

Sedimentation began within T/15P with the rotation of three asymmetric blocks along northwest to southeast-orientated listric faults. These formed the sub-basins of Boobyalla, Anderson, and Bark (Fig 1). The Boobyalla, nearest the incipient Tasman spreading centre, is the largest, measuring 170 km x 30 km. The Anderson, wedged between the Boobyalla and Bark Sub-Basins, is approximately 60 km x 10 km. The Bark Sub-Basin measures 100 km x 37 km.

The isopachs of the Durroon Megasequence are thickest within the Boobyalla Sub-Basin, where in excess of 5,000 m of sediments were deposited adjacent to its bounding listric fault. Isopachs greater than 3,000 m are measured within the Anderson Sub-Basin, though subsequent erosion has likely reduced the original depositional isopach. Those within the Bark Sub-Basin are similarly reduced by erosion and measure in excess of 2,500 m.

## 5.2 Structural Style

Listric normal faults constitute the predominant structural features of these sub-basins. Individual blocks are internally complex. Second-order faults within the Boobyalla Sub-Basin, for example, have created smaller sub-basins within the larger half-graben, while the bounding faults of the Bark Sub-Basin display a pronounced dogleg pattern.

The segments of the half-grabens have a consistent southwest dip slope within T/15P. These may affect another direction elsewhere in the Bass Basin, though seismic evidence for this appears to depend on the correct identification of the Otway Megasequence Boundary. The dip of the sub-basins along strike appears, within T/15P, to be to the southeast.

## 5.3 Component Sequences

Three component sequences are recognised within the Durroon Megasequence in the Anderson Sub-Basin. These are of Cenomanian and Turonian age. At least one younger sequence is mapped within the northern part of the Bark Sub-Basin. Sequence boundaries may be present within the Boobyalla Sub-Basin, though rapid burial and subsequent faulting of the sediments make these impossible to map.

A widespread volcanic terrain developed at the beginning of the rotation of the blocks within T/15P. Seismic evidence of volcanic mounds, intrusions, and lava flows, is seen within the Anderson and Bark Sub-Basins. These episodes of vulcanism were separated by erosion and deposition of clastics derived from the uplifting Otway blocks and the surrounding Palaeozoic and Pre-Cambrian rocks of Tasmania. There is seismic evidence of a similar depositional history within the Boobyalla Sub-Basin. The synchronous subsidence of blocks along listric faults caused reverse drag to develop along the fault faces of some blocks.

Two seismic sequences are recognised within this depositional interval within the Anderson Sub-Basin. These are succeeded by the Durroon Mudstones encountered at Durroon-1. This nonmarine mudstone, a lacustrine deposit of Turonian age, was laid down during an eustatic high stand and may be present over large areas of all three sub-basins. Its depositional thickness is unknown. It is likely that fluvial and deltaic conditions prevailed along the slopes of each sub-basin.

Duff et al (1991) recognised a marine incursion within the uppermost part of UK1 and an extensive incursion within UK2, of the Golden Beach Megasequence of the Gippsland Basin. The uppermost UK1 is dated as Coniacian; that of UK2,