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## **Analysis of Neogene Structures as a Tool for Determining Trap Breach in the Timor Sea, Northwest Australia**

Neogene deformation in the Timor Sea has caused significant left-lateral transtensional reactivation of Mesozoic rift structures. Given that some hydrocarbon traps in the Timor Sea have been charged in the past 3 Ma, the Neogene structural history and fault linkage is crucial in understanding structural controls on trap formation and breaching in this area.

Transtensional reactivation of basement lineaments has resulted in a series of pull-apart basins along the southern margin of the Timor Trough. Faults with mainly dip-slip movement trend NE-SW, while strike slip movement is taken up by faults trending E-W. Although most of the faulting is confined to the Neogene section, some faults form a hard link with reactivated Mesozoic structures. The proportion of hard linkage increases with the amount of strain and is dominant on the northern margins of basement highs that flank the Timor Trough. Strong partitioning of strain has occurred since the Late Pliocene, limiting recent fault movement to the border of the Timor Trough and Cartier Trough.

Contemporary stress orientations vary locally around the Laminaria high, and the effects of present day stress in reactivating faults is important in understanding the structural controls on the Laminaria/Corallina fields. Smaller than expected offsets on major faults in the area indicate that significant deformation may also be distributed on sub-seismic-scale faults.