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Fluid inclusion screening of Central Luconia carbonates

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Fluid inclusion screening is a fast and cost effective technique, which has been used routinely in the oil industry for several years now. With this technique cutting samples are dried and crushed, fluid inclusion volatiles are released and then analysed in a mass spectrometer. This provides a log of palaeofluids and/or present day geochemistry throughout the stratigraphy. This reveals information on hydrocarbon composition, migration, seals and proximity-to-pay zones.

Historically in Central Luconia the Miocene carbonate build-ups have been the main exploration objective. The key risks associated with this play are the charge and retention risks

Warta Geologi (Newsletter of the Geological Society of Malaysia), Vol. 27, No. 5, September-October 2001
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as quite a number of structures were dry and nearby structures, in a similar geological setting, were gas-bearing. For the ongoing carbonate evaluation it is important to know if structures are dry due to "lack of charge" or due to "retention failure". This technique can provide a quick and cheap way to resolve some of these questions.

A pilot study has been carried out using eight wells as a calibration set. Of these wells 4 found a gas column, and one of these is suspected to be a blown trap. The 4 other wells are basically dry.

The results of the fluid inclusion analysis had an excellent fit to the well and seismic data. Clear indications for top seal failure, lateral seal failure and the liquid content of the gas have been observed and reasons for failure of the dry wells were established. As a consequence this dataset provides a good calibration for future work.

This technique can help us to better understand the hydrocarbon habitat of the Central Luconia carbonate play and it is recommended to analyse more (dry) wells in the future.