BASIC DATA.
Palynological analysis of cuttings samples between 1069 and 1867 metres in Echidna High-1, onshore Gippsland Basin.

by

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Introduction

Six cuttings samples between 1069 and 1867 metres have been analysed from the Echidna High-1well, drilled by Lakes Oil N.L. in the Seaspray Depression, onshore Gippsland Basin. When the samples were received by the author they were initially washed and the most obvious shards of caved Tertiary coal were picked-out and discarded, to remove a potential contamination problem. If the coal is not removed caved palynomorphs from the coal can completely overwhelm the *in situ* palynomorphs from the other lithologies, and this problem has complicated age dating in previous wells. Selected samples were then forwarded in two separate batches to Core Laboratories Australia Pty Ltd in Perth, for laboratory processing and slide preparation. Initial results on the analysis of the samples were reported in Provisional Reports issued on 23rd March and 19th April 2005.

Basic sample data on the lithologies and weight of sample processed are provided in Table 1. Basic assemblage data comprising the visual organic residues yields recovered from the samples, concentration of palynomorph on the slides, and their preservation are recorded in Table 2. Overall, the organic yields and the palynomorph concentrations and their preservation improve in the deeper samples. The recorded spore-pollen diversity varies from very low to moderate averaging 26+ species per sample for all categories, whereas the recorded microplankton diversity is always low and is comprised mainly of caved species.

Description of Range Chart

The distribution of the palynomorphs identified in the samples are recorded on the accompanying range chart prepared using the StrataBugs™ program. The chart displays the species in the samples proportional to their depth in the well and in terms of their absolute abundance in the counts. The palynomorphs are also distributed between different categories. The terrestrial spore-pollen are divided between spores, gymnosperm pollen and angiosperm pollen, and are plotted in separate panels. These are followed by the panel labelled Caved which records the total number of caved specimens recorded in the counts. The Microplankton and Other palynomorphs are next plotted as separate panels. Within the panels the species are plotted according to their highest or youngest occurrence or alphabetical.

Author citations for most of the recorded spore-pollen species can be sourced from the papers by Dettmann (1963, 1986), Helby *et al.* (1987) or 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.

The following codes or abbreviations apply to the individual species occurrences and abundances on the range chart:

Numbers	=	Absolute abundance or number of species counted
+	=	Species recorded outside of count
C	=	Caved species
R	=	Reworked species
?	=	Questionable identification of species.

References

DETTMANN, M.E., 1963. Upper Mesozoic microfloras from southeastern Australia. *Proceedings Royal Society Victoria 77*, p.1-148.

DETTMANN, M.E., 1986. Early Cretaceous palynofora of subsurface strata correlative with the Koonwarra Fossil Bed, Victoria. *Association of Australasian Palaeontologists Memoir 3*, p.79-110.

FENSOME, R.A., WILLIAMS, G.L., BARSS, M.S., FREEMAN, J.M. & HILL, J.M., 1990. Acritarchs and fossil Prasinophytes: An index to genera, species and infraspecific taxa. *AASP Contribution Series No. 25*, p.1-771.

HELBY, R., MORGAN, R. & PARTRIDGE, A.D., 1987. A palynological zonation of the Australian Mesozoic. **In** *Studies in Australian Mesozoic Palynology*, P.A. Jell, editor, *Memoir Association Australasian Palaeontologists 4*, p.1-94.

STOVER, L.E. & PARTRIDGE, A.D., 1973. Tertiary and late Cretaceous spores and pollen from the Gippsland Basin, southeastern Australia. *Proceedings Royal Society of Victoria, vol.85*, pt.2, p.237-286.

WILLIAMS, G.L., LENTIN, J.K. & FENSOME, R.A., 1998. The Lentin and Williams index of fossil dinoflagellates 1998 edition. *American Association of Stratigraphic Palynologists, Contributions Series, no. 34*, p.1-817.

BASIC DATA

Table 1: Basic sample data for Echidna High-1, onshore Gippsland Basin.

Sample Type	Depth	Lithology	Wt gms
Cuttings	1069m	Medium grey Sandstone and Coal (caved) which was picked out of sample before processing.	17.4
Cuttings	1081m	Washed sample: Sandstone, light grey >60%, Coal or carbonaceous shale <30% (~25g of wet sample submitted). Original sample: >50% large pieces of caved coal.	12.5
Cuttings	1162m	Coal >50% (caved and picked-out); Mudstone, light grey-brown with carbonaceous flecks <30%; Quartz sand to pebbles ~10%.	14.0
Cuttings	1237m	Mudstone, medium grey <70%; Sandstone >20%; Coal >10% (caved)	16.5
Cuttings	1519m	Mudstone, medium grey <60%; Sandstone, white 35%; Coal <5%.	18.2
Cuttings	1867m	Sandstone, light grey feldspathic/lithic >60%; Mudstone, medium grey <40%. (~35g of wet sample submitted)	14.0

Wt = Weight of sample processed in grams.

Table 2: Basic assemblage data for Echidna High-1, onshore Gippsland Basin.

Sample Type	Depth	Visual Yield	Palynomorph Concentration	Preservation	No. SP Species†	No. MP Species†
Cuttings	1069m	High	Very Low	Poor-Fair	6+ (4+)	(2+)
Cuttings	1081m	Moderate	Low	Poor-Fair	19+ (14+)	(2+)
Cuttings	1162m	Moderate	Moderate	Poor-Fair	6+ (16+)	
Cuttings	1237m	Moderate	Moderate	Poor-Fair	24+ (17+)	(1+)
Cuttings	1519m	High	High	Fair-Good	28+ (8+)	1+
Cuttings	1867m	Moderate	High	Very Good	20+	1+
				Averages:	**17+ (9+)**	**<1**

† Bracketed number of species (n+) refers to species which are caved or contaminants.

Well Name : Echidna High-1

Operator : Lakes Oil NL

Interval : 1000m - 1900m

Scale : 1:5000

Chart date: 11 July 2005

Echidna High-1

Palynological Range Chart

Sample Interval 1069 to 1867m

Microscope analysis by Alan D. Partridge

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