Prospectivity in the North Red Sea Egypt - New Data, New Challenges, New Opportunities

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Recent work by a multi-disciplinary team has led to a significantly better understanding of the prospectivity of the North Red Sea. New regional biostratigraphic and environmental analysis from North to South through the Gulf of Suez and into the Red Sea have placed the Nubian sequences into a regional chronostratigraphic framework. The Nubian Upper Cretaceous pre-rift sandstones are observed in the field on both the Egyptian and Saudi-Arabian side of the North Red Sea. This regionally extensive sequence was deposited in a continental to shallow marine setting fringing the Mesozoic Tethys Ocean which lay further north. Extensive onshore fieldwork and mapping of sediment input points, fault orientations and fault linkages have helped to develop an understanding of the expected controls on syn-rift sandstone and carbonate deposition offshore. Thick halite with interbedded evaporite and clastics in the Late Miocene sequences of the Red Sea pose seismic imaging challenges. Recent reprocessing and newly acquired seismic data has produced a step change improvement in imaging of the prospective pre-rift section. Petroleum systems modelling incorporating new information on rift timing and crustal thinning as well as onshore core analysis for source rock properties and temperature variation through time indicate oil expulsion occurs in the inboard section of North Red Sea - Block 1. This is supported by hydrocarbon shows in the drilled offshore wells which can be typed to pre-rift source rocks from stable isotope and biomarker data. All the key elements of the Gulf of Suez petroleum system exist in the North Red Sea. An integrated exploration approach has enabled prospective areas in the North Red Sea - Block 1 to be high-graded for drilling in early 2011.