PALYNOLOGY OF ANGLESEA - 1

TORQUAY EMBAYMENT, BASS BASIN, AUSTRALIA

BY

ROGER MORGAN

for AMOCO AUSTRALIA

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CONTENTS

I SUMMARY

497 ft. (core) - 1216 ft (core) : lower N. asperus Zone : Middle Eocene : marginally marine at the base, non-marine at the top : immature

P. asperopolus to L. balmei Zones not seen but may be partly present in the 300 ft. sample gap.

1515 ft. (core) : T. longus Zone : Maastrichtian : non-marine :immature.

1778 ft. (core) : T. lillei Zone ; Maastrichtian - Campanian : non-marine : immature.

N. senectus to C. paradoxa Zones not seen and probably largely absent on a hiatus in the 160 ft. sample gap.

1939 ft. (core) - 2862 ft. (core) : C. striatus Zone : early Albian : non-marine ; mature for oil, marginally mature for gas½condensate.

4019 ft. (core) ; indeterminate ; too lean of palynomorphs : mature for oil and gas/condensate.

4821 ft. (core) : C. hughesi Zone : Aptian : non-marine : fully mature for oil, mature for gas/condensate.

6239 ft. (core) - 7859 ft. (core) : indeterminate Cretaceous: post-mature for oil, fully mature for gas/condensate.

8701 ft. (core) - 10,060 ft. (core) : indeterminate Jurassic-Cretaceous : post-mature for oil, fully mature for gas/condensate.

II INTRODUCTION

Amoco requested palynology of these 16 core samples as part of a review of the Torquay Embayment. This area is open acreage and currently available for tender, having recently been gazetted. It also adjoins Amoco's extensive Bass Basin exploration leases.

Figure 1 shows the zonation outline. The Cretaceous Zones are most recently reviewed in Helby et al (1987) while those in the Tertiary are basically those of Stover and Partridge (1973) as modified for the Bass Basin by Partridge (1973).The Tertiary dinoflagellate Zones of Partridge (1976) connot be recognised in the Bass Basin.

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

FIGURE 1

III PALYNOSTRATIGRAPHY

A. 497 ft. (core) - 1216 ft. (core) : lower N.asperus Zone.

This interval is assigned to the lower Nothofagidites asperus Zone at the top on the absence of younger indicators and at the base on oldest common Nothofagidites spp. including oldest N.falcatus and N.vansteenisii plus oldest Periporopollenites vesicus and Proteacidites rugulatus (all at 1216 ft) supported by oldest Milfordia homeopunctatus, Tricolpites simatus and Proteacidites reflexus (at 1093 ft) and oldest Milfordia hypolaenoides and Tricolporites leuros (at 799 ft.).

Marginally marine environments are indicated at 1093 ft. and 1216 ft. where very rare dinoflagellates were seen. Non-marine environments are indicated at 497 ft. and 799 ft. where dinoflagellates were not seen.

These features are normally seen in the topmost Eastern View Formation, with the overlying middle N. asperus Zone associated with the Demon's Bluff Formation.

Light yellow spore colours indicate immaturity for hydrocarbon generation.

B. P. asperopolus to L. balmei Zones : not seen.

These zones were not seen, but may be partly present in the large 300 ft. sample gap. They may also be largely absent b hiatus.

C. 1515 ft. (core) : T. longus Zone

Assignment of this sample is clearly indicated at the top by youngest Tricolpites confessus, T. longus and Tricolporites

pachyexinus, and at the base by oldest T. longus and Tripunctisporis punctatus. Within the assemblage, Proteacidites spp. are dominant with frequent Phyllocladidites mawsonii and Tricolpites phillipsii

Non-marine environments are indicated by the absence of dinoflagellates and the rare freshwater alga Botryococcus amongst the common and diverse spores and pollen.

These features are normally associated with the mid Eastern View Formation.

Yellow spore colours indicate immaturity for hydrocarbon generation.

D. 1778 ft. (core) : T. lillei Zone

Assignment of this sample is indicated at the top by the absence of younger indicators (supported by youngest frequent Nothofagidites senectus and N. endurus and at the base by oldest Tricolporites lillei, Stereisporites regium and Triporopollenites sectilis. Proteacidites spp. are dominant, but with frequent Nothofagidites spp.)

Non-marine environments are indicated by the absence of dinoflagellates and rare presence of algal acritarchs (Schizosporis) and Botryococcus.

Yellow spore colours indicate immaturity for hydrocarbon generation.

E. N. senectus to C. paradoxa Zones : not seen

These zones were not seen and are probably largely absent by hiatus in the 160 ft. sample gap. log data suggest a hiatus at 1921 ft. leaving room perhaps for some more Late Cretaceous zones, but little room for Early Cretaceous ones.

F. 1939 ft. (core) - 2862 ft. (core) : C. striatus Zone.

Assignment to the Crybelosporites striatus Zone is indicated at the top by the absence of younger indicators and at the base by oldest C. striatus. Youngest Dictyotosporites filosus (1939 ft.) and Pilosisporites parvispinosus (2225 ft.) occur in this interval. Cyathidites spp., Cicatricosisporites spp. and Falcisporites spp. are the common types.

Non-marine, possibly partly lacustrine, environments are indicated by the absence of dinoflagellates and rare presence of algal acritarchs (Schizosporis spp.)

These features are normally associated with the Eumeralla Formation of the Otway Group.

Spore colours of light to mid brown indicate early maturity for oil generation but only marinal maturity for gas/condensate.

G. 4019 ft. (core) : indeterminate.

Very few palynomorphs were recovered from this sample, and zonal assignment is not possible. Minor Triassic reworking and younger Cretaceous caving (? mud contamination of core) were noted.

Mid brown spore colours indicate full maturity for oil generation and early maturity for gas/condensate.

H. 4821 ft. (core) : C. hughesi Zone

Assignment to the Cyclosporites hughesi Zone is indicated at the top by youngest C. hughesi without younger indicators and at the base by oldest Foraminisporis asymmetricus and consistent Cicatricosisporites australiensis. Common forms

are Osmundacidites wellmanii and Falcisporites similis, but yields are very low.

Non-marine environments are indicated by the lack of dinoflagellates.

These features are normally seen in the lower Eumeralla Formation of the Otway Group.

Spore colours of mid to dark brown indicate peak maturity for oil, and full maturity for gas/condensate.

I. 6239 ft. (core) - 7859 ft. (core) : indeterminate Cretaceous.

Very poor yields (especially at 6239 ft) preclude zonal assignment, but oldest Cicatricosisporites australiensis at 7859 ft. indicates a Cretaceous age. Too few specimens were seen to make valid environmental conclusions.

Spore colours of very dark brown to black indicate post-maturity for oil and peak maturity for gas/condensate.

J. 8701 ft. (core) - 10,060 ft. (core) : indeterminate Jurassic-Cretaceous

Very poor yields (especially at 8701 ft.) preclude zonal assignment. However, the presence of Camarozonosporites clivosus and Corollina torosa indicate Jurassic or younger ages.

Too few specimens were seen for valid environmental conclusions.

Spore colours of very dark brown to black indicate post-maturity for oil and peak maturity for gas/condesate.

IV CONCLUSIONS AND RECOMMENDATIONS

A. CONCLUSIONS

1. Section beneath a log-based unconformity at 5710 ft. shown in Evans (1966) is essentially undated, but is probably all Cretaceous. Given the increased maturity beneath this point, it is not unlikely that the unconformity corresponds with the "top Pretty Hill unconformity" in the Otway Basin to the west. If so, this section would be Neocomian in age and a shale equivalent of the sandy Pretty Hill Formation of the Otway Basin.

2. The Aptian to early Albian section between the log based unconformities at 5710 ft. and 1921 ft. is equivalent to the lower Eumeralla Formation of the Otway Group.

3. The upper Eumeralla Formation equivalent (middle and late Albian) plus the lower Eastern View Formation (Cenomanian to Santonian) are lost on the hiatus at 1921 ft.

4. The Eastern View Formation comprises a lower non-marine section of Companian to Maastrichtian age (and on regional grounds may extend into the Paleocene in the unsampled interval), a probable hiatus removing part or all of the Paleocene to Middle Eocene and an upper partly marginal marine section of Middle Eocene age. The top of the Eastern View is presumably at top sand (370 ft.) and is conformably overlain by the Demon's Bluff Formation.

B. RECOMMENDATIONS

1. The 300 ft. wide sample gap between 1216 ft. and 1515 ft. may contain part or all of the six missing Paleocene to Middle Eocene Zones. Study of 30 ft. cuttings is recommended to try to detect the missing zones.

2. The 160 ft. wide samle gap between 1778 ft. and 1939 ft. may contain part of the five missing zones, although regional evidence suggests that only the N. senectus Zone is likely to be present. Study of 50 ft. cuttings is recommended to resolve the uncertainty.

3. Only a few of the available cores in the Otway Group have been studied, and this, along with poor yields and high maturity has resulted in poor resolution of the interval below the C. striatus Zone. Study of the other 16 available cores would increase resolution.

VI REFERENCES

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ANGLESEA #1 S/P

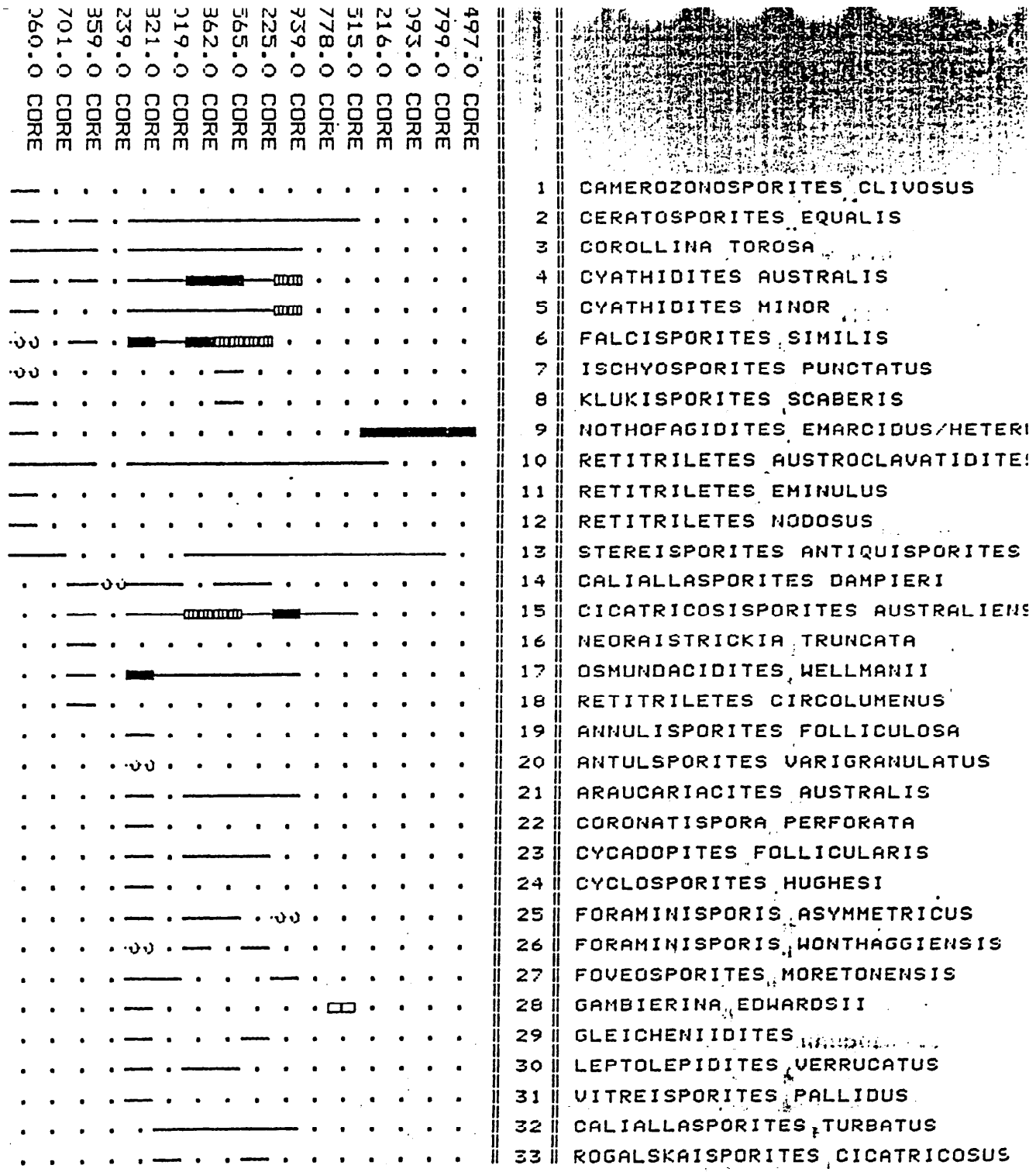
DESCRIPTION:

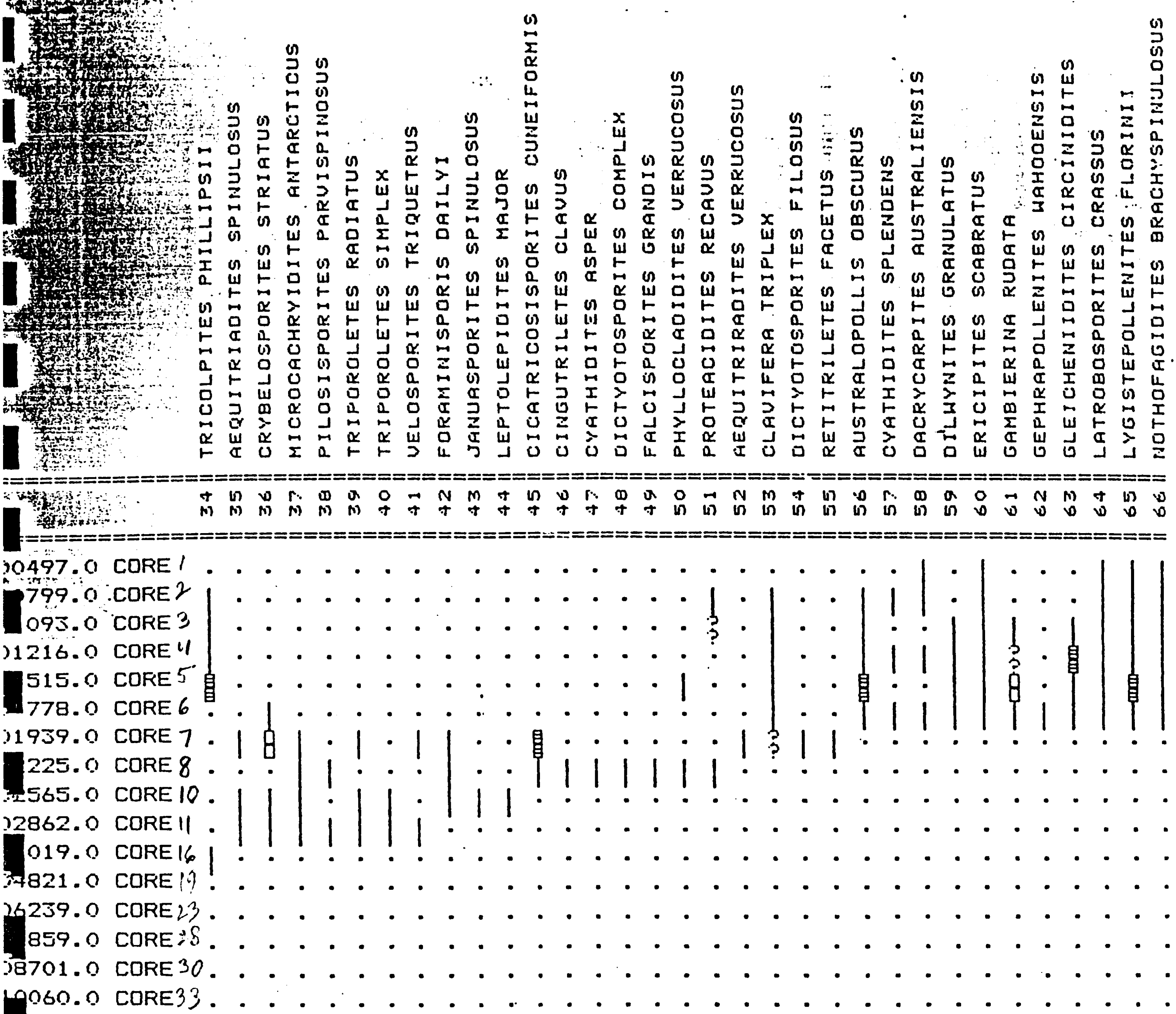
CHECKLIST OF GRAPHIC ABUNDANCE BY LOWEST APPEARANCE


= Abundant
= Common
= Few
= Rare
= Very Rare

? = Questionably Present

. = Not Present


497.0 CORE
799.0 CORE
093.0 CORE
216.0 CORE
515.0 CORE
778.0 CORE
939.0 CORE
225.0 CORE
565.0 CORE
362.0 CORE
019.0 CORE
321.0 CORE
239.0 CORE
359.0 CORE
701.0 CORE
060.0 CORE
1 CAMEROZONOSPORITES CLIVOSUS
2 CERATOSPORITES EQUALIS
3 COROLLINA TOROSA
4 CYATHIDITES AUSTRALIS
5 CYATHIDITES MINOR
6 FALCISPORITES SIMILIS
7 ISCHYOSPORITES PUNCTATUS
8 KLUKISPORITES SCABERIS
9 NOTHOFAGIDITES EMARCIDUS/HETERI
10 RETITRILETES AUSTROCLAVATIDITE!
11 RETITRILETES EMINULUS
12 RETITRILETES NODOSUS
13 STEREISPORITES ANTIQUISPORITES
14 CALIALLASPORITES DAMPIERI
15 CICATRICOSISPORITES AUSTRALIENS
16 NEORAISTRICKIA TRUNCATA
17 OSMUNDACIDITES WELLMANII
18 RETITRILETES CIRCOLUMENUS
19 ANNULISPORITES FOLLICULOSA
20 ANTULSPORITES VARIGRANULATUS
21 ARAUCARIACITES AUSTRALIS
22 CORONATISPORA PERFORATA
23 CYCADOPITES FOLLICULARIS
24 CYCLOSPORITES HUGHESI
25 FORAMINISPORIS ASYMMETRICUS
26 FORAMINISPORIS WONTHAGGIENSIS
27 FOVEOSPORITES MORETONENSIS
28 GAMBIERINA EDWARDSII
29 GLEICHENIIDITES
30 LEPTOLEPIDITES VERRUCATUS
31 VITREISPORITES PALLIDUS
32 CALIALLASPORITES TURBATUS
33 ROGALSKAISPORITES CICATRICOSUS



34 TRICOLPITES PHILLIPSII
35 AEQUITRIADITES SPINULOSUS
36 CRYBELOSPORITES STRIATUS
37 MICROCACHRYIDITES ANTARCTICUS
38 PILOSISPORITES PARVISPINOSUS
39 TRIPOROLETES RADIATUS
40 TRIPOROLETES SIMPLEX
41 VELOSPORITES TRIQUETRUS
42 FORAMINISPORIS DAILYI
43 JANUASPORITES SPINULOSUS
44 LEPTOLEPIDITES MAJOR
45 CICATRICOSISPORITES CUNEIFORMIS
46 CINGUTRILETES CLAVUS
47 CYATHIDITES ASPER
48 DICTYOTOSPORITES COMPLEX
49 FALCISPORITES GRANDIS
50 PHYLLOCLADIDITES VERRUCOSUS
51 PROTEACIDITES RECAVUS
52 AEQUITRIRADITES VERRUCOSUS
53 CLAVIFERA TRIPLEX
54 DICTYOTOSPORITES FILOSUS
55 RETITRILETES FACETUS
56 AUSTRALOPOLLIS OBSCURUS
57 CYATHIDITES SPLENDENS
58 DACRYCARPITES AUSTRALIENSIS
59 DILWYNITES GRANULATUS
60 ERICIPITES SCABRATUS
61 GAMBIERINA RUDATA
62 GEPHRAPOLLENITES WAHOOENSIS
63 GLEICHENIIDITES CIRCINIDITES
64 LATROBOSPORITES CRASSUS
65 LYGISTEPOLLENITES FLORINII
66 NOTHOFAGIDITES BRACHYSPINULOSUS
)0497.0 CORE 1
799.0 CORE 2
093.0 CORE 3
)1216.0 CORE 4
515.0 CORE 5
778.0 CORE 6
)1939.0 CORE 7
225.0 CORE 8
565.0 CORE 10
)2862.0 CORE 11
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4821.0 CORE 19
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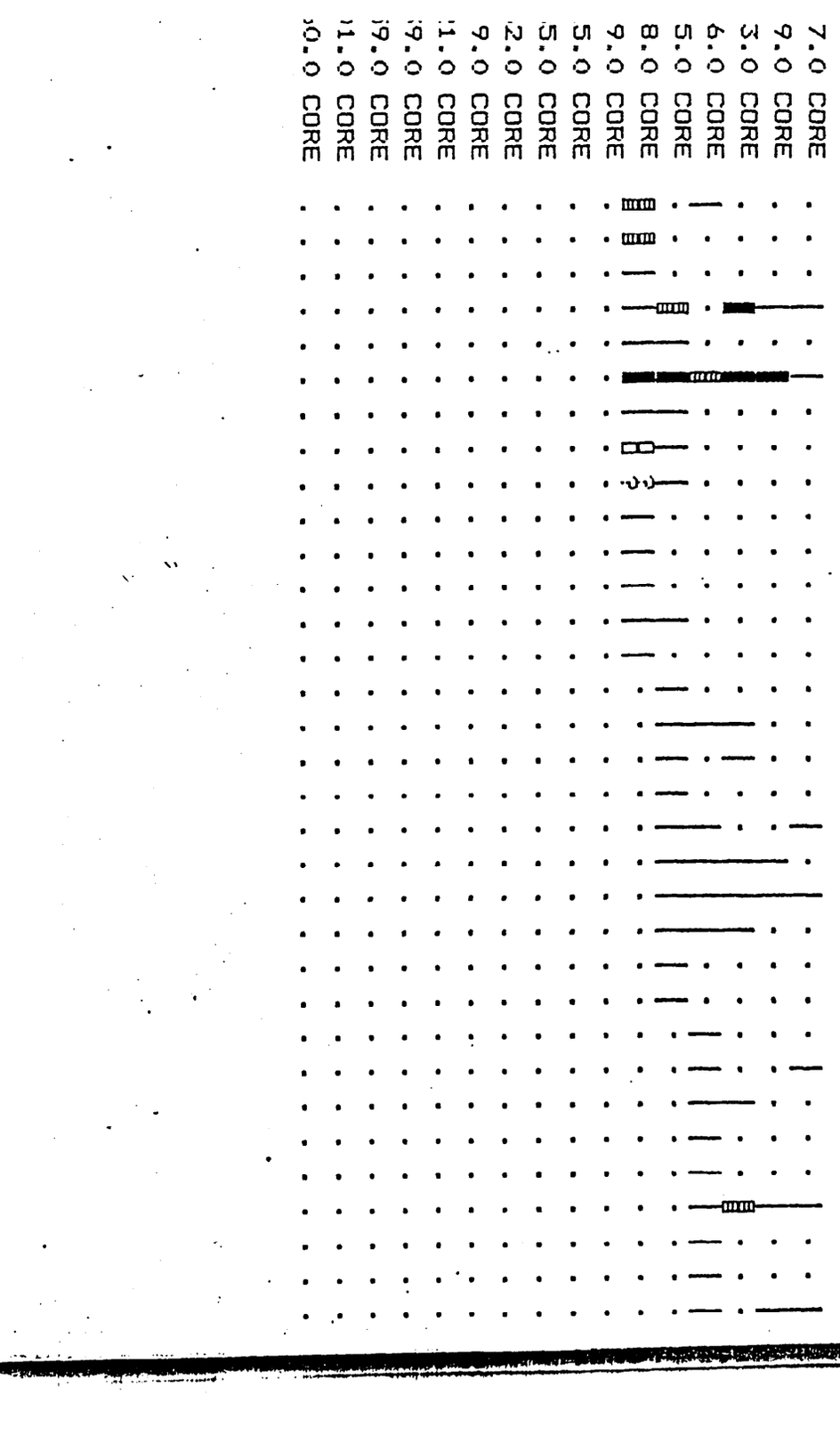
859.0 CORE 28
)8701.0 CORE 30
0060.0 CORE 33



67 NOTHOFAGIDITES ENDURUS
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69 NOTHOFAGIDITES SPP.
70 PHYLLOCLADIDITES MAWSONII
71 PODOSPORITES MICROSACCATUS
72 PROTEACIDITES SPP.
73 STEREISPORITES REGIUM
74 TRICOLPITES CONFESSUS
75 TRICOLPITES GILLII
76 TRICOLPITES SABULOSUS
77 TRICOLPITES SPP
78 TRICOLPORITES LILLIEI
79 TRICOLPORITES PACHYEXINUS
80 TRIPOROPOLLENITES SECTILIS
81 AMOSOPOLLIS CRUCIFORMIS
82 DILWYNITES TUBERCULATUS
83 HERKOSPORITES ELLIOTTII
84 LATROBOSPORITES OHAIENSIS
85 NOTHOFAGIDITES FLEMINGII
86 PERIPOROPOLLENITES POLYORATUS
87 PROTEACIDITES ANNULARIS
88 STEREISPORITES (TRIPUNCTISPORIS) PUNCTATUS
89 TRICOLPITES LONGUS
90 TRICOLPORITES SP.A
91 BANKSIEACIDITES ARCUATUS
92 CUPANIEIDITES ORTHOTEICHUS
93 CYATHIDITES GIGANTIS
94 EPHEDRIPITES SP
95 GRANODIPORITES NEBULOSUS
96 HALORAGACIDITES HARRISII
97 LYGISTEPOLLENITES BALMEI
98 MALVACIPOLLIS DIVERSUS
99 MALVACIPOLLIS SUBTILIS

		MYRTACEIDITES PARVUS/MESONESUS	NOTHOFAGIDITES FALCATUS	NOTHOFAGIDITES VANSTEENISII	PERIPOROPOLLENITES DEMARCATUS	PERIPOROPOLLENITES VESICUS	PROTEACIDITES ADENANTHOIDES	PROTEACIDITES CRASSUS	PROTEACIDITES GRANDIS	PROTEACIDITES INCURVATUS	PROTEACIDITES KOPIENSIS	PROTEACIDITES LAPIS	PROTEACIDITES LEIGHTONII	PROTEACIDITES ORNATUS	PROTEACIDITES PACHYPOLUS	PROTEACIDITES RECTOMARGINIS	PROTEACIDITES RUGULATUS	TETRACOLPORITES TEXTUS	TRICOLPORITES ESTOUTUS	TRIORITES MAGNIFICUS	TRIPOROPOLLENITES AMBIGUUS	VERRUCOSISPORITES KOPUKUENSIS	ILEXPOLLENITES SP	ISCHYOSPORITES GREMIUS	MILFORDIA HOMEOPUNCTATA	PROTEACIDITES OBSCURUS	PROTEACIDITES REFLEXUS	TRICOLPITES SIMATUS	BEAUPREAIDITES VERRUCOSUS	MILFORDIA HYPOLAENOIDES	RUGULATISPORITES MALLATUS	TRICOLPORITES LEUROS	BANKSIEACIDITES ELONGATUS	BEAUPREAIDITES ELEGANSIFORMIS
		100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132
0497.0	CORE	.	.	.	—	.	.	.	.	—	.	.	.	.	.	.	.	.	.	.	.	—	.	.	.	.	.	.	.	.	.	.	.	.
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1093.0	CORE	.	.	—	.	—	.	.	.	—	.	.	—	.	.	.	.	.	.	.	.	—	.	—	.	.	—	.	.	.	.	.	.	.
1216.0	CORE	.	.	—	.	—	.	.	.	—	.	.	—	.	.	.	.	.	.	.	.	—	.	—	.	.	—	.	.	.	.	.	.	.
1515.0	CORE	.	.	—	.	—	.	.	.	—	.	.	—	.	.	.	.	.	.	.	.	—	.	—	.	.	—	.	.	.	.	.	.	.
1778.0	CORE	.	.	—	.	—	.	.	.	—	.	.	—	.	.	.	.	.	.	.	.	—	.	—	.	.	—	.	.	.	.	.	.	.
1939.0	CORE	.	.	—	.	—	.	.	.	—	.	.	—	.	.	.	.	.	.	.	.	—	.	—	.	.	—	.	.	.	.	.	.	.
2225.0	CORE	.	.	—	.	—	.	.	.	—	.	.	—	.	.	.	.	.	.	.	.	—	.	—	.	.	—	.	.	.	.	.	.	.
2565.0	CORE	.	.	—	.	—	.	.	.	—	.	.	—	.	.	.	.	.	.	.	.	—	.	—	.	.	—	.	.	.	.	.	.	.
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3019.0	CORE	.	.	—	.	—	.	.	.	—	.	.	—	.	.	.	.	.	.	.	.	—	.	—	.	.	—	.	.	.	.	.	.	.
3821.0	CORE	.	.	—	.	—	.	.	.	—	.	.	—	.	.	.	.	.	.	.	.	—	.	—	.	.	—	.	.	.	.	.	.	.
5239.0	CORE	.	.	—	.	—	.	.	.	—	.	.	—	.	.	.	.	.	.	.	.	—	.	—	.	.	—	.	.	.	.	.	.	.
7859.0	CORE	.	.	—	.	—	.	.	.	—	.	.	—	.	.	.	.	.	.	.	.	—	.	—	.	.	—	.	.	.	.	.	.	.
8701.0	CORE	.	.	—	.	—	.	.	.	—	.	.	—	.	.	.	.	.	.	.	.	—	.	—	.	.	—	.	.	.	.	.	.	.
0060.0	CORE	.	.	—	.	—	.	.	.	—	.	.	—	.	.	.	.	.	.	.	.	—	.	—	.	.	—	.	.	.	.	.	.	.

		133	134	135	136	137	138	139
		NOTHOFAGIDITES DEMINUTUS	PROTEACIDITES CLARUS	PROTEACIDITES SCITUS	SAPOTACEOIDAEPOLLENITES ROTUNDUS	TRIPOROPOLLENITES "FURRY"	TRIPOROPOLLENITES CHNOSUS	VERRUCATOSPORITES SP
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01216.0	CORE	.	.	.	.	.	.	.
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10060.0	CORE	.	.	.	.	.	.	.

35	AEQUITRIADITES SPINULOSUS
52	AEQUITRIRADITES VERRUCOSUS
81	AMOSOPOLLIS CRUCIFORMIS
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56	AUSTRALOPOLLIS OBSCURUS
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131	BANKSIEACIDITES ELONGATUS
132	BEAUPREAIDITES ELEGANSIFORMIS
127	BEAUPREAIDITES VERRUCOSUS
141	CALIALLASPORITES DAMPIERI
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2	CERATOSPORITES EQUALIS
15	CICATRICOSISPORITES AUSTRALIENSIS
45	CICATRICOSISPORITES CUNEIFORMIS
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53	CLAVIFERA TRIPLEX
13	COROLLINA TOROSA
22	CORONATISPORA PERFORATA
36	CRYBELOSPORITES STRIATUS
92	CUPANIEIDITES ORTHOTEICHUS
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4	CYATHIDITES AUSTRALIS
93	CYATHIDITES GIGANTIS
5	CYATHIDITES MINOR
57	CYATHIDITES SPLENDENS
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6	FALCISPORITES SIMILIS
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42	FORAMINISPORIS DAILYI
26	FORAMINISPORIS WONTHAGGIENSIS
27	FOVEOSPORITES MORETONENSIS
28	GAMBIERINA EDWARDSII
61	GAMBIERINA RUDATA
62	GEPHRAPOLLENITES WAHOOENSIS
29	GLEICHENIIDITES
63	GLEICHENIIDITES CIRCINIDITES
95	GRANODIPORITES NEBULOSUS
96	HALORAGACIDITES HARRISII
83	HERKOSPORITES ELLIOTTII
121	ILEXPOLLENITES SP
122	ISCHYOSPORITES GREMIUS
7	ISCHYOSPORITES PUNCTATUS

63	GLEICHENIIDITES CIRCINIDITES
95	GRANODIPORITES NEBULOSUS
96	HALORAGACIDITES HARRISII
83	HERKOSPORITES ELLIOTTII
121	ILEXPOLLENITES SP.
122	ISCHYOSPORITES GREMIUS
7	ISCHYOSPORITES PUNCTATUS
43	JANUASPORITES SPINULOSUS
8	KLUKISPORITES SCABERIS
64	LATROBOSPORITES CRASSUS
84	LATROBOSPORITES OHAIENSIS
44	LEPTOLEPIDITES MAJOR
30	LEPTOLEPIDITES VERRUCATUS
97	LYGISTEPOLLENITES BALMEI
65	LYGISTEPOLLENITES FLORINII
98	MALVACIPOLLIS DIVERSUS
99	MALVACIPOLLIS SUBTILIS
37	MICROCACHRYIDITES ANTARCTICUS
123	MILFORDIA HOMEOPUNCTATA
128	MILFORDIA HYPOLAENOIDES
100	MYRTACEIDITES PARVUS/MESONESUS
16	NEORAISTRICKIA TRUNCATA
66	NOTHOFAGIDITES BRACHYSPINULOSUS
133	NOTHOFAGIDITES DEMINUTUS
9	NOTHOFAGIDITES EMARCIDUS/HETERUS
67	NOTHOFAGIDITES ENDURUS
101	NOTHOFAGIDITES FALCATUS
85	NOTHOFAGIDITES FLEMINGII
68	NOTHOFAGIDITES SENECTUS
69	NOTHOFAGIDITES SPP.
102	NOTHOFAGIDITES VANSTEENISII
17	OSMUNDACIDITES WELLMANII
103	PERIPOROPOLLENITES DEMARCATUS
86	PERIPOROPOLLENITES POLYORATUS
104	PERIPOROPOLLENITES VESICUS
70	PHYLLOCLADIDITES MAWSONII
50	PHYLLOCLADIDITES VERRUCOSUS
38	PILOSISPORITES PARVISPINOSUS
71	PODOSPORITES MICROSACCATUS
105	PROTEACIDITES ADENANTHOIDES
87	PROTEACIDITES ANNULARIS
134	PROTEACIDITES CLARUS
106	PROTEACIDITES CRASSUS
107	PROTEACIDITES GRANDIS
108	PROTEACIDITES INCURVATUS
109	PROTEACIDITES KOPIENSIS
110	PROTEACIDITES LAPIS
111	PROTEACIDITES LEIGHTONII
124	PROTEACIDITES OBSCURUS
112	PROTEACIDITES ORNATUS
113	PROTEACIDITES PACHYPOLUS
51	PROTEACIDITES RECAVUS
114	PROTEACIDITES RECTOMARGINIS
125	PROTEACIDITES REFLEXUS
115	PROTEACIDITES RUGULATUS

115	PROTEACIDITES RUGULATUS
135	PROTEACIDITES SCITUS
72	PROTEACIDITES SPP.
10	RETITRILETES AUSTROCLAVATIDITES
18	RETITRILETES CIRCOLUMENUS
11	RETITRILETES EMINULUS
55	RETITRILETES FACETUS
12	RETITRILETES NODOSUS
33	ROGALSKAISPORITES CICATRICOSUS
129	RUGULATISPORITES MALLATUS
136	SAPOTACEOIDAEPOLLENITES ROTUNDUS
88	STEREISPORITES (TRIPUNCTISPORIS) PUNCTATUS
13	STEREISPORITES ANTIQUISPORITES
73	STEREISPORITES REGIUM
116	TETRACOLPORITES TEXTUS
74	TRICOLPITES CONFESSUS
75	TRICOLPITES GILLII
89	TRICOLPITES LONGUS
34	TRICOLPITES PHILLIPSII
76	TRICOLPITES SABULOSUS
126	TRICOLPITES SIMATUS
77	TRICOLPITES SPP
117	TRICOLPORITES ESTOUTUS
130	TRICOLPORITES LEUROS
78	TRICOLPORITES LILLIEI
79	TRICOLPORITES PACHYEXINUS
90	TRICOLPORITES SP.A
118	TRIORITES MAGNIFICUS
39	TRIPOROLETES RADIATUS
40	TRIPOROLETES SIMPLEX
137	TRIPOROPOLLENITES "FURRY"
119	TRIPOROPOLLENITES AMBIGUUS
138	TRIPOROPOLLENITES CHNOSUS
80	TRIPOROPOLLENITES SECTILIS
41	VELOSPORITES TRIQUETRUS
139	VERRUCATOSPORITES SP
120	VERRUCOSISPORITES KOPUKUENSIS
31	VITREISPORITES PALLIDUS

ANGLESEA #1 DINOS

DESCRIPTION:

CHECKLIST OF GRAPHIC ABUNDANCE BY LOWEST APPEARANCE


= Abundant
= Common
= Few
= Rare
= Very Rare

? = Questionably Present

. = Not Present

		1 SCHIZOSPORIS PSILATUS	2 BOTRYOCOCCUS	3 SCHUZISOIRUS RETICULATUS	4 APECTODINIUM HOMOMORPHA (1. S	5 APECTODINIUM HOMOMORPHA (SH.	6 DAPSILIDINIUM PASTIELSII	7 MORKALLACYSTA PYRAMIDALIS
00497.0	CORE	.	.	.	.	.	.	.
00799.0	CORE	.	_	.	.	.	.	.
01093.0	CORE	.	.	.	.	_	.	.
01216.0	CORE	.	_	.	_	_	_	_
01515.0	CORE	.	_	.	.	.	.	.
01778.0	CORE	.	_	_	.	.	.	.
01939.0	CORE	_	.	.	.	.	.	.
02225.0	CORE	.	.	.	.	.	.	.
02565.0	CORE	_	.	.	.	.	.	.
02862.0	CORE	_	.	.	.	.	.	.
04019.0	CORE	.	.	.	.	.	.	.
04821.0	CORE	.	.	.	.	.	.	.
06239.0	CORE	.	.	.	.	.	.	.
07859.0	CORE	.	.	.	.	.	.	.
08701.0	CORE	.	.	.	.	.	.	.
10060.0	CORE	.	.	.	.	.	.	.

Well Name ANGLESEA-1 Basin TORQUAY SUB-BASIN Sheet No. 1 of 6

SAMPLE TYPE OR NO. *	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
FOSSIL NAMES / DEPTHS	490-510ft.	789-809ft.	1090-1110ft	1214-1234ft	1506-1526ft	1778-1798ft	1931-1951ft	3158-3168ft	4011-4021ft	5161-5171ft	6327-6347ft	7544-7550ft	8690-8707ft	9156-9176ft	9641-9656ft	10045-10065ft	C
Acanthotriletes spp. R																	
Aequitriradites spinulosus						•			•	•	•						
A. verrucosus																	
Alangiopollis sp. of Foster 1982																	
Alisporites grandis							•						•				
A. similis				•													
Amosopollis cruciformis				•	•												
Anacolosidites acutullus			•														
A. luteoides																	
A. sectus																	
Araucariacites australis		•	•	•	•	•											
A. sp. cf A. fissis																	
Australopollis obscurus			•	•	•												
Baculatisporites comaumensis			•			•	•			•							
B. disconformis																	
Balmeisporites holodictyus						•											
B. tridictyus																	
Banksieaeidites arcuatus	•																
B. elongatus																	
B. lunatus ms				•													
Basopollis mutabilis ms			•	•													
B. otwayensis ms			•	•	•												
Beaupreacidites elegansiformis																	
B. orbiculatus																	
B. trigonalis ms	•																
B. verrucosus	•																
Biretisporites spectabilis s.l.							•		•		•						
Bysmapollis emaciatus	•		•														
Camarozonosporites australiensis s.l.																	
C. bullatus				•													
C. dumus ms																	
C. spp. indeterminate			•														
Canthiumidites oblatus																	
Ceratosporites equalis						•	•	•	•					•	•		
Cicatricosisporites australiensis	R	R		R	R	•	•	•	•	•	•	•	•	?	?	•	
C. sp cf C. australiensis																	
C. hughesii																	
C. ludbrookii									•								
Clavifera triplex complex		•		•													
Clavatisporites glarius																	
Conbaculites apiculatus ms		•															
Concavissimisporites penolaensis																	
Contignisporites cooksoniae																	
C. fornicatus																	
Coptospora paradoxa																	
Corollinia spp.		R				•	•	•	•						•		
Crassiretitriletes vanraadshooveni																	
Crybelosporites punctatus																	
C. striatus							•	•	•	•	?						
C. sp. cf C. striatus of Burger 1980									•								
Cunoniaceae-type																	
Cupanieidites orthoteichus		•	•	•													
Cyathidites australis							•			•	•	•	•	•	•	•	
C. gigantis			•	•													
C. minor		•	•				•	•									
C. paleospora																	

* C=CORE S=SIDEWALL CORE
T=CUTTINGS J=JUNK BASKET

R - REWORKED SP.
C - CONTAMINANT

Well Name ANGLESEA-1 Basin TORQUAY SUB-BASIN Sheet No. 2 of 6

SAMPLE TYPE OR NO. *	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C											
FOSSIL NAMES / DEPTHS	490-510ft	789-809ft	1090-1110ft	1214-1234ft	1506-1526ft	1778-1798ft	1931-1951ft	3158-3168ft	4011-4021ft	5161-5171ft	6327-6347ft	7544-7550ft	8690-8707ft	9156-9176ft	9641-9656ft	10045-10065ft													
Cyathidites splendens			•	•		•																							
Cyclosporites hughesii																													
Dacrycarpites australiensis																													
Deltoidospora spp.																													
Densoisporites velatus																													
Dicotetradites clavatus			•	•																									
Dictyophyllidites cf arcuatus			•	•																									
D. crenatus																													
Didecitriletes spp. R																													
Dilwynites granulatus		•	•	•																									
D. tuberculatus		•																											
Dryptopollenites semilunatus			•	•																									
Elaeocarpaceae-type		•	•																										
cf Elphredripites notensis [65y]			•	•																									
Ericipites scabratus																													
Foraminisporis asymmetricus								•			•																		
F. dailyii																													
F. wonthaggiensis								•																					
Forcipites longus																													
F. renmarkensis ms																													
F. sabulosus						•																							
F. stipulatus																													
F. spp. indeterminate						•																							
Foveosporites canalis																													
Foveotriletes balteus			•																										
F. parviretus																													
Gambierina edwardsii			•		•																								
G. rudata			•	•	•	•																							
G. tenuis ms			•																										
G. verrucatus ms						•																							
Gleicheniidites spp.		•	•	•	•			•		•	•				•	•													
Granodiporites nebulosus																													
Haloragacidites harrisii	•	•	•	•																									
Herkosporites elliotii		•	•																										
Ilexpollenites anguloclavatus complex	•	•	•		•	•																							
Integricorpus antipodus ms																													
Intratriporopollenites notabilis																													
Ischyosporites gremius																													
I, irregularis ms		•	•	•	•																								
I. punctatus							•																						
Jaxtacolpus pieratus ms [12u]	•		•																										
Klukisporites scaberis				R				•			•			•															
Kraeuselisporites spp.			•			•																							
Kulyisporites waterbolkii																													
Laevigatosporites spp.		•	•	•	•																								
Latrobosporites amplus				•	•																								
L. crassus	•			•	•																								
Leptolepidites major										•																			
L. verrucatus						•	•	•	•					•															
Liliacidites bainii																													
L. lanceolatus																													
L. sernatus ms																													
L. spp. indeterminate		•		•		•																							
Lycopodiumsporites spp.		•	•			•	•	•	•	•	•			•	•	•													
Lygistepollenites balmei			•	•		•																							
L. florinii	•	•	•	•	•	•																							

* C=CORE S=SIDEWALL CORE
T=CUTTINGS J=JUNK BASKET

R = REWORKED SP.
C = CONTAMINANT

Well Name ANGLESEA-1 Basin TORQUAY SUB-BASIN Sheet No. 3 of 6

SAMPLE TYPE OR NO. *	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C											
DEPTHS / FOSSIL NAMES	490-510ft	789-809ft	1090-1110ft	1214-1234ft	1506-1526ft	1778-1798ft	1931-1951ft	3158-3168ft	4011-4021ft	5161-5171ft	6327-6347ft	7544-7550ft	8690-8707ft	9156-9176ft	9641-9656ft	10045-10065ft													
Malvacipollis diversus		•																											
M. duratus ms				•																									
M. robustus ms			•																										
M. subtilis	•	•	•	•																									
Matonisporites ornamentalis																													
M. sp. cf M. cooksonii																													
Micrantheum spinyspora																													
Microcachrydites antarcticus	•	•		•		•	•	•																					
Milfordia homeopunctatus																													
M. hypolaenoides	•																												
Monolites alveolatus																													
Myrtaceidites tenuis																													
M. parvus-mesonesus		•		•																									
Myrtaceoipollenites australis			•																										
Neoraistrickia truncata							•	•				•		•															
Nothofagidites asperus						C																							
N. brachyspinulosus	•		•	•		•																							
N. deminutus-vansteenii	•	•																											
N. emarcidus-heterus	•	•		•		C	C							C															
N. falcatus				C																									
N. flemingii	•	•																											
N. kaitangata			•			•																							
N. senectus s.l.			•		•	•		C																					
N. cf waipawaensis [Late Cretaceous]					•																								
Osmundacites wellmanii	R						•																						
Parvisaccites catastus	•	•																											
Peninsulapollis askinae																													
P. gillii			•	•	•	•																							
Periporopollenites demarcatus	•		•	•																									
P. polyoratus	•	•	•		•																								
P. vesicus																													
Peromonolites bacculatus ms		•	•																										
P. densus			•	•																									
Phyllocladidites mawsonii	•	•	•	•	•	•																							
P. reticulosaccatus [var. enuch]			•	•	•																								
P. verrucosus				•	•																								
Phyllocladus palaeogenicus	•	•		•																									
Pilosisporites notensis									•																				
P. parvispinosus									•																				
Plicatipollenites spp. R																													
Podocarpidites spp.	•	•	•	•	•	•	•	•	•	•	•		C		•	•													
Podosporites microsaccatus	•	•		•	•	•	•	•																					
Polycingulatisporites clavus							•																						
P. spp. indeterminate								•	•	•					•	•													
Polyorificites oblatus																													
Polypodiaceoisporites cf tumulatus																													
Polypodiisporites spp.			•																										
Polycolpites langstonii			•	•																									
P. cf P. simplex ms	•		•																										
Polycolporopollenites esobalteus	•			•																									
Proteacidites adenanthoides	•		•	•																									
P. ademonosus ms						•																							
P. amolosexinus						•																							
P. angulatus					•																								
P. annularis	•	•	•	•																									
P. asperopolus	•																												

* C=CORE S=SIDEWALL CORE
T=CUTTINGS J=JUNK BASKET

R - REWORKED SP.
C - CONTAMINANT

Well Name ANGLESEA-1 Basin TORQUAY SUB-BASIN Sheet No. 4 of 6

SAMPLE TYPE OR NO. *	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C										
DEPTHS / FOSSIL NAMES	490-510ft	789-809ft	1090-1110ft	1214-1234ft	1506-1526ft	1778-1798ft	1931-1951ft	3158-3168ft	4011-4021ft	5161-5171ft	6327-6247ft	7544-7550ft	8690-8707ft	9156-9176ft	9641-9656ft	10045-10065ft												
Proteacidites biporus																												
P. callosus																												
P. crassus	•																											
P. differentipollis	•	•		•																								
P. dierama ms						•																						
P. dilwynensis-grandis complex	•	•	•	•																								
P. incurvatus		•	•	•																								
P. kopiensis		•																										
P. latrobensis	•	•																										
P. leightonii	•			C																								
P. nasus		•																										
P. obscurus	•	•	•	•																								
P. ornatus	•																											
P. otwayensis ms						•																						
P. pachypolus	•	•																										
P. pseudomoides																												
P. recavus	•																											
P. rectomarginis																												
P. rectus		•	•																									
P. reticulatus	•			C																								
P. reticuloconcavus ms						•																						
P. reticuloscabratus		•			C																							
P. retiformis					•	•																						
P. rugulatus	•																											
P. scitus																												
P. tenuiexinus																												
P. tuberculatus																												
P. tuberculiformis																												
P. tuberculotumulatus ms		•																										
P. spp. undescribed	•	•	•	•	•	•							C															
Protohaploxypinus spp. R																												
Pseudowinterapollis calathus																												
P. cranwellae						•																						
P. wahooensis						•																						
Pyrolobospora reticulata																												
Reticulatisporites pudens									•																			
Retistephanocolpites nixonii ms		•	•																									
Riccia boxatus ms																												
Rogalskaisporites cf canalis											•																	
Rotverrusporites stellatus ms				•	•																							
Rouseisporites reticulatus						•	•	•	•																			
R. simplex																												
Rugulatisporites mallatus complex	•		•		•																							
Santalumidites cainozoicus	•			C																								
Sapotaceoidaepollenites rotundus																												
Schizaea digitatoides					•																							
Schizocolpus marlinensis																												
S. rarus ms																												
Selagosporis sp.																												
Spinizonocolpites prominatus																												
Stereisporites antiquisporites				•	•	•	•	•	•	•		•		•		•												
S. australis f. crassa			•				•																					
S. cf pocockii								•	•		•	•				•												
S. punctatus ms			•	•	•																							
S regium ms						•																						
S. spp. indeterminate		•	•	•		•																						

* C=CORE S=SIDEWALL CORE
T=CUTTINGS J=JUNK BASKET

R - REWORKED SP.
C - CONTAMINANT

Well Name ANGLESEA-1 Basin TORQUAY SUB-BASIN Sheet No. 5 of 6

SAMPLE TYPE OR NO. *	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C											
FOSSIL NAMES / DEPTHS	490-510	789-809ft	1090-1110ft	1214-1234ft	1506-1526ft	1778-1798ft	1931-1951ft	3158-3168ft	4011-4021ft	5161-5171ft	6327-6347ft	7544-7550ft	8690-8707ft	9156-9176ft	9641-9656ft	10045-10065ft													
Striatopodocarpidites spp. R																													
Tetracolporites multistrixus ms		•	•	•	•																								
T. palynius				•																									
T. textus ms			•																										
T. verrucosus					•																								
Tetradopollis securus						•																							
Tricolpites confessus																													
T. gigantis ms																													
T. phillipsii		•	•	•	•	•																							
T. reticulatus																													
T. simatus																													
T. thomasii				C																									
T. waiparensis						•																							
Tricolpites spp. undescribed	•	•	•	•	•	•																							
Tricolporites adelaidensis	•																												
T. cf adelaidensis [lingicolpate]		•																											
T. angurium																													
T. circumlumensus ms																													
T. halis ms				C																									
T. leuros				C																									
T. lilliei						•																							
T. moultonii ms																													
T. paenestriatus	•																												
T. retequetrus [sensu Stover & Partridge]																													
T. scabratus complex	•			•																									
T. sphaerica complex		•																											
Tricolporites spp. undescribed	•	•	•	•	•	•	C																						
Triletes tuberculiformis		•																											
trilete spores indeterminate/undescribed	•		•	•			•	•	•	•	•	•	•	•	•														
Trilobosporites tribotrys																													
T. trioreticulatus																													
Triorites magnificus																													
Triporopollenites ambiguus	•		•																										
T. crocodilus ms																													
T. delicatus																													
T. helosus		•																											
T. scabratus	•	•																											
T. sectilis complex						•	C																						
Triporopollenites spp. undescribed	•	•		•	•																								
Trisaccites spp.				•			•			•																			
Tsugaepollenites spp.																													
Velosporites triquetrus																													
Verrucatosporites alienus			•																										
V. attinatus ms																													
Verrucosisporites kopukuensis complex	•		•	•																									
Dictyotosporites speciosus		R																											

* C=CORE S=SIDEWALL CORE
T=CUTTINGS J=JUNK BASKET

R = REWORKED SP.
C = CONTAMINANT

Well Name ANGLESEA-1 Basin TORQUAY SUB-BASIN Sheet No. 6 of 6

SAMPLE TYPE OR NO. *	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	t C										
FOSSIL NAMES / DEPTHS	490-510ft	789-809ft	1090-1110f	1214-1234f	1506-1526f	1778-1798f	1931-1951f	3158-3168f	4011-4021f	5161-5171f	6327-6347f	7544-7550f	8690-8707f	9156-9176f	9641-9656f	10045-10065												
DINOFLAGELLATES																												
cf Achomosphaera alcicornu																												
Apectodinium homomorpha			•	•																								
A. hyperacantha		•																										
Areosphaeridium capricornum																												
A. diktyoplokus																												
Chordosphaeridium inodes																												
Deflandrea phosphoritica																												
Glaphyracysta retiintexta			•																									
Homotryblium tasmaniense																												
Hystiocysta variata																												
Hystrichosphaeridium rigaude																												
Impagidinium spp.																												
Nematosphaeropsis balcombiana																												
Operculodinium centrocarpum																												
Rhombodinium glabrum																												
Schematophora speciosa																												
Spinidium spp.			•	•																								
Spiniferites spp.		•		•																								
Thalassiphora spp.																												
indeterminate/undescribed dinoflagelates		•	•	•																								
ACRITARCHS																												
Leiosphaeridia spp.																												
Micrhystridium spp.																												

* C=CORE S=SIDEWALL CORE
T=CUTTINGS J=JUNK BASKET

R = REWORKED SP.
C = CONTAMINANT