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kee" (Des Moinesian) time in a large embayment called the Enid embayment. There were four fairly distinct phases of sand deposition: an early phase where channel sand was deposited; two phases of offshore bar deposition, followed by a brief period when seas receded from the area and channel sand was deposited. Using this interpretation, several unusual problems can be explained.

The Oakdale Field in southeastern Woods County has oil reserves of nearly 30 million barrels from the Red Fork Sandstone. The sandstone in this field is in two separate linear bands which include sand deposited during the first 3 phases. The Southwest Wakita Field in Grant County produces from two fairly distinct Red Fork Sandstone bodies that were deposited during phase 2. The Wakita Trend (Phase 3) in Grant County produces from a thin Red Fork Sandstone body slightly higher stratigraphically than that at Oakdale and Southwest Wakita. In the Cheyenne Valley Field in Major County, the Red Fork is interpreted as being a channel sand deposited during Phase 4, and it is higher stratigraphically than sandstone in the previously-mentioned fields. This channel-type deposit is productive and fairly widespread over the Enid embayment, and it has several distinguishing characteristics.

By reconstructing the depositional environments of the Red Fork Sandstone and by interpreting this interval as representing four fairly distinct phases, the Red Fork is seen to be a reservoir with great potential in the Anadarko basin. There are several good indications where undiscovered major producing areas are located, and they can be found by basing an exploration program on detailed reconstruction of depositional environments to explain the problems that arise, and to make interpretations necessary to find prospective Red Fork Sandstone trends.

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GEOLOGIC HISTORY OF THE GULF BASIN

HUNTER YARBOROUGH*

The basin contains more than six million cubic miles of predominantly Mesozoic and Cenozoic sediments. It is underlain by a normal oceanic crust (and a normal upper mantle) which is buried in its axial depression by 45,000 feet of sediments, most of which were deposited in deep waters. It is a fragment of the "old" Pacific Ocean and not a part of the "new" Atlantic.

Late Paleozoic orogenies influenced the basin shape: the "buried" Llanoria (Ouachita) structural belt along the northern margin, the Chiapas-Guatemalan structural belt along the southern margin, and a "connecting" structural belt (now "buried") along the western margin. This latter margin was more strongly established by Nevadan (Jurassic) and Laramide (early Tertiary) orogenies. A complex system of transform faulting, created as the Gulf Basin (and Mexico) drifted westward, leaving the Caribbean "Pacific Tongue" behind, marks the southeastern margin. Great thicknesses of Jurassic salt occur in major depressions within the basin. Much of this salt was apparently deposited "abruptly" in deep waters. During salt deposition, the African continent probably marked the eastern margin of the Gulf Basin. The Nevavda orogeny restricted normal Gulf circulation from the Pacific, creating conditions favorable for salt sedimentation.

Post-salt sediments came from two major provenances: Mesozoic from the Appalachians and Cenozoic from the Rocky Mountains.

History of the Gulf Basin supports modern concepts of continental drift. The rising Mid-Atlantic ridge and westward drift dominated the sedimentary and structural history during Late Paleozoic and Mesozoic times, while the East Pacific rise controlled the Cenozoic history. The data indicate

that the effect of the rising Mid-Atlantic ridge ended the Paleozoic era, and that intermittent drift of the continents away from the ridge carrying them "deeper" into the Pacific sea level, controlled the beginning and ending of the different periods and epochs of the Mesozoic. Furthermore, the influence of the East Pacific rise on western North America ended the Mesozoic era and controlled the periods and epochs of the Cenozoic era.

The Gulf "salt basin" appears genetically related to a series of "salt basins" which formed from north to south as continents began to drift apart along the Mid-Atlantic "swell." Progressive decrease in age from Late Paleozoic at the north to Lower Cretaceous at the south suggests the supercontinent (or continents) began rifting apart first at the northern end. The sedimentary and structural records indicate drift was spasmodic rather than continuous.

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