

The Sigsbee Sub-salt Play

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Results of a new deep water seismic effort in the Gulf of Mexico middle to lower slope reveal the presence of large salt mats at water depths of 2,500 to 8,000 ft. Initial lines from a new 60,000 mile, high effort seismic program resolve features produced by late salt movement and formation of young traps exhibiting both stratigraphic and structural components. Examination of these recently formed salt sills provides keys to the mechanisms of formation of the outer slope structures. Young basins currently down building into the tops of these sills represent the initiation of new sediment pathways over the salt. Analysis of the salt sills suggests mechanisms of salt deformation and sill emplacement with the youngest features forming at the Sigsbee scarp and progressively older and more complex features observed as the slope is traversed up dip.

Deep water sub-salt structures are imaged more precisely than their older shelf counterparts. Water bottom multiples that obscure the primary sub-salt reflectors are greatly reduced due to the larger window between successive multiples. The combination of deep water, and near sea- floor salt allows potential reservoirs to be imaged with correspondingly less interference from water bottom multiples.

Similarity of the sub-salt structures to those observed in Mississippi Canyon at the Mickey and Gemini discoveries is noted. Westward extension of the Mississippi fold belt beneath the Sigsbee scarp is confirmed by these data. These same structural features modify deep basin floor fans of sizable extent located beyond the Sigsbee scarp. The Sigsbee sub-salt structures and the deep basin floor fans both provide attractive targets for new deep water exploration ventures.