DOUBLE PRESENTATION— SEPTEMBER 23, 1987

DR. ALAN J. SCOTT—Biographical Sketch

Dr. Alan J. Scott is a noted process sedimentologist and genetic stratigrapher specializing in the development of depositional models for oil and gas exploration. He is an expert in a variety of both clastic and carbonate depositional systems in the Gulf Coast and elsewhere.

Dr. Scott received his Ph.D. from the University of Illinois, after which he accepted a professorship at the Department of Geological Sciences at the University of Texas at Austin. During his 25 years on the faculty, he developed and maintained active graduate research programs in sedimentology, basin analysis and reservoir characterization. He supervised more than 65 graduate students who successfully completed their doctoral or master's degree programs. During his tenure, he served as departmental graduate advisor and Director of the Geology Foundation at the University of Texas. His accomplishments were recognized by several teaching and service awards including the first Mr. & Mrs. Charles E. Yaeger Professorship, and endowed position. In addition to his academic activities, Al maintained an active consulting practice conducting research and training programs for more than a dozen major oil and gas companies.

After joining RPI in 1984 as president of the Texas group, Al helped organize and complete three major regional studies of the Yegua and Vicksburg formations in the Texas Gulf Coast. He is now Chief Scientist, Gulf Coast, RPI Colorado Inc., Boulder, Colorado.

DEPOSITIONAL SYSTEMS AND CYCLES IN THE EOCENE YEGUA FORMATION, TEXAS GULF COASTAL PLAIN

Tertiary Gulf Coast stratigraphy is characterized by a series of large-scale progradational wedges. Fluvial-deltaic and deepwater sandstones in several of these progradational units have proven to be prolific hydrocarbon-bearing reservoirs. The Eocene Yegua formation is considered a relatively minor wedge compared to the Wilcox, Vicksburg and Frio progradations. Prior to the late 1970's, Yegua exploration and thus stratigraphic control was confined to areas overlying the relatively stable submerged Wilcox deltaic platform.

Basinward, the Yegua thickened significantly beyond the margin of the Wilcox platform. A few wells penetrating this thickened Yegua section unexpectedly encountered thick sandstones several miles beyond presumed Yegua shorelines. The discovery of Black Owl and Toro Grande Fields in the early 1980's triggered an exploration play in the expanded Yegua. Several depositional models were proposed to explain the occurrence of sandstones in this downdip setting. Deep water, shelf and deltaic origins all had their proponents.

The Yegua has a large number of thin, laterally persistent, high-resistivity shales. These shales, inferred to be deposited during transgressive (non-progradational) episodes, have been used to subdivide the Yegua Formation into 12 genetic units. Correlation of these marker beds in more than 4,000 wells has resulted in a series of detailed regional maps delineating and documenting Yegua depositional systems and cycles.

The Yegua in the central Texas coastal plain is characterized by a series of narrow (1 to 3 mile wide) dip-oriented depositional axes. These axes represent meanderbelt and distributory channel deposits associated with fluvial and deltaic systems. The scale of these features is comparable to modern Texas coastal plain systems. The distribution and direction of the narrow axes are strongly influenced by syndepositional growth faults. Reworking of sands by shoreline processes are only a minor factor influencing reservoir distribution in the Yegua.

Regional mapping also documents shifts in depositional axes and depocenters of the various Yegua genetic units. Several minor Yegua depositional cycles are the result of these shifts rather than eustatic sea level fluctuations. However, a eustatically controlled cycle within the Yegua has been documented. This cycle provides a mechanism for deposition of sand in the down-dip Yegua trend. Several other sands in this trend are associated with dip-oriented fluvial and deltaic axes deposited during progradational episodes. As these axes extended beyond the margin of the subjacent Wilcox platform, they reactivated, or initiated, a series of growth faults. Sand deposition was locally thickened and confined to very localized depocenters along these faults.