

Law of the Sea Institute Conference

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and Caribbean; Unresolved Issues and Challenges”

“Cuba’s Future Energy Challenge”

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Opportunities

Using a geology-based assessment methodology, the United States Geological Survey in its "Assessment of Undiscovered Oil and Gas Resources of the North Cuba Basin, Cuba, 2004", estimates a mean of 4.6 billion barrels of undiscovered oil, a mean of 9.8 trillion cubic feet of undiscovered natural gas, and a mean of 0.9 billion barrels of undiscovered natural gas liquids in Cuba's North Cuba Basin. (1)

If this assessment is correct it will move Cuba up the ranks, and side by side with other South American top holders of proven oil reserves such as Ecuador, Colombia and Argentina.

The future of Cuba's oil and gas exploration and production sector could very well be in the deep offshore Gulf of Mexico waters, along the western approaches to the Florida Straits and the eastern extension of Mexico's Yucatán Peninsula.

Cuba's Exclusive Economic Zone (EEZ) in the Gulf of Mexico is an 112,000 square kilometers area that has been divided in 59 exploration blocks of approximately 2,000 sq km each at an average depth of 2,000 meters, with some blocks as deep as 4,000 meters. (2)

The EEZ lies within demarcation boundaries, between Mexico, Cuba, and the United States, agreed in December 1977 during the administration of U.S. President Jimmy Carter. (3) It is important to point out that the *United Nations Convention on Law of the Sea* treaty has not been ratified by the United States Senate and that the *Maritime Boundary Agreement: Cuba – United States* is only operational (Article V) by mutual two year extension periods. (4)

In 2001 Unión Cubapetroleo (Cupet), the state oil company under the Ministry of Basic Industry (Minbas) signed with Spain's Repsol its first deepwater offshore concession agreement to explore and develop six EEZ blocks; N25-N29, and N36, in Cuba's new hydrocarbon frontier.

By June 2004 Repsol had drilled its first test well, Yamagua 1, located in Block 27 about 20 miles northeast of La Habana and about 65 miles southwest of the Dry Tortugas. The well reached a depth of 10,819 feet with an estimated cost of over \$40 million.

According to press reports of July 29, 2004 Repsol's chief operating officer, Ramon Blanco was quoted as saying that the drilling results were promising. "The existence of a petroleum system has been confirmed. Also we have been able to prove the presence of high quality reservoirs. Nevertheless, the well has been considered non-commercial and at this stage the group is defining future exploration activities in the area". (5)

Repsol's CEO Antoni Brufau announced in Madrid on May 31, 2005, of the company's commitment in drilling two new wells in Cuba in 2006. He also announced the addition of Norwegian oil giant Norsk Hydro (30%) and India's ONGC (30%) as project partners. (6) To many experts, the participation of Norsk Hydro and ONGC is an indication of the importance and potential of the project.

The 2006 scheduled Yamagua #2 project is currently delayed reportedly due to the lack of availability of deepwater semisubmersible rigs and by the partners' challenge of how to monetize Cuba's future crude oil and natural gas production.

In 2002 Canada's Sherritt acquired exploration rights to N16, N24, N23, and N33 deepwater blocks, which span 2 million acres; and it is currently assessing 3D seismic data on these four offshore blocks and reportedly looking for partners with deepwater expertise.

Recently three additional deepwater EEZ Gulf of Mexico concessions were announced by the Cuban government; blocks N34-35 to India's ONGC, blocks N44-45 and N50-51 to Malaysia's Petronas, and N53-54 and N58-59 to Venezuela's PDVSA.

If successful, these deep water projects would take from three to five years to bring into full development at an estimated total capital investment cost of over \$3 billion.

The challenge for foreign oil companies operating in Cuba would be how to monetize future hydrocarbon production in the most efficient and cost effective way as long as the United States economic and trade embargo against the Cuban government remains in place.

With the possible exception of PDVSA's future revamped Cienfuegos refinery, Cuba does not have the refinery or conversion capacity needed to process large amount of heavy crude oil production. Most likely the current U.S. government administration would also try to limit the exports of any future Cuban oil production.

We believe that current commitments by international oil companies in spending hundred of millions of dollars in exploratory work, along with the USGS new estimates of undiscovered reserves, underscores Cuba's oil and natural gas offshore potential.

Challenges

As of 2006 it is estimated that Cuba had a deficit of approximately 90,000 b/d of crude oil/refined products. Due to the lack of heavy oil refining capacity Cuba's current onshore/coastal heavy oil production of approximately 68,250 barrels per day is use directly as boiler fuel in the electric power, cement, and nickel industries.

Under an advantageous financial agreement, Cuba contracted for the purchase of 53,000 b/d of crude oil and/or refined products from Venezuela, this volume has grown today to approximately 90,000 b/d. This agreement of May 2002 calls for a portion of the oil to be repaid over a fifteen-year period with an annual interest rate of 2 percent and an initial two-year repayment grace period.

No cash payments have been reported in over three years; Cuba's estimated total oil debt to Venezuela amounts to nearly \$3.5 billion as of November 2006.

Rice University's economists Amy Myers Jaffe and Ronald Soligo, project that as the result of a future open market economic system, Cuba's crude oil consumption would nearly double from 179,000 b/d in 1998 to 349,000 b/d by the year 2015. (7)

This anticipated future demand would not make Cuba a net exporter of crude oil until anticipated EEZ production surpasses the 350,000 barrel per day threshold.

The economic and political implications for the island, not only becoming oil self sufficient but also a possible net crude oil/products exporter, could become a major challenge for future US/Cuba policy makers.

Cuba's economy and infrastructure, in shambles following the economic crisis caused by the end of Soviet Bloc aid in 1991, improved somewhat after the government enacted a series of market reforms in 1993.

Even though short lived, the inevitable continuation of these open market policies, particularly in a future post central planning system would create substantial economic benefits and opportunities for the island nation.

Today, just like during the 1970-80s, Cuba again depends, as a by product of a political relationship, on over fifty percent of its oil supply from a single foreign source at subsidized prices and preferential contractual payment terms; such relationship and dependence weakens economic transition and growth.

We believe that Cuba's long term energy challenge begins with its future economic growth and rising standard of living within an open market environment. This anticipated growth will depend largely on the development of a competitively priced, readily available, environmentally sound long term energy plan.

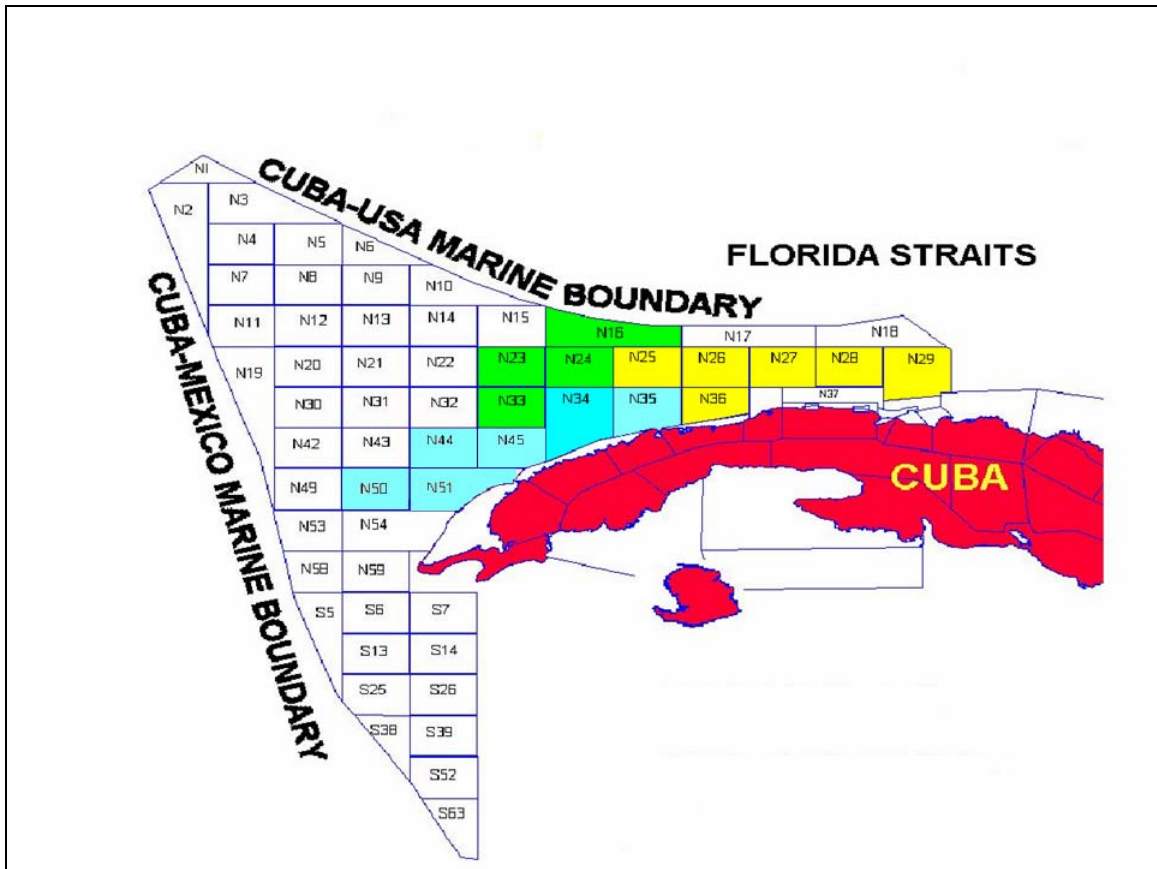
There will be no sector, industry or infrastructure group that will not be directly impacted and or influenced by such a comprehensive energy policy.

A future Cuban energy policy should embrace energy conservation, modernization of the energy infrastructure, and a balance sourcing of oil, natural gas, sugarcane ethanol and other alternative energy sources in a way that protects the island's environment and plays a catalyst role in its economic development and growth.

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- (1) United States Department of Interior, U.S. Geological Survey; "Assessment of Undiscovered Oil and Gas Resources of the North Cuba Basin, Cuba, 2004"; February 2005, Denver, Colorado.
- (2) "Cuba Deepwater Exploration Opportunities Described in Southeastern Gulf of Mexico", Oil & Gas Journal, December 11, 2000.
- (3) "U.S. Mexico Settle Offshore Territory Dispute", Oil & Gas Journal, June 5, 2000.
- (4) United States Department of State, Bureau of Oceans and International Environmental and Scientific Affairs; Limits in the Seas, No. 110. Marine Boundary: Cuba-United States, December 1977, Washington DC.
- (5) "Search for Oil off Cuban Shores Yields Mixed Feelings"; South Florida Sun-Sentinel, July 29, 2004.
- (6) "Repsol lo Intenta por Segunda Vez en Cuba", Expansión, June 3, 2005.
- (7) Energy in Cuba; Amy Myers Jaffe and Ronald Soligo, James A. Baker III Institute for Public Policy, Rice University, Houston, TX, 2002.

Attachment



Cuba's EEZ Concessions

N25-29, N36	Repsol-Spain Norsk Hydro-Norway ONGC-India	(40%) (30%) (30%)
N16, N23-24, N33	Sherritt-Canada	(100%)
N34-35	ONGC-India	(100%)
N44-45, N50-51	Petronas-Malaysia	(100%)
N53-54, N58-59	PDVSA-Venezuela	(100%)