

Structural and Stratigraphic Controls on the Distribution of Hydrocarbons in the Greater Kinabalu Field, Sabah, Malaysia

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The Kinabalu Field, discovered in 1989 on the shelf of Sabah, Malaysia, consists 3 distinct accumulations, Main, Deep, and East, that are fault dependant closures with Late Miocene shelf sandstones reservoirs. Using new long cable 3-D seismic, high-resolution biostratigraphy, and a full Field static model the following issues will be discussed:

(1) The structural and stratigraphic evolution of the area in relation to controls on the contrasting distribution of hydrocarbons between these fields. (2) The origin and timing of the Kinabalu Fault (tectonic extension ~ 8.0 ma) and its control on reservoir quality and hydrocarbon distribution. (3) Reservoir subdivisions of the 4th to 5th order parasequences from the standpoint of column lengths, fault seal, and the timing of reservoir pressure measurements. Over “geological time” the major reservoirs behave as a tank, whereas over the time scale of production (6 years, intra-sequence shales vertically compartmentalize them, e.g., static vs. dynamic top seals. (4) Rapid deposition of hydrocarbon-barren TB 3.2 transgressive systems tract in P, Q, and R sequences during maximum growth of Kinabalu Fault influenced the position of top over pressures.