Depositional Environments of 3D Surveys for potential CO_2 Sequestration in the Northern Caswell Sub-Basin, Browse Basin, North West Shelf, Australia

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ABSTRACT

The Browse Basin is a northeast-trending, Palaeozoic depocentre on Australia's North West Shelf. It covers an area of approximately 140,000km^2, contains in excess of 15km of Palaeozoic to Cenozoic sediments and host significant gas and condensate reserves.

Reactivation and inversion of older structures, as well as the generation of anticlines within the Browse Basin has occurred. The Browse Basin holds two very large Miocene inversion structures, the Lombardina and Lyner structures, interpreted to be transpressional anticlines that continued to grow throughout the Late Miocene (Keep, 1998). The reservoir/seal thicknesses are similar to what would be expected of those deposited in a regressive/lowstand environment, with thicker accumulations of strata most likely to be encountered basinward, or in this case to the west/northwest.

The prospect that an adequate system exists for the capture and storage of CO_2 within all three surveys cannot be adequately determined from this study. All three of the 3D surveys showed valid reservoir and seal pairs exist, with the thicknesses varying greatly. The lack of any structural high within the Canis and North Browse 2 surveys despite the presence of a valid reservoir/seal pair automatically precludes these survey areas from being considered for a potential CCS project.

KEYWORDS

Caswell Sub-basin, Northwest Shelf, Browse Basin, Sequestration, Sequence Stratigraphy, Carbon Capture & Storage

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