

A supercomputer called Bruce

Tuesday, 21 April 2015

Haydn Black

PERTH-based DownUnder GeoSolutions is gearing up to receive the data from Polarcus Capreolus multi-client 3D seismic survey in the emerging Roebuck Basin, said to be one of the world's largest surveys.

The MC3DSS was expected last month to cover a total area of 22,130sq.km, supplementing 4300sq.km of existing seismic data, which is being reprocessed to create a seamless, huge, multi-client offering of over 26,430sq.km in the previously overlooked basin that sits between the prolific Browse and Carnarvon basins.

Last year Apache Energy, JX Nippon and Australia's Carnarvon Petroleum and Finder Exploration made the play-opening Phoenix South-1 oil discovery in the Bedout Sub-basin, which has highlighted the potential of the **Roebuck Basin**.

The basin, known erroneously until 1994 as the Offshore Canning Basin, is one of the least explored offshore regions in the North West Shelf, but could be a new oil province for Australia, although past exploration of the Bedout and Rowley sub-basins has been limited.

The data is currently being acquired with two Polarcus A-Class 3D seismic vessels using the company's RightBAND technique for broadband data acquisition.

The processing and imaging will be conducted by DUG using the power of its Perth supercomputer, simply known as Bruce.

A single copy of the newly acquired field data will be around 500 terabytes in size.

The DUG team of geophysicists is processing and imaging the data as it is acquired.

Fast track volumes will be available throughout the acquisition with final data delivery of a depth migrated product, TTI PreSDM, in early 2016.

By using Bruce's supercomputing power, the time taken to process such a large dataset is reduced.

DUG managing director Matt Lamont said the combination of Polarcus' proficiency in survey design and acquisition and DUG's processing and imaging expertise make for a strong technical team.

"The DUG team is processing this very large dataset, through a complex workflow, in record time. This is made possible by our team of industry-leading geophysicists, proprietary software and the power of Bruce, our supercomputer," Dr Lamont said.

"We're excited to, once again, be involved in a world-renowned project which has the potential to unlock huge hydrocarbon reserves off the coast of Western Australia."

Polarcus CEO Rod Starr said the global marine geophysical company was pleased to be part

of a project which pioneered innovation in oil and gas technology.

"The partnership between Polarcus and DUG is enabling us to provide the industry with a very unique solution that seamlessly integrates and accelerates every step of the seismic data acquisition and processing workflow," Starr said.

"The resultant data will enable E&P companies to make well informed decisions about potential investment opportunities in this exciting new basin offshore Western Australia, given its importance in global oil and gas production."

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The hardware employed on board the Polarcus vessels was custom developed by SGI specifically for DUG and is powered by Intel Xeon processors and Intel Xeon Phi coprocessors.

DUG's proprietary software, DUG Insight, enables the onboard team to provide intuitive quality control of the data as it's acquired. The data is then sent to Bruce and team of specialised geophysicists for more complex processing and imaging analysis onshore.

SGI and Intel have been involved with DUG for more than a decade.

"DUG's innovative use of Intel Xeon Phi coprocessors is enabling geophysicists to work with large seismic data sets interactively," Intel's Charles Wuischpard said.

"In an industry where time is invaluable, the Intel Xeon Phi-based SGI system allows DUG to test more data, faster, leading to better results in a much shorter period of time. Its integration of Intel Xeon Phi coprocessors has enabled them to quickly adapt its existing code and immediately pass this value on to its customers."

Western Australia is expected to be one of the largest oil and gas producing regions in the world when projects currently under development move into production.

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