New Insights into Cenozoic Depositional Systems of the Gulf of Mexico Basin

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ABSTRACT

The Gulf of Mexico Basin has long been a focus of intensive study in connection with its status as one of the richest hydrocarbon basins in the world. In spite of this record of research activity, new understanding of the depositional history of the basin is continually being enhanced as new well and seismic data become available: there is still much to be learned. The Gulf Basin Depositional Synthesis project at the University of Texas Institute for Geophysics has been compiling and analyzing industry data and published research from the basin for over 18 years and the latest phase of the project has yielded important new insights. In particular, recent exploration activity in ever greater water depths and deeper, subsalt drilling penetrations are documenting Cenozoic depositional systems and facies in areas that have previously been poorly constrained. For example, the areas covered by the thick middle Wilcox fan systems continue to be expanded. In addition, a potential new sediment transport axis is postulated, extending southward from the Mississippi Embayment and supplying sand to the thinner upper Wilcox basinal deposits. In the Miocene, fans and sand transport are also the focus. A small lower Miocene fan, newly interpreted in Green Canyon, may be a precursor to the larger Middle Miocene "McAVLU fan." A more significant new upper Miocene subsalt fan in the west-central Gulf is sourced from the paleo-Mississippi and may extend southward into Mexican waters. The general trend throughout the Cenozoic involves a southward expansion of sand-rich areas.