Abstract

While current interest in Mexico is focusing on sales for blocks offshore Gulf of Mexico and in adjoining onshore productive basins, now is the time for explorationists to turn their attention to the frontier basins, shown in Poster 1, where, after a few more bid rounds in the oil producing areas, there will likely be calls for nominations leading to awarding of exploration contracts. This paper summarizes the present state of evaluation of these under-explored areas in preparation for such future bid rounds.

First of all, it is important to realize that these are not entirely virgin basins. Since the 1940s, Pemex geologists have undertaken extensive field mapping of the whole country and identified potential source and reservoir quality rocks in a number of localities. Magnetic surveys identified deep basins, and seismic surveys picked out structural prospects. Some wells were drilled which often resulted in oil or gas shows. Success, however, has been very limited, with commercial production being established only in the Sabinas Basin. Pemex has since concentrated their exploration and development efforts on the offshore and near onshore basins around the Gulf of Mexico. Little additional exploration has occurred in the frontier basins. We review the findings in all the frontier basins in the hope that a few basins will be found to be productive in the future.

In the Cenozoic Pacific margin-type basins, gas shows and possibly oil shows in the U.S. extension, have been encountered so far. Potential source rocks have been identified in these basins. Structural and stratigraphic trapping has been suggested and sandstone reservoirs have been encountered. Paleozoic back-arc basins on Mexico's High Plateau may have had their traps breached by the Laramide orogeny and later extensional faults. Mesozoic basins have been similarly inverted except for the extension into Mexico of the Peten Basin. The Yucatan Platform remains stable and for the most part immature, but it has curious oil and gas shows in the area of a major meteoric impact crater.

In general, active petroleum systems have been found in eleven out of the fifteen frontier basins, but as these areas were thought to have low probabilities of encountering commercial hydrocarbons, Pemex abandoned further investment in them.

All of the above conclusions are based on limited information. These frontier areas are ripe for re-examination and renewed thinking, especially applying up-to-date geological concepts and exploration and production technologies. These under-explored basins offer potential source rocks of different ages, a variety of tectonic regimes resulting in numerous potential traps, and the potential for both clastic and carbonate reservoirs.
Perhaps some of them will merit being nominated for future bid rounds. One or two might be the location of discoveries of commercial hydrocarbons.

**Summary Data on Poster 2**
- Vizcaino
- Salton-Altar Basin
- Mazatlan Basin
- Chihuahua-Pedregos
- Borderland Basin
- Purisima-Iray basins
- Obregon Basin

**Summary Data on Poster 3**
- Parras Basin
- San Luis Potosi Platform
- Yucatan Platform
- Tlaxiaco Basin
- Tehuantepec Basin
- Chiapas-Peten South

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HOW WOULD **YOU** UNLOCK THE HYDROCARBONS IN THESE FRONTIER BASINS WITH NEW TECHNOLOGY?

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**Legend**

- Frontier Basins
- Productive Basins
- Field
- Oil Discovery
- Gas Discovery
- Oil Show in Well
- O&G Show
- Gas Show in Well
- Dry Hole
- Oil Seep
- Gas Seep

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Map showing various hydrocarbon basins in Mexico and the Gulf of Mexico, with symbols indicating different types of findings and discoveries.
MEXICAN FRONTIER HYDROCARBON BASINS

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ABSTRACT

While current interest in the Mexican frontier is focused on the western half of Mexico and its offshore sedimentary basins, most oil in the frontier is located in the eastern half of Mexico, in frontier areas that have received less public attention. The Mexican frontier is characterized by shallow marine basins with significant volumes of sedimentary rock, which have potential for hydrocarbon accumulation.

Of all the frontier areas, Salkhit is the most promising. Salkhit is a shallow marine basin with significant sedimentary rock and potential for hydrocarbon accumulation. The Salkhit basin is located in the eastern half of Mexico and has received less public attention. The Salkhit basin is characterized by a thick sequence of sedimentary rock, which has potential for hydrocarbon accumulation.

In general, frontier areas have been identified as areas of high potential for hydrocarbon accumulation. These areas have been identified through geological mapping and geophysical surveys. Frontier areas have been identified as areas of high potential for hydrocarbon accumulation through geological mapping and geophysical surveys. These areas have been identified as areas of high potential for hydrocarbon accumulation through geological mapping and geophysical surveys. These areas have been identified as areas of high potential for hydrocarbon accumulation through geological mapping and geophysical surveys. These areas have been identified as areas of high potential for hydrocarbon accumulation through geological mapping and geophysical surveys.