

New Dry Gas Discovery in Tertiary Deposits. Western Guarico Sub-Basin. Venezuela

Atilio F. Viera and Esteban J. Gobbo
Pluspetrol S.A., Buenos Aires, Argentina.

The objective of this study is to present a paleoenvironmental interpretation of La Pascua and Roblecito formations as well as the stratigraphic evolution of the western sector of the Guárico Sub-Basin based on the new data available.

The understanding of the western sector of the Guárico Sub-Basin has been limited due to the lack of sub-surface data. Previous studies were based on surface outcrops and sparse 2D seismic data generally acquired along roads. Since 2004 some 1000 km of new 2D seismic have been acquired and three exploration wells drilled.

The area of study covers 5,000 km² and is to be found to the south and adjacent to the “Serrania del Interior” emerging front. The western limit is formed by the “El Baul” high. The stratigraphy is principally made up of transitional Tertiary deposits overlying marine clastics of a passive margin of the Mid Cretaceous. These marine clastics in their turn overlay a metamorphic basement assigned to the Mesozoic.

The tertiary infill is made up of sediments of mid to late Eocene age and is known as the La Pascua formation, characterized by shallow water (deltaic) clastics interbedded with thin coal layers, arranged in progradational to aggradational sequences. During the Oligocene thick and parallel clastic sequences known as the Roblecito formation were settled down in shallow water platforms with a marked retrogradational stacking pattern. La Pascua and Roblecito clastics show a clear change in the polarity of sedimentation. The former deposits came from a stable area at the south, while these later deposits came from a mountain front emerging to the north as a response to a compressive regime. From the Lower Miocene the area was subject to compressive forces which led to a series of thrusts with detachment levels in the Oligocene-Eocene. The shales of Guavinita formation, Upper Cretaceous, are considered to be the source rock.

Along with the discovery of gas this new data has allowed for the definition of new depositional schemes for the tertiary intervals.