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LIVING FORAMINIFERA OF WEST FLOWER GARDEN BANK

The West Flower Garden Bank is a calcareous prominence on the outer edge of the Texas-Louisiana continental shelf, rising to within 20 m of the sea surface. An actively growing fauna of West Indian scleractinian corals caps the top 30 m of the bank, and represents the northernmost known flourishing coral reef in the Gulf of Mexico.

The bank supports a foraminiferal fauna related to that present on the West Indian and Florida-Bahamian reefs. Within the sediments most species and individuals are attached to coarse sedimentary particles, rather than being free tests. The largest populations are attached to large scleractinian colonies in the upper part of the bank and to algal nodules that occur at a depth of 46-82 m.

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DENKMAN SANDSTONE MEMBER—IMPORTANT JURASSIC RESERVOIR IN MISSISSIPPI, ALABAMA, AND FLORIDA

A clean, generally well-sorted, commonly porous, Jurassic sandstone separates marine lower Smackover carbonate mudstone from nonmarine redbeds of the Norphlet Formation in parts of southern Mississippi, southwestern Alabama, and northwestern Florida. Various workers have considered this sandstone unit to be marine, nonmarine, or a combination, and have called it basal Smackover, Norphlet, or Denkman. "Denkman sandstone" was proposed for this unit by Murray, who designated the Lion No. 2 Denkman, Sec. 22, T17N, R4E, Rankin County, Mississippi, as the type section. The Denkman locally exceeds 1,000 ft in thickness and is a lithologically distinct, mappable unit. Nevertheless, it is included in the Norphlet Formation by the industry and in this paper it is called the Denkman Sandstone Member of the Norphlet Formation.

The Denkman is overlain generally without gradation by nonsandy basal Smackover carbonates, but is gradational downward into redbeds, the more characteristic lithology of the Norphlet. Regionally, the Denkman grades updip into conglomeratic redbeds interpreted to be alluvial fan and fluvial deposits. The Denkman sand typically consists of well-sorted, fine- to medium-grained, rounded and commonly frosted, quartz grains with some feldspar, chert, and rock fragments. The section is commonly crossbedded and does not contain fossils or carbonate beds. The Denkman usually has good permeability and intergranular porosity ranges up to 25%. Unlike sandstone beds in the Smackover, the Denkman rarely contains carbonate cement. The Denkman sandstone is reddish in its lower part and may contain some thin shaly beds. Regional distribution of the Denkman suggests a sand source on the north and east. Stratigraphic relations, lithology, and sedimentary structures suggest a nonmarine fluvial to eolian origin for most of the Denkman sandstone. Locally the uppermost part has been reworked during Smackover transgression. The Denkman Sandstone Member marks the top of the Werner Anhydrite-Louann Salt-Norphlet Formation deposition cycle.

The Denkman sandstone commonly has excellent reservoir properties and has been found productive at the Pelahatchee, Prairie Branch, Archusa Springs, East Nancy, South State Line, Big Escambia Creek, Flomaton, Little Escambia Creek, Jay, and Blackjack Creek fields. It is and will continue to be an important exploration objective along the southeast part of the Jurassic trend.

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BATHYMETRY OF RECENT MARINE OSTRACODA IN NORTHWEST GULF OF MEXICO

Holocene bottom samples from the northwest Gulf of Mexico, examined for their Ostracoda faunas, yielded a total of 171 species. A large majority of them have never been described. The number of species per sample varied from 2 to 40; the richest and most diversified faunas occur in middle to outer shelf environments. Numerous species exhibit rather restricted depth ranges, and distinctly different faunal assemblages characterize the various bathymetric environments from shallow freshwater lakes and bayous down to the abyssal depths of the Sigsbee Deep. A bathymetric chart illustrates that at the generic level there exists a marked diversity of faunal composition at different depths.

A pronounced relation has been noted between the size of 2 common species of *Echinocythereis* and the depth at which they were collected. A similar connection was observed in 12 species of the genus *Krithe*.

The results of this study will be of considerable use in evaluating the paleoecologic significance of the rich, ostracod assemblages commonly found in the clastic Tertiary and Upper Cretaceous deposits of the Gulf Coast area.

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ENVIRONMENTAL CRITERIA—THEIR USE AND MISUSE

Recent advances in sedimentology have made it possible to reconstruct and identify closely associated environments. Tables of environmental criteria for deltaic, shoreline, and marine environments are based upon modern analogues. Preliminary log and sample data generally only suggest environmental interpretations. Characteristics of channeling, marine wave and current patterns, and shoreline processes are identifiable only with a range of data from logging programs, cores, and core slices.

Stratigraphic study of genetic depositional units provides the basis for stratigraphic exploration. The areal and vertical patterns of sedimentary units are closely related and consequently patterns of reservoirs, source beds, and trapping lithologies can be determined. These are related to local structure, and oil and gas trend plays can be recognized and developed on the basis of this type of information.

Exploration for stratigraphic traps requires an understanding of the genesis of the target reservoir unit. Environmental interpretations utilizing incorrect depositional models, incomplete studies of modern examples, or the absence of a multiple approach will lead to incorrect interpretations.

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PLATE TECTONICS AND ORIGIN OF CARIBBEAN SEA AND GULF OF MEXICO

Previously published reconstructions of the late Paleozoic "fit" of crustal plates and continents fail to explain many geologic features present in the southwestern U. S., Mexico, Central America, and northern South America. In particular, they fail to consider major geologic and tectonic continuities of Paleozoic age observable in the Southern Appalachians, the Ouachita and Marathon fold belts, the fold belts of southern Mexico and Central America, and the eastern Andean mountain belt of northern South America, as well as the significance of many major transcurrent fault systems or megashears that cross these regions.

With the well-documented joining of Africa-North America as a control for the positioning of South America relative to North America, this report suggests a somewhat different "fit" than any heretofore proposed. Instead of truncating North America in northern Mexico and filling in the Gulf of Mexico with fragments as is most commonly done, this reconstruction wraps Mexico and Central America around the western margin of South America, thus placing in juxtaposition the major tectonic belts of both continents. There is evidence that indicates that the Late Ordovician Taconic orogeny was an arc-continent collision rather than a continent-continent collision as has been