

Repsol Chases Breakthrough Technology as Offshore Oil Politics Heat Up

By Andrew K. Burger
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A CORUÑA, Spain (ResourceInvestor.com) -- As President Bush, Republican presidential candidate John McCain, Florida governor Charlie Crist and others push to end the U.S. moratorium on offshore oil drilling, Spanish-Argentinean oil major Repsol [NYSE:REP] and the Barcelona Supercomputing Center's Kaleidoscope Project team at the World Petroleum Congress in Madrid on July 1 announced early research results that lead them to believe a major breakthrough in offshore oil exploration is within reach.

Working with IBM BladeCenter QS22 supercomputers – built around IBM's PowerXCell 8i processor, originally developed for use in Sony video game consoles – Repsol and BSC researchers believe they now have a methodology – Reverse Time Migration – and the tools to speed up exploration and development of deep oil and gas fields on- and off-shore up to six times compared to the technology currently employed by the oil and gas industry.

The U.S. Department of the Interior's Minerals Management Service estimates that although many shallow fields are on the downside of their production curves, the Gulf of Mexico holds approximately 56 billion barrels of oil equivalent worth more than \$7 trillion assuming \$130/barrel oil, enough to meet total U.S. oil and gas demand for about five years.

Probing Deeper Beneath Gulf Waters

Repsol and BSF launched Project Kaleidoscope back in November 2006 as part of the Stanford Exploration Project (SEP), an industry-funded academic consortium whose aim is to develop new and better 3-D and 4-D seismic systems.

One of the Kaleidoscope Project's key objectives is to reduce exploration risks in the Gulf of Mexico, as well as other deep offshore basins such as are found off the Atlantic coasts of Brazil and West Africa, where oil companies are exploring for new reservoirs at depths exceeding 40,000 feet that are often trapped below thick layers of salt deposits that inhibit traditional seismic techniques.

Bringing Reverse Time Migration into mainstream use is seen as a way of doing that. "Fidelity of the RTM images reduces the risks associated with oil exploration in these prolific but complex areas," Repsol's director of geophysics Francisco Ortigosa said in a media release (<http://www.kaleidoscopeproject.info>).

"However, the universal use of this technology is limited by processing speed. The IBM PowerXCell 8i processor's unparalleled speed for the imaging algorithm allows extensive use of the technology. By speeding up seismic imaging, we foresee a revolution in exploration that will be comparable to the revolution in medical imaging technologies, such as MRIs, that today routinely yield detailed images from inside the body."

"This collaboration will deliver a robust, first-to-market seismic imaging solution for Repsol- PF, well ahead of the competition," said Biondo Biondi, a Stanford University associate professor, and co-founder and chief technical advisor of [3DGeo](http://3DGeo.com), a member of the SEP and Project Kaleidoscope research programs, when the program was launched.

"The Kaleidoscope project will allow us to maximize the value of our present assets and position the company as a key player in the deep and ultra-deep water exploration in the Gulf of Mexico," added Ramon Hernan, Repsol YPF's North American regional director, in the media release.

For and Against

With gasoline prices breaching \$4/gallon, tropical storms hitting the Gulf Coast, floods in the Midwest and forest fires blazing in California, the upcoming presidential election will determine whether or not ending the offshore oil drilling ban is likely to be a central plank of the next administration and federal government's energy policy.

Florida in late 2006 issued leases to 36 off-shore tracts in the Gulf of Mexico, some 125-plus miles off its Panhandle coast, to Australia's BHP Billiton Petroleum Deepwater Inc., Houston's Anadarko E&P Co., Shell Offshore Inc. and Italy's Eni SpA. Formerly covered by the moratorium, the leases were granted in exchange for the state setting up a "no drilling" buffer zone along the rest of its coastline.

OPEC controls some 40% of estimated world oil reserves – most of it among the easiest and cheapest to produce and refine – and that percentage is expected to increase in coming decades as world energy demand continues to grow.

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Oil industry executives and proponents of ending the moratorium acknowledge that the "easy oil" has been found, but argue that the US and world will need as much oil and gas as can be found and produced to meet demand growth, and that technological advancements are improving their ability to find, efficiently and safely develop deeper and more remote oil and gas reservoirs.

Critics contend that ending the offshore drilling ban would be a misallocation of capital and national resources, increase CO2 and greenhouse gas emissions and add to environmental threats. Citing statistics showing record-high numbers of BLM issued oil and gas leases in recent years, they contend that allowing multinational oil companies to explore and drill offshore has not and will not bring gasoline and fuel prices down and that government incentives would be better directed towards developing alternative, renewable energy resources.

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