

Seal Rock Characterization of the Barinas Apure Basin, Venezuela

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Abstract

The study was conducted in Barinas Apure Basin, an exploratory immature basin located in the southwest of Venezuela, that it covers 68,000 km². In order to establish a risk assessment in exploratory plays is necessary an accurate seal characterization. The aim of this work is to characterize the effective seal within passive and active margin of this basin, and thus reduce uncertainty about existence and quality of seal.

As a result, this work found that the passive margin has a seal rock in the regressive cycle, with a better thickness and capillary pressure to the north. Moreover, current effectiveness of the seal is necessary to retain the hydrocarbons generated in the northern area. 40Ma ago this effectiveness decreases southward due to presence of some hills. In the producer units of the active margin, seal rocks are located into the regressive cycle. The best Eocene seal properties are restricted to the northwest area. While the Oligocene are in the southwest of the unit.

In conclusion, currently Barinas-Apure basin presents an effective seal for the accumulation of hydrocarbons from the current generation pod. 40Ma ago, during the expulsion of hydrocarbons in the Maracaibo Basin, west-central area had no the capillary pressure needed, evidenced by the presence of oil seeps such as Aguas Calientes, Caparo and Qiú.