

Abstract: Paleogene Thrust Tectonics In Northwestern Venezuela:
Petroleum System Implications Eduardo Quijada, Simon Oropeza

Oil exploration in northeastern Perija Mountains, northwestern Maracaibo basin, has been difficult, mainly due to the various tectonic events that have strongly deformed this area. This study is an attempt at better understanding the effect of a Paleogene thrusting event on the petroleum system development in the area.

Subsidence analysis interpretation at both sides of the NNE directed Tigre fault (which separates the northern

Perija Mountains from the rest of the Maracaibo basin) suggests the onset of a foreland basin during, at least, Paleocene-Early Eocene time. Continuous sedimentation occurred from Late Cretaceous to Early Eocene, as long as it kept pace with subsidence, in the west block of the fault, while the east block acted as an obstacle against the thrust-sheet movement, delaying its subsidence. Sedimentation for this time is associated with a thick unit of mainly paralic sediments west of that fault and thinner continental (fluvial) to shallow marine sediments, with an intra-Paleocene/Early Eocene unconformity, east of it. So, this tectonic event, associated with convergence from the north, caused a south-verging thrust sheet giving rise to differences in the evolution of the petroleum system on both sides of the Tigre fault, mainly regarding the existence of source rocks and their generation/migration of hydrocarbons, preservation time and critical moment.

Finally, in order to evaluate the oil exploration opportunities in northeastern Perija mountains, it is advisable that any integrated interpretation of the petroleum system processes (generation-migration-accumulation) take into account this tectonic event.

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