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PALYNOLOGICAL DATING AND CORRELATION OF LATE EOCENE SEDIMENTS FROM THE EUCLA BASIN, SOUTH AUSTRALIA.

DIAMOND VENTURES NL.

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Biostratigraphy

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Palynological dating and correlation of Late Eocene sediments from the Eucla Basin, South Australia.
Diamond Ventures NL.

Neville F. Alley

Summary

A sample from CAR3 No. 1 Well on Eyre Peninsula is Late Eocene in age and correlative with the marginal marine upper part of the Pidinga Formation.

Introduction

One sample of cuttings from 84-88 m depth in CAR3 No. 1 Well, Eyre Peninsula, was submitted by Diamond Ventures NL, Camberwell, Victoria, for palynological dating.

The laboratory processing was undertaken by Laola Pty. Ltd., Perth, and the microscope analyses and dating by Neville F. Alley, Principal Geologist, Mines and Energy, South Australia.

The data were processed and details presented graphically using Stratabugs 1.2 and CorelDraw 5 software.

General composition of the palynofloras (Fig. 1)

The sample produced a palynoflora of good yield and preservation.

The palynoflora is dominated by ***Nothofagidites*** pollen, especially the ***Brassospora*** group (***N. deminutus/ emarcidus/ falcatus/heterus/incrassatus/vansteenisii*** species). Other common taxa are ***Haloragacidites harrisii*** and the conifers ***Microcachryidites antarcticus*** and ***Podocarpidites ellipticus***. Although the ***Proteacidites*** group forms only a small percentage of the overall palynoflora, it is reasonably diverse in species.

A relatively small amount of marine microplankton (dinoflagellates) is present with moderate species diversity.

Dating and correlation

The presence of ***Triorites magnificus*** indicates a correlation with the largely Late Eocene Middle ***Nothofagidites asperus*** spore-pollen Zone of Stover and Partridge (1973, 1982; Fig 2). This species makes its oldest appearance at the base of the zone and is largely restricted in its time range to that zone. A marginal marine setting is indicated by the presence of the marine microplankton.

This designation is supported by the presence of the relatively diverse assemblage of the genus ***Proteacidites***, in particular the species ***P. grandis***, ***P. kopiensis*** and ***P. pachypolus***, which are common associates of ***T. magnificus*** and are largely extinct by the latest Eocene.

The palynoflora is very similar to those of Late Eocene age in the eastern Eucla Basin (Alley and Benbow, 1989; Alley and Beecroft, 1993). Because of its age and the presence of the marine microplankton the sediment is correlative with the upper part of the Pidinga Formation which is widespread in the Eucla Basin, underlying the Early to Middle Tertiary carbonates and occurring in palaeochannels several hundred kilometres inland from the coast (Fig. 3; Alley and Beecroft, 1993; Benbow ***et al.***, 1995). Deposition was undoubtedly related to the Tortachilla Transgression of McGowran (1989) which was a major sea level rise in the Late Eocene leading to deposition of the upper part of the Pidinga Formation (Alley and Beecroft, 1993).

Conclusions

The sample is Late Eocene in age and correlates with the upper marginal marine part of the Pidinga Formation in the Eucla Basin.

References

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DIAMOND VENTURERS

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DIAMOND VENTURERS CAR3 NO. 1

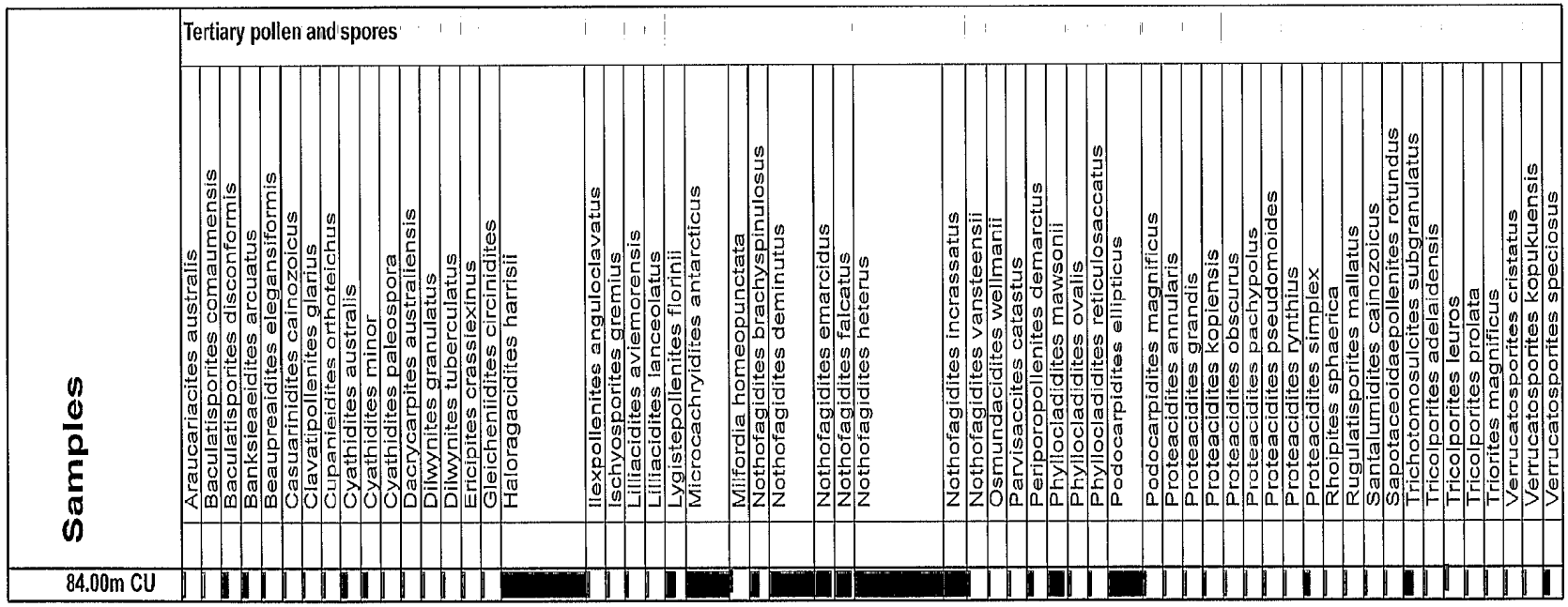

Figure 1

Plan No. 1996-0723

Plan No. 1996-0724

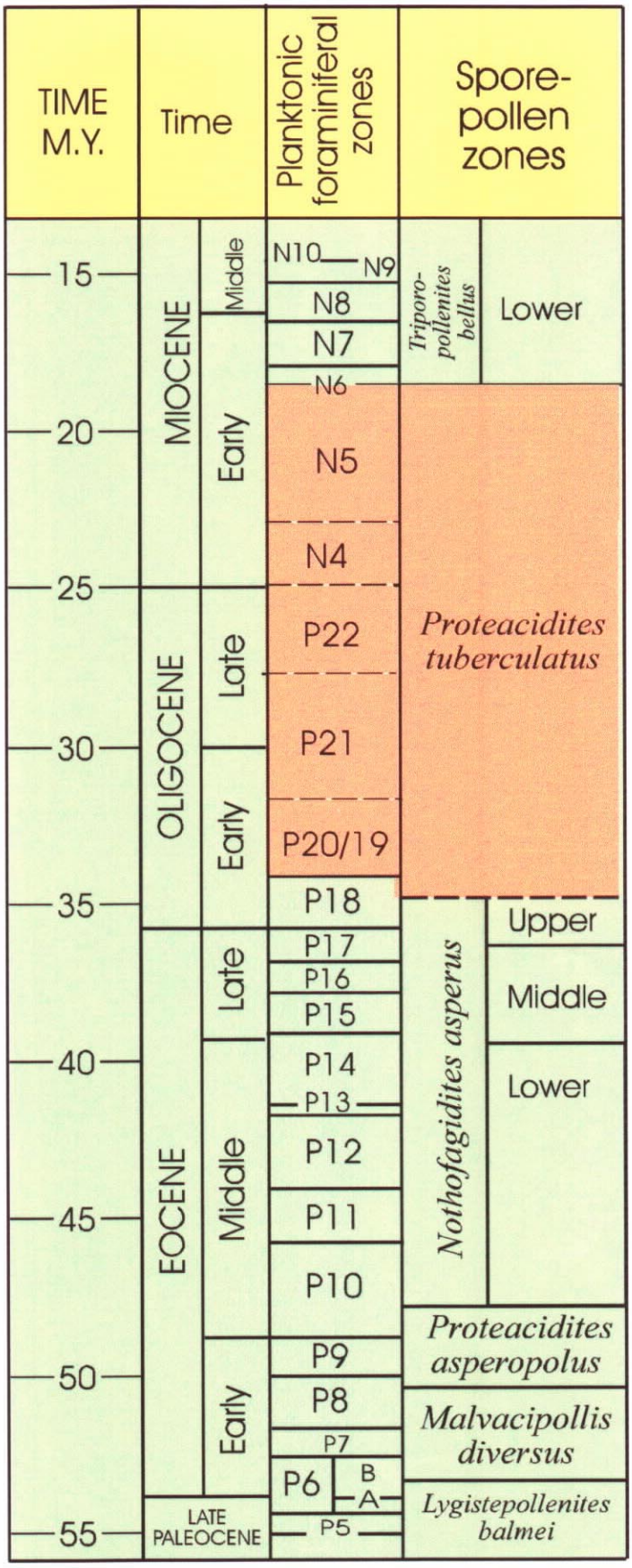

Figure 2

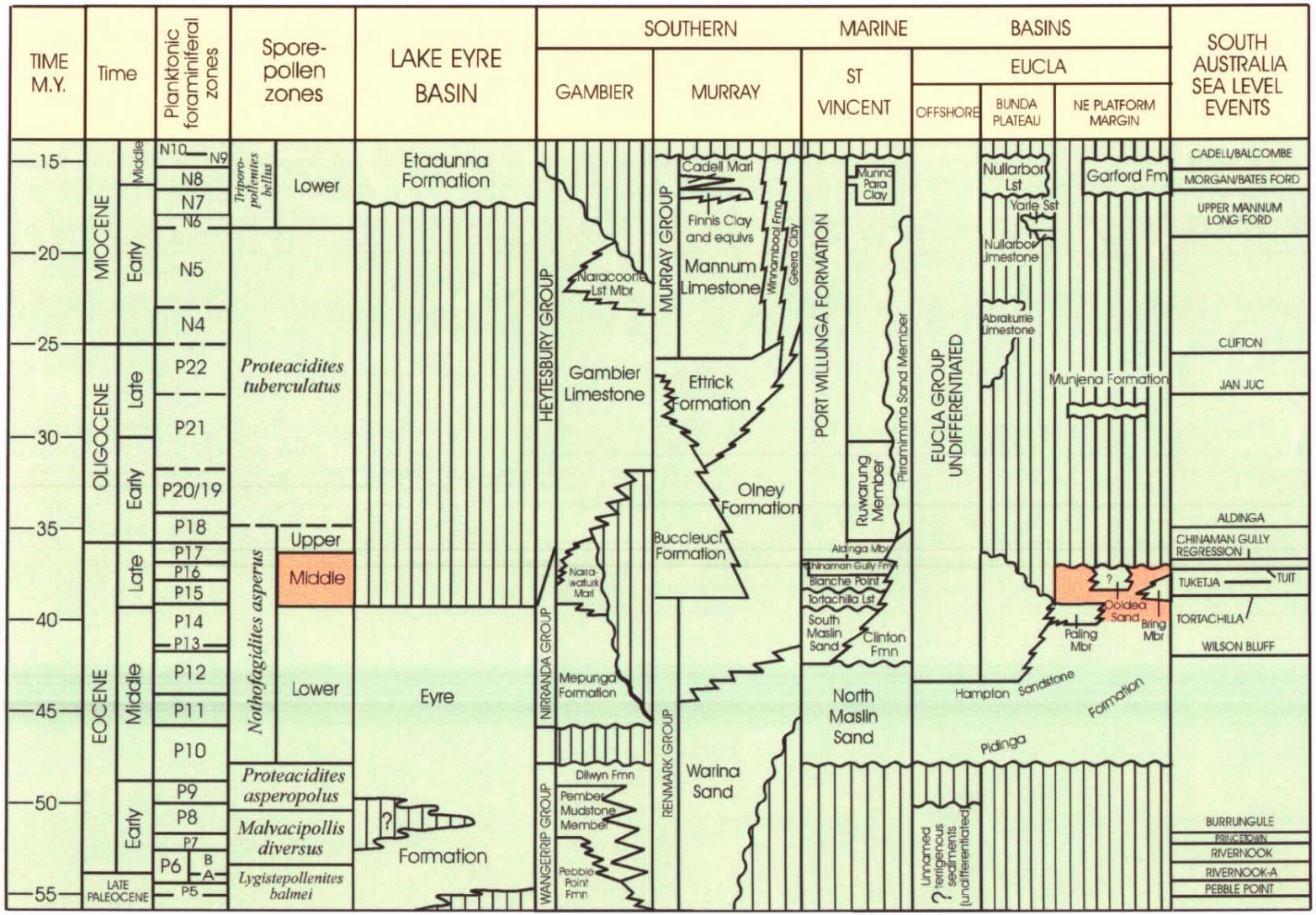

Figure 3

Plan No. 1996-0725