Paper 1

Tectonic evolution and sedimentation history of Sarawak Basin

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A seismic stratigraphic study of the regional lines for the offshore Sarawak area was undertaken with the 'aim' of reviewing the present understanding of the tectonics and the paleo-depositional environments of the Sarawak Basin. The study was integrated with biostratigraphy and wireline log data from the wells drilled throughout the basin.

Seven unconformities were identified within the Tertiary sediments and these were used as the markets for the seismic correlations. Where the unconformities become conformable, well data were used to guide the correlation of the conformities. Palaeo-environment maps were generated which document the interaction of tectonics and sediments throughout the basin history. The development of the Sarawak Basin commenced in late Oligocene times with deposition along a coastline running in a NW-SE direction, which is almost perpendicular to the present day coastline. The coastline was oriented to the present day NE-SW during late Miocene times.

The study revealed that the Sarawak Basin was formed as a result of NW-SE trending right lateral fault movement during late Oligo-Miocene times. This dextral movement was responsible for creating the earlier NW-SE coastline and divided the offshore Sarawak area into two sub-basins. Deposition and preservation of coastal plain and shallow marine sediments continued in the eastern area while the western area remained as a 'high' until late Miocene times. The dextral strike-slip movement which controlled the evolution of the Sarawak Basin is sub-parallel to a number of lineaments elsewhere in Sarawak. The timing of movement of these suggests progressive younging in an eastward direction. It is also believed the late structuration of the sediments and the formation of structural traps is linked to these tectonic movements.

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