

FORAMINIFERAL BIOSTRATIGRAPHY

AROO-1 WELL

BASS BASIN

by David Taylor.

Fourteen side wall cores and rotary cutting samples from 2000 feet to 6800 feet were examined for Foraminifera. No fauna was found in side wall core at 6246 feet and no new fauna was recognised below 6555 feet. A large fragment of Ammodiscus parri was submitted from a cutting sample between 9470 and 9500 feet. As A. parri is present in both the Demons Bluff Formation and the basal Jan Juk, this specimen was probably a down hole contaminant, especially as the species was recorded in the side wall core at 5824 feet (= early Oligocene). However large specimens of A. parri are common in the Dilwyn Formation of the Otway Basin (e.g. Wangoom-2, conventional core between 2500 and 2511), so that the possibility of early Eocene marginal marine conditions in Aroo-1 cannot be dismissed completely.

A distribution chart of planktonic foraminifera is submitted with this report together with an environmental analysis diagram. When the distribution chart and the environmental diagram are compared it is apparent why there are fluctuations in the degree of biostratigraphic control. There are only two small intervals, representing oceanic flooding or very high tides, within the tidal salt marsh environment between 6555 feet and 5700 feet. The interval at 6105 feet contains a Zone K fauna (= late Eocene) whilst that at 5700 feet contains a Zone J (= early Oligocene) fauna. More marine conditions exist above 5700 feet, but the deposition was on a very shallow shelf with poor oceanic circulation resulting in that no planktonic foraminifera were washed in and that arenaceous foraminifera were dominant due to poor oxygenation. Marine flooding at about 5000 feet introduced Zone I (late Oligocene) planktonics and oxygenation increased as is expressed by the absence of an arenaceous fauna.

In the early Miocene the environments reverts to one of a sheltered shallow continental shelf, without oceanic circulation reaching the depositional area and zonation is impossible due to absence of planktonic fauna between 5000 feet and 4300 feet. Above 4300 feet there is a gradual increase in the planktonic fauna culminating with a rich Zone E fauna (base of late Miocene). A rich planktonic fauna was characteristic of Zone E throughout the basin and marks the peak of the Miocene transgression.

Between 3100 feet and 2800 feet (Zone D) there is a decline in planktonic fauna which is absent completely above 2800, so that zonation is impossible. Richly bryozoal calcarenites are present above 2800 feet and this together with a dominance of miliolid and/or elphidid benthonic foraminifera indicates high energy conditions above the wave base.