INTERNATIONAL EXPLORATIONISTS

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RICHARD A. MILLS—Biographical Sketch

R. A. Mills received a Bachelor's degree in geology from the University of Texas at Austin in 1950 and a Master's degree in Oceanography from the University of California at La Jolla in 1953. He was a research geologist with Mobil for 4 years and then worked in various foreign areas including Honduras, Surinam, Libya, South Africa, and worked for Felmont Oil Corporation until retirement in 1988. His experience includes both petroleum and mineral exploration.

During the last 3 years he has been active as a consultant working in Honduras and offshore Gulf of Mexico on a sulfur project. He is a member of the GSA and AAPG. He has published two articles about the stratigraphy of Honduras in the *AAPG Bulletin*.

PETROLEUM POTENTIAL OF HONDURAS

Honduras, the second largest country in Central America, has no petroleum reserves. Only 15 confirmed wells exceeding 1500 meters have been drilled in the country. Thirteen of these wells were offshore, with the last being drilled in 1980.

Honduras is the central part of the Chortis block that includes southern Guatemala, □ Salvador, and most of Nicaragua. Chortis is a continental block that has a complicated history, starting off the coast of SW Mexico and rotating to its present position as the northwest corner of the Caribbean plate.

Regional subsidence during the early Cretaceous was responsible for thick carbonate platforms in the central Yojoa Basin and the eastern Mosquitia Basin of Honduras. Laramide orogenic movement folded and faulted the brittle rocks of Chortis into trends that are not parallel to those in the Maya block (North American plate). Red beds are widespread in Chortis. An early series is related to the late Jurassic Nevadian orogeny and a later, much thicker series is the result of molasse deposition during the Laramide period.

The Pacific plate (Farallon/Cocos) has been subducting under the south coast of Chortis from early Mesozoic time to the present. As a result, a thick arc terrane has been built on the southern half of the block and a line of stratovolcanoes along the Pacific coast is active today.

Beginning in Cenomanian time, Chortis became part of the Caribbean plate and Caribbean ocean crust was subducted under the north coast. From Campanian time until the end of the Paleocene, Chortis was moving east with the Caribbean plate, resulting in oblique collisons with the stable Maya block.

Beginning in Oligocene time, a north-south rift developed north of the Swan Isle transform, the Cayman trench formed, and the Maya block rotated west with respect to the now-stable Chortis block.

Geochemical studies indicate that Albian carbonates are the prime source rocks in Honduras. The extremely thick Albian section (over 2000 meters) plus several thousand meters of Upper Cretaceous and Tertiary molasse cover provided sufficient time and temperature for generation of oil as early as Campanian time. Reservoir rock is largely fractured, dolomitized Albian limestone. Trapping is in Laramide structures that are sealed by Upper Cretaceous and Paleogene shales.

Neogene rifting associated with renewed plate movement uplifted a large part of the Chortis block and badly breached most of the Laramide structures except, possibly, those in the Ulua graben on the north coast and those in the Mosquitia Basin on the northeast coast of Honduras. In the Mosquitia Basin the Tertiary sediments have been tested as immature; however there are two shelf areas with thick Albian carbonates. The northern shelf limestones have been tested with two wells that were not productive. Currently the southwest shelf carbonates are being tested with a 4500-meter well that is located onshore about 25 kilometers from the coast and near the Patuca river.

The generation history of the Honduras basins is unique because oil may have been formed early compared to the basins ringing the Gulf of Mexico. Migration into younger structures is problematical because there may have been too many escape routes. Consequently, large potential rests on the discovery of relatively undisturbed early traps.