

Australia's Southern Margin: A Significant Deepwater Exploration Frontier

Rigby, Stephen M., and Mark L. Taylor, Woodside Energy Ltd, Perth, Australia

Australia's southern margin basins developed during the Jurassic and Cretaceous in response to rifting and break-up between Australia and Antarctica. Rift-induced depocentres include (from west to east) the Bremer, Eyre, Ceduna and Duntroon Sub-basins of the Bight Basin and the Otway and Sorell Basins further east. Sedimentary wedges composed mainly of Tertiary cold-water carbonates form the present-day continental shelf, while present-day deep water basins have thin Tertiary sedimentary cover.

The deepwater basins of Australia's southern margin remain sparsely explored, with only 3 wells drilled in water depths greater than 500m. Woodside-led joint ventures are actively exploring the vast deepwater frontier province of the Ceduna and Duntroon Sub-basins, where a Late Cretaceous delta system extends over more than 100,000 km². As part of a systematic exploration program an extensive regional 2-D seismic grid has been acquired and one exploration well (Gnarlyknots-1A) has been drilled. Activity has continued with the recent acquisition of 3-D seismic data.

The Otway Basin has been the focus of exploration activity for many years. During the past decade several significant gas discoveries have been made in the offshore shelfal part of the basin and developments such as the Woodside-operated Thylacine gas field are now supplying gas into the eastern Australian domestic market. Exploration is now moving into deep water, where a Woodside-led joint venture has acquired a substantial 3-D seismic survey and intends to drill what will be only the second deep water Otway Basin exploration well during the coming year.

Australia's deep water southern margin is still largely unexplored and remains one of Australia's most significant exploration frontiers in an increasingly opportunity-constrained global E&P business.