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BASIN FRONTIERS AND LIMITS OF EXPLORATION IN THE CRETACEOUS SYSTEM OF CENTRAL LOUISIANA

This paper is concerned with an area of 11,000 square miles in central Louisiana. Facies changes and thickening of the section make correlation with updip equivalents difficult. The estimated combined maximum thicknesses of Gulfian and Comanchean beds in southeastern Avoyelles Parish is more than 15,000 feet.

The most prominent structural features that affected deposition were the Sabine uplift and the LaSalle arch. The dip is steep on the south flanks of both. South of them, the dip ranges from 150 to 200 feet per mile toward the Gulf. The northern edge of the central Louisiana area is believed to have acted as a hinge line between a platform area on the north and a basin on the south.

A sandstone-limestone percentage map of Hosston sediments indicates that potential Hosston sandstone reservoirs may be present in Caldwell, Richland, and Franklin Parishes. There may be a reef of Hosston age across southern Vernon, Rapides, and Avoyelles Parishes.

Potential reef and stratigraphic traps are expected to be present in the Glen Rose of central Louisiana. Although shallow-water platform limestones of Washita-Fredericksburg age may have culminated southward in a structurally higher reef complex along the outer edge of the southern platform, post-Comanchean uplift and erosion probably removed this objective section.

The zero line of porous sand in the Tuscaloosa runs diagonally across Louisiana from northeast DeSoto to northern Avoyelles Parishes. South and west of this line, little porous sand can be expected to be present in the Tuscaloosa section. The best potentials for Austin and Taylor production are in the form of faulted chalks. Sediments of Navarro age are absent in this area.

The calculated volume of ultimate recoverable Cretaceous oil in North Louisiana is 1,760 MM barrels, or approximately 117,000 barrels per cubic mile. Based on this figure, a total of 819 MM barrels of ultimate recoverable Cretaceous oil are expected to be present in central Louisiana.

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CENTRAL TEXAS LOWER CRETACEOUS STRATIGRAPHY

The Trinity Group is divided into a lower unit consisting of the terrigenous Hosston Formation overlain by the carbonate Sligo; a middle unit called the Pearsall, made up of the Hammett shale, Cow Creek limestone, and Bexar shale; and an upper unit which includes the Hensel sand, overlain by the Glen Rose limestone.

Limestone, dolomite, and marl of the section between the base of the Upper Trinity and the top of the Edwards were deposited in shallow water behind the Stuart City coral-rudistid barrier reef. Lower Glen Rose reefs and the Stuart City reef formed the southwestern, southern, and eastern barriers of the Ferry Lake anhydrite evaporation pan.

The Fredericksburg Group includes the strata between the base of the Bee Cave limestone and the base of the Kiamichi.

The Washita Group includes the Kiamichi, middle (Kiamichi) Edwards, upper Edwards, Georgetown, Del Rio, and Buda formations. The upper, or the lower Edwards should be renamed.

Structural elements which affected Lower Cretaceous deposition include the spasmodically positive Belton high (new term), the Round Rock syncline (new term), two synclinal troughs behind the Stuart City reef, and the Sample fault system (new term). Up-to-the-coast faults are dominant southeast of the axes of the synclinal troughs, and down-to-the-coast faults are dominant northwest.

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APPLICATION OF MARINE ECOLOGY IN THE GULF COAST TERTIARY

Recent studies of sediments and faunas on the present continental shelves and slopes of the world have afforded paleoecologists many valuable data for interpreting the depositional history of older rocks. The thick subsurface wedges of marine and shore-line sediments in the Gulf Coast Tertiary, and their contained faunas, lend themselves ideally to paleoecologic interpretations using principles developed from studies of modern distributions.

Characteristics of modern faunas, principally the Foraminifera, have been most useful in Tertiary sediments. Specific and generic distributions where applicable are most diagnostic. Non-specific characteristics such as gross population characteristics, generic dominance, faunal diversity, and morphology become more useful in older Tertiary rocks.

The application of these characteristics in the Texas Gulf Coast Oligocene allows the construction of essentially time-stratigraphic paleogeographic maps and interpretation of the depositional history of Oligocene sediments. Such interpretations are essential to a valid understanding of subsurface stratigraphy.

## S.E.P.M. ABSTRACTS

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DISTRIBUTION OF FORAMINIFERA AND OSTRACODA OFF THE GULF COAST OF THE CAPE ROMANO AREA, FLORIDA

Four benthonic foraminiferal and ostracod assemblages are recognized in the Cape Romano area, corresponding with four vaguely defined environments. They include the following: (1) a marsh river assemblage; (2) a lagoonal assemblage; (3) a mangrove island assemblage; and (4) an open-gulf assemblage.

Distribution patterns of both faunal elements are similar. Patterns of distribution appear to be the function of a combination of ecologic factors rather than a single factor, with correlation observed with organic carbon content of bottom sediments, mean grain size of bottom sediments, salinity-temperature of bottom water, and submarine topography.

There is evidence that an acid environment exists in the highly organic, fetid, gelatinous oozes which cover the bottoms of large tracts within the marsh river, lagoonal, and mangrove island regions. This condition could conceivably result in the total destruction of both faunal elements after burial.

The foraminiferal fauna consists of 47 genera and 118 species, of which 98 are referred to known forms. The ostracod fauna consists of 38 genera and 88 species. Sixty-six of these are identified specifically.

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*Bigenerina humblei* AND THE HUMBLE H. L. ELLENDER