## Interpretation of seismic attributes in detecting fluid contacts – case history: Tembungo Field

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Tembungo Oil Field, which is located 75 km offshore, NW of Kota Kinabalu, Sabah, East Malaysia, in the water depth of 85 m, represents the only "turbidite play" reservoir in Malaysia to date. The field is a NE-SW trending anticline, dissected by several NNW-SSE normal faults. The major production of the field comes from the "Tembungo Sandstones". The sands are of turbidite/mass flow type, apparently deposited in a series of bifurcating channels of a lobe complex of a submarine fan. The deposition nature of Tembungo Sandstones, coupled with the poor quality of seismic data, especially in the zones of interest, make the prediction of hydrocarbon and fluid contacts in a reservoirs very challenging and subjective. This paper describes the usage of interactive seismic interpretation workstation, in extracting and displaying seismic attributes for stratigraphic interpretation.

Based on three-dimensional seismic data, direct hydrocarbon indicators (DHIs), including amplitude anomaly, phase change, flat spot and frequency attenuation zone which are associated with gas caps were investigated using full attributes extraction method. Interpretation of seismic data and integration of information from wells suggest that the existence and distribution of the DHIs in Tembungo Field and fluid contacts are controlled by structural and stratigraphic factors.

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