

## **Jurassic Extensional Faulting and its Control on Distribution and Extent of Upper Jurassic and Cretaceous Marine Source (?) Rocks, Deepwater Gulf of Mexico: A Preliminary Report**

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Jurassic extensional faulting associated with rifting and opening of the Gulf of Mexico created a topography characterized by grabens, half grabens and structural highs, which controlled Late Jurassic and Cretaceous depocenters, sedimentary processes, and sediment dispersal.

Regional interpretation of 2D seismic data covering 14,600 miles of the abyssal plain adjacent to the Sigsbee Scarp, mainly in the Lund and Walker Ridge protraction areas, has allowed preliminary interpretation of a Jurassic relict structural grain developed during the early tectonic evolution of the Gulf of Mexico.

The Cretaceous, and possibly Upper Jurassic (?) sections have thicknesses that range from 850 to 3,000 m, depending on the depth and configuration of the rifted basins. The onlap of highly-dipping strata against structural highs in the lowest parts of the grabens may indicate the possible presence of Jurassic rocks, which are the oldest strata in this area.

The deposition of the Upper Paleocene – Lower Eocene Wilcox Formation was essentially not affected by the Jurassic structural grain, as a matter of fact, these clastic successions have a very homogeneous thickness of 750 m throughout the study area, except for local, very steep structural highs, where the overlying Wilcox thicknesses are on the order of 276 to 498m.

The possible existence of Upper Jurassic (?) and Cretaceous marine source rocks in grabens adjacent to large structures along the Sigsbee Scarp may have important implications from the point of view of petroleum systems, particularly if these potential source rocks are hydrocarbon generators.