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ASSOCIATION ROUND TABLE

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Abstracts

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No. 1 Play in U.S.A.—South Louisiana Tuscaloosa Trend, 1975-80

Since the May 31, 1975, discovery of Tuscaloosa production at False River field in West Baton Rouge Parish, Louisiana, the Tuscaloosa trend of south-central Louisiana has developed into the most active deep exploratory play in the United States. Drilling activity since the discovery of the False River field has resulted in the additional discovery of 13 Tuscaloosa gas-condensate fields, one Tuscaloosa oil field, three Austin Chalk discoveries, and one Wilcox discovery. As of March 1980, 241 permits have been issued by the Louisiana Department of Conservation. Of this number, 119 are wildcats which have been drilled or are drilling below a depth of 15,000 ft (4,572 m). The success ratio for wildcats is one of six, or 16⅔%, and field extension and development drilling has resulted in a success ratio of one of two, or 50%.

There are more than 4 million acres (1,600,000 ha.) under lease in the trend; 129,680 acres (51,872 ha.) have been placed in Tuscaloosa drilling units by the Louisiana Department of Conservation. Some of the most significant fields discovered along the trend are the False River field, West Baton Rouge Parish; Moncrief, Judge Digby, and Moore-Sams fields in Pointe Coupee Parish; Port Hudson, Irene, and Profit Island fields in East Baton Rouge Parish; and Lockhart Crossing field in Livingston Parish, Louisiana. Proved reserves of 4 Tcf of gas and 400 MM bbl of condensate have been established. In addition, available seismic and subsurface data indicate the future reserve potential of the Tuscaloosa to be estimated at 16 Tcf of gas.

A detailed subsurface and stratigraphic study of the existing fields to date should serve as a guide for locating other major reserves along the trend.

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Environments of Deposition and Diagenesis of Stuart City Formation (Cretaceous), Speary Gas Field, Karnes County, Texas

Carbonate rocks of the Stuart City Formation accumulated at the Lower Cretaceous shelf margin from late Trinitian through middle Washitan. Paleobathymetry controlled facies patterns in and around reef buildups. Following uplift of the San Marcos arch during middle Washitan and consequent exposure of some reefs, fresh water diagenesis produced secondary porosity and permeability in part of the upper Stuart City.

Facies present in cores from the Speary gas field reflect deposition in backreef lagoon and open shelf-margin environments of the Comanche platform. Miliolid wackestones accumulated in protected areas behind the rudist reefs which were fringed by wave and tide-washed grainstones of rudist debris. Stromatoporoid boundstones reflect patch reef deposition close behind the main reef complex. Adjacent shoal areas were characterized by packstones of rudist and associated reef debris coated with abundant algal encrustations. Mollusk wackestones were deposited as a transitional facies between the shelf-margin facies and the lagoonal facies. As Stuart City deposition ended, shelf-margin facies were offlapped by shelf-lagoon facies.

Early marine phreatic diagenesis lithified much sediment but did relatively little to alter the original rock texture. Micritized grain rims and bladed calcite after acicular aragonite rim cement, characteristic of marine diagenesis, are ubiquitous.

Dissolution of aragonitic skeletal grains followed, and was then followed by bladed or blocky cement infilling of the grain molds. During a later stage of cementation a coarse, calcite mosaic was precipitated in remaining interparticle pore spaces and grain molds. Interparticle porosity was rarely preserved. The preserved intraparticle porosity is, however, present in all facies and notably in body cavities of large rudist fragments. Moldic porosity occurs only in grainstones and only in those cores in which the Stuart City was deposited on a bathymetric high. The widespread distribution of the coarse, calcite mosaic in the cores indicates that fresh water diagenesis affected all of the rocks. However, diagenesis was more extreme on bathymetric prominences as indicated by the isolated occurrences of moldic porosity. Grainstones containing moldic porosity have the highest porosity and permeability in the cores, 16% and 14 md, respectively.

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Regional Patterns of Woodbine-Tuscaloosa, Northern Coastal Region

The "lower Tuscaloosa fairway" can be understood best as a boundary phenomenon. Sands of this trend were deposited along the demarcation between two distinct tectonic elements. Also, these sands were superposed upon one of the greatest sedimentary breaks of northern coastal areas, i.e., the angular unconformity which separates Comanche and Gulf (Cretaceous) Series.

Basic crustal differences produced a marked correspondence between Mesozoic tectonic and physiographic features. The boundary between the Mesozoic shelf and the central Gulf subbasin constituted a structurally controlled shelf break which remained constant in position through the major part of the Mesozoic Era. The shelf was an exceptionally broad feature where sea