

From Source to Sink – a Depositional Model for Upper Slope Canyons in the Lower Tertiary-Campos Basin, Brazil

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The Campos Basin, offshore Brazil is one of the country's most prolific hydrocarbon bearing sedimentary basins and is the source of about 85% of it's national oil and gas production. The Campos Basin is a typical passive margin basin. The shallow water shelfal areas have been explored mainly for Albian Macae carbonates and the Aptian to Barremian Lagoa Feia rift sequence with only limited success. The Tertiary deep-water sandstones of the Paleocene and the Eocene hold significant oil reserves as seen in the Barracuda and Marlim South fields.

The key to the analysis of the hydrocarbon potential is the identification of the main sediment fairways from the shelf into the basin in order to predict reservoir presence and facies in both, shelfal and basinal areas. The paper outlines detailed seismo-stratigraphic investigations of a Lower Tertiary (Paleocene to Mid-Eocene) shelf canyon system based on the interpretation of newly acquired high quality 3-D seismic data in combination with regional 2-D seismic in the shallow water of the Campos Basin. This resulted in the development of a new play concept for the shelfal areas of the Campos Basin. The study has given detailed insight into the internal canyon architecture and fill history and enables the prediction of sediment fairways into the basin. It provides the missing link from source to sink between the Rio Paraiba do Sul delta system and other rivers and the well known deep-water sediments of the Campos Basin. Besides the seismic structural and stratigraphic interpretation, other key investigations included log correlations and the re-interpretation of 3rd order cycles in the Lower Tertiary interval.