

High-Tech Seismic Imaging Enables Improved Exploration and Discovery of Oil and Gas Deposits for the Development of New Energy Sources

Researchers at Memorial University are using design tools and hardware provided by CMC Microsystems to develop seismic imaging technology that will enable improved exploration of the earth's interior and the discovery of new oil and gas sources

"CMC has proven invaluable in helping to advance my research and acquire additional investment in this project. Without CMC, I would be forced to spend much of the \$3 million received from the Atlantic Innovation Fund to acquire all the tools and software licences required for the project. I would then have no funds to actually perform the research."

Dr. R. Phillip Bording
Husky Energy Chair in Oil and Gas Research
Professor of Earth Sciences
Memorial University of Newfoundland



Dr. R. Phillip Bording of Memorial University of Newfoundland is leveraging tools and technologies provided by CMC to develop seismic imaging technology that will enable improved exploration of the earth's interior and the discovery of new oil and gas sources.

Dr. R. Phillip Bording of Memorial University of Newfoundland is breaking new ground with a research project valued at \$6 million that aims to provide oil and natural gas companies with the geophysical and geological information required to make sound investments in new off-shore drilling opportunities.

With a \$3 million grant from the Atlantic Innovation Fund, and industrial collaborators such as Husky Oil and IBM, Dr. Bording is developing three-dimensional (3D) seismic modeling inversion software and customized computer hardware that will generate better images of the earth's inner layers to expedite the identification of oil and gas deposits.

"Large-scale 3D seismic modeling would require three years using a thousand-processor parallel computer, a system that separates a large problem into smaller actions that can be carried out simultaneously in a synchronized way. Our goal is to perform this activity in 30 minutes. Companies must overcome computational hurdles to acquire data on viable drilling opportunities and improve the management of their economic assets," says Dr. Bording, who was previously employed in the US-based oil industry before joining Memorial University in 2004 as the Husky Energy Chair in Oil and Gas Research.

Dr. Bording launched the project in early 2006, and anticipates hiring 10 graduate students and researchers for the project. The team is currently designing algorithms using computer-aided design tools and hardware provided by CMC. "With the support of CMC, Memorial may very well be the only university in the world with the computing resources required to help the oil and gas sector solve this problem." *cmc*