Petroleum Geology of Mexico, with Emphasis on Shale Plays

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Abstract

Major oil and gas reservoirs occur in Mexico in seven main basins, from northwest to southeast: Sabinas, Burgos, Tampico-Misantla, Chicontepec, Veracruz, Salina del Istmo, Macuspana and Comalcalco; on, or around carbonate build-ups, of buried basement horsts like the Golden Lane and Akal Horst, as well as in salt related structures. These features are located along the Gulf Coastal Plain, onshore and offshore, between the Sierra Madre Oriental on the west, and the Perdido Fold Belt, the Mexican Ridges, and the Yucatan Platform, on the east. The age of the source rocks for these conventional reservoirs is Tithonian, but could be even Kimmeridgian or Oxfordian. The regional migration trend for the hydrocarbons generated by these sources and accumulated in the conventional known reservoirs, came most probably from east to west, from the deepest part of the Gulf of Mexico, upward to the final traps, in different times. A series of chronological paleogeographic maps are presented in order to try to understand the regional facies distribution and the orogenic. Other source rocks are younger, Upper Aptian, Turonian, Oligocene and Miocene, are poorly studied as unconventional resources, which in turn, have caused an unusual interest on them, without considering that, for example, the Eagle Ford Formation trend is relatively flat in Texas, but its continuation into Mexico is gently folded. On the other hand, it is important to consider that the Lower Cretaceous, Upper Jurassic and Neogene horizons become deeper and strongly folded and thrusted, as one goes southward into Mexico. Additional evidence for the Mexican petroleum system are the numerous oil-gas seeps in the Gulf of Mexico. A reliable estimate of the undiscovered recoverable conventional petroleum resources is presented.