LUNCHEON MEETING—APRIL 22, 1987

JAMES M. COLEMAN—Biographical Sketch

James M. Coleman received his B.S. (1958), M.S. (1962) and Ph.D. (1966) degrees from Louisiana State University. He joined the Coastal Studies Institute at LSU in 1960 as a Field Supervisor and then joined the LSU faculty in 1966 as an Assistant Professor. He has subsequently held positions of Associate Professor (1969-74), Professor (1975-80) and is now a Boyd Professor at LSU. He was named Assistant Director of the Coastal Studies Institute in 1971 and was named Director in 1975, a position he holds at present.

Dr. Coleman has contributed to or personally authored over 100 publications. He has been awarded research contracts from the Office of Naval Research, USGS, Shell, University of Texas, ARCO, Gulf, and the Industrial Association Research Program. He was also selected to serve as co-chief scientist of DSDP Leg 96 which examined the Mississippi Fan.

Dr. Coleman was awarded the A.I. Levorson Award from the AAPG and the Best Paper Award from the Gulf Coast Association of Geological Societies in 1973, and received the second place award in 1974. He served as an AAPG Distinguished Lecturer from 1976-78, was named as an LSU Distinguished Lecturer in 1976 and a Shell Oil Distinguished Lecturer in 1979. He received the LSU Distinguished Research Master Award in 1976 and the Shepard Award for Excellence in Marine Geology in 1980 from the SEPM. Dr. Coleman was named to the the Gulf Universities Research Consortium Program Development Council in 1980, the Gulf Coast SEPM Research Council in 1980, American Men and Women of Science in 1976, and Who's Who in America in 1984. He annually conducts educational seminars for the AAPG and a number of major oil companies.

Dr. Coleman is a member of the International Association for Sedimentology and serves on the Committee on Sedimentary Structure Nomenclature. He is also a member of the AAPG, the Geological Society of America, and the Gulf Coast SEPM. Dr. Coleman serves as a consulting editor for *Transactions of the Royal Society of Edinburgh*, and he is Earth Science Associate Editor for *Geo-Marine Letters*.

GEOLOGIC DEVELOPMENT AND CHARACTERISTICS OF THE CONTINENTAL MARGINS, GULF OF MEXICO

The continental slope of the Gulf Basin covers more than 500,000 sq km and consists of smooth and gently sloping surfaces, prominent escarpments, knolls, intraslope basins, and submarine canyons and channels. It is an area of extremely diverse topographic and sedimentologic conditions. The slope extends from the shelf break, roughly at the 200-m isobath, to the upper limit of the continental rise, at a depth of 2800 m. The most complex province in the basin, and the one of most interest to the petroleum industry, is the Texas-Louisiana slope, occupying an area of 120,000 sq km. In this province, bottom slopes range from less than 1 degree to greater than 20 degrees around knolls and basins.

The near-surface geology and topography of the slope are functions of the interplay between episodes of rapid modification of the depositional sequence by diapirism. Development of discrete depocenters throughout the Neogene results in rapid shelf-edge progradation, often in excess of 15-20 km per million years. This rapid progradation of the shelf edge leads to development of thick wedges of sediment accumulation on the continental slope. Slope oversteepening, high pore pressures in rapidly deposited soft sediments, and changes in eustatic sea level cause subaqueous slope instabilities such as landsliding and debris flows. Large-scale features such as shelf-edge separation scars and landslide-related canyons often result from such processes.

Application of sediment load to pre-existing sediments results in salt and shale diapirs and associated faulting. Slope sediments are uplifted, folded, fractured, and faulted by diapiric action. Local oversteepening on diapiric flanks and near faults causes additional slope instabilities. Petrogenic and biogenic gas seepage along faults and diapiric-induced discontinuities lead to hydrates and clathrates accumulations in the near-surface sediments. Seafloor erosion and development of low sea-level carbonate bioherms often occur on the summits of the diapirs.

The intraslope and interdiapiric basins form contemporaneously with diapiric growth, resulting from salt and shale withdrawal. They are commonly the sites of thick accumulations of Neogene sediments derived from the outer shelf and flanks of the neighboring diapirs.

The base of the continental slope is marked by prominent features such as escarpments and fan lobes. The Sigsbee escarpment is the expression of the lobate frontal edge of the northern Gulf diapiric province and is underlain throughout its length by a series of complex salt ridges, overthrust tongues, and steep-sided salt massifs. The continuity of the escarpment is broken locally by several large, pronounced reentrants and diapiric outliers.