

The Petroleum Plays of the Southwestern Gulf of Mexico

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The southwestern Gulf of Mexico is the offshore area of the states of Tamaulipas and Veracruz, Mexico. Petroleum exploration began there in the 1950s with seismic acquisition. Until now, Pemex has drilled 65 exploratory wells that have discovered reserves of 648 million BOE in 16 fields.

Based on the geological and geophysical interpretation, four productive plays and twelve hypothetical plays have been defined.

The Mesozoic plays are: the Oxfordian, a sequence of calcareous sandstone and dolomite deposited in restricted platform conditions; the San Andres (Kimmeridgian), that produces from a calcareous bank related to a basement high; the Tamaulipas Inferior (Lower Cretaceous), a fractured chalk; the El Abra, the offshore part of the Golden Lane, a reef facies complex of a carbonate platform of middle Cretaceous age; the Tamabra Marino, the talus

facies of the shelf margin of the Golden Lane; and the El Abra Lagunar, a wedging of high-energy facies.

The Tertiary plays are hypothetical. They are related to three tectonic domains: extensional, saline, and compressive. The extensional domain is defined by a thick pile of terrigenous rocks forming anticlines with normal faults. Six plays are defined along the continental platform. The saline tectonic domain, located in the north, includes three plays. The compressive tectonic domain forms a play of elongated anticlines located in the continental talus. The reservoir rocks of these Tertiary plays are Pliocene and Miocene sandstones deposited in deep water in channels and submarine fans.

A preliminary evaluation of the petroleum systems and potential resources shows that the southwestern Gulf of Mexico may contain important additional oil and gas reserves.