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POROSITIES IN PULAI-II SANDSTONE – IMPLICATION FOR HYDROCARBON EXPLORATION IN OLDER RESERVOIRS

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The sandstones of the Pulai-II Formation [Pulai Formation and Unit IIB - IIA(u)] consist primarily of braided fluvial channels and near-shore barrier bars, and secondarily distributary and tidal channels. Petrological, SEM and XRD studies of these sandstones indicate that the reservoir quality is primarily the result of burial diagenesis, and is related to facies, depth of burial (and temperature), structuring and hydrocarbon occurrences. Dominant textural modifications are the destruction of primary porosity by the precipitation of authigenic minerals, primarily quartz and ferroan-calcite, and porosity enhancement by the dissolution of framework feldspars and chert. Up to 40 percent of the total porosity is believed to have been caused by the dissolution process, in places by percolating meteoric waters. Porosity values exceeding 45 percent have been recorded in the medium to coarse-grained sandstones, and porosity of less than 15 percent is generally found mostly in fine-grained sandstones, and in medium to coarse-grained and sandstones which are, or have been buried deeper than 3000 meters.

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