DONALD P. MC GOOKEY

Biographical Review

Donald P. McGookey received a B.A. in Geology at Bowling Green State University in 1951; a Masters in 1952 at the University of Wyoming and completed his Doctorate in 1958 at Ohio State University. In 1952, Dr. McGookey began his professional career with Texaco as a Junior Geologist and worked in several states of the Rocky Mountain area. In 1967, he was promoted to Assistant Division Geologist in Denver. Shortly thereafter he served in New York as a Staff Geologist and Assistant to Senior Vice President in the Executive Department. Since April, 1971 Dr. McGookey has been located in Houston where he is the Chief Geologist, Producing Department-Central U.S. He has contributed several publications on the Cretaceous and Tertiary of the Rocky Mountain area, including the Cretaceous Chapter of the Rocky Mountain Association of Geologists Geologic Atlas of the Rocky Mountain Region.

GULF COAST CENOZOIC SEDIMENTS AND STRUCTURE: AN EXCELLENT EXAMPLE OF EXTRA-CONTINENTAL SEDIMENTATION

Abstract

Donald P. McGookey

Relatively abrupt stratigraphic and structural changes reflect the transition from continental to oceanic crust in the northern Gulf of Mexico basin. This transition is coincident with the hinge zone where the thick Cenozoic clastic section progrades basinward from Mesozoic carbonate shelves. Cenozoic sediments were poured at high rates into areas underlain by mobile deep water muds and Jurassic salt. Loading on an unstable section combined with subsidence of the oceanic crust caused by loading, developed a complex interrelation of structural and sedimentation events that progressed in two phases. Initially, sedimentation at or near the shelf edge caused the underlying shale and/or salt to flow into a series of ridges. Intervening areas became depopods which were self-perpetuating as sediment dumping grounds until up to 14 km was accumulated. At that point near isostatic equilibrium was reached, and the delta front or shelf edge prograded farther basinward to repeat phase one in that area. During phase two basin-wide loading caused slow regional subsidence that allowed deposition of an additional 3 km of nearly horizontal sediments. This section is undisturbed except for local salt piercements.

These relationships may be present worldwide where deltaic progradation causes significant loading of oceanic crust. Conversely, the recognition along the edge of a continent of thick sedimentary sections (17 km) with the structural-depositional relations described, signifies sedimentation on oceanic crust.