

Stratigraphic and Structural Analyses of the Paleogene, Particularly the Guasare Formation, in La Concepción Field (Maracaibo Basin, Venezuela)

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A continental margin undergoing a substantial transition from a passive to an active setting experiences modifications in basin subsidence rates and associated relative sea levels. These dramatic changes alter sedimentation origins and distribution patterns. Collision between Caribbean and South American plates in Late Cretaceous-Eocene transformed northwestern Venezuela's Cretaceous passive margin into a highly active setting. This transition was characterized by a progressing complex thrust belt and associated foreland basin that migrated northwest-north-northeast with time.

Sedimentation in the Maracaibo Basin of northwestern Venezuela during Paleocene (Guasare Formation) and Eocene occurred in a migrating depocenter, sourced from varied input directions. Situated in an understudied area, La Concepción field provides new data that aids in the understanding of the region's passive to active margin evolution from Paleocene-Eocene. Furthermore, past studies have not delineated the depositional history and reservoir potential of the Guasare Formation.

Recently acquired geologic and geophysical data provide the integrated means to conduct an intensive investigation, the results of which help address the following: 1) placement of the Guasare Formation into the context of transitional passive to active margin evolution of the Lake Maracaibo region and 2) possible interpretation of depositional environment and identification of potential reservoir intervals within this formation.

Necessary research involves interpreting the 242-km² 3D seismic data of La Concepción field for Tertiary structural configuration. Additionally, detailed work on the Guasare Formation includes correlation between ten complete well log suites and cuttings analysis of five wells.