

Miocene Play Fairway Opener, Offshore Nile Delta, Egypt

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Hydrocarbon production in Egypt dates from the time of the Pharaohs when surface seeps were used in mummification. More recently, over 40 TCF of gas have been discovered in the Nile Delta. Pliocene shelf and slope systems of the Nile Delta contain the majority of these fields where the predictable seismic response to gas yields high exploration success. Production has focused in the shallow water areas of the Eastern Nile Delta from Plio-Pleistocene targets. Pliocene production in deep water regions occur in the Western Nile and include mostly biogenic gas in slope channel systems. With increased domestic & global demands for gas and an estimated YTF greater than the discovered base, the search for gas has moved to deeper Oligocene to Miocene pre salt sequences. The Western Nile Delta is underlain by Jurassic rift blocks associated with opening of the Mediterranean. The structural setting is characterized by a steep, fault-bounded margin to the south that intersects the Rosetta Fault system. This fault junction exerts a long lived, fundamental control on deposition of slope canyon systems. The most prominent structural feature off the shelf is a large SW to NE plunging anticlinorium that extends offshore for 160 km. The Raven discovery is in slope channel systems draped over a 20 km by 10 km anticline on this trend.

Exploration success in deep water and petroleum system analysis of the West Nile Delta demonstrated deeper sources of thermogenic gas. On the Raven anticline, improved 3D seismic data acquired along multiple azimuths allowed definition of internal channel architecture and a potential fluid response in the Lower Miocene section. These channels were deposited in large scale erosional canyon systems 2-5 km wide and up to 700 meters deep. Reservoir facies range from coarse grained gravels at the base of the channel systems to fine grained channel levees associated with the final stages of channel abandonment. Success at Raven has de-risked a significant volume of the Nile Delta's yet to find volumes. Recent drilling activity north of the Raven discovery and to the East in shallow water areas target these Lower Miocene and Oligocene systems. The four most recent wells have announced additional discoveries. The opportunity for export or supply to a growing domestic market means that Egypt will benefit greatly from the success of this new play fairway.