

Exploration of New Zealand's Deepwater Frontier

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New Zealand's marine territories, the exclusive economic zone (EEZ) and extended continental shelf (ECS), have a combined total area of 5.2 million square kilometres. Of this area, approximately 1.2 million square kilometres is underlain by sedimentary basins which may be thick enough to generate and expel hydrocarbons.

To date, exploration has concentrated on the onshore and nearshore basins and only one, Taranaki, has produced significant volumes of hydrocarbons. The main reason for this is thought to be the active plate boundary which runs through the country, creating numerous petroleum traps and deforming them further, to compromise their integrity. The inference is that regions remote from the effects of the present plate boundary stand most chance of containing large volume of trapped hydrocarbons.

Most basins have deepwater components that, until recently have been largely ignored by industry and have received only minimal research efforts. However, this is changing as both industry and government are beginning to recognise the potential of the deepwater basins.

New seismic data has been acquired over active exploration permits in the Deepwater Taranaki, Great South and Canterbury basins, and drilling commitments are due from companies in each of these basins within the next year. Meanwhile, reconnaissance seismic surveys are being acquired by both government and industry across basins that have never been investigated with modern seismic.

The history of most basins dates from the early Mesozoic, when they formed as the Gondwana margin developed. Many styles are apparent from rift basins with little post-rift deformation, through rift basins with various degrees of post-rift inversion and compressional basins, later rifted. Previously, rocks older than Late Cretaceous were considered to be economic basement, the new information has extended the range of potential source rocks and petroleum systems. The potential of New Zealand's sedimentary basins is considered to be high and New Zealand may become the "North Sea" of the southwest Pacific.