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Sequence Stratigraphy of the Downdip Woodbine Sandstone, Upper Gulf Coast, East Texas

Cretaceous Woodbine deltas in the East Texas basin have fifty years of production history. Recently, the uncertain relationship of reservoir sands within the Woodbine and those in the overlying Eagleford strata has been clarified using sequence analysis. The resulting Woodbine and Eagleford stratigraphic sequences in the East Texas basin contain transgressive and highstand deposits; associated lowstand components comprise the downdip extensions of these intervals in the upper Gulf Coast where thicknesses triple to nearly 3000 ft. Downdip producing fields include Damascus, Hortense, Leggett, Seven Oaks, Double A Wells, and Sugar Creek. Core examination of downdip reservoir facies corroborated earlier interpretations of turbidite sandstones in Sugar Creek field. Twenty miles to the west, along present-day structure, reservoirs within Double A Wells field exhibit massive to laminated sands of distributary mouth bar (delta front) origin, frequently slumped, and associated with bioturbated marine shelf shales. The mouth bars abruptly overlie outer marine shelf to upper slope shales, and are interpreted as the result of deposition within a shelf-edge delta setting.

The juxtaposition of the turbidite and shelf-edge reservoir sandstones, supported by biostratigraphic data, well log correlations, and available seismic provides evidence for two lowstand sequences. Regional mapping of the downdip Woodbine/Eagleford succession has identified that Hortense, Leggett, Seven Oaks and Double A Wells fields as belonging to the younger Eagleford sequence, while Damascus and Sugar Creek fields occur in the Woodbine interval.

Biographical Sketch

Howard J. White received his Ph.D. in geology from Iowa State University in 1981, and subsequently was employed as a worldwide sedimentologist and exploration geologist with Phillips Petroleum. From 1988 to 1999, he was with Oryx Energy, Dallas, as a sedimentologist involved in exploration technology. Presently he works at Kerr-McGee as a sedimentologist specializing in clastic facies, depositional environments, reservoir architecture, sequence stratigraphy and diagenesis. □



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