

Microlaterolog. Although the section from 5935 feet to T.D. is lithologically similar, there are a few differences on which the Upper Cretaceous top has been picked at 6380 feet viz.

1. The sands present from 5935 to 6380 feet are generally slightly coarser than those below 6380 feet.
2. There is no coal present in the section from 5935 to 6380 feet whereas coal bands are present from 6380 feet to T.D.
3. Seismic evidence indicates the presence of an unconformity at the edges of the basin which correlates into the well at around 6400 feet.
4. Lithologic similarities to known Upper Cretaceous rocks in Western Victoria.

(5) Structure

Esso Bass-1 was designed primarily to test the petroleum potential of a seismic anomaly interpreted as a reef in the Miocene section. This abrupt seismic "build-up", the most basinward of a group of similar anomalies, covers an area of some three square miles with a maximum relief of 900 feet. Apart from local draping over the feature, the anomaly is not associated with any structural closure.

Drilling of the well proved this initial seismic interpretation of structure to be essentially correct. However the seismic anomaly, originally postulated as a carbonate reef complex, was in fact pyroclastic material.

In cores below 6000 feet small-scale current bedding was present. The regional dip in these sediments is shown from the dipmeter survey to be about 1° towards the south.

(6) Relevance to Occurrence of Petroleum

Esso Bass-1 achieved its primary objective of evaluating the petroleum potential of an abrupt seismic "build-up", originally postulated as a carbonate reef complex. This anomaly, one of a group of similar anomalies found in the Miocene section throughout the basin, was found to be tuffite.

In addition, the well provided stratigraphic information of considerable value in assessing the petroleum potential of the basin as a whole. Of significance was the thick Tertiary and Upper Cretaceous sections favourable for the generation and accumulation of hydrocarbons. In this regard the following pertinent information was obtained:

- (1) A thick section of marine shales was present in the Oligocene and Eocene providing a possible hydrocarbon source.
- (2) Sandstone of Eocene-Paleocene and Upper Cretaceous age of sufficient thickness, porosity and permeability to provide a commercial hydrocarbon reservoir were present.

(7) Porosity and Permeability of Section Penetrated

Porosity and permeability measurements made by Core Laboratories are included in Appendix 4. of this report.

The only rocks exhibiting good reservoir characteristics and in a favourable position stratigraphically are the sandstones from 5935 feet to total depth. Electric log analysis indicates that the porosity of these rocks ranges from approximately 20 to 35 per cent - these values correspond favourably to core analysis where cores are available. Measured permeabilities range to 161 millidarcys.