



PALYNOLOGICAL REPORT ON THE **BARTON**
CORNER NO 1 WELL - FOR BEACH
PETROLEUM N/L

BY

V ARCHER

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INTRODUCTION

Three side wall core samples from the Beach Petroleum Barton Corner No.1 well were examined for palynological dating purposes. The well is located near Dartmoor in south-western Victoria.

The two shallower samples at 1674m and 1700m yielded assemblages of spores and pollen and microplankton, while the deepest sample at 1835m was virtually barren.

A kerogen and maturation analysis was made for the three samples.

Results : Palynological Examination of Barton-Corner -1

Depth (m) of SWC's	Confidence Rating	Spore-Pollen Zone	Age
1674.0	1	<u>A.distocarinatus</u> Zone	Cenomanian - early Turonian
1700.0	1	<u>P. pannosus</u> Zone - early <u>A.distocoirinatus</u> Zone	Late Albian - early Cenomanian
1835.0		Indeterminate	

CONFIDENCE RATINGS - DEFINITIONS

- 0 : SWC or CORE, EXCELLENT CONFIDENCE, assemblage with zone species of spores, pollen and microplankton.
- 1 : SWC or CORE, GOOD CONFIDENCE, assemblage with zone species of spores and pollen or microplankton.
- 2 : SWC or CORE, POOR CONFIDENCE, assemblage with non-diagnostic spores, pollen and/or microplankton.
- 3-4 : Apply to cuttings only.

SPECIES LIST - BARTON CORNER-1

SPORES-POLLEN	1674m	1700m
Alisporites grandis		x
Amospollis cruciformis	x	x
Appendicisporites distocarinatus	x	x
Arcellites reticulatus		x
Baculatisporites comaumensis	x	
Balmeisporites tridictyus		x
Ceratosporites equatis		x
Cicatricosisporites australiensis	x	x
C.cuneiformis	x	x
C.hughesi	x	
C.ludbrookii	RW	RW
C.pseudotripartitus	x	x
Classopollis cf. C chateaunovi		x
C.classoides	x	x
Coptospora paradoxa	RW	
Cyathidites australis		x
C.minor	x	x
Dictyotosporites filusus	RW	
D.speciosus		RW
Foraminisporis asymmetricus	RW	
F.dailyi		x
Foveosporites canalis		x
Gingkocycadophytus nitidus	x	
Gleicheniidites circinidites	x	
Klukisporites scaberis	x	x
Kraeuselisporites jubatus	x	
K.linearis	cf.	x
K.majus		x
Laevigatisporites major	x	x
L.ovatus	x	
aff. Lunatisporites noviaulensis	RW	RW
Microcachyridites antarcticus	x	x
Osmundacidites wellmanii	x	x
Parasaccites gondwanensis		RW
Podocarpidites ellipticus	x	
Stereisporites antiquasporites	x	x
Triporoletes radiatus		x
T.reticulatus	x	x

MICROPLANKTON	1674m	1700m
Callaiosphaeridium asymmetricum		x
Cleistosphaeridium cf. C.granutatum		x
Coronifera oceanica		x
Cribroperidinium edwardsii	x	x
Cyclonephelium compactum		x
C.distinctum	x	x
C.eisenackii		x
Exochosphaeridium cf. E.phragmites?		x
Fromea amphora	x	
aff. Litosphaeridium arundum		x
Muderongia cf. M. staurota		x
Odontochitina operculata	x	x
Oligosphaeridium pulcherrimum		x
Spinidinium sp.		x
Spiniferites ramosus	x	x

cf. - compare

RW - Reworked

KEROGEN ANALYSIS :- BARTON CORNER NO.1

Depth(m)	TAI	Spores- Pollen (%)	Micro- plankton (%)	Structural Terrestrial (%)	Biode- graded Terrest- rial (%)	Amorphous Sapropelic (%)	Inert Opaque fusain
1674	4	+	-	5.5	14.5	6.0	74.0
1700	4	1.5	4.5	-	22.5	2.0	70.0
1835	-	+	-	-	7.0	6.0	81.5

To nearest 0.5%

DISCUSSION AND CONCLUSIONS

a) The Biostratigraphic Zones

1674m. The palynomorph assemblage contains the species A.distocarinatus, L.major, C.pseudotripartitus, C.cuneiformis and K.jubatus which suggest an A.distocarinatus Zone assemblage.

1700. The assemblage is richer in microplankton than the sample above. The spore-pollen species A.distocarinatus, C.cuneiformis, L.major, K.majus in the assemblage restrict the vertical distribution to the T.pannosus - early A.distocarinatus Zones. The dinoflagellate species present lend support to an Albian - Cenomanian age.

Both samples contain reworked Permian and Early Cretaceous species.

1835m. The sample proved to be virtually barren of microflora, and yielded insufficient information for dating purposes. The sparse palynomorphs present were poorly preserved and although not able to be dated, a kerogen analysis was made on the organic matter present.

b) Kerogen Analysis

The Thermal Alteration Index (TAI) is based on a subjective observation of an unornamented spore(s) to determine the colour as it relates to a TAI scale (Batten 1981).

A TAI of 4 indicates a light to medium brown colour which falls within the dry and wet hydrocarbon generation regime.

The Barton Corner No.1 samples are high in inert (opaque) fusian (>70%). Of the remaining organic matter, biodegraded terrestrial material is the most common, then amorphous material and structured terrestrial.

The percentages of amorphous material are generally higher in these samples than the Fahley-1 samples. The Barton Corner No.1 results,

being from side wall core material, must be regarded as being truer representations of the organic constituents than the cutting analysis, but nevertheless, the two wells yielded similar trends.

As with the Fahley-1 samples, the proportion of opaque material is the highest, followed by biodegraded terrestrial, then amorphous and structured material.

From Staplin 1969, this mixture of amorphous and recognizable terrestrial plant matter tends to have wet hydrocarbon potential.

BIBLIOGRAPHY

- Batten D.J 1981 : Palynofacies organic maturation and source potential for petroleum, in Brooks, J (ed) Organic Maturation Studies and Fossil Fuel Exploration. Academic Press Inc (London) Ltd.
- Dettmann & Playford 1969, Palynology of the Australian Cretaceous - a review; in Stratigraphy and Palaeontology : Essays in honour of Dorothy Hill (K.S.W. Campbell Ed.) A.N.U. Press, Canberra.
- Staplin F.L., 1969 : Sedimentary Organic Matter, Organic Metamorphism, and Oil and Gas Occurrence. Bull. Can. Petr. Geol. Vol. 17 No.1 : 47-66.