

## **THE APPLICATION OF INTEGRATED 3D SEISMIC AND RESERVOIR GEOLOGICAL STUDIES IN A COMPLEX OILFIELD, D18 FIELD, SARAWAK, MALAYSIA**

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The D18 oil field is located in the Balingian Province of offshore Sarawak, Malaysia. The field is structurally complex, being situated in the West Balingian Fold Belt, a province affected by complicated compressional wrench tectonics. The productive reservoirs comprise Lower to Middle Miocene lower coastal and delta plain deposits which are characterised by variable lateral continuity.

Development of the field began in 1986 with the drilling of five wells. However, poorer than expected performance of these initial wells, combined with the presence of different fluid contacts and variable sand distribution, raised uncertainties concerning the degree of interconnectedness of the reservoir sands, and curtailed further development of the field.

A detailed 3D seismic review was therefore undertaken in order to refine the initial structural maps and to develop a valid structural model for the field—in particular, to determine the extent of reservoir level faulting. This study was supported by the latest techniques in 3D interpretation, including horizon attribute extraction (dip and azimuth mapping), and was successful in highlighting the presence of subtle faulting which was previously not detected.

Integration of these results with a detailed reservoir geological review and with well performance data has enabled a more accurate determination of hydrocarbon volumes and prediction of well recoveries, and was rewarded by the identification of further development potential for the field. The study provides a model for the successful integration of detailed geophysical and geological studies in similar complex and marginal fields.