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PALYNOLOGY REPORT

BIOSTRATIGRAPHY OF SELECTED SAMPLES IN KILLARA NO. 1, 984M - 2405M, OTWAY BASIN

by

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## SUMMARY

The following are biostratigraphic results of a palynological investigation of four samples from Killara No.1, Otway Basin:

Depth (m)	Biostratigraphic Allocation		Age
	Dettmann & Douglas (1988)	Helby <i>et al.</i> (1987)	
984	<i>C. paradoxa</i>	<i>C. paradoxa</i>	m-1 Albian
1753	<i>C. hughesii</i> (upper)	<i>C. hughesii</i>	1 Barrem.-Aptian
2049	<i>C. hughesii</i> (lower)	<i>F. wonthaggiensis</i>	Valang.-Barrem.
2405	<i>C. stylosus</i>	<i>C. australiensis</i>	Tithon.-Valang.

The palynological evidence confirms that the sample at 984m is from sediments in the upper part of the Eumeralla Formation, and that from 1753 from the lower part of the same formation. The sample at 2049m is a correlative of the Geltwood Beach Formation, and the lowermost sample (2405m) is a correlative of the 'Basal Unit' or the overlying Pretty Hill Sandstone.

## INTRODUCTION

Two sidewall cores (1753m, 2405m) and two cuttings samples (984m, 2049m) from Killara No.1 have been palynologically analysed to ascertain the age and biostratigraphic relationships of the sediments.

Preparation of the samples was by standard techniques (Phipps & Playford, 1984), and three strew slides of each residue were scanned. Species distributions are documented in Table 1.

## BIOSTRATIGRAPHY AND AGE

Biostratigraphic syntheses is in terms of the scheme developed for the Otway Basin (Dettmann & Douglas, 1976; Dettmann, 1986) and the more generalized Australia-wide one (Helby *et al.*, 1987). Although several of the zonal indices are known to have different stratigraphic ranges in disparate sedimentary basins within Australia (Table 2, from Dettmann, 1986), relationships between the Otway Basin and the Australia-wide schemes have been adduced.

### 1. 984m; *C. paradoxa* Zone, mid-late Albian

The sample is assigned to the *C. paradoxa* Zone on the basis of *Coptospora paradoxa* and in the absence of *Dictyotosporites speciosus* and other species known to be restricted to zones older than the *C. paradoxa* Zone. Although down-hole contamination is likely in cuttings, the extracted palynoflora is entirely consistent with those occurring in the *C. paradoxa* Zone.

Palynomorphs identified are all of land plant origin.

the sample. The occurrence of these species indicate assignment to the upper *C. hughesii* Zone (Otway Basin scheme) and *C. hughesii* Zone (pan-Australian scheme). Occasional non marine algal cysts were encountered in the assemblage which is predominantly of land plant palynomorphs.

3. 2049m; *C. hughesii* (lower) Zone, Valanginian-Barremian

The assemblage obtained from the cuttings sample contains *Dictyotosporites speciosus* associated with *Crybelosporites stylosus* and *Foraminisporis wonthaggiensis*. Accordingly the sample is believed to be at or near the base of the lower *C. hughesii* Zone (Otway Basin) and equivalent *F. wonthaggiensis* Zone (pan-Australia). The assemblage is entirely of land plant palynomorphs.

4. 2405m; *C. stylosus* Zone, Tithonian-Valanginian

A restricted palynoflora was extracted from the sample. The presence of *Dictyotosporites speciosus* and *Cyclosporites hughesii* indicates that the sample is younger than the *R. watheroensis* Zone and is assigned to the *C. stylosus* Zone (Otway Basin) and equivalent *C. australiensis* Zone (pan-Australia). Deposition in a lacustrine situation is indicated by the presence of fresh water algal cysts.

#### REFERENCES

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	Gippsland/Otway Basins										Eromanga/Surat Basins										
	C. STYLOSUS ZONE			D. SPECIOSUS ZONE			C. PARADOXA ZONE				C. STYLOSUS ZONE			D. SPECIOSUS ZONE			C. PARADOXA ZONE				
	lower	middle	upper	C. HUGHESII SUBZONE			C. STRIATUS SUBZONE				lower	upper	C. FLORIDA ZONE			C. HUGHESII SUBZONE			C. STRIATUS SUBZONE		
<b>Filicean spores:</b>																					
<i>Murospora florida</i>	-----										-----										
<i>Crybelosporites stylosus</i>	-----										-----										
<i>Cicatricosisporites australiensis</i>	-----										-----										
<i>Dictyotosporites speciosus</i>	-----										-----										
<i>Pilososporites notensis</i>	-----										-----										
<i>Pilososporites parvispinosus</i>	-----										-----										
<i>Dictyotosporites filosus</i>	-----										-----										
<i>Crybelosporites striatus</i>	-----										-----										
<i>Balmeisporites holodictyus</i>	-----										-----										
<i>Trilobosporites trioreticulosus</i>	-----										-----										
<i>Pilososporites grandis</i>	-----										-----										
<b>Bryophytic spores:</b>																					
<i>Foraminisporis dailyi</i>	-----										-----										
<i>Cooksonites variabilis</i>	-----										-----										
<i>Foraminisporis wonthaggiensis</i>	-----										-----										
<i>Tripcoletes reticulatus</i>	-----										-----										
<i>Foraminisporis asymmetricus</i>	-----										-----										
<i>Coptospora striata</i>	-----										-----										
<i>Coptospora paradoxa</i>	-----										-----										
<b>Lycophytic spores:</b>																					
<i>Cyclosporites hughesii</i>	-----										-----										
<b>Angiospermous pollen:</b>																					
<i>Clavstipollenites hughesii</i>	-----										-----										

Gippsland/Otway Basins

Eromanga/Surat Basins

Table 2. Comparison of Early Cretaceous palynostratigraphic sequences in southern margin (Gippsland/Otway) and intracratonic (Eromanga/Surat) Basins (from Dettmann, 1986).