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## **Petroleum Geology and Factors Characterized the Richness and Potential Plays of Hydrocarbons in the Gulf of Suez Rift Basin, Egypt**

The Gulf of Suez in Egypt has excellent hydrocarbon potential, with the prospective sedimentary basin area measuring appropriately 19,000 km<sup>2</sup>. This basin contains in excess of 80 oil fields, with reserves ranging from 1500 MMbl to less than 1 MMbl. The lithostratigraphic units in the Gulf of Suez can be subdivided into three megasequences: a pre-rift succession (pre-Miocene or Paleozoic-Eocene), a syn-rift succession (Oligocene-Miocene) and a post-rift succession (post-Miocene or Pliocene-Recent). The northern and central Gulf of Suez consists of several narrow elongated depositional troughs; while the southern part is dominated by a tilt-block terrane, containing numerous offset linear highs. Oils in the Gulf of Suez were sourced from potential source rock intervals in the pre-rift succession which, are typically oil-prone and occasionally oil and gas prone, or are composites of more than one type for oil prone, oil and gas prone or gas prone, respectively.

The reservoirs can be classified into: pre-rift reservoirs (the pre-Cambrian granitic rocks, Paleozoic-Cretaceous Nubian sandstones, Late Cretaceous Nezzazat sandstones and the fractured Eocene Thebes limestone), and syn-rift reservoirs (the Miocene sandstones and carbonates of the Nukhul, Rudeis, Kareem and Belayim Formations and the sandstones of South Gharib, Zeit and post-Zeit). Miocene evaporites are the ultimate hydrocarbon seals, whereas the shale and dense limestones of the pre-rift and the syn-rift stratigraphic units are the primary seals. The Gulf of Suez is the most prolific and prospective oil province in Egypt, and any open acreage, or relinquished area, will be of great interest to the oil industry.