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## **Growth Faults and Diapir Development in the Neogene Sandakan Basin Offshore Sabah-Malaysia - New Insight from 3D Modelling**

Exploration for hydrocarbons undertaken in the Neogene clastic sediments of eastern Sabah yielded limited results compared to the prolific oil and gas bearing Baram Delta and West Sabah Basin. Understanding the timing and evolution of the relatively complex structures is critical to the development of successful exploration in this area.

Offshore seismic interpretation was used to create a conceptual model of the Neogene tectonic evolution for the Sandakan basin. Current sedimentation rates produce an eastward prograding wedge. Two underlying domains have been identified on 2D seismic lines. In the Inner Basin circular outliers, similar to those observed onshore, are sealed by a strong "Shallow Regional Unconformity". In the Outer basin, the structural style is dominated by growth faults and roll over anticlines. Mud diapirs originating from the substratum penetrate the "Deep Regional Unconformity" and play a major role in the structure of both areas. Growth faults and diapirs are the major features accommodating the progradation of the Sandakan delta throughout Neogene to present.

A series of 2D interpretations were used to construct a 3D model of the area. Sequential restoration was used both to validate the interpretations and to develop a new integrated structural model for the area. 3D-palinspastic reconstructions were used to understand the interplay of shale diapirism and growth faulting with continuing sedimentation in the resultant accommodation space to develop models for both stratigraphic and structural trapping in the basin. These new models highlight the value of integrating sedimentation with 3D structural evolution to develop valid exploration strategy.