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# Repsol-YPF joins the fray in Gulf

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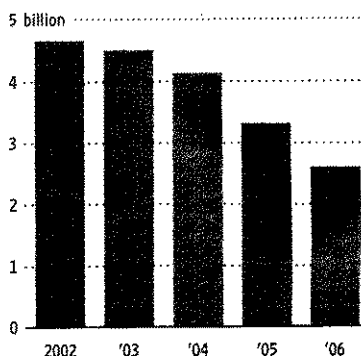
MADRID—Repsol-YPF SA has become the latest major oil company to come up with a plan to make it big in the Gulf of Mexico, just when Latin American woes and declining reserves are piling up the pressure on its embattled management team.

Madrid-based Repsol-YPF, a Spanish-Argentine company, is teaming up with 3DGeo Inc.—a company owned by private investors and researchers at California's Stanford University—as it seeks to stake its future on the tricky field of deep-water exploration in the Gulf of Mexico, where high-tech maps of the underground seafloor and computer calculations rule the day.

The Kaleidoscope project, as Repsol-YPF's plan is called, aims to increase the reliability of sub-sea maps, which trace oil and gas deposits thousands of feet below the seafloor. It will use software being developed by 3DGeo and run through the MareNostrum super-computer in Barcelona.

**DEALS &  
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**Repsol's reserves**  
In barrels of oil equivalent



Source: the company

The deepwater Gulf of Mexico continues to attract a bevy of international oil companies due to its relatively low tax and royalty rates, stable political regime, abundant infrastructure and remaining untapped oil deposits. Companies compete against each other in government auctions to snap up new acreage. Using seismic data to see a prospective pocket of oil that others have

missed could provide a critical leg up for oil explorers. Repsol-YPF hopes the new 3DGeo technology will give it a unique advantage.

Repsol-YPF is hardly the first oil major in the Gulf to join hands with academia. Most other foreign firms that have started operations in the area in the past two years—including companies like Norway's Statoil and Norsk Hydro, Saudi Arabia's Aramco and Brazil's Petrobras—have similar agreements in place.

The difference with Repsol-YPF is the scope and ambition of Kaleidoscope, and the fact that in its case the stakes may be higher than for other companies. Repsol-YPF has one of the lowest ratios of reserve replacement among major oil companies, and continued conflicts with the governments of Bolivia, Argentina and Venezuela over taxes and ownership of reserves have resulted in a blurry business outlook and declining profits during the past few quarters.

In February, Repsol-YPF said its fourth-quarter net profit fell 14% due to lower output and higher exploration costs, and said contract renegotiations have caused its re-

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serves in Bolivia—formerly one of its main focuses for exploration—to plunge to some 91 million barrels of oil equivalent, from around 1.3 billion barrels in 2004.

Jason Kenney, head of oil-and-gas research at ING bank, said Repsol-YPF's move into the Gulf and the launch of Kaleidoscope are a significant part of the company's move away from such troubled Latin American regions.

Still, he noted that Repsol-YPF's exposure to the U.S. is still small and, without new oil or gas finds in the area, only 3% of its production will come from the Gulf by 2010. He added that competition in oil exploration is fierce, and there are no guarantees that Kaleidoscope will work any better than comparable exploration projects being undertaken by rivals. "Investment in research and development is positive, but ultimately you gotta find the oil," he said.

Kaleidoscope is unique because 3DGeo is a for-profit firm rather than an academic consortium, even if it retains close ties to Stanford, and because the involvement of Repsol-YPF has allowed U.S.-based researchers access to Barcelona's MareNostrum supercomputer. According to the companies involved, MareNostrum—now the world's fifth-most-powerful computer—is by far the most powerful computer used by the international oil industry.

A lot is riding on this project. If it manages to find oil or gas deposits deep under the seabed, it would be a significant breakthrough for oil exploration.

Seismic imaging has become a vital tool for oil majors in the Gulf due to the rapid depletion of easily accessible shallow-waters reserves. In the past decade, shallow-water hydrocarbon production in

the Gulf has fallen by 50%, while deep-water production has increased fourfold, according to David Heikkinen, an analyst with Houston firm Pickering Energy Partners, Inc.

As a result, several dozen companies now drill in water over three kilometers deep to well depths of more than 9,000 meters, according to Mr. Heikkinen. Seismic imaging, obtained by sophisticated ships run by a specialized group of companies called geophysical contractors, tells these companies where to drill.

This knowledge is valuable. In deep waters, a well takes 60 days of work and costs around \$100 million or more. That compares with a cost of some \$500,000 for a similar well on dry land in Texas. Geophysical contractors sell seismic data either on an individual or a collective basis. The result is most oil producers in the Gulf work with the same sets of maps, and newcomers such as Repsol-YPF must find a way to try to make a difference in their investment.

The approach taken by Repsol-YPF and 3DGeo is similar to that recently taken by several competitors in the oil industry, and the academic world, says Arthur Weglein, a professor of Geophysics at the University of Houston. Mr. Weglein himself heads a seismic research program called M-OSRP, launched in 2001, that is sponsored by several international oil companies, including Royal Dutch Shell PLC, BP PLC, Italy's Eni and Petrobras.

The Massachusetts Institute of Technology is working with Shell in a similar, nonexclusive initiative launched last year, and Shell is also involved in projects of this kind with Stanford University and the Netherlands' Delft University, one of the leading institutions in seismic imaging.