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New Exploration Play Concepts in Tarfaya Offshore Basin, Morocco

The Tarfaya area lies on the offshore extension of the Anti Atlas Palaeozoic fold belt. The Mesozoic development of this margin was largely controlled by late Triassic to middle Jurassic rifting and subsequent opening of the Atlantic, with the evolution of a typical continental passive margin profile. Initiated in Triassic times, the process of rifting led to horst and graben geometry at the rift margin. The rifting stage was followed by moderate subsidence associated with Jurassic continental drift and development of widely spread carbonate platform.

Cretaceous time is characterized by the development of a deltaic System. The Tertiary sequence is well developed toward the offshore.

New seismic interpretation in the Tarfaya area led to the identification of several plays. These consist of Tertiary turbidite; Cretaceous siliciclastics which are associated with roll over structures; Upper Jurassic carbonate debris flow; Lower to Middle Jurassic reefs and carbonates, and Triassic related lacustrine deposit plays.

Geochemical studies have demonstrated the presence of good mature source rocks within the Lower Cretaceous and Lower Jurassic sequences. The reservoir rocks with adequate porosity have been encountered in the previous exploratory wells at different stratigraphic levels. This new interpretation has permitted a better understanding of the hydrocarbon migration mechanism.