

## Jurassic Petroleum Potential of the Deep Southeastern Gulf of Mexico

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A detailed analysis of available seismic data and the results of DSDP Leg 77 define four major tectono-stratigraphic sequences in the deep southeastern Gulf of Mexico bounded by major unconformities: crystalline basement, pre-rift rocks, a Late Jurassic syn-rift sequence, and an Early Cretaceous post-rift sequence. The Late Jurassic syn-rift sequence occurs in grabens or half-grabens and consists of two units: 1) a lower unit interpreted to be non-marine alluvial/lacustrine sediments, which have potential as both reservoir and source rocks, and 2) an overlying unit interpreted to be shallow marine carbonates and shales. Carbonate buildups (reefs) on fault blocks form potential reservoir rocks, while the adjacent marine shales could be potential source rocks. In the southeastern Gulf Jurassic rocks are absent over high-standing fault blocks as well as the adjacent Yucatan and Florida blocks. The Lower Cretaceous post-rift deep-water carbonate sequence drilled during DSDP Leg 77 drapes the entire area and forms an excellent regional seal as well as potential source rocks that could charge adjacent fault blocks if they have reached maturity. Six tectono-paleogeographic maps covering the eastern Gulf of Mexico and northwestern Cuba (palinspastically restored to the southeastern margin of Yucatan) document the evolution of the area. The proposed tectonic evolution of the southeastern Gulf puts constraints on the Jurassic evolution of the Gulf of Mexico basin. The Late Jurassic-earliest Cretaceous continental rifting in the study area is time equivalent with the formation of oceanic crust and rotation of the Yucatan block out from the northern deep Gulf.

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