

be lower Miocene basalts.

DEPOSITIONAL HISTORY

(i) Depositional environments:

The faunal elements in each core were counted (total of 500 specimens in most samples) and the accumulative percentages calculated. These percentages were plotted on Fig. 2. Because of contamination, the rotary cutting samples were not statistically reliable, so they were not counted but visual examination showed that they confirmed the trends plotted on Fig. 2.

Six faunal elements were selected as being significant, although twelve were counted. Where counts were less than 5%, the minor elements have been combined under the category of "others".

As a result of plotting these percentages, the foraminiferal sequence can be divided roughly into four biofacies, as demonstrated on Fig. 2. These will be discussed in ascending order.

(a) "Barred basin" environment (5905' to 5382') postulated as 100% arenaceous species in core 11 indicates anaerobic conditions, deleterious to calcareous species. Environmental indicators (including lithofacies) show close similarities between this core and intervals within the western Victorian Upper Cretaceous, where Taylor (1964, pp. 551-557) has postulated barred basin conditions and discussed the significance of high percentages of arenaceous foraminifera. Higher in this interval, calcareous benthonic forms appear. The thick shelled cassidinids are dominant calcareous forms, probably because their tests can withstand anaerobic conditions. Uvigerinids are present, and are usually present at the beginning of a general marine transgression in the mid-Tertiary of Victoria.

(b) A gradual overflow of oceanic currents (5382' to 3890') marked by the rapid increase of planktonic foraminifera. The decrease in the ratio of arenaceous species to calcareous benthonic species, also suggests better water circulation (i. e. anaerobic conditions minimal).

(c) Open marine shelf environment (3890' to 3090') is reached where the percentage of planktonic forms is between 40 and 50%. Cibicidids and miliolids are the other dominant elements of the fauna. The benthonic fauna is broadly similar to that on the sea floor (in 262 feet of water) at the drill site. The sea floor sample contains only 15%