

Hydrocarbon Prospectivity of the Deep Water Phu Khanh Basin

Tad Choi¹ and Jo McArdle¹

¹Petroleum Geo-Services (PGS), Singapore

Abstract

The Phu Khanh Basin, offshore Vietnam is a frontier basin covering an area of approximately 78,000 km². Exploration of the Phu Khanh Basin initiated in 1972 in the inboard shallow water part of the basin. However, exploration in the deepwater area only began in 2008 when PGS acquired over 14,500 line km of long offset, partly GeoStreamer® multi-client 2D seismic, gravity and magnetic data. Several wells have been drilled post seismic acquisition and have proven the presence of a working petroleum system.

The Phu Khanh basin lies on the central and southern Vietnamese continental margin, which marks the transition zone between the continental Indochina block and the South China Sea margin. The opening of the South China Sea during the Cenozoic has strongly influenced the development of the basin.

Interpretation of the seismic and gravity data supports the existence of two main depocentres filled with multiphase syn-rift Paleogene-Neogene sediments. The early syn-rift package is thought to host lacustrine derived source rocks which are believed to be thermally mature as evidenced by shows seen in the wells. Several inverted structures have formed due to the regional tectonics related to the opening of the South China Sea. The multiphase syn-rifting that occurred in the Phu Khanh Basin is also seen in the NW Palawan Basin (observations made on PGS's NW Palawan MC3D dataset), making these basins possible analogues to each other, with similar structures and Play types.

Various Play types have been identified in the Phu Khanh Basin and they include; basement play, Miocene reefal build-ups on basement highs, Mio-Pliocene turbidite fans and Oligocene syn-rift clastics sealed under the regional Miocene unconformity. Various direct hydrocarbon indicators (DHI's) are observed in the seismic data at various stratigraphic levels. This coupled with recent well results, gives further evidence for a working petroleum system in the Phu Khanh Basin. This study will present the prospectivity of the deep water Phu Khanh Basin.