MEETINGS

HGS DINNER MEETING
SEPTEMBER 9, 1991
JOHN W. SNEDDEN—Biographical Sketch

John Snedden is currently with Mobil Research and Development Corporation's Dallas Research Laboratory. He received his B.A. in geology at Trinity University, his M.S. in geology at Texas A&M University, and a Ph.D. in geology at Louisiana State University. He has worked as an exploration geologist in the Gulf Coast, as a production geologist in the Permian Basin, and as an exploration technical service specialist. He recently returned from a 3-year assignment as staff sedimentologist in Mobil's Norway office where he worked upon the North Sea, the Barents Sea, and the Mid-Norway offshore exploration sectors. He has recently been involved in exploration projects from the Mid-Continent USA, Papua New Guinea, and the Niger Delta.

Dr. Snedden's specialties lie in the field of siliciclastic sedimentology with an emphasis upon shallow marine environments. He has published on Gulf Coast and Norwegian sandstone reservoirs, interpretation of SP log responses, paleocurrent patterns, and trace fossils. His present research is centered on modern shelf sandridges of the Atlantic coastal margin.

SEQUENCE STRATIGRAPHY AND SEDIMENTOLOGY OF A SHELF-MARGIN LOWSTAND WEDGE IN THE DEEP WILCOX FLEXURE TREND OF SOUTH TEXAS

An integrated sedimentologic and biostratigraphic study of 15 wells and over 1400 ft. (430m) of core facilitated establishment of a sequence stratigraphic framework for the deep Wilcox Group of South Texas. This analysis also revealed the presence of a dip-restricted, sand-prone sediment wedge which produces hydrocarbons in growth-fault structures.

A sequence stratigraphic framework for the Wilcox was constructed via the use of "faunal-increase" markers, thin intervals present in well cuttings characterized by rises in the relative abundance of planktonic foraminifera. These marine flooding horizons can be utilized to subdivide the Wilcox Group into four depositional sequences termed P (Paleogene) -8, P-7, P-4, and P-3, in descending order. Identification of "standard" sequence-bounding unconformities is hampered by the poor seismic expression of the Wilcox and the structural complexity of the area.

The Paleocene-age P-3 depositional sequence is unusual as dip correlation indicates that it is restricted to the flexure trend, tapering rapidly up depositional dip. This aggradational sediment wedge has no preserved coeval fluvial/coastal plain system and can be miscorrelated with the "Massive" Upper Wilcox of the P-8 sequence. The wedge has a maximum thickness of 2000 ft. (620 m) but a dip-length of less than 10 mi (16 km).

In cores, the section is dominated by fine-grained, burrowed to flat-laminated sandstones formed in wave-dominated shoreface and shelf environments. Evidence of deposition at the shelf margin, with attendant high levels of wave energy, may explain the abundance of wave-generated stratification in these sandstones.

P-3 sequence sandstones commonly occur in stacked, coarsening-upward parasequences and larger scale aggradational parasequence sets. The P-3 sequence is interpreted as a shelf-margin lowstand-wedge prograding complex developed just after a rapid sealevel fall at 60 Ma. The lowstand wedge can be linked with an unconformity present within the Midway interval of the updip stable platform area.

Recognition of the P-3 shelf-margin lowstand wedge also has important implications for exploration in the Wilcox flexure trend. It demonstrates that thick packages of sandstone may be found basinward of the apparent "shale-out" of updip sandstones. Shelf-margin lowstand wedge sandstones have a greater strike-continuity and higher net/gross ratios than downdip basin-slope submarine fan complexes.