TRANS-BOUNDARY OIL AND GAS FIELDS BETWEEN MEXICO AND THE USA

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GoM E&P activities have developed to a point where Mexico & US will soon have to solve issues related to reservoirs.

Recent discoveries have established the Perdido foldbelt as a significant new petroleum province in the initial stages of evaluation.

- high-quality light oil
- multiple hydrocarbon source rocks
- the age of key seismic markers
- abundant and well-developed sandstone reservoirs.

PEMEX has also announced the existence of significant resources in the Mexican part of the Perdido foldbelt.

The issues to solve are complex.
Hydrocarbon structures in the Gulf of Mexico (GoM)

1.- The big picture – towards an agreement

- Production site should depend on the reservoir
- Previous to that, the governments must agree:
  - Is it a trans-boundary reservoir?
  - Should it be exploited?
  - As a single unit?
  - Using an existing host facility?

- International examples of joint petroleum production agreements

- US and Mexico: neither the authorities nor the legislators have established the agenda for discussions leading to a common agreement.
2.- Defining the border in territorial waters

- Early 70s: 200 nautical miles.
- Their extended jurisdictions overlapped in some areas of the GoM
- 1976: provisional recognition agreement
- 1979: The Mexican Senate signed

- Two areas were left undefined.
- The Eastern and Western doughnut hole (or Gap or Polygon)

- 2000: Mexico-USA signature of a territorial and marine delimitation Treaty for the Western Polygon.
- Sharing of the Western Polygon: 60% for Mexico, and 40% for the USA.
The 1958 Geneva Convention on the Continental Shelf
The Western Gap is considered part of the continental shelf of the GoM

The 1982 UN Convention on the Law of the Sea (UNCLOS)
Mexico is party.

The US refused to sign UNCLOS.
The US accepts that UNCLOS reflects customary international law
Doughnut Holes or Gaps or Polygons

- In 1980 the USGS initiated an evaluation on the GoM showing significant resources *in situ* at the border and at central regions in the GoM.

- The study also showed the presence of hydrocarbons in Mexican territorial waters at the "Mexican Ridges."

- Some politicians in Mexico mentioned that companies operating from the US could extract the Mexican resources using directional drilling.
3.- GoM Outlook

- The US requires increasing oil and gas, preferably from domestic sources.
- Geologists also consider that the Mexican part of the GoM contains significant resources.

- Increased exploratory activity in the US part of the GoM
  - advanced 3-D seismic,
  - new drilling technologies, and
  - deep-water production systems.
- Deep-water royalty relief legislation since 1995
- Moratoria on new leasing for the Eastern GoM, Atlantic and Pacific coasts
- PEMEX is preparing works for a deep-water exploratory well in the Perdido foldbelt.
The Perdido Fold belt

Source: Trudgill, Bruce et al. The Perdido Fold Belt, Northwestern Deep GoM,
4.- Activities in the border areas: USA

- Late 90s: new interest in ultra-deep water areas.
- Activities are moving towards the eastern GoM and deeper waters.
- 1,112 fields: 14.6 MMMB of oil and 164 TCF of gas since 1938.
- Remaining reserves (MMS 2002): 18.75 MMMB for oil and 176.8 TCF for gas.

- The projects require new drilling technologies and new approaches to exploration.
- The average size of fields in the deep waters of the GoM is 11 times larger.
- Possible to find prospects containing up to 1 billion BOE?
- MMS in 2006: the hydrocarbon potential of the deep and ultra-deep water in the GoM could be as high as 46 billion BOE.
4.- Activities in the border areas: USA

- Interesting activities in the Perdido foldbelt
  - Baha and Trident.
  - Great White

- The Perdido foldbelt: 80% of the structure is in Mexican waters?

- Western Polygon
  - Jack prospect.
  - Record bonuses.

- Shell’s Great White, Silver Tip, and Tobago discoveries:
  - 8,000 feet of water depth,
  - Deepest spar production facility in the world
Reserves & water depths in the US GoM

Production estimates based on remaining oil and gas reserves in the US GoM
5.- Activities in the border areas: Mexico

- The Mexican part of the GoM also contains significant resources,
  - The Campeche salt province
  - The eastern part of the GoM is a frontier area, still to be fully explored.

- Reserves
  - 29.6 MMMBOE
  - The size of the potential oil reserves at the Mexican GoM remains unknown, probably much larger
  - Insufficient exploration.

- Mexico is facing a major challenge in the production of oil and natural gas.
  - Proven reserves have been declining
    - Oil production has passed its peak level in 2005.

- Re-evaluation of the strategy to develop the deep waters in the GoM
Reserves & water depths in the Mexican GoM

Miles de millones de barriles de petróleo crudo equivalente

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* Suma estocástica. El resultado puede no coincidir con la suma algebraica.
Reserves & water depths in the Mexican GoM
6.- Towards a Common Solution

- Establishing joint development zones between the two countries helps to separate the issue of boundary limits from the underlying resources.

- Examples:
  - Common petroleum deposits
  - Precise geographical areas
  - Joint development zone or regime
  - Common Zone
  - Delimitation scheme setting up a protected zone or a Cooperation Zone
...Towards a Common Solution

- Any of this type of agreements can include simple or complex clauses depending on the detail of activities that are allowed.

- Norway-UK Frigg agreement

- The feasible approaches require an institutional setup to administer the system.
  - A royalty-sharing agreement.
  - Unitization.
7.- Conclusion

- Mexico and the US must reach oil sharing and unitization schemes pursuant to international practice.
- Mexico also faces a major challenge in implementing international practice due to its constitutional and legal hydrocarbons framework.
- The legal amendments ought to be solved soon since
- The US should also be interested in a solution since the oil and gas resources in the GoM could help it to increase the energy security