

MEETING

LUNCHEON MEETING— DECEMBER 12, 1988

PULAK K. RAY—Biographical Sketch



Pulak K. Ray is currently a supervisory geologist/geophysicist in the Gulf of Mexico OCS Region of Minerals Management Service (MMS). After finishing his BS and MS in applied geology in India, he completed his PhD in sedimentology in 1971 from LSU. Prior to joining Minerals Management Service in 1982, he taught at the University of South Carolina at Beaufort and State University of New York Col-

lege at Buffalo. In 1981 Ray served as the director of the Great Lakes Laboratory. He has conducted research on various depositional environments from shallow marine to deep-sea fan. He has published and presented numerous papers. At MMS, his work involves geological and geophysical evaluation of deep water potentials both at regional and at prospect level.

AN OVERVIEW OF THE NORTHERN GULF OF MEXICO: GEOLOGY, PRODUCTION TRENDS, HISTORICAL DEVELOPMENT AND FUTURE POTENTIAL*

In response to the implementation of areawide lease sales in 1983 and reduction of minimum per acre bid value to 25 dollars by Minerals Management Service, the leasing activity in the OCS Gulf of Mexico increased significantly. Even though the continental shelf has been extensively explored and developed up to an average depth of 10,000 to 12,000 feet, a large portion of the stratigraphic column still remains to be explored. In recent years, the oil industry has been leasing an increasing number of tracts in deeper and deeper waters while continuing to lease relinquished and expired tracts on the continental shelf. The exploration of the upper continental slope (Flexure Trend) has been extremely successful. An equally successful result is expected from the exploration of the deeper water areas. An evaluation of the hydrocarbon potential of the unexplored and scantily explored portion of the continental shelf and continental slope of the Gulf of Mexico, based on the geology, dynamic stratigraphy, source and reservoir rocks, and spatiotemporal distribution of reservoirs, is presented.

Suitable reservoir rocks, trapping mechanisms, and geochemically favorable conditions for the preservation of hydrocarbons are believed to be present throughout the entire stratigraphic section. The areas of high future hydrocarbon potential on the shelf include deep lower Middle Miocene and Lower Miocene of the Western and Central Gulf, Lower Pleistocene of the Central Gulf, and shallow inner shelf sediments of Plio-Pleistocene and Miocene age. On the continental slope the Middle Miocene to Plio-Pleistocene section is believed to be highly prospective.

Deep-water turbidites, interdomal basin fills, slumped shallower water deltaic sediments and sediments associated with listric growth faults of Middle Miocene to Pleistocene age may provide suitable reservoir rocks. On the upper continental slope, faulted anticlines associated with diapiric salts, rollovers, and other structures associated with growth faults and subtle traps associated with intraslope basins provide the trapping mechanism. The lower slope is characterized by extensive lateral salt movement. Numerous structural and subtle traps associated with the salt movement, both below and above the tabular salt, provide an excellent trapping potential.

**with J. Rogers Pearcy*