

PETROLEUM EXPLORATION IN SUBANDEAN BASINS

INVENTORY, INTERPRETATION AND ASSESSMENT OF THE GEOLOGICAL, GEOCHEMICAL AND THE GEOPHYSICAL INFORMATION BELONGING TO THE CAYOS BASIN

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Abstract

Los Cayos Basin is located in the Colombian Caribbean Sea, on the boundary with the Nicaraguan Marine Border area that is determined by the 82nd parallel. This marine geological and geographical environment's area is 144.755 km². Geologically, the basin has a Pretertiary volcanic basement and a sequence of calcareous rocks from the Eocene to the Pleistocene.

A map displaying the main geological faults was made based on the structural interpretation of the sea floor bathymetric models. In it, two main structures are shown: a N45 – 50E faults system and a EW faults system at N45W. The first NE system seems to correspond to normal, regional faults that have a horts shaped uplifted corridor on its western area on which San Andres, Providencia and Santa Catalina Islands and Quitasueño Bank are located. This faulted corridor is also affected by a second system of normal and transcurrent tear faults that form risen and subsident blocks.

The existing geological information was obtained from the Miskitos-1 and Miskitos-2 oil wells which are 6728 and 6428 feet deep respectively. In them, the existence of a calcareous sequence of calcarenites, calcilutites and organic calcareous shale aged Eocene that are superjacent to a pre-Eocene volcanic basement. On the surface, the crop ups are restricted to San Andres Island, Providence and Santa Catalina. The first ones register a Miocene to Pleistocene calcareous sequence composed of sparitic limestones, micritic limestones and reef limestones. There are volcanic rocks crop ups in Providencia and Santa Catalina islands.

This indicates that the calcareous rocks studied show a mixture of levels with characteristics to generate liquid hydrocarbons (kerogen type II) with characteristics to generate gaseous hydrocarbons (kerogen type III). The rocks deposited during the Early to Middle Eocene show enough maturity to enter in hydrocarbon generation window.

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