

GWF9107.009-RJS

SHOWS: Minor gas shows were reported during drilling in the Palaeocene over the interval 2778 - 2820m and weak shows of fluorescence occurred in cores 1 to 3 over the interval 2850.2 - 2902m. FIT's and production testing recovered only minor gas from these zones.

RESERVOIR: Core analysis results from cores 1, 2 and 3 indicate reservoir quality in the Palaeocene abnormally pressured zone is poor with porosities in the range 8 - 23% and typical permeabilities of less than 2 millidarcies.

MATURITY: Only two vitrinite reflectance determinations have been made from samples from Pelican 3. Both samples are from near total depth and give a mean vitrinite reflectance range of 0.67 - 0.71% indicating the sediments are near the onset of the oil mature window.

SOURCE ROCK: Total organic carbon contents were determined for three samples at 2861.0, 2877.0 and 2891.0m giving values of 2.86, 1.50 and 1.42% respectively. The richest sample, at 2861.0m, a grey laminated shale was investigated further. Rock Eval results classify this sample as a moderate source rock, with a fairly low hydrogen index of 84 and a moderate maturity level (Tmax 434). The sediment yielded a good amount of total extract which was rich in aromatic hydrocarbons.

Terrestrial origin is indicated by odd - even predominances of the $C_{25}+$ n-alkanes, a low $(C_{21}+C_{22}) / (C_{28}+C_{29})$ ratio, low C_{27}/C_{29} diasterane and sterane ratios and the presence of eudesmane and diterpanes.

CONTRIBUTIONS TO KNOWLEDGE/REASONS FOR FAILURE:

Pelican 3 established that the lower to middle M. diversus palynological zone sediments that contained gas condensate charged reservoirs in Pelican 1 and 2 had thinned considerably over the Pelican 3 structure. Palynological age dating established that the lower to middle M. diversus sequence had thinned from 558m over the Pelican structure to 127m at Pelican 3. Also no sediments of the lower M. diversus zone were identified indicating that they are thin or absent due to onlap at Pelican 3.

The absence of hydrocarbons in the good quality middle M. diversus sandstones is interpreted to be due to the juxtaposition of these reservoirs with high porosity high permeability sandstones of the upper M. diversus and P. asperopolus zones across the fault which forms the southwestern limit of closure.