

Basin Modeling, a valuable Exploration Tool - An Example from Brazil's Campos Basin

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The Campos Basin, offshore Brazil is one of the most prolific hydrocarbon bearing sedimentary basins in Brazil. About 85% of Brazil's hydrocarbons are produced from this basin.

Campos basin is an Atlantic type passive margin basin. The shallow water shelfal areas have been explored mainly for Albian Macae carbonates and the Aptian Lagoa Feia rift sequence with limited success. The deep-water areas hold major oil fields like Albacora, Marlim and Roncador with deep-water turbidite reservoirs, discovered in the 1990's.

Key to the analysis of hydrocarbon potential is the integration of all geoscience disciplines. The paper will outline how a hydrocarbon systems analysis based on the interpretation of newly acquired high quality 3D seismic data in combination with regional 2D seismic in the shallow water Campos Basin resulted in the development of a new play concept and lead to the high grading of existing plays. Key investigations include besides the seismic structural and stratigraphic interpretation, log correlations, fluid replacement studies, inversion, structural reconstruction and AVO analysis. Regional 3D basin modeling studies combine all elements of the hydrocarbon system from source to trap, integrate the results of the interpretation process and provide detailed results before final exploration decisions are made. The application of different interpretation systems proved valuable / necessary to visualize the complex geological settings.

An example of a 3D basin modeling study in the shallow water Campos Basin illustrates the use of basin modeling studies.
