

taining remaining hydrocarbon potential in this area. The algorithms which have been used for the combination of the geologic and seismic data in this study may be used to provide more complete subsurface interpretations in other areas.

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Block 25 Field, Chandeleur Sound, St. Bernard Parish, Louisiana

Block 25 field, Chandeleur Sound, St. Bernard Parish, Louisiana, was discovered by Atlantic Richfield Co. through the drilling of its State Lease 4542 No. 1 well in October 1965. Drilling had been preceded by a common-depth-point seismic survey that revealed a subtle, east-west elongated, rollover structure on the downthrown side of a down-to-the-coast growth fault.

Present water depths in the field area are 10 to 12 ft (3 to 3.7 m).

Two pay sands occur on the structure, the 4,800' Sand with a total, original hydrocarbon column of approximately 30 ft (9.1 m), and the 5,200' or BB Sand with a total, original hydrocarbon column of approximately 55 ft (17 m). The 5,200' Sand is the primary producer in the field. Total oil production from the field to date is more than 18.5 million bbl. The gravity of the oil is 27/27.1° API, and several of the wells are being gas-lifted. Thirty-seven wells are currently producing in the field.

Relief on the structure at BB Sand depth is approximately 65 ft (20 m), which is based on the difference by subtracting the depth of the last closing contour on the BB Sand and the highest point of penetration.

The down-to-the-coast fault which trends east-west and lies on the northern side of the field apparently has contributed to the trapping of hydrocarbons in the structure. The fault has a dip of 55° and an upthrown-to-downthrown displacement which increases from 60 ft (18.3 m) at a depth of -3,507 ft (-1,069 m), to 650 ft (198 m) at a depth of -7,295 ft (-2,224 m).

The geometry of the BB Sand suggests that it is a bar-type deposit. The sand interval thickens abruptly on the southern side of the field. Accumulation has occurred in the structurally high sand area to the north, toward the shore, and in the upper, back-bar members of the BB Sand. The bar has some channeling or breaching.

The source of the hydrocarbons in the pay sands apparently has not been from the sediments above or below the reservoirs. These sediments have been analyzed as immature. It is postulated that the oil accumulated in the 4,800' Sand and BB Sand reservoirs probably migrated into the Block 25 structure from peripheral areas.

The 4,800' Sand is *Bigennerina* B, upper Miocene in age, and the 5,200' Sand or BB Sand is *Textularia* L, upper Miocene in age.

The preceding discussion includes numerous studies done by ARCO geologists, geophysicists, and engineers who have worked on the Block 25 field.

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Regional Tectonic Features of Inner Gulf Coast Basin

and Mississippi Embayment—Implications for Potential Low-Temperature Geothermal Resources

The Balcones and Luling-Mexia-Talco fault systems in central Texas delineate the deep reaches of several aquifers that yield low-temperature (up to 65°C) geothermal water. This geothermal region also coincides with a tectonic province that bisects Texas. Besides the normal faults that mark the boundary between the Edwards plateau uplands and Gulf coastal plain, there is at depth the foundered Ouachita structural belt, a hinge zone that repeatedly affected Mesozoic and Cenozoic sedimentation and structures. For example, crustal adjustments across the buried Ouachita trend apparently controlled the location of the strand throughout much of the Cretaceous time. The change from fluvial and deltaic terrigenous systems to open marine and lagoonal systems has an important effect on aquifer properties; dip-oriented sand trends are preferred pathways for groundwater flow. Other geologic features that occur along this tectonic and geothermal trend are igneous plugs, loci of hydrothermal mineralization, and ongoing (aseismic or microseismic) adjustments across faults. In short, just as active tectonic areas are the present geothermal "hot spots" of the world, "relict" tectonic areas are distinguished by a coincidence of geologic features that suggest the local occurrence of low-temperature geothermal resources.

Along other parts of the Gulf Coast basin and within the Mississippi embayment, tectonic, igneous, and hydrothermal features converge in a similar manner. Hot Springs, Arkansas, is a notable example. Other areas also show a similar coincidence, but they have not been recognized as having geothermal waters. Areas such as the headward part or the axis of the Mississippi embayment, and the zone of intersection of the deep Appalachian and Ouachita structural trends are potential targets for production of low-temperature geothermal waters. Tectonic trends commonly coincide with population trends, such as along the inner Gulf coastal plain of Texas and along the fall line of the eastern United States. Hence, there may be an established market for direct use of the low-grade geothermal waters from aquifers superjacent to the inner margin of the Gulf Coast basin.

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Paleoecology of Midway Group in Northeast Texas

Strata of the Midway Group crop out in a belt from Georgia to Mexico, including well exposed, studied sections in northeast and central Texas. The benthic foraminiferal data assembled by Kellough have been subjected to cluster analysis. Based on these analyses, five different biofacies are recognized in eastern Navarro County. The Littig, Kinkaid, and lower parts of the Wills Point Members represent one shallow-water biofacies. Upper parts of the Mexia clay represent a different community in which some increases in planktonic foraminiferal percentage may indicate deeper stages. The other biofacies are variations of marginal-marine and deltaic-marine environments. These shallow-water communities are similar to the Paleocene Atlantic coastal plain biofacies. Only a few characteristic species

at any particular level dominate the populations. Fluctuations in diversity, high morphologic variability of species, and slow rates of evolution can also be observed. Many qualitative similarities occur between these biofacies and those occurring on and around modern deltas.

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BULLETIN ANNOUNCEMENT

The 1979 North American Development papers for "Louisiana Gulf Coast Onshore," by David Woltz, and "Southeastern States," by P. D. Cate, will appear in the Foreign Development issue of the BULLETIN, currently scheduled for publication in November.