

INTRODUCTION

Twenty four intervals of ditch cutting samples were examined between 400m and 1770m in Pelican-5. Mud contamination was severe at 1150m; note apparent contaminants marked with an asterisk (*) on Table 2. For instance, *Orbulina universa* extended at least 600m below its assumed in situ position. This mud contamination compounded the difficulty in subdividing the sequence biostratigraphically as planktonic foraminifera were numerically sparse with low specific diversity. Because of these factors the sequence has been subdivided into five facies units utilising a combination of broad foraminiferal distributions (both planktonic and benthonic forms) as well as lithological changes. Some indication of bio-geochronology has been possible (see Table 1).

A summary of the Pelican-5 sequence is given in Table 1; whilst factual data on planktonic and benthonic foraminiferal distribution is presented in Table 2. Because of lack of biostratigraphic control, the sequence is discussed in descending order; from the top down.

FACIES UNIT I MID MIOCENE OR YOUNGER - top sample at 400m

A bryozoal calcarenite dominated by shallow water species of the elhidid, benthonic foraminifera. Planktonic foraminifera were sparse or absent, so that no biostratigraphic correlations can be made, except the inference from superposition, that the sediments were of Mid Miocene or younger age. Deposition was on a shallow platform shelf, in a high energy, possibly inter-tidal environment. This facies is widespread across the Bass Basin, marking the terminal and regressive phase of marine Tertiary sedimentation.

FACIES UNIT II - MID MIOCENE - top approximating 800m.

Bryozoal calcarenites interbedded with dark grey micrites and marls. Planktonic foraminifera were not well represented but the association at 800m was typical of Zone D-2, near the base of the Mid Miocene. The benthonic components of Unit II are of more significance as they contain elements of a group loosely referred to as "Larger Foraminifera", including *Amphistegina*, *Operculina* and *Carpentaria*. Today these forms inhabit shallow biogenic banks or platforms in warm water with a minimum temperature of 22 degrees C. The "Larger Foraminifera" are adherent on or shelter amongst sessile marine plant and bryozoa or coral colonies. Because of this commensal association with marine plants, optimum growth of these foraminifera is restricted to the zone of light penetration; approximately 30 meters in clear water, less in muddied water. The preferred living habitat of *Amphistegina lessonii* is on the sea-ward edge of an elevated biogenic bank, in situations accessible to well oxygenated oceanic currents (Palmieri, 1976). In Unit II of Pelican-5, *A. lessonii* was the most prevalent "Larger Foraminifera", it and similar forms were worn and, together with bryozoal debris, were interbedded with, lime muds, (micrites). Therefore it is probable that sedimentation did not take place on a biogenic bank, but in deeper muddied water down the fore slope, with the skeletal debris being displaced.