

Tectonic evolution and depositional system analysis of the mesozoic section in browse basin, north west shelf australia

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The Browse basin is one of NW Australian shelf extensional super basin, it is one of the richest hydrocarbon-bearing basins in Australia. The present study deals are the relationships between tectonic and sedimentation and how the tectonic control the sedimentation, in order to reconstruct the basin evolution, the tectonic style and to understand the depositional system phases of the Mesozoic interval.

The Mesozoic interval defines at least L. Triassic and Jurassic syn-rift mega sequence and at least Aptian-Albian and L. Cretaceous Post-rift mega-sequence.

The Area of interest (AOI) represents a L. Triassic and Jurassic NE-SW to NNE-SSW major normal fault system reconstruct the AOI as a Successive Half Graben controlled at least the L. Triassic and the Jurassic sedimentation represented by lateral thickness and facies change, also an E-W to ENE-WSW complex fault system represents by normal and lateral components, reconstruct the AOI as a Half Grabens, affected and shifted the previous fault system and controlled at least the Jurassic sedimentation.

The U. Triassic Norian sequence represents an upper to lower shoreface depositional environment. The L. and M. Jurassic sequence clearly define the tectonic control sedimentation in Half Grabens, represent a shoreface depositional environment in the L. Jurassic, this sequence represents the principal sandstone gas bearing reservoir potential in the AOI.

The U. Jurassic and the base of the L. Cretaceous intervals define a local tectonic reactivation to the North eastern part of the AOI affect the sedimentation and indicate a lateral thickness variation in successive Half Grabens despite the other part of the AOI.

The Post-rift mega-sequences cover all the inherited topography from the previous L. Triassic and Jurassic tectonic events define the principal seal for the Jurassic targets. Predominately represent a deep marine depositional environments and L. Cretaceous submarine channel system.

Key Words: Browse basin, australian super basin, tectonic, sedimentation, mega-sequence, syn-rift, post-rift, half-graben, shoreface, reservoir, deep marine, seal, sub-marine channel