

## **Paleogene Lowstand Systems Tract Sand Deposits of the Eastern Gulf Coastal Plain: Potential Reservoir Facies in the Offshore Northeastern Gulf of Mexico**

**Ernest A. Mancini**

*Department of Geological Sciences, University of Alabama, Box 870338, Tuscaloosa, Alabama 35487*

Characterization of Paleogene stratigraphic sequences in the eastern Gulf Coastal Plain involving outcrop and well log studies resulted in the recognition of six Upper Paleocene (Selandian) and Eocene (Ypresian-Lutetian) third-order unconformity-bounded depositional sequences. These sequences include the Naheola Formation (Midway Group), the Nanafalia, Tusahoma, and Hatchetigbee formations (Wilcox Group), and the Tallahatta Formation (Claiborne Group). The Paleogene depositional history of the eastern Gulf was dominated by fluvial-deltaic, marginal marine, and marine shelf sedimentation. The deposits of the systems tracts inherent to these Paleogene sequences consist of lowstand fluvial-deltaic, estuarine, tidal-influenced, and coastal barrier crossbedded sand of 40-100 ft (12-30 m) in thickness; transgressive nearshore marine shelf glauconitic sand and marl of 10-40 ft (3-12 m) in thickness; and highstand fluvial-deltaic, marginal marine, tidal-influenced, and marine shelf sand, silt, clay, and lignite of 100- 250 ft (30-76 m) in thickness. Stratigraphic architecture was formed primarily as a result of changes in base level. With a relative fall in sea level, the shelf was subaerially exposed and incisement through fluvial processes occurred. A subsequent relative rise in sea level and creation of accommodation space resulted in filling the shelf incisions and incised valleys. During these times of erosion and deposition, Paleogene sand bypassed the shelf and accumulated in deepwater settings as lowstand fan and wedge facies. These potentially quartz-rich sand facies are priority petroleum reservoir targets in the offshore northeastern Gulf of Mexico.