BASIC DATA
Palynological analysis of cuttings samples from Pritchard-1, onshore Otway Basin.

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Introduction

This palynological study of the onshore Prichard-1 well was undertaken for Essential Petroleum Resources Limited as part of the post-drill analysis for the Well Completion Report.

Twenty-two cuttings samples are analysed (plus two samples given repeat preparations which confirmed that one of the original samples was out-of-place) over a 1581m thick interval between 960 and 2541m. The samples were received in two separate batches by the author in April and sent to Core Laboratories Australia Pty Ltd for chemical processing. Palynological slides were returned for microscope examination on 26th April and 11th May 2006.

Basic sample data comprising sample lithologies and weights of sample processed are provided in Table 1, while the basic palynological assemblage data is provided in Table 2. An average of 15 grams of each sample was processed to give mainly moderate to high visual organic residue yields, which contain moderate to high concentrations of palynomorphs on the microscope slides. Preservation of the palynomorphs was found to be mostly poor to very poor, and only occasionally fair. Spore-pollen diversity was moderate to high averaging 38+ species per sample while microplankton diversity ranged from low to moderate with one to fourteen species recorded per sample (average 7+ species per sample).

The distribution of the palynomorphs identified in the samples are displayed on the accompanying StrataBugs™ range chart. The palynomorphs are displayed proportional to their depth in the well and in terms of their absolute abundance. They are also split between different categories. The terrestrial spore and pollen are divided between spores, gymnosperm pollen and angiosperm pollen, which are plotted in separate panels. The next panel shows the abundance of marine microplankton and the colonial algae *Amosopollis cruciformis* as a percentage relative to the combined spore-pollen and microplankton counts. In the following panel labelled Microplankton are displayed the absolute abundance of individual species recorded in the microplankton counts. Then plotted are Other Palynomorphs counted and this is followed by the final panel labelled Reworking which displays spore-pollen species considered reworked from Permian, Triassic and Early Cretaceous sediments. The species are plotted within the panels according to their shallowest or youngest occurrences, or in alphabetical order. The following codes or abbreviations apply to the individual species occurrences and abundances on the range chart:

Numbers = Number of specimens counted
\+ = Species outside of count
C = Caved species
R = Reworked species
? = Questionable identification of species.

Author citations for the recorded spore-pollen species can be sourced from papers by Dettmann (1963), Dettmann & Playford (1968), Helby *et al.* (1987) and Stover & Partridge (1973), while the author citations for the microplankton species can be sourced from the indexes for dinocysts and other organic-walled microplankton prepared by Fensome *et al.* (1990) and Williams *et al.* (1998). Manuscript species names and combinations are indicated by “sp. nov.” or “comb. nov.” on the range chart, and “ms” after their binomials names in the text and tables.

References

DETTMANN, M.E., 1963. Upper Mesozoic microfloras from southeastern Australia. *Proceedings Royal Society of Victoria, vol.77,* pt.1, p.1–148, pl.1-27.

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Table 1. Basic Sample Data for Pritchard-1, Otway Basin.

No.	Depth Metres	Sample Type	Lithology (hand-specimen description)	Weight grams
1	960	Cuttings	Medium brown-grey siltstone	14.9
2	1005	Cuttings	Dark brown grey muddy sandstone	15.2
3	1071	Cuttings	Medium grey mudstone	15.0
4	1164	Cuttings	Medium grey muddy sandstone	14.8
5	1263	Cuttings	Medium grey mudstone	15.1
6	1305	Cuttings	Medium chocolate grey hard mudstone	15.0
7	1326	Cuttings	Medium grey muddy sandstone	15.1
8	1348	Cuttings	Medium grey sandy mudstone	15.0
9	1362	Cuttings	Medium grey muddy sandstone	15.0
10	1401	Cuttings	Medium greenish grey mudstone	15.0
11	1530	Cuttings	Medium grey muddy sandstone	14.9
12	1713	Cuttings	Medium grey sandy mudstone	15.1
13	1833	Cuttings	Medium grey mudstone	14.8
14	1986	Cuttings	Medium grey silty mudstone	15.0
15	2025	Cuttings	Medium-dark grey hard mudstone	15.0
16	2094	Cuttings	Dark grey soft mudstone	14.8
17	2250A	Cuttings	Medium grey mudstone	15.1
18	2250B	Cuttings	Medium grey mudstone	15.0
19	2358	Cuttings	Dark grey soft mudstone	14.9
20	2460	Cuttings	Dark grey soft mudstone	15.0
21	2517	Cuttings	Medium grey mudstone	15.0
22	2520A	Cuttings	Medium grey muddy sandstone	15.0
23	2520B	Cuttings	Medium to dark grey mudstone	18.9
24	2541	Cuttings	Medium grey muddy sandstone	15.1

Sample A = Original sample processed.
Sample B = Repeat sample processed.

Table 2. Basic Palynomorph Assemblage Data for Pritchard-1, Otway Basin.

No.	Depth Metres	Sample Type	Visual Yield	Palynomorph Concentration	Palynomorph Preservation	No. SP Species	No. MP Species
1	960	Cuttings	High	High	Very poor	54+ (1+)	4+
2	1005	Cuttings	High	Moderate	Poor-fair	39+	2+
3	1071	Cuttings	High	Low	Poor	31+	3+
4	1164	Cuttings	High	Low	Poor	22+ (2+)	1+
5	1263	Cuttings	High	High	Very poor	44+ (4+)	9+
6	1305	Cuttings	High	Moderate	Very poor	34+	11+
7	1326	Cuttings	High	Moderate	Very poor	28+ (4+)	9+ (3+)
8	1348	Cuttings	High	High	Poor-fair	59+ (3+)	5+ (1+)
9	1362	Cuttings	High	Moderate	Poor-fair	38+ (1+)	3+ (2+)
10	1401	Cuttings	High	High	Fair	37+ (6+)	7+ (1+)
11	1530	Cuttings	High	Moderate	Very poor	35+ (5+)	4+
12	1713	Cuttings	High	Moderate	Poor	32+ (5+)	7+
13	1833	Cuttings	Moderate	Low	Poor-fair	34+ (1+)	9+ (1+)
14	1986	Cuttings	Moderate	Moderate	Poor	27+ (3+)	6+
15	2025	Cuttings	Moderate	Moderate	Poor	39+ (2+)	7+ (1+)
16	2094	Cuttings	High	Moderate	Very poor	25+ (3+)	12+ (2+)
17	2250A	Cuttings	Moderate	Moderate	Very poor	32+ (5+)	4+
18	2250B	Cuttings	High	Moderate	Poor	31+ (5+)	6+
19	2358	Cuttings	High	Moderate	Very poor	26+ (2+)	8+
20	2460	Cuttings	High	High	Very poor	27+ (2+)	7+
21	2517	Cuttings	Moderate	Moderate	Very poor	29+ (6+)	8+ (1+)
22	2520A	Cuttings	High	Moderate	Poor-very poor	32+ (2+)	4+ (1+)
23	2520B	Cuttings	High	Low	Very poor	24+ (3+)	6+ (1+)
24	2541	Cuttings	Moderate	Moderate	Very poor	30+ (2+)	5+ (1+)

SP & MP are abbreviations for Spore-Pollen and Microplankton
Species numbers in brackets refer to number of reworked and/or caved species identified.

Appendix. List of species recorded from out-of-place sample A at 2520m in Pritchard-1.

Spore-Pollen	
Araucariacites australis	X
Ariadnaesporites sp. (threads)	0.8%
Australopollis obscurus	3.1%
Baculatisporites spp.	2.4%
Cicatricosisporites & *Ruffordiaspora* spp.	0.8%
Clavifera triplex	1.6%
Clavifera vultuosus sp. nov.	1.6%
Cupressacites sp.	6.3%
Cyathidites spp. (large species)	1.6%
Cyathidites spp. (small species)	12.6%
Dictyophyllidites spp.	2.4%
Dilwynites echinatus sp. nov.	0.8%
Dilwynites granulatus	2.4%
Gleicheniidites ancorus sp. nov.	0.8%
Gleicheniidites circinidites	9.4%
Herkosporites elliottii	2.4%
Laevigatosporites ovatus	0.8%
Latrobosporites amplus	X
Lygistepollenites florinii	2.4%
Microcachryidites antarcticus	3.9%
Ornamentifera sentosa	0.8%
Osmundacidites wellmanii	1.6%
Peninsulapollis gillii	X
Perotrilites majus	0.8%
Phyllocladidites mawsonii	0.8%
Plicatipollenites spp.	Reworked
Podocarpidites spp.	25.2%
Proteacidites spp.	2.4%
Protohaploxypinus spp.	Reworked
Rugulatisporites spp.	0.8%
Stereisporites antiquasporites	0.8%
Trichotomosulcites subgranulatus	7.1%
Trilete spores undiff.	2.4%
Vitreisporites signatus	1.6%
Count:	127
Microplankton	
Amosopollis cruciformis	X
Apectodinium homomorphum	Caved
Dinogymnium acuminatum	X
Heterosphaeridium spp.	X
Isabelidinium cretaceum	X
SP + MP Count:	136
Amosopollis cruciformis (in SP count):	1.5%
Marine microplankton (in SP count):	5.1%

X = Present outside of count.

Well Name : Pritchard-1
Operator : Essential Petroleum Resou
Well Code : PRITCHARD-1
Lat/Long : 38° 0' 26.25"S 141°12' 35.40"E
Interval : 940m - 2560m
Scale : 1:2500
Chart date : 03 July 2006

BASIC Palynomorph Range Chart
Sample interval 960 to 2541m
Microscope analysis by Alan D. Partridge

Pritchard-1

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