

Offshore Lamu Basin, Kenya: Comparison with Northwest Shelf Australia

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The Lamu Basin covers a large area of coastal Kenya, extending offshore from a relatively narrow onshore graben to cover most of the continental shelf and slope off Kenya. The hydrocarbon resource potential of the offshore segment of the Lamu Basin can be assessed by comparing with other Gondwana basins on the margins of the Indian Ocean. The Gondwana break-up history of East Africa is reviewed to identify major reservoir-seal pairs and potential source intervals within the basin. The stratigraphy of the offshore Lamu Basin is compared with that of the Carnarvon Basin along Australia's North West Shelf to identify analogue plays and potential resource volumes. Historical well results and recent 2-D seismic data have been interpreted to identify various structural styles and play fairway segments.

Four 'mega-sequences' from the Karroo to the Late Tertiary are identified and all have potential reservoir-seal pairs. Major similarities and some differences in structural styles can be seen between the offshore Lamu and Carnarvon Basins. Yet the Carnarvon Basin has discovered reserves in excess of three billion barrels of oil equivalent and 50 wells per 25,000 square kilometres of productive basin area. Scant, off shore, well control of only one well per 25,000 square kilometres in the Offshore Lamu Basin shows evidence exists of at least two active petroleum systems. The results of the comparison indicate a significant potential resource in a number of trap types, within a core area of the offshore play fairway in the Lamu Basin.