainstones (based on core data) of the transgressive systems tract of Sequence 50 on small structural closures along the present-day structural hingeline; and an untested (?) 'Debris Wedge Play' comprising structural/stratigraphic traps in potentially coarse-grained sediments shed basinward from Sligo shelf margins.