NOON MEETING APRIL 27, 1977

JAMES M. COLEMAN — Biographical Sketch

Dr. James M. Coleman is a native of Louisiana and holds three degrees in geology from Louisiana State University, receiving his Ph.D. in 1966. Since 1960 he has been associated with the Coastal Studies Institute and he is currently the Director. During his career, field work has taken him to Australia, Malaysia, Pakistan, Romania, Brazil, Spain, Africa, Alaska, and Surinam. He has published approximately fifty papers. He has presented numerous invited papers before professional societies and he has conducted many short courses, seminars, and field trips for industrial and professional groups both in the United States and foreign countries. Dr. Coleman was the recipient of the A. I. Levorsen Award for the best paper presented at the 1973 GCAGS convention. In 1976, Louisiana State University recognized him with the LSU Distinguished Research Master Award and also as an LSU Foundation Distinguished Faculty Fellow. Dr. Coleman is a member of the LSU Science Club., International Association for Sedimentology (Committee on Sedimantary Structure Nomenclature), GSA, Gulf Coast Section SEPM, Sigma Xi, and AAPG. For 1976-77, he is an AAPG Distinguished Lecturer.

SUBMARINE-SLOPE FAILURES AND DOWNSLOPE MASS MOVEMENT OF SEDIMENT (abstract)

by James M. Coleman

Deltaic and continental-shelf deposits off the Mississippi River delta are deformed severly and slumped seaward by many types of submarine-slope failures. The major forms of deformation include (a) peripheral-rotational slumping, (b) differential weighting and diapirism, (c) radial-tensional faulting, (d) mass wasting and flowage induced by wave motion and degassing, (e) mud flows, (f) shelf-edge arcuate slumping, and (g) contemporaneous faulting (growth faults). Rotational slumps are subparallel with offshore contours and cause shallow-water sediments to migrate downslope into deep water. These slump blocks have longitudinal dimensions of ≃60-600m and lateral dimensions of 200 to >600m; some blocks have moved 800m downslope in a period of one year. Differential loading by coarse bar sands overlaying weak marine clays results in large-scale diapirism (vertical scale of intrusion, 200 to 700m). Deep-seated flowage of clays from beneath the delta stresses continental-shelf deposits, causing radial-tensional grabens. Prodelta and interdistributary clays contain high percentages of biochemically formed methane gas, and passage of storm waves produces bottom-pressure perturbations which cause entrapped gas to migrate vertically upward with a resulting loss of sediment strength. Weak, shallow-marine clays creep down and plunge over the edge of the continental shelf (mudnoses display heights up to 80m). Large-scale arcuate slumping scars the shelf break and slump planes cut up to 500m of sediment. This slump material is of major importance in the development of large-scale growth faults on the upper continental slope. High-resolution seismic lines and side-scan sonar records show the distribution and mechanisms involved.