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Abstract

The deep Upper Cretaceous Tuscaloosa-Woodbine trend in Louisiana and Texas is an important gasexploration target in the Gulf Coast Region, and ongoing USGS assessment studies indicate that undiscovered gas reserves are large. Over-pressured gas-bearing sandstone reservoirs are at depths of about 15,000 to 25,000 ft in the Tuscaloosa (Louisiana) and about 12,000 to 16,000 ft in the Woodbine (Texas). Both the Tuscaloosa and Woodbine are characterized by several producing fields and extensive seismic and well control. These major producing areas in the Tuscaloosa and Woodbine are separated by a region across the Texas-Louisiana state line with no known production and with limited deep well control. Seismic profiles in the two producing areas document a Cenomanian prograding high-stand shelf to deep-water system overlain by a Turonian highstand marine shale downdip from the Lower Cretaceous shelf edge. The Cenomanian section contains at least four higher-order sequences dominated by thick lowstand (LST) and thinner transgressive (TST) and highstand systems tracts (HST). Gas production in the Tuscaloosa is associated with growth-faults in LSTprograding complexes and HST-shoreface deposits that accumulated within mini-basins formed by the withdrawal of underlying Jurassic Louann Salt. Woodbine production is also from a high-stand shelf to deep-water system with higher-order sequences, but the influence of salt on deposition has previously not been recognized. Application of a sequence stratigraphic model suggests that significant undiscovered gas resources may exist in LST to HST in underexplored to unexplored sequences downdip and on-strike to known production where the model predicts additional potential sandstone reservoirs and growth faulting.