

# Best Technology Practices to Reactivate Macuspana Gas Province, Southern Mexico

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Mexico's gas needs for the beginning of the next century are well acknowledged. Major gas demand will come from the oil industry, the growing number of gas-driven electricity plants, transportation, and other industrial and residential consumers. Aware of this, Pemex is implementing a national strategy focused on gas.

Macuspana Basin with its offshore extension is located in the states of Tabasco and Campeche in southern Mexico. It is an elongated Neogene basin formed between the Yucatan Platform to the east and the Reforma Akal Folded Belt to the west. This basin contains a thick sequence of fluvio-deltaic and open marine Neogene sediments cut by numerous growth faults associated with rollover anticlines and amorphous shale bodies. The basin is a prolific gas province, in a mature stage of exploration and production. During its 90 years of exploratory history, over 700 exploratory wells have been drilled and 36 fields discovered; so far only 11 of them are commercially exploited.

Among other important issues, technology practices will play an important role in facing the challenges of reactivating this basin. Following, a brief description of technology practices in Macuspana Basin is presented.

To properly plan and execute seismic activities it is very important to have a clear picture of the ground surface. The use of seismic orthomaps to honor natural and

cultural obstacles during the design and execution of seismic activities is now a common Pemex practice.

In addition to orthomaps, in some regions aeromagnetic surveys are needed to accurately identify old but active buried pipelines.

Based on geologic targets, access, cost, and time needed for operation, a center-shot cross swath was chosen for seismic acquisition because it increases the range attributes (fold, offset, and azimuth distribution) and affords operational simplicity in the field.

The use of AVO as a direct hydrocarbon indicator in gas-filled clastic rocks is widespread along the Gulf Coast.

A methodology for high-quality prospect generation and reduced turnarounds was also tested. It consisted of a series of steps that included: synthetic seismograms, seismic attributes extraction, correlation between petrophysical properties and seismic attributes, depth conversions, and intensive training in workstation applications.

The fulfillment of exploration and production targets in the Macuspana Basin over the next five years will demand intensive operations that must rely on high-performance leadership and teamwork practices, as well as careful selection, adoption, and application of best technology practices that transform Pemex investments into profitable ventures.