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Geophysical and geological aspects of the exploration of carbonate buildups in Central Luconia, Sarawak

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The Central Luconia Province forms part of the outer shelf area of offshore Sarawak. It is characterised by the extensive development of Middle Miocene reefal carbonate buildups which constitute attractive hydrocarbon trap possibilities. A large number of these carbonates have been sealed off by transgressive marine shales.

On seismic the carbonate buildups can be easily identified and show to have simple geometries, being either flat-topped tabular bodies or pinnacle features. Internally they have in general a layered appearance on seismic caused by an alternation of tight and more porous rocks types, with clear differences in the respective interval velocities.

Drilling results have shown the Central Luconia Province to be basically a gas province.

The main problems encountered in drilling these carbonate buildups include overpressures and well control, mud losses and sticky hole conditions. From seismic depth predictions had to be made of the levels where possible technical problems could arise. Whilst drilling, the well results had to be quickly evaluated in order to give recommendations about logging, casing depths, etc. and to warn for possible drilling hazards.

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