

TECTONIC SETTING

The Bass Basin is one of several basins which developed along the southern continental margin of Australia during the major rift phase that preceded the Australia - Antarctica break up. The southern rift system also resulted in the formation of the Otway, Duntroon and Great Australian Bight Basins.

Three phases of structural evolution are recognised in the Bass Basin, (i) initiation of lithospheric extension during the Early Cretaceous, (ii) a Late Cretaceous to Pliocene thermal subsidence phase, and (iii) a Tertiary compressional phase (Etheridge et al., 1985). Etheridge et al. (1985) also proposed that the Bass Basin is divided into a series of major fault bounded half-grabens offset by a series of orthogonal transfer faults with a consistent right lateral displacement.

The tectonic setting of T91-2 is dominated by the presence of a major half graben referred to as the Pelican Trough which trends northwest to southeast. The Pelican Trough is bounded to the northeast by a major northwest to southeast trending listric normal fault system downthrown to the southwest (Figure 5). A structural section (Figure 6) trending southwest to northeast across T91-2 and two composite regional seismic sections (Enclosures 5 and 6) illustrate the major tectonic elements of the gazetted area. Note that subsidence of the Pelican half graben appears to have been greatest during two periods of structural movement; the first during early EVCM deposition in the Late Cretaceous and then a later episode during the Early Eocene when sediments of the lower to middle *M. diversus* palynological zones were deposited.

Tectonic inversion in the Late Tertiary was responsible for the creation of the large, but complexly faulted Pelican structure.