APPENDIX 2 to WCR Sole-1

PALYNOLOGICAL REPORT ON WELL SOLE-1, OFFSHORE GIPPSLAND BASIN, VICTORIA, AUSTRALIA.

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SUMMARY

All suitable sidewall samples in the Latrobe and Strzelecki formations intersected by well Sole-1 were investigated palynologically. The Latrobe group proved to be of an Eocene-Paleocene age, unconformably overlying the Strzelecki group, Albian in age in this well. No Upper Cretaceous dating could be proved although sediments of this age may be present between 3200' and 3355'.

1. INTRODUCTION

Palynological investigations were carried out in the interval 2665' to TD from which no microfaunas were recovered. Out of a total of forty three (43) sidewall samples taken in that interval only thirteen (13) could be selected as suitable for palynology. In addition a coal sample from 3190-3205' was selected from the ditch cuttings.

Detailed analyses were carried out by using types published by Cookson (Refs. 1-5), Cookson and Pike (Refs. 6 and 7), Dettmann (Ref. 9), Dettmann and Playford (Refs. 10 and 11) and Harris (Refs. 12 and 13). A number of type slides of Tertiary and late Cretaceous sporomorphs, on which a publication is in progress by the Royal Society of Victoria and which are already available at the National Museum of Victoria, were also studied (Ref. 14).

For Cretaceous sediments the zonation of Dettmann (Ref. 11) is used. In the Lower Tertiary section no published zonation could be referred to and only the Time-stratigraphic classification has been given.

The samples analysed, together with their microfloral content and bio-stratigraphic and bio-facies interpretations are presented on a Distribution chart (Encl.3).

2. MICROFLORAL SUBDIVISION

Generally speaking, samples proved to be rich in sporomorphs with the exception of 2917' and 3175'. The following subdivisions could be established:

a) 3365'-3690' Albian Coptospora paradoxa zone.
All samples determined to belong to this zone were taken in the Strzelecki group of sediments penetrated in this well. The zone was determined on the presence of restricted species as Contignisporites glebulentus and Pilosporites grandis, although the latter one was only identified in the deepest sample. A number of Species commencing their vertical range within this zone were noted, notably Appendicisporites distocarinatus, Cicatricosisporites cuneiformis and pseudotripartitus, Krauselisporites jubatus and majus and Laevigatosporites major. A few specimen of Tricolpites pannosus were observed in these samples. This species is supposed to start its range in a younger zone, overlying the Coptospora paradoxa zone (Tricolpites pannosus zone). However, some contamination of small angiospermous elements such as Triporates and Tricolporates was observed most likely due to mudfiltrate and it is believed that the species determined as Tricolpites pannosus have the same origin.

Slightly higher maturation levels were observed in this interval as compared with those noted above. This may indicate erosion of some Strzelecki sediments before sedimentation resumed during Paleocene times.

b) 2791'-3200' Paleocene
Microfloras observed in this interval closely resemble those described by Harris (Ref. 12) from the Princetown area as belonging to his Triorites edwardsii Assemblage zone. Dacrydiumites balmei, restricted to the basal beds of the Pebble Point Formation occurs throughout with the exception of the coal sample at 3200'. Gambierina edwardsii was found from 2917' downwards and occurred in high frequencies in the coal. Duplopolis orthoteichus is absent. The absence of types characteristic of Dettmanns 'Nothofagidites microflora' such as Nothofagidites senectus and Tricolpites sabulosus from the coal at 3200' would favour a Paleocene age for it. A few species also believed restricted to the 'Nothofagidites microflora' such as Proteacidites amolosexinous and Tricolpites pachyexinus were found higher in this interval. However, in sample 3093' a specimen of Deflandrea speciosa was found which is restricted to Paleocene sediments.

The presence of the Triorites edwardsii/Duplopollis orthoteichus Concurrent range zone of Harris could not be established.

Between 3200' and 3365' no suitable sidewall samples are available, and the presence of the 'Nothofagidites microflora' of Upper Cretaceous age could thus not be determined.

c) 2665' Eocene
The highest sample belonging to the Latrobe group contains a microflora which differs from that described before. It consists of species described by Harris as belonging to his Duplopollis orthoteichus Assemblage zone, such as Duplopollis orthoteichus, Tiliaepollenites notabilis, Myrtaceiidites eugenoiides Proteacidites dilwijnensis and pachypolis. Harris assigned a Paleocene (Upper) to these microfloras. In a lecture given during the Anzaas congress in May 1971 on the stratigraphic palynology of the offshore Gippsland basin (unpublished) Evans indicated the Eocene/Paleocene boundary at the first occurrence of Duplopollis orthoteichus. It is of interest to note a marked increase in Nothofagidites in the higher part of the Latrobe group in this well.

3. BIOFACIES INTERPRETATION

In both the Latrobe and Strzelecki group of sediments no microfaunas were recovered, indicating a non marine depositional environment. In palynological preparations however, a few microplankton specimen were observed. This could indicate marginal marine conditions for these samples. No detailed identification of depositional environments by means of sporomorphs has been attempted for lack of more data on the basin and the entire interval has been classified as continental/transitional.

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