DEVELOPMENT OF A CHRONOSTRATIGRAPHIC FRAMEWORK FROM THE WELL LOG/SEISMIC SEQUENCE STRATIGRAPHY OF MIOCENE-PLEISTOCENE DEPOSITIONAL SEQUENCES, HIGH ISLAND AREA, OFFSHORE TEXAS, AAPG TRANSECT-PHASE II

Katrina Coterill, Sharon Allen, Francisco de Tagle, Arturo Soto, Chingju Liu, Guilllermo Perez-Cruz, Walter Wornardt, Peter Vail[1]

ABSTRACT

Detailed sequence stratigraphic analysis is used to define genetic chronostratigraphic intervals and delineate correlative lithofacies in northern Gulf of Mexico Miocene through Pleistocene depositional sequences. This analysis is accomplished by integration of seismic profiles, velocity surveys, electric logs, micropaleontology reports, and, where available, high resolution biostratigraphic information. Correlative sequence and systems tract boundaries, and the depositional systems and associated lithofacies tracts located within these boundaries are determined by integration of sequence stratigraphic interpretation procedures.

The oldest datable sequence boundary within the area is 22 Ma, early Miocene age,and occurs in the northern, updip end of the trend. The youngest sequences are high frequency cycles of 100,000 year duration, and are present at the top of the section, obtaining their greatest thickness in the most southerly, downdip well locations. Older sequences are dominated by lowstand slope fan deposits, while younger sequences are primarily composed of lowstand prograding complexes. Transgressive and highstand systems tracts remain thin throughout the section, but are thickest in the neritic environments

The onlap and downlap patterns typical of sequence and systems tract boundaries are obscured by the tectonic style of the region. Syndepositional, listric "growth" faulting is abundant and occurs in conjunction with widespread salt diapirism. Nevertheless, the sequences and systems tracts are readily recognizable within the overall progradational stacking pattern that fills the northern Gulf of Mexico. As a result, sequence stratigraphy provides a means to develop a chronostratigraphic framework that is essential for accurate mapping and analysis of depositional systems and lithofacies tracts of the Miocene through Pleistocene section in the High Island area of the northern Gulf of Mexico.

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