

FUTURE PETROLEUM PROVINCES OF THE GULF OF MEXICO REGION

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ABSTRACT

The Gulf of Mexico area is the fifth largest potential petroleum-producing region in the world, being exceeded only by the Arabian (Persian) Gulf basin, the west Siberian basin, the eastern Venezuela (Maturin) basin, and the western Canada basin. The last two are larger than the Gulf of Mexico basin because of their enormous tar-sand deposits.

Within the United States, large areas of the west Florida shelf remain to be explored, specifically, the Paleocene and parts of the Mesozoic. In the upper Gulf Coast, the post-Ouachita Pennsylvanian and Permian rocks are promising. Jurassic objectives, particularly the Smackover, require intensive exploration in Texas. Additional Gulf Coast plays of the United States include: westward extension of the Tuscaloosa trend, development of the Austin Chalk play, the drilling of numerous structures, still undrilled, in central Louisiana, development of Wilcox marine sandstone plays, and extensive drilling of the salt ridges and domes of the continental slope where large reserves of oil and gas can be expected to be found. There are other plays, but those listed are the largest.

In Mexico, the Upper Jurassic-Lower Cretaceous gas reserves of the Sabinas basin are just being developed. Several score of structures remain to be drilled and tested. In the Paras basin, gas should be found in formations ranging in age from Late Jurassic through the Late Cretaceous, possibly extending into the earliest Tertiary. Farther south, Upper Jurassic-Middle Cretaceous plays are almost untested in the San Jose de las Rusias homocline, and the Arenque Jurassic reef play north of the Golden Lane still is undeveloped. A subthrust play extends from north of the Sabinas basin to the mountain front south of the Isthmus of Tehuantepec. Large subthrust fields should be expected, particularly between Monterey and the southwestern part of the Veracruz basin. The full extent of the Reforma-Campeche shelf play, onshore and offshore, still has not been determined. Southeast of the Reforma trend, the Upper Jurassic and Lower to Middle Cretaceous of the Chapayal basin remain to be explored. Beneath the Reforma trend and the Chapayal basin is an extremely attractive section of Pennsylvanian and Permian with probable reef development, similar to that of west Texas. Some major Paleozoic structures have been found at depths of less than 3,000 m. Offshore, west of the Campeche shelf, a salt-dome province extends from the Isthmus of Tehuantepec northward to the Sigsbee Knolls, all of which may be prospective. Tertiary turbidites also may be objectives in the deep Gulf. Certainly the Mexican ridge province east of eastern Mexico offers attractive possibilities for future exploration.

Cuba is far less attractive because of its complex alpinotype geology. However, several large structures in Upper Jurassic and Lower Cretaceous carbonates still remain to be drilled in northern and northwestern Pinar del Rio province.

Although the entire Gulf of Mexico region can be regarded as having reached the mature stage of exploration, there are many areas which have not even been explored. As a consequence, it is possible that only half of the potential reserves of the entire Gulf of Mexico region have been found.

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