

## **The Karroo Corridor, Madagascar and the Perth Basin, Western Australia: their remarkable similarities, and potential for cross-basin learnings.**

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This paper seeks to summarise and compare the structural settings, stratigraphy, and known hydrocarbon systems of the Perth Basin of Western Australia and the Karroo Corridor of Western Madagascar.

Despite their present-day separation of ~6000 km, and their pre-drift, intra-Gondwana separation of ~3500 km, the Karroo Corridor (KC) of Madagascar and the Perth Basin (PB) of Western Australia show remarkable similarities:-

- Both lie on the west side of a (sub-) continent,
- Both are failed Permian rift basins
- Both strike N-S and are more than 900 km in length and 50 - 100 km wide
- Both are bounded inboard by a faulted contact with crystalline basement
- Both are bounded outboard by a Jurassic rift system which culminated in continental separation and sea-floor spreading (mid-Jurassic for KC; late Jurassic-Valanginian for PB)
- Both are overlain by a Cretaceous-Tertiary passive margin sequence, though now widely eroded as a consequence of Neogene uplift.
- A proven oil charge in both basins from Early Triassic shale source rocks (with  $\delta^{13}\text{C}$  values of 30-33 ppt)
- A proven (PB) and potential (KC) gas-condensate charge from Permian coals (with  $\delta^{13}\text{C}$  values of 25-28 ppt)

On this basis, the two basins could have significant analogue value, one for the other. For example,

- Is there an as-yet undiscovered heavy oil play in the PB?

- Are there two discrete working Permo-Triassic hydrocarbon systems in the KC?
- Are there viable gas-condensate reservoirs within the Permian sequence of the KC, similar to the High Cliff and Dongara sandstones of the PB?
- Could the geo-mechanical studies from the PB (relating stress orientation to fault leakage) provide valuable insights to trap risking in the KC?

