

Structural history of Hinge fault zone of the Malay Basin

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The curvilinear Hinge fault zone demarcates the western boundary of the Malay Basin. This fault zone trends northerly in the north and changes progressively to WNW-ESE in the south. This 10-kilometre wide fault zone represents the sites of pull-apart grabens, and is traceable for more than 450 km. This major fault zone transects several tectonic domains: in the north, this fault runs parallel between the Kerteh Ramp and the Pulong sub-basin; in the centre, this fault zone lies within a flexure zone in which the Terengganu Platform changes into the Kerteh Ramp, and in the south, it runs into the Angsi-Duyong sub-basin.

Based on the trends and structural styles, this fault zone can be subdivided into five major segments: northerly trending Ular-Kuda fault zone that is associated with north-south trending flexures; northwest-southeast trending Kabut-Tembikai fault zone which comprises extensional fault block and associated anticlines; WNW-ESE trending Angsi-Duyong fault zone having symmetrical compressional anticlines and associated fault blocks; Dungun fault zone with its rhombic Dungun graben and associated half grabens; and Sotong fault zone that forms a major boundary between the Tenggol Arch and the Angsi-Duyong sub-basin. The Ular-Kuda, Kabut-Tembikai, and Angsi-Duyong fault zones are interpreted to form the main segment of Hinge fault zone. The Dungun and Sotong fault zones are interpreted as splays from the main Hinge fault zone. The Dungun fault zone trends NNW-SSE and bifurcates in the vicinity of Kuda and Kabut. The other splay is the NW-SE Sotong fault zone which meets the main fault zone in the vicinity of Tembikai-Angsi.

During ?Late Eocene-Early Oligocene, this fault zone experienced right lateral movement. In this wrenching period, strings of rhomboid pull-apart grabens are developed within the fault zone. These faults were probably active until Late Middle Miocene. During Middle Miocene, reversal of wrench movement (left lateral) produced compressional anticlines within the pull-apart grabens in this fault zone.
