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Video game chip may help search for undersea oil

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New York — A microchip built to power video game consoles may help speed up the search for deep oil reserves in areas such as the Gulf of Mexico, IBM Corp. and the international oil company Repsol are announcing today.

Repsol, based in Spain, tested IBM supercomputers to decipher the complex geology found at greater depths. The technology makes the computing process of searching for oil deposits up to six times faster, the companies said.

Faced with soaring oil and gas prices and an insatiable demand for fuel, energy companies are hunting for new sources in hard-to-reach places, such as off the coasts of Brazil and West Africa and in the deep waters of the Gulf, which may hold billions of barrels of untapped oil worth trillions of dollars.

Since drilling can be an expensive gamble, energy companies use seismic imaging to create 3-D underground maps that show likely oil and gas reserves. Ships searching for oil send loud noises into the earth and listen for the echoes that return, recording enormous amounts of data.

Translating that into a useful form requires a lot of computing power.

In parts of the Gulf and other regions, a thick layer of salt beneath the seabed may trap oil below and make imaging even harder. Sound probes may have to reach beneath 10,000 feet of water and 20,000 feet of sediment and rock.

Cell-powered supercomputers make new search methods more efficient and allow them to be used more broadly, said Francisco Ortigosa, Repsol's geophysics director.

"By speeding up seismic imaging, we foresee a revolution in exploration," Ortigosa said. He compared it to how advances in medical imaging, such as MRIs, have improved health care.

Repsol's imaging tests were conducted at the Barcelona Supercomputing Center using PowerXCell 8i processors.

The company planned to announce its results today at the World Petroleum Congress in Madrid.

The Cell processor powers the PlayStation 3 game console, but its speed and ability to process detailed 3-D images has led to uses in fields such as medical research.

The technology is attractive to energy companies as the search for oil gets more aggressive, said Tom McClure, who leads the IBM operation that sells computers to the oil industry.

"Because there's these trillions of dollars of oil sitting there waiting for the first guy to come get 'em, there's a race to develop these imaging techniques," McClure said. "You're going to see the amount of computational capacity in the industry go up dramatically in the next few years."

Repsol wanted to be one of the first to have the technology and approached IBM, he said.

McClure said IBM also has been working with other oil companies, but he would not name them. He said the computer algorithms involved in the imaging are among the "crown jewels" of intellectual property.

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