

Reservoir Development of Cenozoic Carbonates in Southeast Asia

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Almost half of SE Asia's considerable hydrocarbon reserves are contained in carbonates. Although the majority of economic discoveries are in Miocene buildups, Paleogene reservoir intervals also occur. However, there is little data on how the spatial and temporal variability in depositional and diagenetic conditions influence the considerable heterogeneities in reservoir quality often encountered. Paleogene carbonates in SE Asia are commonly dominated by larger foraminifera. These carbonates developed on or around the margins of highs within subsiding basins, and typically form large-scale platforms or isolated shoals. Good poroperms can be preserved in shoal or redeposited carbonates lacking micrite. Secondary porosities develop due to fracturing, chemical dissolution during burial, or as karstic cavities. However, the lack of aragonite, paucity of eustatic fluctuations and deposition in generally subsiding environments reduces the potential for vadose or meteoric leaching. In comparison, Neogene carbonates often contain abundant aragonitic bioclasts, such as corals. Neogene carbonates typically develop as reefal buildups, shelfal deposits or as isolated platforms. Active Neogene compression in SE Asia resulted in increasing subaerial emergence, and many of the platforms were affected by tectonics or eustacy. Compared with Paleogene limestones, poroperms are generally higher in Neogene carbonates and interparticle, biomouldic, vuggy, cavernous and fracture porosities all occur. This evaluation of variability in SE Asian carbonate reservoirs provides much needed data as the hydrocarbon industry focuses on improving recovery from existing fields and exploring for new reserves.