The Chicontepec Formation in Presidente Alemán Field (Veracruz, Mexico): Depositional Processes and Stratigraphic Architecture of a Submarine Slope Canyon-Fill

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ABSTRACT

Submarine canyon-fills are the least studied component of turbiditic systems, with high stratigraphic complexity and architectural variation. This study of the Chicontepec Formation in the Presidente Aleman Field (Veracruz) contributes to the existing knowledge on ancient submarine canyons. 3D seismic interpretation, well log correlation, and core analysis indicate that the formation was deposited in the head part of a complex east-trending slope canyon. The Chicontepec Canyon represents a turbiditic tributary system with sand-prone channels feeding a larger canyon-floor system of eastward drainage. Channels were dominated by sustained, high- to low-density turbidity currents, whereas low-density currents with Bouma-type turbidites accompanied by hemipelagic mud deposition occurred in interchannel areas. Recurrent slumping and debris flows occurred on the canyon walls. The infilling of the Chicontepec Canyon involved multiple episodes of erosion and deposition, resulting in a variety of fining-upward sequences, possibly controlled by relative sea-level changes. Each sequence consists of: (1) a basal erosional boundary indicating sediment bypass; (2) a sandstone-rich, high net/gross succession of channel-fill turbidites and minor levee/overbank and crevasse-splay turbidites (lowstand systems tract); and (3) a low net/gross succession dominated by thin-bedded heterolithics recording channel deactivation followed by small unconfined flows (transgressive to highstand systems tracts).

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