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Structural trap styles of the Malay Basin

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The Malay Basin has experienced three major tectonic events: Middle to Late Oligocene extension, Middle to Late Miocene compressional inversion and Pliocene through Recent extension. The superposition of these events has resulted in a variety of structural trap styles including basement-supported and non-basement-supported traps. Six trap styles within proven play areas and trapping commercial hydrocarbons in the Malay Basin are described.

Basement-supported traps occur on the basin flanks and are dominated by extensional deformation. The simplest traps are *anticlinal basement drapes* which result from compactional drape over basement highs. These traps occur on basement arches that separate extensional sub-basins of the basin flanks. *Basement-supported fault closures* and associated anticlines resulted from normal-fault displacement and block rotation during extensional deformation. These structures are comprised of faulted anticlines, high-side fault-dependent closures, low-side fault-dependent closures, and low-side fault-bend fold anticlines.

Non-basement-supported traps occur predominantly in the central portion of the Malay Basin and are related to compressional inversion and associated faulting. The most common traps are *asymmetrical compressional anticlines*. These traps are strongly elongated east-west and result from inversion of antecedent Oligocene half-grabens. These structures are usually cored by high-angle reverse faults beneath the steeper flank and have normal faults oriented either orthogonal or oblique to their long axis. *Symmetrical to slightly asymmetrical compressional anticlines* are generally broader, and more equi-dimensional than asymmetrical compressional anticlines. They occur predominantly in the deepest portion of the basin and are dissected by large north-south oriented normal faults. *Non-basement-supported fault closures* are low-relief structures that resulted from mild antiformal compression and are segmented by orthogonal (north-south) normal faults. Finally, *anticlines and fault closures associated with north-south normal faults* also occur. They are comprised of high and low-side fault closures and anticlinal fault-bend folds. These traps are usually elongated in the north-south direction and are associated with north-south fault trends that may have complex *en echelon*, splay or antithetic-synthetic relationships.

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