

Aspects of the Geological Development of the Phan Rang Shelf, Offshore South Central Vietnam, South China Sea

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The scarcely explored Phan Rang Shelf is situated in between the hydrocarbon bearing Cuu Long and the Nam Con Son basins and the undrilled Phu Khanh Basin. The area is structurally composed of a set of Cenozoic grabens, half-grabens and structural highs probably underlain by Mesozoic basement situated as deep as more than 3 sec TWT. The northern part of the area is characterized by coast-parallel, N–S trending extensional faults, whereas the southern part is characterized by NE–SW trending extensional faults paralleling the shoreline of SE Vietnam.

Rifting probably started during Paleogene time and continued into the early half of Neogene after a period of inversion in the western half of the shelf near the Oligocene – Miocene boundary. The structural trends are therefore speculated to reflect both tectonics related to the SE-wards extrusion of Indochina (N–S strike) and tectonics related to the rifting and spreading of the South China Sea (NE–SW strike). Widespread magmatic activity occurred during early Late Miocene times, the onset of which marked the cessation of rifting and caused the formation of a distinct earliest Late Miocene unconformity that seals most faults. Thermal subsidence dominated the area hereafter during late Neogene times, which resulted in fast transgression initially promoting extensive carbonate deposition and later on caused marine siliciclastic deposition to dominate.