Utility of Sparse Paleontologic Data in Addressing Stratigraphic Problems: Onshore and Deep-Water Wilcox Trend, Gulf of Mexico

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In the last 80 years, the onshore Wilcox trend has produced >5 BBOE from fluvial to shallow marine reservoirs in the northwest Gulf of Mexico (GoM). The deep-water Wilcox trend is a new turbidite play, located > 250 miles downdip from onshore production. In the last 10 years, 34 wildcats in the deep-water Wilcox trend have had a 65 % discovery rate, with > 3 BBO reserves likely, in discoveries ranging from 30 - 600 MMBO.

Stratigraphic subdivision of the Wilcox is often problematic because of poor paleontologic control, a result of rapid sedimentation, poor preservation, and dissolution. Sparse in situ assemblages can, however, be tied to physical stratigraphic data to derive a reliable chronostratigraphic framework.

Onshore and deep-water chronostratigraphic frameworks are reviewed in context of their application to specific stratigraphic problems. An onshore example in the Houston Salt Basin shows how sequence stratigraphy supported by sparse paleontologic control enabled identification of upper Wilcox incised valley fill sandstone reservoirs. Paleontologic control is also the key to constraining timing of opening and backfill of the Wilcox “Mega-Raft” in the south Texas “middle” Wilcox section. The onset of Wilcox deposition is documented in the up-dip Laredo Lobo trend and is also used to support the timing of the earliest Wilcox deposition in deep-water.

The deep-water Wilcox is a world class basin filling turbidite deposit that is 2,000’ to 6,000’ thick across much of the western and central GoM. An integrated paleontologic, well log and seismic supported framework is used to subdivide the Wilcox into large scale sequences. Wilcox 4, 3, 2, and 1B are Late Paleocene, while the Wilcox 1A sequence is Early Eocene. The deep-water chronostratigraphic framework and sequences are characterized in terms of age and paleontologic control, and specific examples of the impact of sparse paleontologic control are discussed.