Spectrum has completed comprehensive broadband reprocessing of 19 contiguous legacy 3D surveys in the North Carnarvon Basin, offshore the North West Shelf of Australia, one of the most prospective hydrocarbon provinces in the world (Figure 1). All surveys were processed as one volume from field tapes and the result is a fully conformable and seamless dataset, named ‘Olympus’. This follows the format of the reprocessing and all the older Surveys (Northwest Shelf), Olympus such as Delhi, Komba, Darwinian and Hermes sediment— all of which happen to be the names of wells and/or 3D surveys within the area.

**Olympus Rising**

**A Step Change in North Carnarvon Basin Imaging**

The early results of the Olympus comprehensive broadband PSTM dataset, the first of its kind in the North Carnarvon Basin, have not only shown the significant uplifts that can be obtained from modern reprocessing of legacy data but have also revealed the potential of the ability to embark on fully integrated 3D basin studies tied to hundreds of wells. Even now, as the PSDM version of this data is being generated, the possibility of unearthing nearby exploration opportunities along the Rankin Trend looks very promising.

Further afield across the Victoria Syncline the Olympus data will rejuvenate exploration by allowing accurate basin modelling and reservoir mapping to unravel the details of complex but potentially prolific charge migration and trapping systems that have been barely touched to date. The futures of Olympus and the underlying Mesozoic basin are truly rising!

The reprocessed dataset covers nearly 20,000 km² and encompasses 300 km of the Rankin Trend along the southeast margin of the shelf, where over 30 oil and gas fields have been discovered. This data is complete to PSTM (Pre-Stack Time Migration) and as the PSDM (Pre-Stack Depth Migration) nears completion the astounding fidelity of the data is bringing new insight to reservoir mapping in the prolific Rankin Trend and to
The dataset is an important addition to the processing tool box, as it improves the zero-phase Radon transform and an improved deghosting technique, which is a significant addition to the processing tool box. This is broadly reprocessing, which improves the zero-phase Radon transform and an improved deghosting technique. This is particularly valuable in complex geological settings, such as those encountered in the Northern Territory, where the geological structure is complex and the seismic data quality is poor.

The reprocessed data has been used to identify potential exploration targets, such as the Victoria Carbonate Basin, where a number of exploration wells have been drilled in the past. The reprocessed data has also been used to improve the understanding of the geological structure, which has led to the identification of new exploration targets. For example, the new reprocessed data has been used to identify a number of potential exploration targets in the Victoria Carbonate Basin, where a number of exploration wells have been drilled in the past.

The improvement in the zero-phase Radon transform and an improved deghosting technique is particularly valuable in complex geological settings, such as those encountered in the Northern Territory, where the geological structure is complex and the seismic data quality is poor. This is particularly valuable in complex geological settings, such as those encountered in the Northern Territory, where the geological structure is complex and the seismic data quality is poor.

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The Olympus 3D dataset, completed in association with Santos Petroleum, recently matured over the Dax Formation, which holds the single largest gas resource in the North West Shelf. The dataset was acquired through the acquisition of 38,000 km of new 3D seismic data and 15,000 km of reprocessed 3D data in the sub-basin. This provided the highest image quality available, with a consistent inline direction, significantly improving the data quality compared to the conventionally shot data. The dataset is now available to explore the Jurassic and Triassic formations, providing a much better understanding of the reservoirs and a cost-effective solution for deep prospect evaluation.

Regional Trends: Victoria Syncline and Brigadier Trend

The main prospective intervals lie beneath the Cretaceous strata. As such, there is no reservoir characterization above the Cretaceous and the main focus is the Late Jurassic to Early Cretaceous. These intervals are known to be gas-prone and have been proven to contain gas fields. The Mungaroo Formation is a significant reservoir in the region, and the Mungaroo gas field is a well-known example of a productive Jurassic gas field in the region. The Mungaroo Formation is known to contain significant gas reserves, and the Olympus dataset provides a high-quality image of this formation, allowing for a more detailed evaluation of the reservoir.

Complex Charging Paths

Forty years later exploration drilling continues and oil and gas pools are still being discovered. As such, the opportunity for exploration remains high, with the potential for significant discoveries in the region. The Olympus dataset provides a high-quality image of the region, allowing for a more detailed evaluation of the reservoirs and a cost-effective solution for deep prospect evaluation.

Figure 3: Stratigraphic column showing the main plays and tectonic events.