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PALYNOLOGY OF TASMANIAN MINES DEPARTMENT SUB-BASALT DRILLING PROGRAMME HOLES 6 & 10

by

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INTRODUCTION

Three core samples were submitted by Peter Baillie for palynological analysis. All were from sediment horizons interbedded with basalts. All three 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 are given as an Appendix.

PALYNOSTRATIGRAPHY

HOLE 6 : 79.3m (CORE) : lower P. tuberculatus Zone : early Oligocene : non-marine : immature.

This sample is dominated by Nothofagidites spp., but contains frequent Ischyosporites, Lygistepollenites and Stereisporites. The co-occurence of Granodiporites nebulosus with Cyatheacidites annulatus indicates assignment to the lower Proteacidites tuberculatus Zone, assuming that the Gippsland ranges are also valid here. The presence of Periporopollenites vesicus is general confirmation.

Non-marine evironments are indicated by the common and diverse spores and pollen and absence of dinoflagellates or significant cuticle.

Yellow spore colours indicate immaturity for hydrocarbon generation, and result in excellent preservation.

HOLE 6 : 157.2m (CORE) : upper N. asperus Zone : latest Eocene to earliest Oligocene : non-marine : immature.

This sample is also dominated by Nothofagidites, but contains frequent non-descript Proteacidites spp. and Stereisporites spp. The absence of C. annulatus (seen in the sample above) and the multitude of older (middle N. asperus Zone) indicators defines assignment to the upper Nothofagidites Asperus Zone. The presence of Beaupreadites verrucosus, Periporopollenites demarcatus and P. vesicus

broadly confirms a lower P. tuberculatus or older assignment.

Non-marine environments are indicated by the frequent and diverse spores and pollen, and lack of dinoflagellates. Plant cuticle is notably rare, with Nothofagidites spp. comprising the bulk of the oxidised residue.

Yellow spore colours indicate immaturity for hydrocarbon generation and result in excellent preservation.

HOLE 10 : 173.5m (CORE) : upper N. asperus Zone : latest Eocene to earliest Oligocene : immature.

This sample is also overwhelmingly dominated by Nothofagidites spp. with subordinate Proteacidites and Lygistepollenites florinii. N. falcatus is consistent, and more common than in the overlying P. tuberculatus Zone. The absence of younger or older indicators, in the presence of Nothofagidites flemingii, and Periporopollenites vesicus.

Non-marine environments are indicated by the absence of dinoflagellates, and the overwhelming dominance of Nothofagidites spp. with low diversity of other taxa.

Yellow spore colours indicate immaturity for hydrocarbon generation and contribute to the excellent preservation.

CONCLUSIONS

The studied section is of latest Eocene to early Oligocene age (upper N. asperus and P. tuberculatus Zones), non-marine and immature. Heating from the associated basalt flows does not appear to have effected maturity.

These results are totally consistent with the results from previous wells in this drilling programme, and suggest that the rock package in the drilled area is all of similar age, even near the outcrop edge. It thus corresponds to only a small part of the time interval represented in the Bass Strait basins.

REFERENCES

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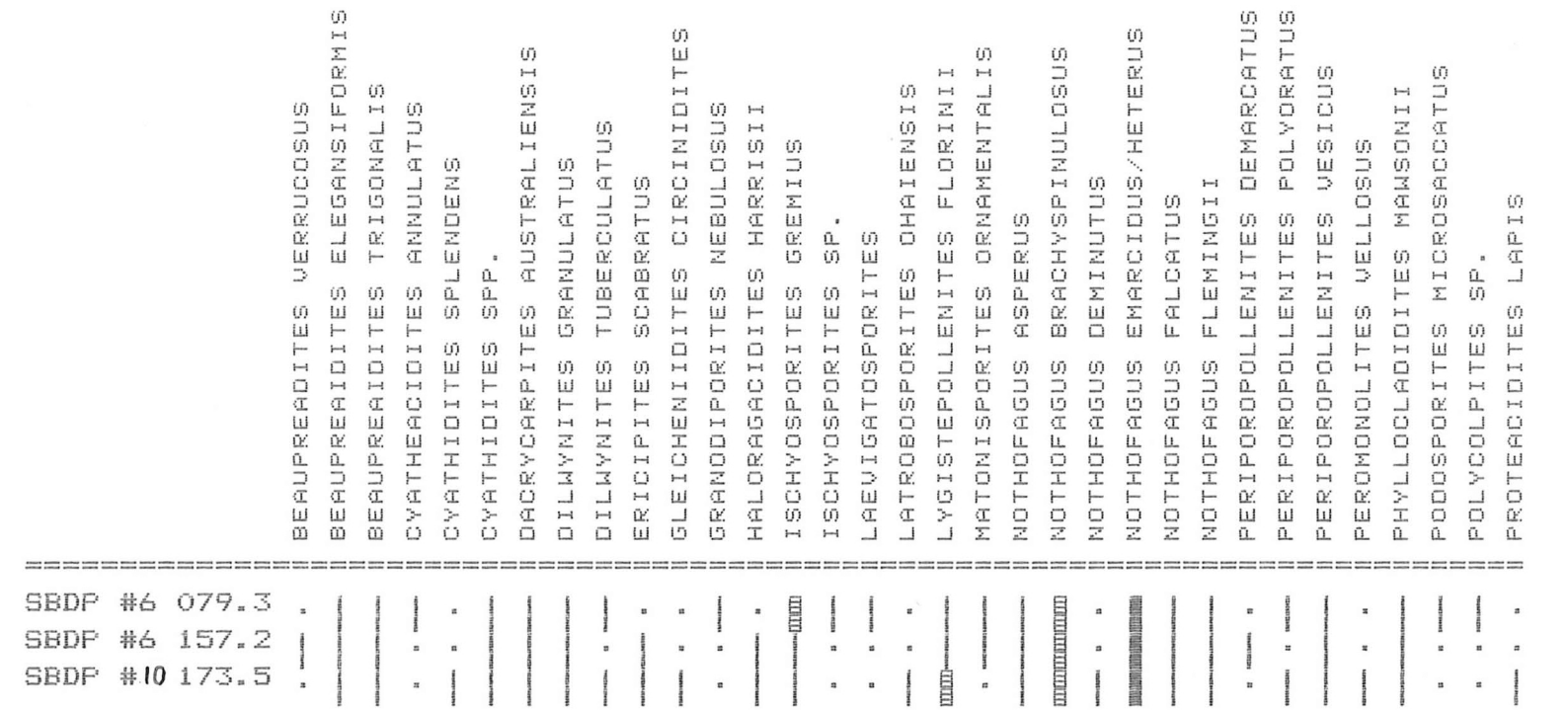
TASDM SBDP #6 AND #10

CHECKLIST OF GRAPHIC ABUNDANCE BY ALPHABETICAL ORDER

▓ = Abundant
▒ = Common
▒ = Few
▒ = Rare
▒ = Very Rare
? = Questionably Present
. = Not Present



PROTEACIDITES SPP.
RETITRILETES AUSTROCLAVATIDITES
STEREISPORITES ANTIQUISPORITES
TRIPOROPOLLENITES CHNOSUS
VERRUCATOSPORITES SP.
VERRUCOSISPORITES KOPUKUENSIS

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SBDF #6 079.3
SBDF #6 157.2
SBDF #10 173.5