

Structural and Stratigraphic Evolution of the Offshore Sirt Basin, Libya

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The Onshore Sirt basin is a prolific, rift basin with an estimated 50 Bboe of resources discovered to date. Newly acquired marine 3D seismic data has demonstrated that the onshore Early Cretaceous rift continues into the Gulf of Sirt where comparatively little exploration activity has occurred. In advance of drilling deepwater exploration wells in the basin, this study has been undertaken to understand the resource potential of the Mesozoic and Tertiary section.

In this paper we will examine the stratigraphic and structural evolution of the Sirt basin, focusing on the implications for reservoir and source rock potential in the Cretaceous and Tertiary. An extensive onshore wells database has been used to define gross depositional environments for 15 intervals throughout the Mesozoic and Tertiary. Subsequent seismic stratigraphic mapping has been used to extend these maps into the offshore environment. The structural setting to the basin has been determined from regional 2D and recently acquired 3D data offshore. Onshore, where there is limited seismic data, the structure has been inferred from regional well correlation.

Combining our understanding of stratigraphic and structural development has enabled us to make predictions as to the likely palaeobathymetry of the offshore area during the Cretaceous and make observations regarding the evolution of the margin offshore Libya.