

# EXPLORATION HISTORY AND GEOLOGICAL IMPLICATIONS OF THE KORA PROSPECT, TARANAKI BASIN, NEW ZEALAND

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## Abstract

During 1987-88, ARCO became a major player in the offshore Taranaki Basin with the drilling of the Kora wells and the acquisition of interest in several licences. Data from the Kora wells provide exploration insight into source rock distribution, hydrocarbon migration, and potential reservoir rocks.

The original Kora play concept was to test the Eocene Tangaroa Sandstones in a large domal structure associated with a Miocene age volcano, located on the western bounding (Cape Egmont) fault of the Northern Taranaki Graben. Kora-1 was drilled to 3421m, and encountered significant hydrocarbon shows in the Miocene volcanics and the Tangaroa Sandstones. Cores indicate the Tangaroa was highly altered, due to proximity of the vent, and drillstem tests recovered mud filtrate and minor oil. The Miocene volcanics tested 1168 BOPD, 435 GOR, 35° API, nonwaxy crude, in contrast to the typical waxy gas/condensate of Taranaki. This oil was sourced from a nondefined Cretaceous marine facies.

Cores from the Kora-1A sidetrack indicated reservoir heterogeneity within the volcanics. Kora-2 and 3 were drilled to test the concept of a very large oil accumulation within the volcano. They encountered variable volcanic reservoirs, biodegraded oil staining and a poor Pliocene seal. Timing of migration and seal deposition was the key to Kora oil entrapment. Kora-4 evaluated the Tangaroa in the southwest quadrant of the structure. Significantly, the Tangaroa contained unaltered quality reservoir rocks but no hydrocarbons. Lack of charge on the west flank confirmed that oil generation was confined to the Taranaki Graben with the Cape Egmont Fault system providing the conduit for migration.

## Author

DANIEL NEDLAND is currently the Project Coordinator for ARCO's New Zealand Project. He received a B.Sc. in Geology (1969) from Wisconsin State University and his M.Sc. in Geology (1971) from the University of Wisconsin. He completed additional studies at Rice University and the University of Oslo. He joined Atlantic Richfield in early 1977. In early 1990 he joined ARCO International and has worked in Jakarta, Indonesia and head office.