

## **Stratigraphy and Structure of the Perdido Foldbelt, an Emerging Toe-of-Slope Play in the Northwestern Deep-Water Gulf of Mexico**

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In 2000-2001 the Baha-2 (AC557-1) dry hole penetrated for the first time the entire lower Tertiary section and part of the Cretaceous section of the northwestern Gulf of Mexico abyssal plain. It also validated the basic play elements for the Perdido Foldbelt, subsequently confirmed by the Trident (AC903) and Great White (AC857) discoveries.

Two main objective sections, the Wilcox-Midway (Paleocene to early Eocene) and Frio (middle Oligocene), contain turbidite sandstones with channel and lobe geometries deposited in medial to proximal facies of large basin-floor fans. Sandstone compositions are similar to contemporaneous deltaic sandstones in south Texas. The Wilcox-Midway and Frio sections are separated by the distal, downlapping, sand-lean, northern flank of a large submarine fan of middle Eocene to early Oligocene age, sourced from the Tampico-Poza Rica region of Mexico. The Wilcox-Midway section rests on the top (formerly "MCSB") of Maastrichtian to Cenomanian carbonates and clastics. Lower Cretaceous to Upper Jurassic carbonates, presumed to include Tithonian source rocks, were not penetrated.

The main episode of gravity-driven, salt-detachment folding occurred in late Oligocene to early Miocene time; this was preceded by slow structural growth during the early Tertiary, and was followed by Plio-Pleistocene salt inflation. Each structure in the Perdido Foldbelt has a different history of uplift and exhumation and thus different thermal and stress histories, which complicates charge modeling, porosity and permeability prediction, amplitude calibration, and velocity-based pressure prediction. Perdido oils are sourced from both Tithonian and mid-Cretaceous source rocks, calibrated in deep-water wells outside the foldbelt.

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