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PALYNOLOGY OF BRIDGE MYLOR-1

ONSHORE OTWAY BASIN, VICTORIA

BY

ROGER MORGAN

for BRIDGE OIL

Sept 1994

OTW.RPMYLOR

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I SUMMARY

1388.0m(swc), 1391.0m(swc) : upper *apoxyexinus* Zone (upper *cretacea* Dino Zone) : late Santonian : very nearshore marine : immature for hydrocarbons : seen in Paaratte and Belfast Formations and equivalents

1500.0m(swc), 1515.0m(swc) : middle *apoxyexinus* Zone (lower *cretacea* Dino Zone) : mid Santonian : nearshore marine : immature to early marginal mature for oil, immature for gas/condensate : seen in the Paaratte and Belfast Formations and equivalents

1650.0m(swc), 1658.0m(swc) : lower *apoxyexinus* Zone : early Santonian : nearshore marine : marginally mature for oil, immature for gas/condensate : seen in the Belfast and Flaxmans Formations and equivalents

1672.0m(swc) : *mawsonii* Zone : Turonian-Coniacian : brackish lagoon : marginally mature for oil, immature for gas/condensate, algal rich : seen in the Belfast and Flaxmans Formations and equivalents

1758.5m(swc), 1763.0m(swc) : extremely lean and zonally indeterminate, apparently non-marine or slightly brackish : marginally mature for oil, immature for gas/condensate

1833.0m(swc) : apparently *paradoxa* Zone, but the usual markers are extremely rare as in the sandy Eumeralla facies offshore : mid Albian : slightly brackish lagoon : borderline mature for oil, borderline marginally mature for gas/condensate : usually Eumeralla Formation.

II INTRODUCTION

After well completion, ten sidewall cores were submitted for detailed study. All results are summarised herein.

Palynomorph occurrence data are shown as Appendix I and form the basis for the assignment of the samples to five spore-pollen and dinoflagellate units of Santonian to Albian age. Specimen counts were made on all assemblages and expressed in the raw data as percentages. The marine fossils are presented as a percentage of total fossils (marine plus non-marine) in the raw data in Appendix 1 as an expression of marineness.

The Cretaceous spore-pollen zonation is essentially that of Dettmann and Playford (1969), but has been significantly modified and improved by various authors since, and most recently discussed in Helby et al (1987), as shown on Figure 1. The Late Cretaceous zonation has been modified by Morgan (1992) in project work and recent offshore drilling for BHPP and partners.

Maturity data was generated in the form of Spore Colour Index, and is plotted on Figure 2 Maturity Profile of Mylor-1. The oil and gas windows on Figure 2 follow the general consensus of geochemical literature. The oil window corresponds to spore colours of light-mid brown (Staplin Spore Colour Index of 2.7) to dark brown (3.6). These correspond to Vitrinite Reflectance values of 0.6% to 1.3%. Geochemists argue variations on kerogen type, basin type and basin history. The maturity interpretation is thus open to reinterpretation using the basic colour observations as raw data. However, the range of interpretation philosophies is not great, and probably would not move the oil window by more than 200 metres.

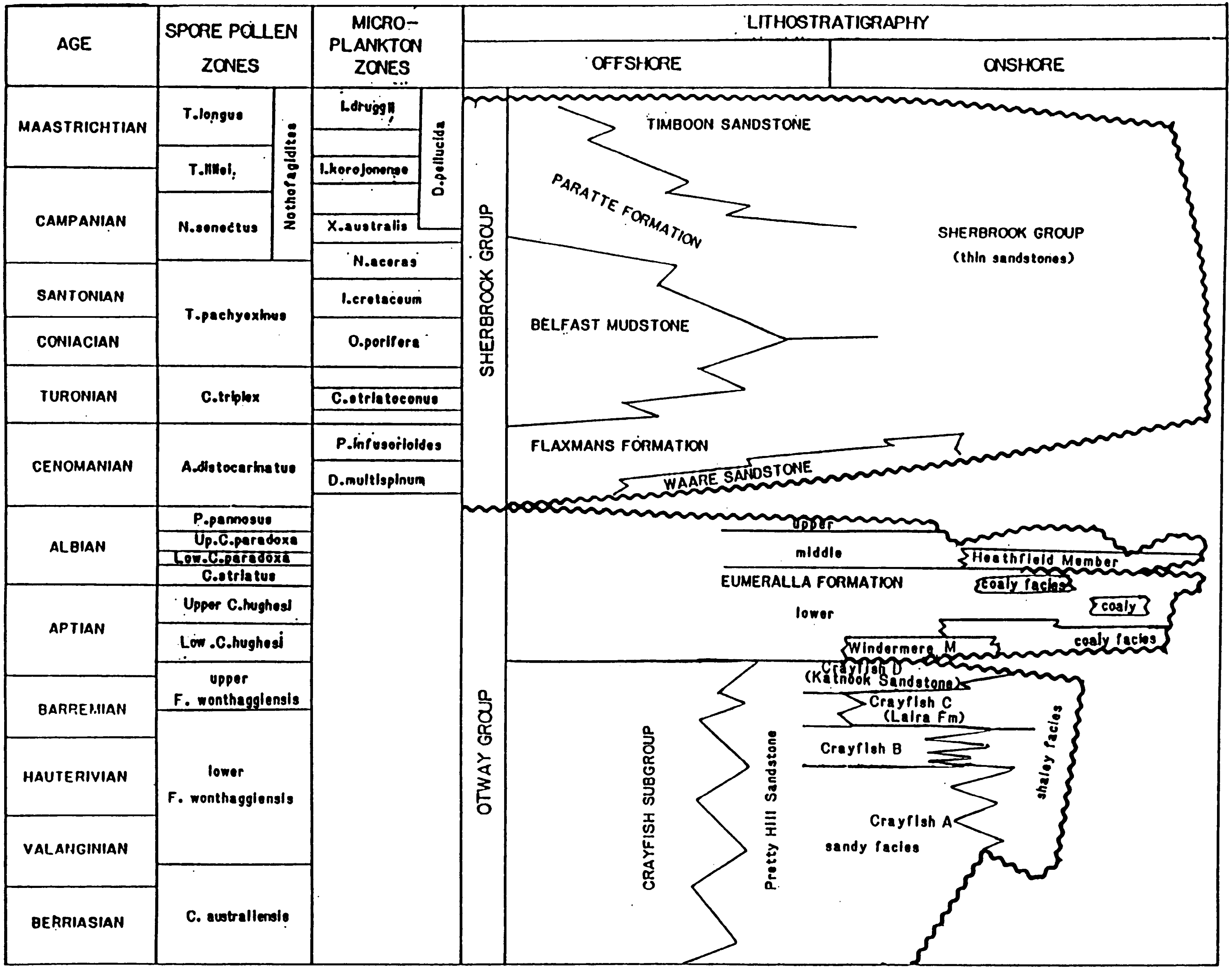

FIGURE 1. CRETACEOUS REGIONAL FRAMEWORK, OTWAY BASIN

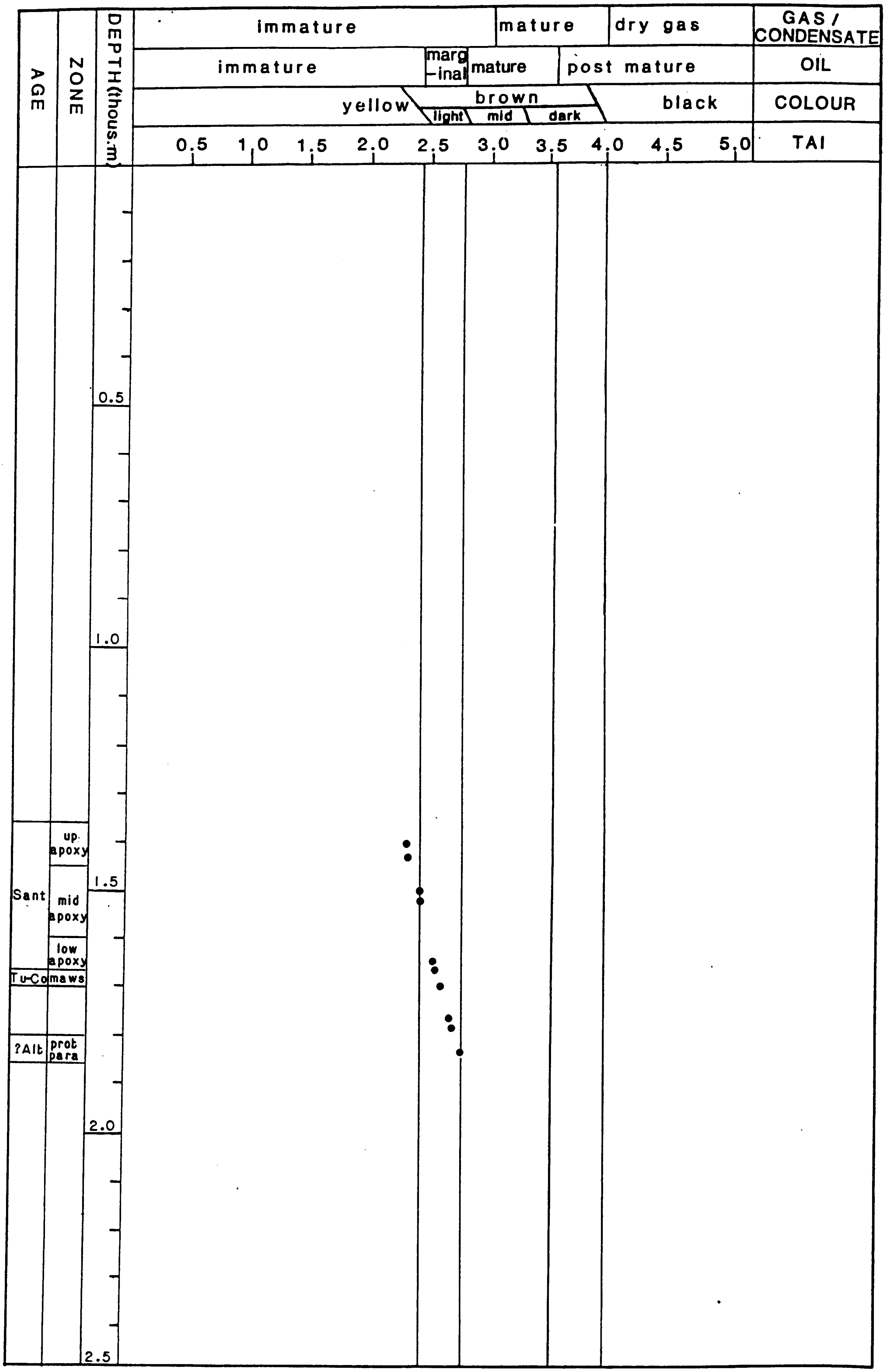

FIGURE 2 MATURITY PROFILE : MYLOR-1

III PALYNOSTRATIGRAPHY

A 1388.0m(swc), 1391.0m(swc) : upper *apoxyexinus* Zone (upper *cretacea* dino Zone)

Assignment to the upper *Tricolporites apoxyexinus* Zone of late Santonian age is indicated at the top by the absence of younger markers (such as *Nothofagidites senectus*) and at the base by consistent but rare *Amosopollis cruciformis* (1% or less). *Falcisporites* and *Microcachryidites* are common with *Australopollis obscurus*, *Cyathidites*, *Osmundacidites*, *Podosporites*, *Proteacidites* spp and *Vitreisporites* frequent. Angiosperms are rare with *Tricolpites gillii* and *Tricolporites apoxyexinus* seen.

Assignment to the upper *Isabelidinium cretacea* dinoflagellate Zone is indicated at the top by youngest *Amphidiadema denticulata* and *Isabelidinium belfastense rotundata* and at the base by oldest *Isabelidinium belfastense belfastense*. Dinoflagellates are all rare but *Heterosphaeridium heteracanthum* is the most frequent. *Trithyrodinium* spp and *Odonotochitina* spp are striking elements.

Environments are very nearshore marine, as shown by the low dinoflagellate content (3% and 11% downhole) and moderate diversity.

These features are normally seen in the Paaratte Formation (including the Skull Creek and Nullaware Members) and Belfast Mudstone and their equivalents. They occur in the Sherbrook Group above the Shipwreck Group offshore.

Yellow to light brown spore colours indicate immaturity for hydrocarbon generation.

B 1500.0m(swc), 1515.0m(swc) : middle *apoxyexinus* Zone (lower *cretacea* dino Zone)

Assignment to the middle *T. apoxyexinus* Zone is indicated at the top by the downhole influx of *A. cruciformis* and at the base by the absence of older indicators. *Cyathidites* and *Falcisporites* were common, with *Dilwynites*, *Podosporites*, *Proteacidites* and *Vitreisporites* frequent. *T. gillii* occurs only at 1500m. Very rare elements include *Aequitriradites* spp, *Australopollis obscurus*, *Foraminisporis wonthaggiensis*, and *Phyllocladidites mawsonii*.

Assignment to the lower *I. cretacea* dinoflagellate Zone is indicated at the top by the absence of younger markers and at the base by oldest *I. cretacea*. *Heterosphaeridium* spp are frequent to common with rare taxa including *Odontochitina* spp, *O. porifera* and *Trithyrodinium* spp.

Nearshore marine environments are indicated by the low dinoflagellate content (19 and 23% downhole), and their moderate diversity.

These features are normally seen in th Paaratte Formation and Belfast Mudstone and their equivalents. They occur in the Sherbrook Group above the Shipwreck Group offshore.

Light brown to yellow spore colours indicate early marginal maturity for oil and immaturity for gas/condensate.

C 1650.0m(swc), 1658.0m(swc) : lower *apoxyexinus* Zone

Assignment to the lower *T. apoxyexinus* Zone is indicated at the top by the major downhole influx of *A. cruciformis* (9-14%) and at the base by the base of the *A. cruciformis* acme and absence of older markers. *Dilwynites granulatus* is very common, with *Falcisporites* and *A. cruciformis* common. Rare elements include *A. obscurus*, *Clavifera triplex* and *P. mawsonii*.

Dinoflagellates are rare and lack the published zone markers. However, youngest *Aptea* sp (1658m) *Chlamydophorella ambigua* and consistent *Circulodinium deflandrei* (1650m) usually occur within the lower *apoxyexinus* Zone and so are consistent. *Heterosphaeridium* spp *C. deflandrei* and *Spiniferites* spp are the most frequent taxa. A small undescribed acritarch informally called *Rectanguladinium* sp occurs only in these two samples and may have future biostratigraphic significance.

Nearshore marine environments are indicated by the low to moderate dinoflagellate content (17 and 34% downhole) and their moderate diversity.

These features are normally seen in the Belfast Mudstone and Flaxmans Formations and their equivalents. They occur in the upper Shipwreck Group offshore.

Light brown spore colours indicate marginal maturity for oil and immaturity for gas/condensate.

D 1672.0m(swc) : *mawsonii* Zone

Assignment to the *Phyllocladidites mawsonii* Zone of Coniacian-Turonian age is indicated at the top by youngest *Appendicisporites distocarinatus* and at the base by oldest *P. mawsonii*. *Cyathidites* spp are abundant with *Microcachryidites* and *Vitreisporites* common, and *Dilwynites* and *Falcisporites* frequent.

Dinoflagellates are very scarce, with only a few single specimens seen. Brackish environments are therefore indicated with the dinoflagellates comprising less than 1% of the assemblage and of very low diversity. Freshwater algae (*Botryococcus*) are abundant (17%) and suggest lacustrine environments. The rare dinoflagellates however argue for minor saline influence and a tidal lagoon or coastal lake are likely.

These features are normally seen in the Belfast and Flaxmans Formations and their equivalents. They occur in the lower part of the upper Shipwreck Group offshore, including the reservoir section in the Minerva field.

Light brown spore colours indicate marginal maturity for oil and immaturity for gas/condensate.

E 1758.5m(swc), 1763.0m(swc) : lean and indeterminate

These two samples are extremely lean and dominated by inertinite and cuticle fragments. The relatively rare age diagnostic taxa were not seen and they cannot be assigned to any zone. *Falcisporites* are abundant with *Cyathidites* and *Odmundacidites* common and *Retitriletes austroclavatidites* frequent. Permian reworking is prominent.

At 1758.5m, saline markers are absent and freshwater algae (*Botryococcus*) comprises 4% of the assemblage. This suggests freshwater environments with lacustrine influence. However, too little material is available to deny the possibility of marine influence.

At 1763m, spiny acritarchs (3%) indicate slight saline influence. Freshwater algae (*Botryococcus* and *Schizosporis*) are present. Slightly brackish environments are therefore indicated.

Light brown spore colours indicate marginal maturity for oil and immaturity for gas/condensate.

F 1833.0m : apparently *paradoxa* Zone

Assignment to the *Coptospora paradoxa* Zone of mid Albian age is suggested at the top by the absence of younger markers (such as *Phimopollenits pannosus*) with youngest *C. paradoxa* and at the base by oldest *C. paradoxa*. However, the assemblage lacks rich heavy spore assemblages normally seen in Eumeralla Formation claystones, as apparently occurs in recent offshore drilling nearby. Instead, the assemblage is very bland, dominated by saccates and smooth spores, and lacking the usual diverse ornamented spore assemblage. As a result, this assemblage might be as young as the Cenomanian *distocarinatus* Zone.

In five microscope slides examined, I saw only one specimen of *C. paradoxa*, two specimens of *Foraminisporis asymmetricus* and no *Crybelosporites striatus*. These are usually all consistent in the Eumeralla Formation.

Brackish influence is slight but seen in very rare spiny acritarchs amongst the dominant and diverse spores and pollen. Freshwater algae (*Botryococcus*) are frequent (5%) suggesting lakes. Brackish nearshore lagoons seem likely.

The *paradoxa* Zone is usually seen in the Eumeralla Formation. However, the tentative nature of the assignment means that palynology cannot definitively confirm penetration of the Eumeralla. This must rest on lithological or other criteria. Palynologically, it is not impossible that the Eumeralla was not drilled.

IV REFERENCES

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MYLOR #1

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C L I E N T: BRIDGE OIL LTD
W E L L: MYLOR #1
F I E L D / A R E A: ONSHORE OTWAY BASIN,
PEP 108, VICTORIA

A N A L Y S T: ROGER MORGAN   D A T E: SEPTEMBER '94

N O T E S: ALL DEPTHS IN METRES. ALL FIGURES ARE PERCENTAGES.
X MEANS THAT SPECIES IS VERY RARE AND OCCURRED OUTSIDE GRAIN
COUNT. IN UNCOUNTED SAMPLES A=ABUNDANT, C=COMMON, F=FREQUENT.

RANGE CHART OF OCCURRENCES BY % & LOWEST APPEARANCE: grouped

No.	Taxon	1388.0 SWC 30	1391.0 SWC	1500.0 SWC	1515.0 SWC	1650.0 SWC	1658.0 SWC	1672.0 SWC	1758.0 SWC	1763.0 SWC	1833.0 SWC
1	--- MICROPLANKTON CONTENT (%) ---	3	11	23	19	17	34	<1	0	3	0
2	MICRHYSTRIDIUM	.	X	.	1	.	.	.	.	3	X
3	VERYHACHIUM	.	.	.	2	1	X	.	.	.	X
4	HETEROSPHAERIDIUM CONJUNCTUM	X	.	X	3	1	X	X	.	.	.
5	SUBTILISPHAERA SP	.	.	.	.	.	.	?	.	.	.
6	TRITHYRODINIUM MARSHALLII	.	X	X	2	3	.	X	.	.	.
7	ALTERBIA ACUMINATUM	.	.	.	.	.	X	.	.	.	.
8	APTEA SP	.	.	.	.	.	12	.	.	.	.
9	CHLAMYDOPHORELLA AMBIGUA	.	.	.	.	X	3	.	.	.	.
10	CIRCULODINIUM DEFLANDREI	.	.	.	X	4	2	.	.	.	.
11	CRIBROPERIDINIUM SPP	.	.	.	.	X	X	.	.	.	.
12	EXOCHOSPHAERIDIUM PHRAGMITES	X	1	.	X	1	1	.	.	.	.
13	FLORENTINIA DEANEI	.	.	.	.	.	1	.	.	.	.
14	HETEROSPHAERIDIUM HETEROCANTHUM	1	4	10	3	3	X	.	.	.	.
15	HETEROSPHAERIDIUM SOLIDA	.	X	7	2	.	1	.	.	.	.
16	KIOKANSIUM POLYPES	.	.	.	.	.	3	.	.	.	.
17	KIOKANSIUM RECURVATUM	.	.	.	.	.	1	.	.	.	.
18	NUMMUS SP	.	.	.	X	1	4	.	.	.	.
19	ODONTOCHITINA OPERCULATA	.	.	.	X	.	X	.	.	.	.
20	OLIGOSPHAERIDIUM COMPLEX	.	.	.	X	X	1	.	.	.	.
21	PALAEOHYSTRICHOSPHORA INFUSORIOIDES	2	.	.	.	X	1	.	.	.	.
22	RECTANGULADINIUM SP	.	.	.	.	X	X	.	.	.	.
23	SPINIFERITES FURCATUS/RAMOSUS	.	.	1	3	2	4	.	.	.	.
24	TRICHODINIUM	.	.	.	.	.	1	.	.	.	.
25	CALLAOISPHAERIDIUM ASYMMETRICUM	.	.	.	X	X	.	.	.	.	.
26	CRIBROPERIDINIUM EDWARDSII	.	.	.	.	X	.	.	.	.	.
27	CYCLONEPHELIUM MEMBRANIPHORUM	.	.	.	.	X	.	.	.	.	.
28	HYSTRICHODINIUM PULCHRUM	.	.	1	.	1	.	.	.	.	.
29	ISABELIDINIUM SP	.	.	.	.	X	.	.	.	.	.
30	CASSICULOSPHAERIDIA GIANT	.	.	X	X	.	.	.	.	.	.
31	FROMEA FRAGILIS	.	.	.	X	.	.	.	.	.	.
32	GILLINIA HYMENOPHORA	.	.	.	1	.	.	.	.	.	.
33	ISABELIDINIUM CRETACEUM	X	.	2	X	.	.	.	.	.	.
34	ODONTOCHITINA COSTATA	.	.	X	X	.	.	.	.	.	.
35	ODONTOCHITINA CRIBROPODA	X	.	X	X	.	.	.	.	.	.
36	ODONTOCHITINIA PORIFERA	.	.	X	X	.	.	.	.	.	.
37	PALAEOPERIDINIUM CRETACEUM	.	.	.	X	.	.	.	.	.	.
38	TRITHYRODINIUM PUNCTATE	.	.	.	2	.	.	.	.	.	.

1833.0 SWC	1763.0 SWC	1758.0 SWC	1672.0 SWC	1658.0 SWC	1650.0 SWC	1515.0 SWC	1500.0 SWC	1391.0 SWC	1388.0 SWC 30	No.	Species
.	.	.	.	.	.	X	2	X	X	39	TRITHYRODINIUM THICK RETICULATE
.	.	.	.	.	.	.	X	.	.	40	CHATANGIELLA VICTORIENSIS
.	.	.	.	.	.	.	X	.	X	41	EUCLADINIUM MADURENSE
.	.	.	.	.	.	.	X	.	.	42	HETEROSPHAERIDIUM CF LATEROBRACHIUS
.	.	.	.	.	.	.	X	.	.	43	ODONTOCHITINIA TRIANGULARIS
.	.	.	.	.	.	.	X	.	.	44	PARALECANIELLA
.	.	.	.	.	.	.	.	2	X	45	CANNINGIA SPP
.	.	.	.	.	.	.	.	X	.	46	HETEROSPHAERIDIUM ROBUSTA
.	.	.	.	.	.	.	.	X	X	47	ISABELIDINIUM BELFASTENSE
.	.	.	.	.	.	.	.	2	.	48	ODONTOCHITINA STUBBY
.	.	.	.	.	.	.	.	2	.	49	TRITHYRODINIUM THICK PSILATE
.	.	.	.	.	.	.	.	.	X	50	AMPHIDIADEMA DENTICULATA
.	.	.	.	.	.	.	.	.	X	51	AUSTRALISPHAERA SP
.	.	.	.	.	.	.	.	.	?	52	ISABELIDINIUM ROTUNDATA
.	.	.	.	.	.	.	.	.	X	53	ISABELIDINIUM TRIPARTITA
.	.	.	.	.	.	.	.	.	X	54	OLIGOSPHAERIDIUM PULCHERRIMUM
X	.	.	.	.	.	X	.	.	.	55	AEQUITRIRADITES SPINULOSUS
X	.	1	.	.	.	.	.	.	.	56	AEQUITRIRADITES TILCHAENSIS
X	.	.	.	.	.	.	X	.	.	57	AEQUITRIRADITES VERRUCOSUS
1	1	1	2	1	2	.	.	3	1	58	ARAUCARIACITES AUSTRALIS
2	1	4	1	X	1	3	X	1	X	59	CERATOSPORITES EQUALIS
X	X	.	X	1	.	.	1	1	X	60	CICATRICOSISPORITES AUSTRALIENSIS
X	.	.	.	.	.	.	.	.	.	61	CICATRICOSISPORITES HUGHESI
X	.	.	.	.	.	.	.	.	.	62	CONTIGNISPORITES GLEBULENTUS
X	.	.	.	.	.	.	.	.	.	63	COPTOSPORA PARADOXA
11	10	.	.	X	.	.	1	.	.	64	COROLLINA TOROSA
?	.	.	.	.	.	.	.	.	.	65	CRYBELOSPORITES STRIATUS
2	5	11	12	1	3	2	4	1	1	66	CYATHIDITES AUSTRALIS
13	11	9	16	2	4	13	11	7	7	67	CYATHIDITES MINOR
X	.	.	.	1	.	.	1	.	.	68	CYCADOPITES FOLLICULARIS
X	.	.	.	.	.	.	.	.	.	69	CYCLOSPORITES HUGHESI
1	.	.	.	1	.	.	.	X	.	70	DICTYOTOSPORITES COMPLEX
X	.	.	.	.	.	.	.	.	.	71	DICTYOTOSPORITES SPECIOSUS
1	1	.	4	21	24	8	3	2	12	72	DILWYNITES GRANULATUS
4	6	8	2	1	.	1	1	3	3	73	FALCISPORITES GRANDIS
19	31	31	6	6	17	13	13	15	21	74	FALCISPORITES SIMILIS
X	.	.	.	.	.	.	.	.	.	75	FORAMINISPORIS ASYMMETRICUS
X	.	.	.	.	.	.	.	.	.	76	FORAMINISPORIS DAILYI

	Taxon	1833.0 SWC	1763.0 SWC	1758.0 SWC	1672.0 SWC	1658.0 SWC	1650.0 SWC	1515.0 SWC	1500.0 SWC	1391.0 SWC	1388.0 SWC 30
77	FORAMINISPORIS WONTHAGGIENSIS	1	.	.	X	.	.	X	1	.	.
78	KLUKISPORITES SCABERIS	2	.	1	.	1	.	.	.	.	.
79	LEPTOLEPIDITES VERRUCATUS	1	.	.	X	.	.	.	X	.	.
80	MICROCACHRYIDITES ANTARCTICUS	7	5	1	11	3	7	4	2	10	13
81	NEVESISPORITES VALLATUS	X	.	.	.	.	.	.	.	.	.
82	OSMUNDACIDITES WELLMANII	15	13	13	1	3	4	2	4	7	.
83	PERINOPOLLENITES ELATOIDES	1	.	.	.	.	.	.	.	.	.
84	PODOSPORITES MICROSACCATUS	1	1	.	3	3	2	8	3	9	3
85	RETITRILETES AUSTROCLAVATIDITES	4	5	5	1	1	.	1	4	.	1
86	REWORKING - PERMIAN	X	.	4	.	.	.	.	.	.	.
87	STERIESPORITES ANTIQUASPORITES	8	3	3	2	.	.	5	2	3	1
88	TRIPOROLETES RETICULATUS	X	.	.	.	.	.	.	.	.	.
89	VITREISPORITES PALLIDUS	1	2	1	11	2	2	12	9	7	4
90	CALLIALASPORITES TURBATUS	.	1	3	.	.	.	.	.	.	.
91	AMOSOPOLLIS CRUCIFORMIS	.	.	.	X	14	9	X	3	X	1
92	APPENDICISPORITES DISTOCARINATUS	.	.	.	X	.	.	.	.	.	.
93	BALMEISPORITES HOLODICTYUS	.	.	.	X	.	.	.	X	.	.
94	DICTYOPHYLLIDITES	.	.	.	1	.	.	.	.	1	.
95	GLEICHENIIDITES	.	.	.	2	1	2	2	1	4	6
96	INTERULOBITES INTRAVERRUCATUS	.	.	.	X	.	.	.	.	.	.
97	LAEVIGATOSPORITES OVATUS	.	.	.	4	.	1	.	1	1	2
98	PHYLLOCLADIDITES MAWSONII	.	.	.	1	.	2	X	X	3	3
99	TRICOLPITES SPP	.	.	.	X	.	.	.	.	.	.
100	TRICOLPITES VARIVERRUCATUS	.	.	.	3	.	.	.	.	.	.
101	AUSTRALOPOLLIS OBSCURIS	.	.	.	.	1	X	2	1	.	7
102	PEROTRILETES MAJUS	.	.	.	.	X	.	X	.	.	.
103	TRICOLPITES GILLII	.	.	.	.	1	.	.	1	2	1
104	TRILOBOSPORITES TRIORETICULOSUS	.	.	.	.	X	.	.	.	.	.
105	CLAVIFERA TRIPLEX	.	.	.	.	.	1	1	.	.	3
106	CAMEROZONOSPORITES OHAIENSIS	.	.	.	.	.	.	X	.	2	.
107	CONTIGNISPORITES COOKSONIAE	.	.	.	.	.	.	X	.	.	.
108	PROTEACIDITES SPP	.	.	.	.	.	.	4	10	4	4
109	ORNAMENTIFERA SENTOSA	.	.	.	.	.	.	.	.	X	.
110	PHIMOPOLLENITES PANNOSUS	.	.	.	.	.	.	.	.	1	1
111	TRICOLPORITES APOXYEXINUS	.	.	.	.	.	.	.	.	1	.
112	BOTRYOCOCCUS	5	1	4	17	.	2	.	.	1	2
113	SCHIZOSPORIS PSILATUS	.	X	.	.	.	.	.	.	.	.
114	SCHIZOSPORIS RETICULATUS	.	.	X	.	.	.	.	.	.	.

SPECIES LOCATION INDEX

Index numbers are the columns in which species appear.

INDEX NUMBER	SPECIES
1	--- MICROPLANKTON CONTENT (%) ---
55	AEQUITRIRADITES SPINULOSUS
56	AEQUITRIRADITES TILCHAENSIS
57	AEQUITRIRADITES VERRUCOSUS
7	ALTERBIA ACUMINATUM
91	AMOSOPOLLIS CRUCIFORMIS
50	AMPHIDIADEMA DENTICULATA
92	APPENDICISPORITES DISTOCARINATUS
8	APTEA SP
58	ARAUCARIACITES AUSTRALIS
51	AUSTRALISPHAERA SP
101	AUSTRALOPOLLIS OBSCURIS
93	BALMEISPORITES HOLODICTYUS
112	BOTRYOCOCCUS
25	CALLAOISPHAERIDIUM ASYMMETRICUM
90	CALLIALASPORITES TURBATUS
106	CAMEROZONOSPORITES OHAIENSIS
45	CANNINGIA SPP
30	CASSICULOSPHAERIDIA GIANT
59	CERATOSPORITES EQUALIS
40	CHATANGIELLA VICTORIENSIS
9	CHLAMYDOPHORELLA AMBIGUA
60	CICATRICOSISPORITES AUSTRALIENSIS
61	CICATRICOSISPORITES HUGHESI
10	CIRCULODINIUM DEFLANDREI
105	CLAVIFERA TRIPLEX
107	CONTIGNISPORITES COOKSONIAE
62	CONTIGNISPORITES GLEBULENTUS
63	COPTOSPORA PARADOXA
64	COROLLINA TOROSA
26	CRIBROPERIDINIUM EDWARDSII
11	CRIBROPERIDINIUM SPP
65	CRYBELOSPORITES STRIATUS
66	CYATHIDITES AUSTRALIS
67	CYATHIDITES MINOR
68	CYCADOPITES FOLLICULARIS
27	CYCLONEPHELIUM MEMBRANIPHORUM
69	CYCLOSPORITES HUGHESI
94	DICTYOPHYLLIDITES
70	DICTYOTOSPORITES COMPLEX
71	DICTYOTOSPORITES SPECIOSUS
72	DILWYNITES GRANULATUS
41	EUCLADINIUM MADURENSE
12	EXOCHOSPHAERIDIUM PHRAGMITES
73	FALCISPORITES GRANDIS
74	FALCISPORITES SIMILIS
13	FLORENTINIA DEANEI
75	FORAMINISPORIS ASYMMETRICUS
76	FORAMINISPORIS DAILYI
77	FORAMINISPORIS WONTHAGGIENSIS
31	FROMEA FRAGILIS
32	GILLINIA HYMENOPHORA
95	GLEICHENIIDITES
42	HETEROSPHAERIDIUM CF LATEROBRACHIUS
4	HETEROSPHAERIDIUM CONJUNCTUM
14	HETEROSPHAERIDIUM HETEROCANTHUM
46	HETEROSPHAERIDIUM ROBUSTA
15	HETEROSPHAERIDIUM SOLIDA
28	HYSTRICHODINIUM PULCHRUM
96	INTERULOBITES INTRAVERRUCATUS
47	ISABELIDINIUM BELFASTENSE
33	ISABELIDINIUM CRETACEUM
52	ISABELIDINIUM ROTUNDATA
29	ISABELIDINIUM SP
53	ISABELIDINIUM TRIPARTITA
16	KIOKANSIUM POLYPES
17	KIOKANSIUM RECURVATUM
78	KLUKISPORITES SCABERIS
97	LAEVIGATOSPORITES OVATUS
79	LEPTOLEPIDITES VERRUCATUS
2	MICRHYSTRIDIUM
80	MICROCACHRYIDITES ANTARCTICUS
81	NEVESISPORITES VALLATUS
18	NUMMUS SP
34	ODONTOCHITINA COSTATA
35	ODONTOCHITINA CRIBROPODA
19	ODONTOCHITINA OPERCULATA
48	ODONTOCHITINA STUBBY
36	ODONTOCHITINIA PORIFERA

81	NEVESISPORITES VALLATUS
18	NUMMUS SP
34	ODONTOCHITINA COSTATA
35	ODONTOCHITINA CRIBROPODA
19	ODONTOCHITINA OPERCULATA
48	ODONTOCHITINA STUBBY
36	ODONTOCHITINIA PORIFERA
43	ODONTOCHITINIA TRIANGULARIS
20	OLIGOSPHAERIDIUM COMPLEX
54	OLIGOSPHAERIDIUM PULCHERRIMUM
109	ORNAMENTIFERA SENTOSA
82	OSMUNDACIDITES WELLMANII
21	PALAEOHYSTRICHOSPHORA INFUSORIOIDES
37	PALAEOPERIDINIUM CRETACEUM
44	PARALECANIELLA
83	PERINOPOLLENITES ELATOIDES
102	PEROTRILETES MAJUS
110	PHIMOPOLLENITES PANNOSUS
98	PHYLLOCLADIDITES MAWSONII
84	PODOSPORITES MICROSACCATUS
108	PROTEACIDITES SPP
22	RECTANGULADINIUM SP
85	RETITRILETES AUSTROCLAVATIDITES
86	REWORKING - PERMIAN
113	SCHIZOSPORIS PSILATUS
114	SCHIZOSPORIS RETICULATUS
23	SPINIFERITES FURCATUS/RAMOSUS
87	STERIESPORITES ANTIQUASPORITES
5	SUBTILISPHAERA SP
24	TRICHODINIUM
103	TRICOLPITES GILLII
99	TRICOLPITES SPP
100	TRICOLPITES VARIVERRUCATUS
111	TRICOLPORITES APOXYEXINUS
104	TRILOBOSPORITES TRIORETICULOSUS
88	TRIPOROLETES RETICULATUS
6	TRITHYRODINIUM MARSHALLII
38	TRITHYRODINIUM PUNCTATE
49	TRITHYRODINIUM THICK PSILATE
39	TRITHYRODINIUM THICK RETICULATE
3	VERYHACHIUM
89	VITREISPORITES PALLIDUS