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PALYNOLOGY OF PETROFINA MUDSKIPPER-1, GIPPSLAND BASIN,

AUSTRALIA

BY

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for PETROFINA EXPLORATION AUSTRALIA SA

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## II. INTRODUCTION

Seventeen samples were submitted by Nick Grollmann of Petrofina for palynology. Raw data is presented in Appendix I.

The palynostratigraphic framework for the Cretaceous is most recently reviewed by Helby, Morgan and Partridge (1987). In the Tertiary, the zonal scheme was most recently published by Partridge (1976), but significant new data exists in privately circulated studies, in Harris (1985), Morgan (1988), and in Marshall and Partridge (1988). The zonal scheme used here is shown in Fig. 1 and is a combination of Helby, Morgan and Partridge (1987) and Partridge (1976). The data is easily discussed against this framework.

Organic maturity data was generated in the form of the Spore Colour Index and plotted on Fig. 2. The oil and gas windows follow the general consensus of geochemical literature. The oil window corresponds to spore colours of light-mid brown (2.7) to dark brown (3.6). This would correspond to Vitrinite Reflectance values of 0.6% to 1.3%. However, factors such as detailed kerogen type, basin type, basin history and heating curves all affect precise interpretation, and analytical machine-based maturity parameters are probably more reliable.

AGE		SPORE - POLLEN ZONES	DINOFLAGELLATE ZONES	
Early Tertiary	Early Oligocene	<i>P. tuberculatus</i>		
	Late Eocene	upper <i>N. asperus</i>	<i>P. comatum</i>	
		middle <i>N. asperus</i>	<i>V. extensa</i>	
	Middle Eocene	lower <i>N. asperus</i>	<i>D. heterophlycta</i>	
			<i>W. echinosuturata</i>	
	Early Eocene		<i>P. asperopolus</i>	<i>W. edwardsii</i>
			upper <i>M. diversus</i>	<i>W. thompsonae</i>
				<i>W. ornata</i>
			middle <i>M. diversus</i>	<i>W. walpawaensis</i>
			lower <i>M. diversus</i>	
				<i>W. hyperacantha</i>
	Paleocene	upper <i>L. balmel</i>		<i>A. homomorpha</i>
lower <i>L. balmel</i>			<i>E. crassitabulata</i>	
				<i>T. evittii</i>
				<i>M. druggii</i>
Maastrichtian	<i>T. longus</i>			
Campanian	<i>T. lillei</i>		<i>I. korojonense</i>	
	<i>N. senectus</i>		<i>X. australis</i>	
Santonian	<i>T. pachyexinus</i>		<i>N. aceras</i>	
Coniacian			<i>I. cretaceum</i>	
			<i>O. porifera</i>	
Turonian	<i>C. triplex</i>		<i>C. striatoconus</i>	
Cenomanian			<i>P. infusorioides</i>	
		<i>A. distocarinatus</i>		
Early Cretaceous	Albian	Late	<i>P. pannosus</i>	
		Middle	upper <i>C. paradoxa</i>	
		Early	lower <i>C. paradoxa</i>	
	Aptian		<i>C. striatus</i>	
			upper <i>C. hughesi</i>	
		lower <i>C. hughesi</i>		
	Barremian			
	Hauterivian		<i>F. wonthaggiensis</i>	
	Valanginian		upper <i>C. australiensis</i>	
	Berriasian		lower <i>C. australiensis</i>	
	Juras.	Tithonian	<i>R. watheroensis</i>	

FIGURE 1

ZONATION FRAMEWORK

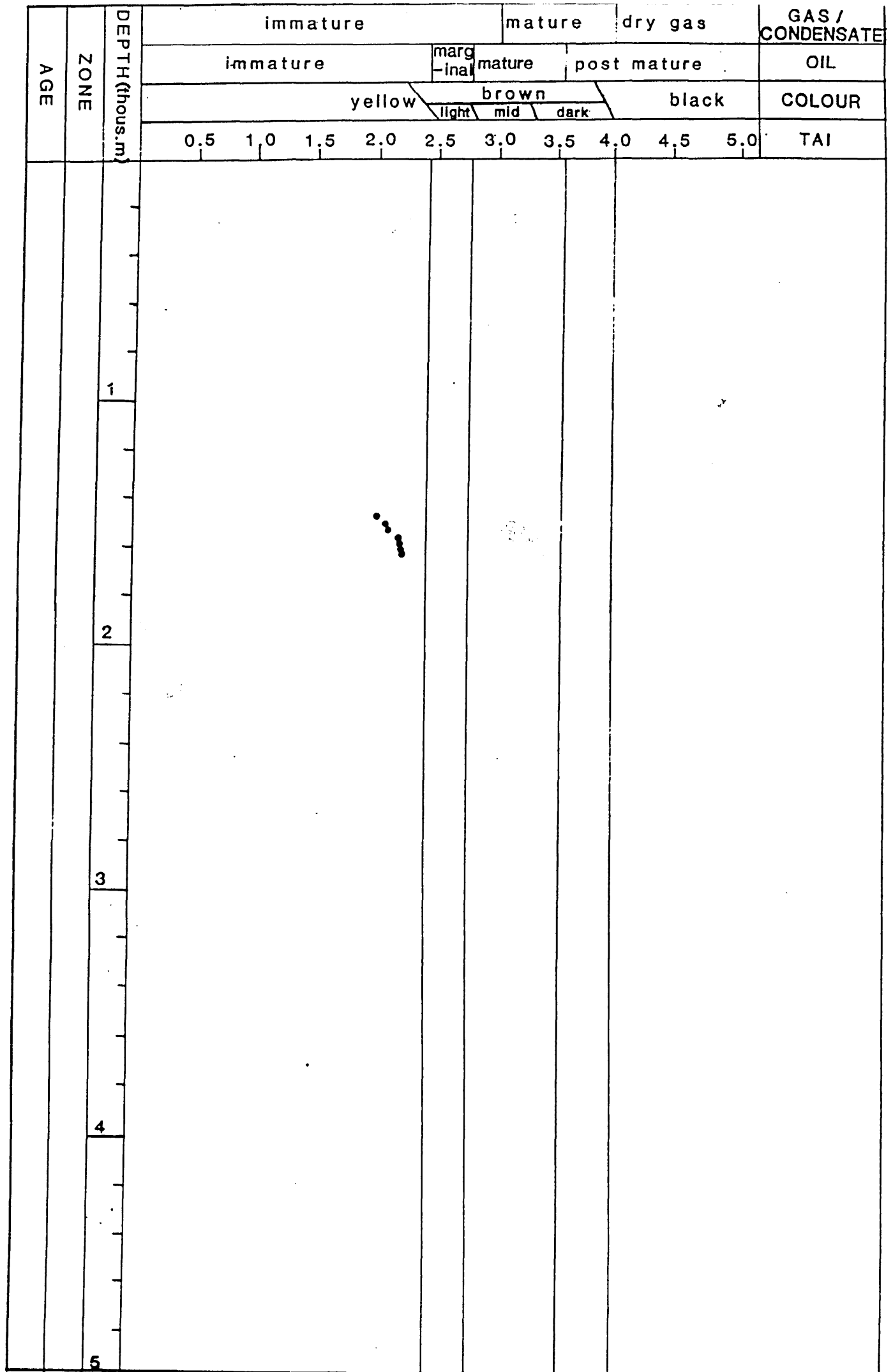


FIGURE 2 MATURITY PROFILE MUDSKIPPER 1

MUDSKIPPER #1 palynological data

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C L I E N T: PETROFINA

W E L L: Mudskipper #1

F I E L D / A R E A: Gippsland Basin


A N A L Y S T: Roger Morgan

D A T E : July '90

N O T E S: all sample depths are in metres

RANGE CHART OF GRAPHIC ABUNDANCES BY LOWEST APPEARANCE..dinos & s/p

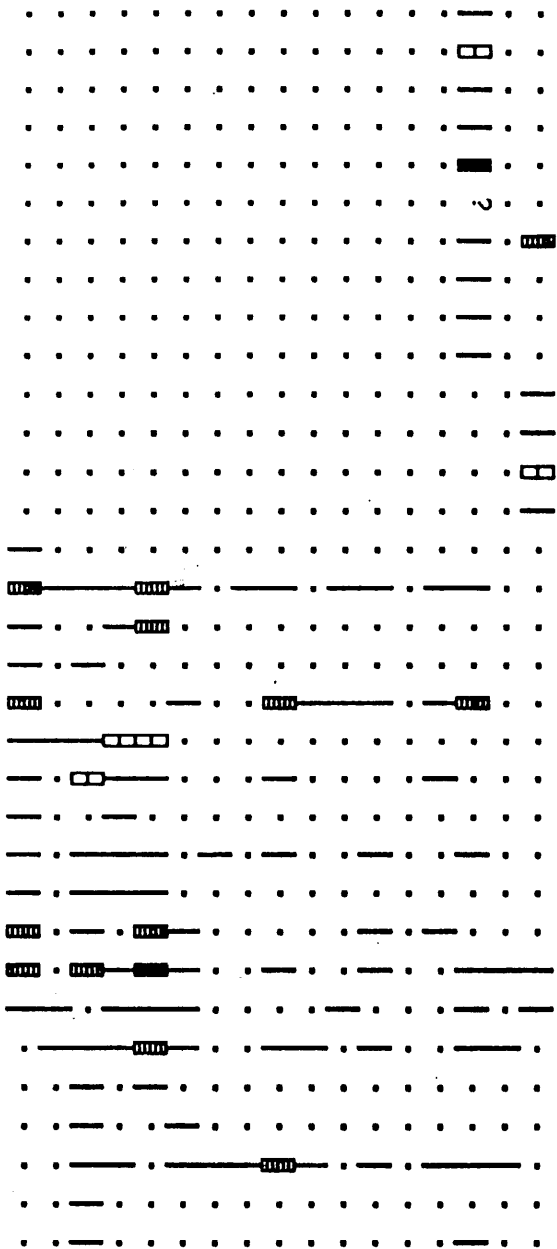
Key to Symbols

- 
- = Very Rare
  - = Rare
  - = Few
  - = Common
  - = Abundant
  - ? = Questionably Present
  - . = Not Present

1477.5	SWC	.....
1498.5	SWC	.....
1500.0	SWC	.....
1503.5	SWC	.....
1506.0	SWC	.....
1510	- cults	.....
1511.0	SWC	.....
1524.5	SWC	.....
1525	- cults	.....
1525.5	SWC	.....
1530	- cults	.....
1557.0	SWC	.....
1587.5	SWC	.....
1600.5	SWC	.....
1603.5	SWC	.....
1607.5	SWC	.....
1613.5	SWC	.....

- 1 AREOLIGERA SENONENSIS
- 2 CORDOSPHAERIDIUM INODES
- 3 DEFLANDREA DILWYNENSIS
- 4 EISENACKIA CRASSITABULATA
- 5 GLAPHYROCYSTA PASTIELLI
- 6 GLAPHYROCYSTA RETIINTEXTA
- 7 MICRODINIUM SP2
- 8 SPINIFERITES RAMOSUS
- 9 CYCLOPSIELLA VIETA
- 10 DEFLANDREA MEDCALFII
- 11 DEFLANDREA SPECIOSUS
- 12 HYSTRICHOSPHAERIDIUM TUBIFERUM
- 13 PALAEOCYSTODINIUM AUSTRALINUM
- 14 PARALECANIELLA INDENTATA
- 15 SPINIDIINIUM SP1
- 16 SPINIDIINIUM LANTERNUM
- 17 HEMICYSTODINIUM ZOHARYI
- 18 IMPLETOSPHAERIDIUM SP
- 19 LINGULODINIUM MACHAEROPHORUM
- 20 NEMATOSPHAEROPSIS BALCOMBIANA
- 21 OPERCULODINIUM CENTROCARPUM
- 22 OPERCULODINIUM SPP
- 23 TUBERCULODINIUM VANCOMPOAE
- 24 CEREBROCYSTA SP
- 25 HETRAULACACYSTA PAXILLA
- 26 HYSTRICHOKOLPOMA EISENACKII
- 27 IMPAGIDIINIUM DISPERTITUM
- 28 AREOSPHAERIDIUM DIKTYOPLOKUS
- 29 ACHILLEODINIUM BIFORMOIDES
- 30 APECTODINIUM HOMOMORPHA (1.sp)
- 31 APTEODINIUM AUSTRALIENSE
- 32 AREOSPHAERIDIUM ARCUATUM
- 33 CORDOSPHAERIDIUM MULTISPINOSUM

1477.5 SMC  
 1498.5 SMC  
 1500.0 SMC  
 1503.5 SMC  
 1506.0 SMC  
 1510 - cutts  
 1511.0 SMC  
 1524.5 SMC  
 1525 - cutts  
 1525.5 SMC  
 1530 - cutts  
 1557.0 SMC  
 1587.5 SMC  
 1600.5 SMC  
 1603.5 SMC  
 1607.5 SMC  
 1613.5 SMC



- 34 DEFLANDREA HETEROPHLYCTA
- 35 FIBROCYSTA BIPOLARE
- 36 HOMOTRYBLIUM ABBREVIATUM
- 37 HOMOTRYBLIUM SCABROSA
- 38 HOMOTRYBLIUM TASMANIENSE
- 39 KENLEYIA SP
- 40 PHTHANOPERIDIUM COMATUM
- 41 RHOMBODINIUM GLABRUM
- 42 TURBIOSPAERA MAGNIFICA
- 43 TURBIOSPHAERA SP
- 44 APECTODINIUM HOMOMORPHA (sh. sp)
- 45 DEFLANDREA PHOSPHORITICA
- 46 PALAEOCYSTODINIUM GOLZOWENSE
- 47 SYSTEMATOPHORA PLACACANTHA
- 48 CAMEROZONOSPORITES OHAIENSIS
- 49 CYATHIDITES SPP
- 50 FALCISPORITES SIMILIS
- 51 GAMBIERINA EDWARDSII
- 52 HALORAGACIDITES HARRISII
- 53 LYGISTEPOLLENITES BALMEI
- 54 LYGISTEPOLLENITES FLORINII
- 55 MICROCACHRYDITES ANTARCTICUS
- 56 NOTHOFAGIDITES BRACHYSPINULOSUS
- 57 PERIPOROPOLLENITES POLYORATUS
- 58 PHYLLOCLADIDITES MAWSONII
- 59 PROTEACIDITES SP
- 60 STEREISPORITES ANTIQUISPORITES
- 61 GLEICHENIIDITES CIRCINIDITES
- 62 AUSTRALOPOLLIS OBSCURUS
- 63 ERICIPITES SCABRATUS
- 64 NOTHOFAGIDITES EMARCIDUS/HETERUS
- 65 RETITRILETES AUSTROCLAVATIDITES
- 66 TRICOLPITES GILLII





SPECIES LOCATION INDEX  
Index numbers are the columns in which species appear.

INDEX NUMBER	SPECIES
29	ACHILLEODINIUM BIFORMOIDES
30	APECTODINIUM HOMOMORPHA (l.sp)
44	APECTODINIUM HOMOMORPHA (sh.sp)
31	APTEODINIUM AUSTRALIENSE
1	AREOLIGERA SENONENSIS
32	AREOSPHAERIDIUM ARCUATUM
28	AREOSPHAERIDIUM DIKTYOPLOKUS
62	AUSTRALOPOLLIS OBSCURUS
48	CAMEROZONOSPORITES OHAIENSIS
79	CERATOSPORITES EQUALIS
24	CEREBROCYSTA SP
70	CLAVIFERA TRIPLEX
2	CORDOSPHAERIDIUM INODES
33	CORDOSPHAERIDIUM MULTISPINOSUM
76	CYATHEACIDITES ANNULATUS
81	CYATHIDITES GIGANTIS
49	CYATHIDITES SPP
9	CYCLOPSIELLA VIETA
3	DEFLANDREA DILWYNENSIS
34	DEFLANDREA HETEROPHLYCTA
10	DEFLANDREA MEDCALFII
45	DEFLANDREA PHOSPHORITICA
11	DEFLANDREA SPECIOSUS
71	DILWYNITES GRANULATUS
4	EISENACKIA CRASSITABULATA
63	ERICIPITES SCABRATUS
50	FALCISPORITES SIMILIS
35	FIBROCYSTA BIPOLARE
51	GAMBIERINA EDWARDSII
5	GLAPHYROCYSTA PASTIELLII
6	GLAPHYROCYSTA RETIINTEXTA
61	GLEICHENIIDITES CIRCONIDITES
52	HALORAGACIDITES HARRISII
17	HEMICYSTODINIUM ZOHARYI
78	HERKOSPORITES ELLIOTTII
25	HETERAULACACYSTA PAXILLA
36	HOMOTRYBLIUM ABBREVIATUM
37	HOMOTRYBLIUM SCABROSA
38	HOMOTRYBLIUM TASHMANIENSE
26	HYSTRICHOKOLPOMA EISENACKII
12	HYSTRICHOSPHAERIDIUM TUBIFERUM
27	IMPAGIDINIUM DISPERTITUM
18	IMPLETOSPHAERIDIUM SP
39	KENLEYIA SP
19	LINGULODINIUM MACHAEROPHORUM
53	LYGISTEPOLLENITES BALMEI
54	LYGISTEPOLLENITES FLORINII
55	MICROCACHRYIDITES ANTARCTICUS
7	MICRODINIUM SP2
20	NEMATOSPHAEROPSIS BALCOMBIANA
80	NOTHOFAGIDITES ASPERUS
56	NOTHOFAGIDITES BRACHYSPINULOSUS
64	NOTHOFAGIDITES EMARCIDUS/HETERUS
72	NOTHOFAGIDITES ENDURUS
77	NOTHOFAGIDITES FALCATUS
21	OPERCULODINIUM CENTROCARPUM