DOUBLE PRESENTATION
FEBRUARY 26, 1986

ALAN J. SCOTT—Biographical Sketch

Dr. Alan J. Scott is a noted clastic and carbonate sedimentologist with 25 years of experience in both ancient and modern depositional systems. Through his work he has related modern coastal processes to a variety of ancient clastic analogs in the Gulf Coast and southern and central Rocky Mountain regions.

While serving a 14-year tenure as professor of geology at The University of Texas at Austin, Dr. Scott supervised theses and disertation research based on a philosophy of practical problem solving and personal development to increase his students' effectiveness in industry research. As director of the Geology Foundation at The University of Texas, he administered expenditures and solicited funds for a foundation endowed at the level of $7.3 million. He has conducted in-house technical development seminars for many oil companies, as well as seminars and short courses for society-sponsored groups such as the American Association of Petroleum Geologists and the Rocky Mountain Association of Geologists.

As president and senior scientist of RPI/Texas, Inc., Dr. Scott applies his expertise in sedimentology and the effects of regional tectonics to detailed stratigraphic projects defining exploration fairways for the oil industry.

SHELF PLUME AND WAVE-INFLUENCED DELTAS: A SIGNIFICANT MECHANISM FOR FORMING SHELF SANDS AND STRATIGRAPHIC TRAPS

Shelf-bar sandstones of the Western Interior Seaway of North America are encased in marine shales and form excellent stratigraphic traps for hydrocarbons. Several of these sandstones were deposited by coastal/nearshore currents that were diverted by projecting deltaic headlands. These currents transported sand down-drift and onto the adjacent muddy shelf floor. The sands formed plumes that were relatively narrow (5-15 miles wide) belts that extended 10-20 miles down-drift and projected 5-15 miles basinward from associated deltaic shorelines.

Channel avulsion and lobe-switching resulted in abandonment and transgression of deltaic axes. The plumes associated with abandoned delta lobes became inactive and were reworked. Migrating shelf-bars were formed during this transgressive phase. The degree of reworking and the relative significance of waves and near-shore currents formed a spectrum of plume types.

Sandstones associated with shelf plumes are characterized by their arcuate strike-elongate geometry, geographic relation to contemporaneous deltaic headlands and vertical sequence of subfacies. The sandstones have transitional bases and coarsen upward. Log response patterns resemble shoreface sequences. Subfacies successions based on sedimentary structures lack beach subfacies or evidence of subaerial exposure. The shelf-bar sandstones are also completely encased in bioturbated shelf mudstones.

Modern shelf sand plumes have been recognized on the Sinai Shelf down-drift from the Nile River delta. Several examples of Cretaceous plume related shelf-bars have been described along the western margin of the Western Interior Seaway. Shelf plumes are also an important Gulf Coast exploration model for many wave-influenced Cretaceous and Tertiary formations.