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PALYNOLOGY OF TASMANIAN MINES DEPARTMENT

SUB-BASALT DRILLING PROGRAMME HOLES 7, 14 AND 15

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INTRODUCTION

Eight core sampls were submitted by Peter Baillie for palynological analysis. All were from sediments interbedded with basalts. All yielded excellently preserved, diverse assemblages. Thermal maturity was constant : all were immature. the zonation used is summarised on Figure 1 and is basically that of Stover and Evans (1973) and Stover and Partridge (1973) as modified by Partridge (1976). Raw data is given as an Appendix.

PALYNOSTRATIGRAPHY

HOLE 7 : 125.5m, 266.8m, 329.9m, 349.5m (CORE) : upper N. asperus Zone : latest Eocene to earliest Oligocene : non-marine : immature.

These samples are dominated by Nothofagidites spp. and Cyathidites spp., with prominent Dacrycarpidites australiensis. The presence of Nothofagidites flemingii and Periporopollenites vesicus indicate a mid P. tuberculatus or older assignment. However, the lack of C. annulatus argues for a pre P. tuberculatus Zone assignment, and the lack of the many middle N. asperus markers, argues for a post middle N. asperus Zone assignment. Thus the sample is assigned to the upper N. asperus Zone, but on negative evidence. However, given regional experience, this is reasonable.

Non-marine environments are indicated by the total lack of marine microplankton, and the common and diverse spores and pollen.

Colourless palynomorphs indicate immaturity for hydrocarbon generation.

HOLE 14 : 185.8m, 220.5m, 246.8m, all CORE : upper N. asperus Zone : latest Eocene to earliest Oligocene :

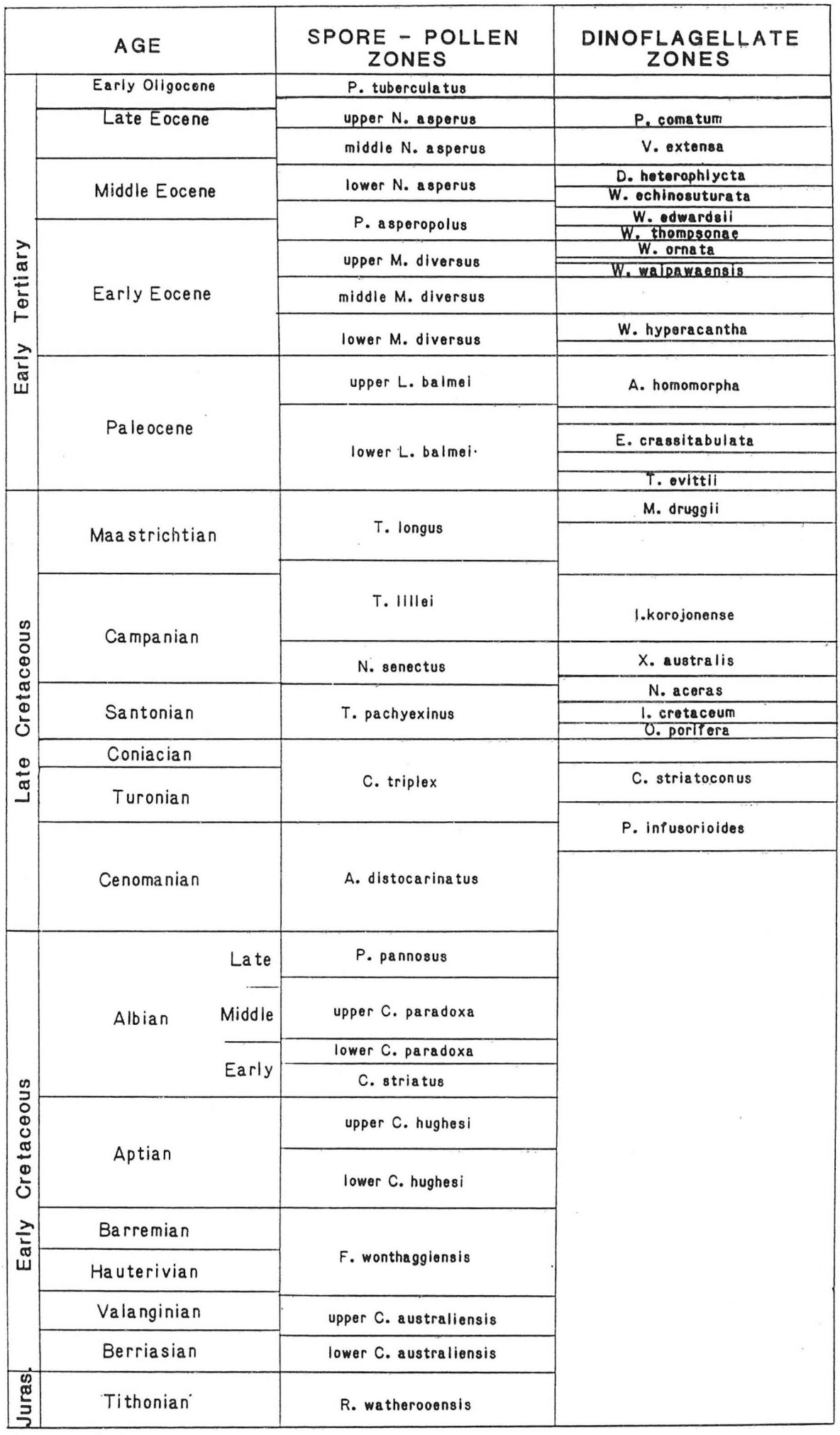

FIGURE 1 ZONATION FRAMEWORK

non-marine : immature.

These samples are all dominated by Nothofagidites spp. and Cyathidites spp., although Triletes tuberculiformis is also frequent in the shallower two samples. The presence of Nothofagidites flemingii, Periporopollenites vesicus and Kuylisporites waterbolkii without younger or older taxa, indicates assignment to the upper N. asperus Zone.

Non-marine environments are indicated by the absence of dinoflagellates, and the dominance and diversity of spores and pollen. A very scarce Cymatiosphaera type was seen at 246.8m only, but its significance is uncertain.

Colourless palynomorphs indicate immaturity for hydrocarbon generation.

HOLE 15 : 16.0m (CORE) : lower P. tuberculatus Zone : Oligocene : non-marine : immature

This sample is dominated by Nothofagidites spp., but contains a significant and conspicuous content of large ornate trilete spores, especially Ischyosporites and Cyatheacidites. Assignment is indicated at the base by oldest Cyatheacidites annulatus and Foveotriletes crater, and at the top by youngest Granodiporites nebulosus. Other species confirming a mid P. tuberculatus or older assignment include youngest N. flemingii and P. vesicus.

Non-marine environments are indicated by the total dominance of diverse pollen and spores, and lack of microplankton.

Colourless palynomorphs indicate immaturity for hydrocarbon generation.

CONCLUSIONS

The studied section is of latest Eocene to mid Oligocene age (upper N. asperus and lower P. tuberculatus Spore Pollen Zones), non-marine and immature. Heating from the associated basalts does not appear to have effected maturity of these samples.

These results are consistent with earlier wells in this drilling programme. Section drilled in this programme is thus equivalent to only a small part of the time represented in the Bass Strait wells, and in other drilling on the northern Tasmanian margin.

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