

EXPLORATION APPLICATIONS OF SEQUENCE STRATIGRAPHY APPLIED TO THE MIOCENE, HIGH ISLAND AREA, OFFSHORE TEXAS

Sharon Allen, Katrina Coterill, Peter Vail, Walter Wornardt¹

ABSTRACT

Sequence stratigraphic analysis incorporating well-log, seismic, and biostratigraphy was used to define and map systems tracts, depositional systems and their associated lithofacies in the Miocene section of the High Island area. Sequence boundaries, maximum flooding surfaces and other systems tract boundaries are regionally correlated on a well-log/seismic grid. The distribution, thickness and rock type is shown on a series of regional isopach and lithofacies maps. Known hydrocarbon occurrences are discussed in relation to the systems tracts.

The study area extends on the average for 60 miles from the offshore Texas-Louisiana border on the east to the Galveston-High Island boundary on the west. It extends approximately 120 miles from the shoreline through High Island South Addition to the south. Over 100 electric logs are incorporated into the seismic grid for accurate correlation and mapping of the system tracts.

Most of the Miocene section in this area is deposited within the lowstand systems tract as either incised valley fill, prograding complex, shingled turbidites, slope fan complex, or basin floor fan. Each lithofacies has characteristic seismic and well-log expression. This characteristic seismic and well-log expression provides accurate correlation of lithofacies and the prediction of the distribution and quality of reservoir sands.

¹ Rice University, Dept. of Geology and Geophysics, P.O. Box 1892, Houston, Texas, 77251