APPENDIX

PALYNOLOGICAL ANALYSIS

TERAGLIN-1, GIPPSLAND BASIN

by

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(revised by

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INTERPRETATIVE DATA

INTRODUCTION

Fifty seven (57) sidewall cores, one core and twelve (12) cuttings samples were processed and examined for spore-pollen and dinoflagellates. Recovery was mostly fair but consistent reworking and/or contamination of Late Cretaceous and Eocene species in the Paleocene sediments, and poor preservation of the Late Cretaceous palynofloras has resulted in low confidence in some of the age-determinations.

Palynological zones and lithological facies divisions from near the base of the Lakes Entrance Formation to the total depth of the well are given below. Occurrences of spore-pollen and dinoflagellate species are tabulated in the accompanying range chart. Anomalous and unusual occurrences of taxa are listed at the end of the Biostratigraphy Section (see Table 2).

SUMMARY

UNIT FACIES	ZONE	DEPTH (m)
Lakes Entrance Fm. & Unnamed carbonate unit	*P. tuberculatus*	2400.5-2420.5m
	log break at 2421m	
Hardground (Turrum or Gurnard Formation equiv.)	Lower *N. asperus*	2423.0m
	log break at 2425m	
Latrobe Group coarse clastics	Upper *L. balmei*	2428.0-2433.0m
	Lower *L. balmei*	2440.0-2937.0m
	Upper *T. longus*	2947.0-3235.0m
	Lower *T. longus*	3282.0-3372.5m

T.D. 3373m.

GEOLOGICAL COMMENTS

1. The Teraglin-1 well contains an apparently continuous sequence of sediments from the Maastrichtian (Upper T. longus Zone) to the Paleocene (Upper L. balmei Zone).

2. The unnamed carbonate unit picked on lithological and log characteristics between 2412.0 to 2421.0m (Rexilius 1983), is P. tuberculatus Zone in age, probably Early Oligocene on the basis of forams recovered at 2419.0m (Rexilius ibid). The overlying Lakes Entrance Formation sampled at 2400.5m and 2411.9m is on palynology unlikely to be older than Miocene in age, a result that supports macro palaeontological data for an unconformity at 2412m (Rexilius ibid).

3. A distinctive unit is represented on log characteristics between the base of the Lakes Entrance Formation at 2421.0m and the top of coarse clastics of the Latrobe Group picked at 2425.0m. On the basis of the single sidewall core from this unit at 2423.0m, which contains limontized glauconite, minor fresh glauconite associated with rare agglutinate forams and fish teeth, the unit has been interpreted as a condensed section or hardground horizon (Rexilius, 1983). The sample is referred to the Lower N. asperus spore-pollen Zone and W. echinosuturatum dinoflagellate Zone and is Middle Eocene in age. The unit is interpreted as a condensed section or hardground and could be referred to either the Gurnard or Turrum Formations.

4. The top of the Latrobe Group coarse clastics is picked on lithogical and log characteristics at 2425.0m. However, the unit of shales and siltstones bounded by log breaks at 2425.0 and 2450.0m contains frequent well-stained Eocene taxa and Late Cretaceous spores mixed with Paleocene spore-pollen assemblages. It is not clear whether this unit represents (1) insitue Paleocene sediments with sidewall cores from this interval contaminated with Late Cretaceous and Eocene palynomorphs from the mud system or (2) an Eocene channel fill sequence with sediments derived predominately from the underlying eroded Paleocene. The second interpretation is supported by the presence of Late Cretaceous palynomorphs which are uncommon as reworked elements other than in the channel fill sequences. Overall however a Paleocene age is preferred even though confidence in zone assignment is poor. This interpretation is supported by the tendency for indicator species of the Upper L. balmei Zone to be concentrated in the upper 8m and Lower L. balmei Zone indicator species in the lower 17m of this section.

5. Lower L. balmei Zone marine samples are recorded at 2553.5m, 2759.3m and 2788.5m. The youngest is characterised by abundant Glaphryocysta retiintexta with Svalbardella sp. and cannot be correlated with any of the transgressions recognised by Partridge (1976). Another (2788.5m) is represented by Palaeoperidinium pyrophorum, a species restricted to the T. evittii Zone event in Hapuku-1 (Partridge 1975) and present only in a greensand (2927.0-2935.0m) in Pilotfish-1A (Macphail 1983). In addition the T. evittii Zone is recorded at 2937.0m and marine sediments of the Maastrichtian age I. druggii Zone occur at 2947.0m.

6. Unfortunately, because of low diversity and poor preservation, the aim of improving the biostratigraphic control in this area of the Gippsland Basin, cannot be fully realised.

BIOSTRATIGRAPHY

The zone boundaries have been established using the criteria of Stover & Evans (1974), Stover & Partridge (1973) and subsequent proprietary revisions.

Lower T. longus Zone : 3282.0 - 3372.5m.
Four samples are provisionally placed in this zone based on the frequent to common occurrence of Gambierina and the absence of Upper T. longus Zone indicator species. Tetracolporites verrucosus and Proteacidites wahooensis occur at 3349.4m and 3282.0m.

Upper T. longus Zone : 2947.0 - 3235.0m.
Samples within this unit are dominated by Gambierina rudata, Proteacidites spp. and a number of gymnosperms including Podocarpidites and Phyllocladidites mawsonii. Except for the sample at 2947.0m, rare occurrences of dinoflagellates are probably due to caving since these include the Paleocene-Eocene species Apectodinium homomorphum. The base of the zone is defined by the first appearance of Stereisporites punctatus at 3235.0m. Other species which first appear in the Upper T. longus Zone, eg. Proteacidites gemmatus, or which range no higher than this zone, eg. Tricolpites waiparaensis, Tricolporites lilliei, Proteacidites otwayensis and P. reticuloconcavus occur infrequently throughout the section. The nominate species first occurs at 3051.0m. The highest occurrences of Tricolpites longus and abundant Gambierina rudata are at 3000.5m. The upper boundary is defined by Isabelidinium druggii with Quadraplanus brossus at 2947.0m.

Lower L. balmei Zone : 2440.0 - 2947.0m.
The zone falls within an interval in which most samples are either barren or contain spore-pollen assemblages of low diversity and limited stratigraphic utility. Although dinoflagellates are usually present, these are rarely abundant and even more rarely include species restricted in range to the Early Paleocene. Because of widespread reworking of Late Cretaceous spores, it is possible that some occurrences of Tetracolporites verrucosus (a species which first appears in the Upper T. longus Zone but which in association with frequent to abundant Lygistepollenites balmei is a reliable indicator of the Lower L. balmei Zone) are also due to reworking from Late Cretaceous sediments.

Samples within the interval are characterised by general L. balmei Zone markers in gymnosperm and Proteacidites-dominated assemblages, eg. frequent to abundant Lygistepollenites balmei, Australopollis obscurus, Basopollis spp., and (infrequently) Polycolpites langstonii and Nothofagidites endurus. The Proteacidites pollen are almost wholly 25 microns or less in diameter, a size class that is particularly prominent in the Lower L. balmei Zone. The base of the zone is placed at 2947.0m, the first sample to lack Late Cretaceous indicator species and frequent to abundant Gambierina rudata. Polycolpites langstonii, a species which first appears in this zone and Basopollis otwayensis, a species which is typical of Paleocene sediments, occur in this sample. The first occurrence of frequent Lygistepollenites balmei is at 2920.0m. Occurrences of Apectodinium homomorphum at 2826.5m and 2788.5m, Palaeoperidinium pyrophorum at 2788.5m and 2778.2m, and Glaphyrocysta retiintexta from 2552.0 to 2622m are also consistent with a Lower L. balmei Zone age for the section. Tetracolporites verrucosus is present to common throughout. The lowest occurrences of other spore-pollen species which first appear in the Lower L. balmei Zone are: Haloragacidites harrisii (2759.3m) and Integricorpus antipodus (2645.9m). The top of the zone is confidently placed at 2451.8m, the highest sample containing a Lygistepollenites balmei - Tetracolporites verrucosus assemblage with (abundant) Australopollis obscurus and lacking signs of reworking/caving.

The assemblages extracted from sidewall cores over the interval 2440.0 to 2450.0m can only be assigned to the Lower L. balmei Zone with low confidence because of (1) the frequent occurrence of Late Cretaceous species including Proteacidites amolosexinus, P. otwayensis and P. wahooensis and (2) less frequent occurrences of Eocene species including Nothofagidites falcatus and Vozzhenikovia extensa. These mixed assemblages are interpreted as contamination of the sidewall cores by Late Cretaceous and Eocene palynomorph which have been incorporated in the drilling mud.

Upper L. balmei Zone: 2428.0 - 2433.0m

Assemblages from both sidewall cores and cuttings over this interval are mainly characteristic of L. balmei Zone assemblages mixed with a minor but conspicuous component of reworked or contaminated Late Cretaceous spore-pollen and caved or contaminated Eocene to Oligocene palynomorphs. Upper L. balmei Zone indicator species are restricted to presence of the spore Verrucosisporites kopukuensis in samples at 2428m and 2433m. As this species could be caved or contamination confidence in recognition of Upper subdivision of the L. balmei Zone is poor.

Lower N. asperus Zone : 2423.0m.

The zone is represented by one sample only. This contains the Lower N. asperus Zone indicator dinoflagellate species Areosphaeridium diktyoplokus as well as Wilsonidium echinosuturatum a species which is restricted to middle portion of this zone. Recovery of spore-pollen was negligible.

Proteacidites tuberculatus : 2400.5 - 2420.5m.

The consistent occurrence of rare to frequent Cyatheacidites annulatus from 2400.5 to 2420.5m confirm a P. tuberculatus Zone age for this glauconite-free, calcareous interval. The sample at 2420.5m, picked as the base of the zone, contains (1) Polyporina chenopodiaceoides and Myrtaceidites eucalyptoides, species which first appear in the Early Oligocene and (2) Sapotaceoidaepollenites rotundus, a species which is last recorded in Miocene sediments. The highest sidewall core sample examined at 2400.5m, contained Polyadopollenites myriosporites a species which is rarely recorded earlier than the Middle-Late Miocene.

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TABLE I : SUMMARY OF PALYNOLOGICAL ANALYSIS TERAGLIN-1, GIPPSLAND BASIN.

INTERPRETATIVE DATA

SAMPLE NO.	DEPTH (m)	YIELD	DIVERSITY SPORE POLLEN	LITHOLOGY	ZONE	AGE & ENVIRONMENT	CONFIDENCE RATING	COMMENTS
CTS	2355-60	Low	V. low	-	Indeterminate	-	-	-
SWC 82	2400.5	Good	Moderate	Calc. Sh.	*P. tuberculatus*	Early Miocene, Marine.	0	*C. annulatus*, *P. myriosporites*.
CTS	2400-05	Fair	Low	-	*P. tuberculatus*	Early Miocene, Marine.	3	*C. annulatus*.
CTS	2405-10	Low	Low	-	Indeterminate		-	*Dacrycarpites australiensis*
SWC 78	2411.9	Good	Low	Calc. Sh.	*P. tuberculatus*	Early Miocene, Marine	2	*C. annulatus*
CTS	2410-15	Barren	-	-	-	-	-	-
CTS	2415-20		Moderate	Coal in cuttings	*L. balmei* (reworked)	-	-	*N. endurus*, *P. verrucosus*
SWC 77	2415.0	Good	Low	Calc. sist.	*P. tuberculatus*	Early Oligocene, Marine	0	*C. annulatus*, *M. ornamentalis*
SWC 75	2418.0	Low	Low	Calc. sist.	*P. tuberculatus*	Early Oligocene, Marine		*C. annulatus*.
SWC 74	2419.0	V. good	Low	Calc. sist.	*P. tuberculatus*	Early Oligocene/ Late Eocene, Marine	0	*C. annulatus* frequent
CTS	2420-25	Barren	-	-	-	-	-	
SWC 73	2420.5	Fair	High	Calc. sist.	*P. tuberculatus*	Early Oligocene/ Late Eocene,	0	*C. annulatus*, *P. chenopodiaceoides*, *N. falcatus*, reworked *T. verrucosus*
SWC 121	2423.0	V. low	Low	Sist, glau, pyr.	Lower *N. asperus*	Middle Eocene	1	*A. diktyoplokus*, *W. echinosuturatum*
SWC 71	2425.5	V. low	V. low	Sh.	*L. balmei*	Paleocene,?	-	*L. balmei* frequent, *P. langstonii*
CTS	2425-30	Good	High	-	Indeterminate	-	-	Mixed *P. tuberculatus*, *N. asperus*, *L. balmei* & *T. longus* Zone Palynofloras
SWC 70	2427.0	Insufficient material for palynological processing				-	-	-
SWC 69	2428.0	Good	Moderate	Sist.	Upper *L. balmei*	Paleocene ?Marine	2	*L. balmei* common, *V. kopukuensis*
SWC 68	2429.5	Good	Moderate	Sist.	*L. balmei*	Paleocene, ?Marine		*L. balmei* common, *T. verrucosus*, caved Eocene dinoflagellates
CTS	2430-35	Good	Moderate	-	*L. balmei*	Paleocene ?Marine	3	*L. balmei*, *J. pleratus*, *H. harrisii* & reworked Late Cretaceous spp.

TABLE I : SUMMARY OF PALYNOLOGICAL ANALYSIS TERAGLIN-1, GIPPSLAND BASIN.

INTERPRETATIVE DATA

SAMPLE NO.	DEPTH (m)	YIELD	DIVERSITY SPORE POLLEN	LITHOLOGY	ZONE	AGE & ENVIRONMENT	CONFIDENCE RATING	COMMENTS
SWC 66	2433.0	Fair	Low	Sh.	Upper *L. balmei*	Paleocene Marginal	2	*L. balmei*, *V. kopukuensis*, *H. harrisii*
CTS	2435-40	Fair	Moderate	-	Lower *L. balmei*	Paleocene Marginal	3	*L. balmei*, *T. verrucosus* & reworked *T. longus* Zone spp.
SWC 65	2435.5	Good	Moderate	Sh.	*L. balmei*	Paleocene Marginal	-	
SWC 64	2438.5	Good	Moderate	Sh.	*L. balmei*	Paleocene Marginal		*P. langstonii*, abund. *L. balmei*
SWC 63	2440.0	Good	Moderate	Ss.	Lower *L. balmei*	Paleocene Marginal	2	*J. pieratus*, *H. harrisii*
CTS	2440-45	Good	High	-	Lower *L. balmei*	Paleocene Marine	3	Includes caved *N. asperus* Zone spp.
SWC 62	2443.0	Good	Low	Sh.	Lower *L. balmei*	Paleocene	2	*T. verrucosus*, abundant *L. balmei*.
SWC 61	2444.0	Good	Low	Slst.	*L. balmei*	Paleocene Marginal	-	*L. balmei* frequent
CTS	2445-50	V. low	V. low	-	*L. balmei*	Paleocene Marginal	-	reworked Mesozoic spp.
SWC 59	2447.0	Good	Moderate	Sh.	Lower *L. balmei*	Paleocene Marginal	2	*T. verrucosus*, caved *N. falcatus*.
SWC 57	2450.0	V.good	Moderate	Sh.	Lower *L. balmei*	Paleocene Marine	2	*L. balmei* common, *J. pieratus*, *T. verrucosus*, *T. multistrixus*, *H. harrisii*
SWC 56	2451.8	Good	Moderate	Sh.,carb.	Lower *L. balmei*	Paleocene Marginal	1	*T. verrucosus*, *H. harrisii*, abundant *Australopollis obscurus*
SWC 55	2453.0	Low	Low	Ss.	*L. balmei*	Paleocene Marginal	-	*L. balmei*, caved Eocene spp.
CTS	2455-60	Fair	Low	-	*L. balmei*	Paleocene Marginal	-	*L. balmei*
SWC 54	2456.0	Barren	-	Ss.	-	-	-	
CORE	2469.4	Barren	-	Sh.	-	-	-	
SWC 52	2479.5	V.low	V.low	Ss.	*L. balmei*	Paleocene, Marine	-	*L. balmei*

TABLE I : SUMMARY OF PALYNOLOGICAL ANALYSIS TERAGLIN-1, GIPPSLAND BASIN.

INTERPRETATIVE DATA

SAMPLE NO.	DEPTH (m)	YIELD	DIVERSITY SPORE POLLEN	LITHOLOGY	ZONE	AGE & ENVIRONMENT	CONFIDENCE RATING	COMMENTS
SWC 50	2493.0	V.low	V.low	Slst.	L. balmei	Paleocene, Fluvial	-	L. balmei
SWC 49	2494.5	V.low	V.low	Slst.	L. balmei	Paleocene, Fluvial	-	L. balmei
SWC 48	2499.4	V.low	V.low	Sh.	L. balmei	Paleocene, Fluvial	-	L. balmei
SWC 47	2552.0	Low	Moderate	Ss.	Lower L. balmei	Paleocene, Marginal	2	Abundant L. balmei & Proteacidites; V. kopukuensis, G. retiintexta
SWC 46	2553.5	Good	High	Ss.	Lower L. balmei	Paleocene, Marine	1	Abundant L. balmei & G. retiintexta; S. australina
SWC 44	2622.0	Fair	Moderate	Sh.	Lower L. balmei	Paleocene, Marginal	2	H. harrisii, P. verrucosus G. retiintexta
SWC 43	2645.9	Fair	Low	Sh.	Lower L. balmei	Paleocene,	2	I. integricorpus, V. kopukuensis
SWC 42	2672.0	Good	Low	Slst.	Lower L. balmei	Paleocene, Marine	1	L. balmei, T. verrucosus, Deflandrea spp., P. angulatus
SWC 39	2741.5	Low	Moderate	Sh.	Lower L. balmei	Paleocene, Fluvial	1	L. balmei, T. verrucosus, P. angulatus
SWC 38	2759.3	Good	Moderate	Sh.	Lower L. balmei	Paleocene, Marine	1	L. balmei frequent, H. harrisii P. angulatus, A. homomorpha
SWC 37	2774.9	V.low	V.low	Slst.	Lower L. balmei	Paleocene Marginal	1	P. pyrophorum
SWC 36	2788.5	Good	Good	Sh.	Lower L. balmei	Paleocene, Marine	0	L. balmei frequent, I. antipodus P. pyrophorum, A. homomorphum
SWC 35	2793.6	Good	High	Slst.,carb.	L. balmei	Paleocene, Marginal	-	and B. otwayensis common
SWC 32	2826.5	Low	Moderate	Slst.	Lower L. balmei	Paleocene, Marginal	1	L. balmei & P. angulatus frequent; A. homomorphum rare.
SWC 31	2875.9	Good	High	Slst.	Lower L. balmei	Paleocene, Marginal	2	L. balmei & T. verrucosus frequent P. amolosexinus, P. otwayensis
SWC 120	2903.0	Low	Moderate	Slst.	Lower L. balmei	Paleocene, Fluvial	2	L. balmei, T. verrucosus
SWC 119	2920.0	Fair	Moderate	Slst.	Lower L. balmei	Paleocene, Marginal	1	L. balmei, T. verrucosus; Late Cretacesus spores, Deflandrea speciosa

TABLE I : SUMMARY OF PALYNOLOGICAL ANALYSIS TERAGLIN-1, GIPPSLAND BASIN.

INTERPRETATIVE DATA

SAMPLE NO.	DEPTH (m)	DIVERSITY YIELD	SPORE POLLEN	LITHOLOGY	ZONE	AGE & ENVIRONMENT	CONFIDENCE RATING	COMMENTS
SWC 118	2937.0	Good	Low	Sist.	Lower *L. balmei*	Paleocene, Marine	0	*L. balmei*, *T. verrucosus*, frequent *T. evittii*
SWC 117	2947.0	Low	Low	Sist.	Upper *T. longus*	Maastrichtian, Marginal marine	0	*I. druggii*, *Q. brossus*
SWC 116	2957.0	Negligible spore-pollen		Sist.	Indeterminate	-	-	
SWC 114	3000.5	Low	Moderate	Sist.	Upper *T. longus*	Maastrictian, Fluvial	1	*G. rudata* abundant, *P. otwayensis* *T. longus*
SWC 112	3051.0	Fair	High	Sist.	Upper *T. longus*	Maastrictian, Fluvial	1	as for SWC 114 plus *P. gemmatus*, *Q. brossus*, *T. lillieI*, *C. horrendus* *S. punctatus*. Occasional
SWC 111	3073.5	V.low	Moderate	Sist.	Upper *T. longus*	Maastrichtian, Fluvial	1	*P. gemmatus*, *P. wahooensis*, *S. punctatus*
SWC 110	3103.0	Good	Moderate	Ss.	Upper *T. longus*	Maastrichtian, Fluvial	1	*G. rudata* frequent, *T. lillieI*, *T. walparaensis*
SWC 108	3120.0	V.low	Low	Sh., carb.	Upper *T. longus*	Maastrichtian, Fluvial	1	*S. punctatus*, *T. verrucosus*, *T. lillieI*
SWC 107	3135.5	V.low	Low	Coal	Upper *T. longus*	Maastrichtian, Swamp	2	*T. truswellii*, *T. walparaensis*
SWC 14	3169.0	Low	Moderate	Sist.	Upper *T. longus*	Maastrichtian, Fluvial	1	*T. verrucosus*, *T. walparaensis*, *T. lillieI*
SWC 12	3201.9	Good	Low	Sh.	Upper *T. longus*	Maastrichtian, Fluvial	1	*G. rudata* abundant, *P. gemmatus*, *P. otwayensis*, *T. verrucosus*
SWC 9	3235.0	Good	High	Sh.	Upper *T. longus*	Maastrichtian, Fluvial	1	as for SWC 12 plus *S. punctatus*, *P. wahooensis*, *P. reticuloconcavus*, *P. pallsadus*, *T. securus*, *T. walparaensis*
SWC 7	3277.0	Barren	-	Ss., carb.	-	-	-	
SWC 5	3282.0	Low	Low	Ss.	Lower *T. longus*	Maastrichtian, Fluvial	2	*T. verrucosus*, *P. wahooensis*, *T. walparaensis*
SWC 103	3295.0	Low	Low	Sh., carb.	Lower *T. longus*	Maastrichtian, Fluvial	2	*G. rudata* common, *P. wahooensis*, *T. lillieI*
SWC 2	3349.4	Fair	High	Sist.	Lower *T. longus*	Maastrichtian, Fluvial	2	*G. rudata* common, *T. verrucosus*, *P. wahooensis*, *T. securus*, *P. otwayensis*
SWC 1	3372.5	Low	Low	Ss.	Lower *T. longus*	Late Cretaceous, Fluvial	2	*G. rudata* common

TABLE 2

ANOMALOUS AND UNUSUAL OCCURRENCES OF SPORE-POLLEN TAXA IN TERAGLIN-1, GIPPSLAND BASIN.

SAMPLE NO.	DEPTH(m)	ZONE	CONF. RATING	TAXON	COMMENTS
SWC 82	2400.5	P. tuberculatus	(0)	Polyadopollenites myriosporites	Early Miocene (H-1) sample.
SWC 82	2400.5	P. tuberculatus	(0)	Proteacidites leightonii	Reworked Not recorded above Middle N. asperus Zone.
CTS	2415-20	L. balmei		Elphedripites notensis	From Palaeocene coal.
SWC 73	2420.5	P. tuberculatus	(0)	Myrtaceidites eucalyptoides	Early Oligocene. J-2/K forams at 2419.0m.
SWC 73	2420.5	P. tuberculatus	(0)	Polyporina chenopodiaceoides	Modern Taxon.
SWC 71	2425.5	L. balmei		Camarozonosporites dumus	Ms sp. (A.D.P.) reworked Late Cretaceous?
SWC 68	2429.5	L. balmei		Contiguisporites fornicatus	Reworked Late Cretaceous sp.
SWC 65	2435.5	L. balmei		Tricolporites reticulatus	Ms sp. Stover & Evans 1969.
SWC 57	2450.0	Lower L. balmei	(2)	Elphedripites notensis	Reworked?
SWC 47	2552.0	L. balmei (Lower)		Verrucosisporites cf kopukuensis	Possible precursor of V. kopukuensis, lacks strong development of verrucae.
SWC 43	2645.9	Lower L. balmei	(2)	Integricorpus antipodus	Rare species.
SWC 43	2645.9	Lower L. balmei	(2)	Verrucosisporites cf kopukuensis	As for SWC 47. In marine shale.
SWC 36	2788.5	Lower L. balmei	(0)	Integricorpus antipodus	Rare species.
SWC 36	2788.5	Lower L. balmei	(0)	Camarozonosporites dumus	Reworked Late Cretaceous species?
SWC 36	2788.5	Lower L. balmei	(0)	Tetradopollis securus	Reworked Late Cretaceous sp?
SWC 31	2875.9	Lower L. balmei	(2)	Proteacidites otwayensis	Reworked Late Cretaceous sp?
SWC 31	2875.9	Lower L. balmei	(2)	Tricolpites vergillus	Ms sp. (A.D.P.), may represent a genuine extension of range into Paleocene.
SWC 120	2903.0	Lower L. balmei	(2)	Tricolpites vergillus	As for SWC 31.
SWC 119	2920.0	Lower L. balmei	(1)	Camarozonosporites eyrensis	Ms sp. (A.D.P.) Reworked Late Cretaceous?
SWC 112	3051.0	Upper T. longus	(0)	Camarozonosporites horrendus	Rare sp.
SWC 111	3073.5	Upper T. longus	(0)	Camarozonosporites cf passarius	Ms. sp. (A.D.P.)
SWC 117	2947.0	Upper T. longus	(0)	Polycolpites langstonii	In I. druggii Zone assemblage with Q. brossus, P. otwayensis, I. coronatum

PALYNOLOGY DATA SHEET

BASIN: GIPPSLAND ELEVATION: KB: +21m GL: -79.3m

WELL NAME: TERAGLIN-1 TOTAL DEPTH: 3373m

AGE	PALYNOLOGICAL ZONES	HIGHEST DATA					LOWEST DATA				
		Preferred Depth	Rtg	Alternate Depth	Rtg	Two Way Time	Preferred Depth	Rtg	Alternate Depth	Rtg	Two Way Time
NEOGENE	*T. pleistocenicus*										
	M. lipsis										
	C. bifurcatus										
	T. bellus										
PALEOGENE	*P. tuberculatus*	2400.5	0				2420.5	0			
	Upper *N. asperus*										
	Mid *N. asperus*										
	Lower *N. asperus*	2423.0	1				2423.0	1			
	P. asperopolus										
	Upper *M. diversus*										
	Mid *M. diversus*										
	Lower *M. diversus*										
	Upper *L. balmei*	2428.0	2				2433.0	2			
	Lower *L. balmei*	2440.0	2	2451.8	1		2937.0	0			
LATE CRETACEOUS	Upper *T. longus*	2947.0	0				3235.0	1			
	Lower *T. longus*	3282.0	2				3372.5	2			
	T. lilliei										
	N. senectus										
	T. apoxyexinus										
	P. mawsonii										
	A. distocarinatus										
EARLY CRET.	*P. pannosus*										
	C. paradoxa										
	C. striatus										
	C. hughesi										
	F. wonthaggiensis										
	C. australiensis										

COMMENTS: Wilsonidium (Wetzeliella) echinosuturatum Zone 2423.0m(1)

Trithyrodinium evittii Zone 2937.0m(1)

Manumiella (Isabellidinium) druggii Zone 2947.0m(1)

CONFIDENCE RATING:

0: SWC or Core, Excellent Confidence, assemblage with zone species of spores, pollen and microplankton.

1: SWC or Core, Good Confidence, assemblage with zone species of spores and pollen or microplankton.

2: SWC or Core, Poor Confidence, assemblage with non-diagnostic spores, pollen and/or microplankton.

3: Cuttings, Fair Confidence, assemblage with zone species of either spores and pollen or microplankton, or both.

4: Cuttings, No Confidence, assemblage with non-diagnostic spores, pollen and/or microplankton.

NOTE: If an entry is given a 3 or 4 confidence rating, an alternative depth with a better confidence rating should be entered, if possible. If a sample cannot be assigned to one particular zone, then no entry should be made, unless a range of zones is given where the highest possible limit will appear in one zone and the lowest possible limit in another.

DATA RECORDED BY: M.K. Macphail DATE: August 11, 1983

DATA REVISED BY: A.D. Partridge DATE: December 31, 1986

BASIC DATA

TABLE 3: BASIC DATA

RANGE CHARTS.

TABLE 3 : SUMMARY OF PALYNOLOGICAL ANALYSIS TERAGLIN-1, GIPPSLAND BASIN.

BASIC DATA

SAMPLE NO	DEPTH (M)	YIELD	DIVERSITY SPORE POLLEN	LITHOLOGY	COMMENTS
CTS	2355-60	Low	V. low	-	-
SWC 82	2400.5	Good	Moderate	Calc. Sh.	C. annulatus, P. myriosporites.
CTS	2400-05	Fair	Low	-	C. annulatus.
CTS	2405-10	Low	Low	-	Dacrycarpites australiensis
SWC 78	2411.9	Good	Low	Calc. Sh.	C. annulatus
CTS	2410-15	Barren	-	-	-
CTS	2415-20		Moderate	Coal in cuttings	N. endurus, P. verrucosus
SWC 77	2415.0	Good	Low	Calc. slst.	C. annulatus, M. ornamentali
SWC 75	2418.0	Low	Low	Calc. slst.	C. annulatus.
SWC 74	2419.0	V. good	Low	Calc. slst.	C. annulatus frequent
CTS	2420-25	Barren	-	-	-
SWC 73	2420.5	Fair	High	Calc. slst.	C. annulatus, P. chenopodiaceoides, N. falcatus, reworked T. verrucosus
SWC 121	2423.0	V. low	Low	Slst, glau,	A. diktyoplokus, W. echinosuturatum
SWC 71	2425.5	V. low	V. low	Sh.	L. balmei frequent, P. langstonii
CTS	2425-30	Good	High	-	Mixed P. tuberculatus, N. asperus, L. balmei & T. longus Zone Palynofloras
SWC 70	2427.0	Insufficient material for palynological processing			
SWC 69	2428.0	Good	Moderate	Slst.	L. balmei common, V. kopukuensis
SWC 68	2429.5	Good	Moderate	Slst.	L. balmei common, T. verrucosus, reworked Eocene dinoflagellates
CTS	2430-35	Good	Moderate	-	L. balmei, J. pieratus, H. harrisii & reworked Late Cretaceous spp.
SWC 66	2433.0	Fair	Low	Sh.	L. balmei, V. kopukuensis, H. harrisii
CTS	2435-40	Fair	Moderate	-	L. balmei, T. verrucosus & reworked T. longus Zone spp.
SWC 65	2435.5	Good	Moderate	Sh.	
SWC 64	2438.5	Good	Moderate	Sh.	P. langstonii, abund. L. balmei
SWC 63	2440.0	Good	Moderate	Ss.	J. pieratus, H. harrisii
CTS	2440-45	Good	High	-	Includes caved N. asperus Zone spp.
SWC 62	2443.0	Good	Low	Sh.	T. verrucosus, abundant L. balmei.
SWC 61	2444.0	Good	Low	Slst.	L. balmei frequent
CTS	2445-50	V. low	V. low	-	reworked Mesozoic spp.
SWC 59	2447.0	Good	Moderate	Sh.	T. verrucosus, caved N. falcatus.
SWC 57	2450.0	V.good	Moderate	Sh.	L. balmei common, J. pieratus, T. verrucosus, T. multistrixus, H. harrisii
SWC 56	2451.8	Good	Moderate	Sh.,carb.	T. verrucosus, H. harrisii, abundant Australopollis obscurus

TABLE 3 : SUMMARY OF PALYNOLOGICAL ANALYSIS TERAGLIN-1, GIPPSLAND BASIN.

BASIC DATA

SAMPLE NO	DEPTH (M)	YIELD	DIVERSITY SPORE POLLEN	LITHOLOGY	COMMENTS
SWC 55	2453.0	Low	Low	Ss.	L. balmei, caved Eocene spp.
CTS	2455-60	Fair	Low	-	L. balmei
SWC 54	2456.0	Barren	-	Ss.	
CORE	2469.4	Barren	-	Sh.	
SWC 52	2479.5	V.low	V.low	Ss.	L. balmei
SWC 50	2493.0	V.low	V.low	Slst.	L. balmei
SWC 49	2494.5	V.low	V.low	Slst.	L. balmei
SWC 48	2499.4	V.low	V.low	Sh.	L. balmei
SWC 47	2552.0	Low	Moderate	Ss.	Abundant L. balmei & Proteacidites; V. kopukuensis, G. retiintexta
SWC 46	2553.5	Good	High	Ss.	Abundant L. balmei & G. retiintexta; S. australina
SWC 44	2622.0	Fair	Moderate	Sh.	H. harrisii, P. verrucosus, G. retiintexta
SWC 43	2645.9	Fair	Low	Sh.	I. integricorpus, V. kopukuensis
SWC 42	2672.0	Good	Low	Slst.	L. balmei, T. verrucosus, Deflandrea spp., P. angulatus
SWC 39	2741.5	Low	Moderate	Sh.	L. balmei, T. verrucosus, P. angulatus
SWC 38	2759.3	Good	Moderate	Sh.	L. balmei frequent, H. harrisii P. angulatus, A. homomorphum
SWC 37	2774.9	V.low	V.low	Slst.	P. pyrophorum
SWC 36	2788.5	Good	Good	Sh.	L. balmei frequent, I. antipodus P. pyrophorum, A. homomorphum
SWC 35	2793.6	Good	High	Slst.,carb.	Acritachs and B. otwayensis common
SWC 32	2826.5	Low	Moderate	Slst.	L. balmei & P. angulatus frequent; A. homomorphum rare.
SWC 31	2875.9	Good	High	Slst.	L. balmei & T. verrucosus frequent
SWC 120	2903.0	Low	Moderate	Slst.	P. amolosexinus, P. otwayensis L. balmei, T. verrucosus
SWC 119	2920.0	Fair	Moderate	Slst.	L. balmei, T. verrucosus; Late Cretacesus spores, Deflandrea speciosa
SWC 118	2937.0	Good	Low	Slst.	L. balmei, T. verrucosus, frequent Deflandrea spp.
SWC 117	2947.0	Low	Low	Slst.	P. langstoni, Deflandrea sp.
SWC 116	2957.0	Negligible spore-pollen			
SWC 114	3000.5	Low	Moderate	Slst.	G. rudata abundant, P. otwayensis T. longus
SWC 112	3051.0	Fair	High	Slst.	As for SWC 114 plus P. gemmatus, Q. brossus, T. lilliei, C. horrendus S. punctatus. Occasional dinoflagellates
SWC 111	3073.5	V.low	Moderate	Slst.	P. gemmatus, P. wahooensis, S. punctatus
SWC 110	3103.0	Good	Moderate	Ss.	G. rudata frequent, T. lilliei, T. waiparaensis
SWC 108	3120.0	V.low	Low	Sh., carb.	S. punctatus, T. verrucosus, T. lilliei

TABLE 3 : SUMMARY OF PALYNOLOGICAL ANALYSIS TERAGLIN-1, GIPPSLAND BASIN.

BASIC DATA

SAMPLE NO	DEPTH (M)	YIELD	DIVERSITY SPORE	DIVERSITY POLLEN	LITHOLOGY	COMMENTS
SWC 107	3135.5	V.low	Low		Coal	T. truswellii, T. waiparaensis
SWC 14	3169.0	Low	Moderate		Slst.	T. verrucosus, T. waiparaensis, T. lilliei
SWC 12	3201.9	Good	Low		Sh.	G. rudata abundant, P. gemmatus, P. otwayensis, T. verrucosus
SWC 9	3235.0	Good	High		Sh.	as for SWC 12 plus S. punctatus, P. wahooensis, P. reticuloconcavus, P. palisadus, T. securus, T. waiparaensis
SWC 7	3277.0	Barren	-		Ss., carb.	
SWC 5	3282.0	Low	Low		Ss.	T. verrucosus, P. wahooensis, T. waiparaensis
SWC 103	3295.0	Low	Low		Sh., carb.	G. rudata common, P. wahooensis, T. lilliei
SWC 2	3349.4	Fair	High		Slst.	G. rudata common, T. verrucosus, P. wahooensis, T. securus, P. otwayensis
SWC 1	3372.5	Low	Low		Ss.	G. rudata common

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