DOUBLE PRESENTATION
DECEMBER 9, 1985

WILLIAM E. GALLOWAY—Biographical Sketch

William E. Galloway, born in Waco, Texas, received his B.S. degree from Texas A&M University in 1966. He then attended the University of Texas at Austin where he received his MA degree in 1968 and PhD in 1971.

In 1970, Dr. Galloway became a Research Scientist Associate with the Bureau of Economic Geology. He then went to work for Continental Oil Company in Ponca City, Oklahoma, from 1970-1975 where he held the positions of Research Scientist, Senior Research Scientist, and Director of Geological Research.

Dr. Galloway rejoined the Bureau of Economic Geology in 1975 as a Research Scientist. He then became a Senior Research Scientist and was also honored as a Visiting Professor to the University of Oklahoma and the University of Bergen. In 1985, Dr. Galloway was named the Elliott Professor of the Department of Geological Sciences at the University of Texas at Austin.

Dr. Galloway has received several outstanding awards including the A.I. Levorsen Award in 1977, the EMD Division of A.A.P.G. Best Paper Award in 1979, and the Wallace Pratt Memorial Award in 1984. He is a member of the A.A.P.G., the S.E.P.M., and the International Association of Sedimentologists.

Dr. Galloway is currently a Distinguished Lecturer for the A.A.P.G. Distinguished Lecture Tour.

DEPOSITIONAL AND STRUCTURAL ARCHITECTURE OF THE NORTHWEST GULF COAST TERTIARY CONTINENTAL PLATFORMS

The northwestern Gulf margin is a broad depositional platform constructed in the Cenozoic by terrigenous clastic sediment derived from the continental interior of North America. This platform was built onto transitional crust fringing a deep oceanic basin. Cooling and loading of stretched transitional crust by sediment infill induced flexural subsidence, producing a total Tertiary sequence exceeding 6.5 km in thickness.

The large-scale depositional architecture of the platform is characterized by offlap. Successive continental margins cumulatively prograded basinward approximately 350 km from the Mesozoic margin. The combination of offlap depositional geometry and flexural subsidence produced a primary depositional unit resembling a highly flattened sigmoid, which is thickest at the position of its contemporary paleomargin. Depositional geometry and consolidation history of the continental margin and slope lead to a predictable distribution of tensional and compressional stress regimes. Mobilization of thick Jurassic salt complicates this relatively simple structural pattern along the Quaternary margin.

Source terranes for this tremendous sediment influx included the southern and central Cordillera and adjacent high included the southern and central Cordillera and adjacent high plains, as well as the continental interior and the Rio Grande and finally to the Mississippi embayments, reflecting contemporary tectonic events of the western North American craton. Large-scale offlap pulses recorded Laramide (late Paleocene-early Eocene) deformation of the southern Cordillera, late Paleogene uplift and volcanism, and Neogene extension and epeirogenic uplift of the Rockies and adjacent high plains.

Offlap of the continental platform was episodic, and most of the depositional episodes encompassed two or more depocenters. Each major offlap unit consists of several principal depositional elements, including one or more fluvial/deltaic systems and wave-dominated shore-zone systems, along with a shelf system, offlap slope sequence, and localized onlap submarine canyon and fan complexes. The correspondence of episodes with the proposed worldwide eustatic curve is relatively good in the late Neogene, when glacial eustasy became increasingly likely. However, relationships of Oligocene episodes to eustatic events are confused at best. Eustatic correlation in the older Paleogene section appears poor.