

A Reevaluation of the Hackberry: New Life for a Comatose Trend

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The Oligocene Hackberry trend of southeast Texas and southwest Louisiana has posed one of the Gulf Coast's most perplexing targets for petroleum exploration. Thick, high-quality pays and moderate drilling depths have lured many explorationists to try to unlock its potential. However, reservoir extent has, in the past, been unpredictable. The play was all but abandoned during the late 1980s and early 1990s.

A regional re-evaluation of the geologic model arose from the assimilation of well log correlations, dipmeter use and evaluation, interpretation of paleontological reports, and the combination of quality 2-D seismic data. From this work it became very apparent that the majority of the trend should be interpreted as a sub-unconformity/slump block play and not a deep-marine, basin-floor/turbidite sequence. The new model predicted reservoir extent and thickness concisely and logically.

The history of the trend is one of prograding shallow-marine deposition from the lower Frio Formation through

the *Nodosaria blanpiedi* and *Nonion struma* zones, followed by thick shallow-water deposition of up to 500 feet of strand plain sands in the upper Frio Formation. Basin collapse, resulting from regional salt withdrawal and development of salt domes, caused over-steepening of the sea floor. The result was slumping of the soft sediments from the underlying Vicksburg Formation through the early Upper Frio strand plain deposits. Wave-base erosion removed most of the youngest sand section. The erosion was followed by marine shale deposition containing the diagnostic Hackberry faunal assemblage. As subsidence ceased and the basin finally filled with shale, shallow-marine strand plain deposition continued through deposition of the upper Frio section.

Armed with this geologic model, a group of industry partners partook to gather regional 3-D seismic coverage in order to take advantage of more than 500 undrilled square miles that still existed in the trend. Eventually the effort resulted in 25 successful wells out of 30 attempts.

Notes