

IVB THE DURROON MEGASEQUENCE

The Durroon Megasequence has been thus named as a result of the work of Morgan (1991), on side wall cores and well cuttings from Durroon-1, where the Durroon Mudstone is positively identified as being age equivalent to the Golden Beach Megasequence of Lowry (1987).

The unconformity at 1286 m in Durroon-1 marks the first occurrence of the micro fossil *N. senectus* at 1311 m (Morgan, 1991). Morgan suggests that this unconformity represents a 5 million year hiatus in the rock record which occurred coincidental with the opening of the Tasman Sea. Morgan also suggests that the unconformity at the base of this sequence (1414 m) represents a 9.5 million year gap in the rock record which occurred coincidental with the Otway Rift phase that saw Australia split from the Antarctic.

Figure 5 very clearly shows a dramatic increase in thickness in this sequence down structure from the well. It is also obvious that the unconformity at the base of this sequence shrouds the existence of several unconformities that are clearly visible on seismic data down structure from the well.

The map shown in Enclosure 5 clearly shows the fault grain related to the opening of the Tasman Sea. Notable is the obliquity of the fault grain on this map in comparison to the map on the Otway Formation (Encl 4).

The shapes of the three blocks were only slightly altered during the latter stages of the Tasman Rift phase. The only evidence of the antithetic faults on the Strathroy Block is a slight southerly dip that is revealed only by decreased contour spacing. This would clearly indicate that the closure mapped at the Otway Formation pre-dated the faults that transect it and that the faulting pre-dated the deposition of the sediments that are expected to form the sealing rocks for Otway Formation reservoirs in this area.

The western bounding fault of the Bark Sub-basin shows the presence of an echelon moderate dip normal faulting; again due to the stress applied by the opening of the Tasman Sea.

The only available evidence of possible marine incursions in the Durroon Basin lies in the identification of 'spiny acritarchs' from 1500 m at Durroon-1 (Morgan, 1991). The interpretation of Durroon-1 cuttings and side wall cores show slightly saline conditions across several zones that 'may represent eustatic rise with saline influence at the base (kipperi zone) passing to maximum lake development still with saline influence (eversa acme zone) succeeded by shallowing (eversa partial range zone). The associated logs suggest an upward coarsening sequence stratigraphic unit over this interval (1540 m - 1457 m'.