

## **Structural style of Kudat Peninsula, Sabah**

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The Northern Sabah Province, which includes the Kudat Peninsula, exhibits a complex structural style. Offshore, NE-striking structural grain changes sharply to E-striking. The E-striking structural grain changes further to SE-striking onshore Kudat Peninsula. A better understanding of the geological structures onshore Kudat Peninsula can benefit hydrocarbon exploration activities offshore.

Kudat Peninsula, consisting of sedimentary and ophiolitic igneous rocks experienced polyphase deformation. Folds trending approximately NW-SE are refolded along NNE-SSW trend. The polyphase deformation produced different structural pattern on three major imbricate thrust slices located at the northern, middle and southern part of the peninsula. A major fault zone, characterised by the presence of a melange deposit, separates the northern and middle thrust slices. The northern thrust slice shows a huge drag fold plunging steeply to the southeast. The middle thrust slice shows wavy fold pattern whereas the southern thrust slice shows a nappe-like fold pattern.

The polyphase deformation was possibly related to progressive N-S transpression generated during the opening of the South China Sea Basin. It is envisaged that early N-S directed deformation produced several E-W trending thrust slices on the Kudat sediments and underlying ophiolitic basement. Each thrust slice was separated by detachment zones. Within each thrust slice, repetition of rock units occurred due to the presence of folds (F1) and thrust faults. Later NW-SE directed deformation oriented oblique to the previous one caused dextral horizontal movement along each of the major detachment/slip zones producing second generation folds (F2) within each of the thrust slice. The type of folds developed within individual thrust slices were possibly related to the competency of the sedimentary sequence.