

The volcanic association occurring at the base of Esso Bass-2 (from 5,511-5,910) is possibly of Mesozoic age. It may be correlative with the widespread Jurassic dolerite of Tasmania.

Tertiary Rocks

Paleocene-Eocene - The basal Tertiary section in the Bass Basin encountered by drilling is a deltaic complex. This unit is the principal reservoir objective in the basin.

The distribution of this sequence in the basin is largely controlled by the boundary fault systems, with the bulk of the sediment confined to central downdropped portions of the basin. The sequence may overlap the Mornington-King Island basement ridge to the northeast and be in part continuous with the Easternview Coal Measures. NW?

This deltaic complex is made up of interbedded sandstone, siltstone, shale and coal all of dominantly continental origin. Sparse microplankton were noted in cores from the Esso Bass-1 well suggesting that paralic and/or marine conditions prevailed in the central part of the basin during the deposition of this interval.

The Esso Bass-1 well encountered 1,745 feet of this sequence and in Esso Bass-2 the section was 1,675 feet thick.

This sequence lies unconformably on economic basement and is transitional into the overlying marine sequence.

A persistent seismic reflecting horizon occurs near the top of this sequence (at 6,380 feet in Esso Bass-1) and local angularity beneath this reflection has led to the interpretation of an unconformable surface within the complex.

In Esso Bass-1 the beds lying above this "unconformity" show a transition from coal and coarse sand upwards through fine sand, to carbonaceous silty mudstone of restricted marine origin. The seismic reflection occurs at 4,495 feet in Esso Bass-2 and the beds on either side are of similar lithological type. In Esso Bass-2 the transition from coarse sandstone to silty mudstone of marine origin is abrupt; this occurs at 3,838 feet. The age of this complex may range down into the Upper Cretaceous.

Upper Eocene - Upper Eocene siltstones and shales of marine origin lie with apparent conformity upon Mid-Eocene and older rocks of continental origin in the central part of the Bass Basin where the intervals range in thickness to 550 feet. The top of the marine Eocene sequence is marked by an unconformity locally. This sequence is correlative with the Demon's Bluff formation of the Anglesea area, Victoria (Taylor, 1966).

Oligocene - The Oligocene series in the Bass Basin ranges in thickness to 2,000+ feet in the axial part of the basin. The interval is distributed throughout the basin proper and overlaps the basin margin in the northwest over the Mornington-King Island high and possibly to the east over the basement ridge which extends from Wilson's Promontory to Northeastern Tasmania.

The base of the marine Oligocene sequence in the central Bass Basin is marked by a thin (30 feet in Esso Bass-1) tuffaceous poorly sorted tight sandstone. The remainder of the section is made up of argillaceous siltstone, silty mudstone, and minor sandstone. Two hundred and thirty-five feet of pyroclastic tuffite was encountered in the upper part of the section at the Esso Bass-1 location.

In Esso Bass-2, the Oligocene period is represented by 632 feet of marine sandstone, siltstone and shale, and the basal sand at this locality has thickened to 328 feet.

A small late Oligocene volcanic build-up is present to the southwest of the Esso Bass-2 location, however the well did not penetrate this section. The top of the Oligocene is marked by a tuffaceous sandstone,