

the underlying Lower and Upper Cretaceous basins. In the Bass, sedimentation shifted to the west. The post-rift beds overlying the sub-basins within T/15P thicken from a feather-edge along the margin of the basin, to 1400 m at Durroon-1, to 3,300 m at Poonboon-1 (Fig 1).

The tectono-sedimentary phase of sedimentation associated with Drift lasted from 80 Ma to the present. There are several periods of subsidence and depositional breaks. Among the most important are those at the end of the Cretaceous (66 Ma; Fig 4). Lower Eocene (50 Ma), and Upper Eocene (37 Ma). Depositional limits in Palaeocene and Early Miocene times are shown in Figs 5 and 6.

#### 4.0 PRE-RIFT BASIN

##### 4.1 The Otway Megasequence (112-98 Ma)

The Otway Megasequence is characterised by a suite of nonmarine sands, shales, siltstones, coals, and volcanics. The megasequence had a duration of 14 Ma. The 1,500 m of sediments drilled at Durroon-1 indicate three minor depositional interruptions, which cannot be recognised on seismic data. Smith (1985) warned that the Durroon sample may not be representative owing to its proximity to Tasmania.

Seismic and field evidence suggest that the basin had gently sloping sides. Subsidence was rapid at first, slowing at the end of Albian times. Douglas (1976) thought the beds were largely deposited on extensive flood plains, with braided streams making a significant contribution.

##### 4.2 The Otway Megasequence Boundary (98 Ma)

The Bass and Gippsland depositional troughs were not sundered by the onset of drifting along the southern margins of Australia. The Tasman Fracture Zone effectively sealed these basins from the drift that occurred to the west. However, these sediments were affected by the uplift and faulting that accompanied this rupture, and faulting and tilting of Otway sediments occurred within the Bass Basin. The ensuing period of subaerial erosion created a depositional sequence boundary that can be recognised around the margins and over uplifted blocks within the Bass Basin.

This Otway Megasequence Boundary can be recognised on seismic lines within the Anderson and Bark Sub-Basins. Its presence within the Boobyalla is inferred from regional correlations but cannot be substantiated by the presence of a regional angular unconformity or disconformity. This is a problem of the recording of these data since the thicknesses encountered at the Durroon well cannot be identified on seismic data on the downthrown side of the fault block, and partly a problem caused by the severe faulting that later occurred within the Boobyalla Sub-Basin.

#### 5.0 SYN-RIFT BASIN

##### 5.1 The Durroon Megasequence (98-80 Ma)

Smith (1985) drew attention to the fact that this syn-rift megasequence represented both the phase of rifting in the Tasman Sea and the drifting of Australia from Antarctica. The period of Tasman rifting may have been more important. The decreasing size of the sub-basins that were formed at this time in proportion to their distance from the Tasman rift zone follows Cochran's (1983) suggestion that heat flow from the rift system into the adjoining flanks increased syn-rift subsidence.