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PALYNOLOGICAL ANALYSIS,

VEILFIN-1, GIPPSLAND BASIN

by

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&

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PART 1

INTERPRETATIVE DATA

INTRODUCTION

In Veilfin-1 intersected Latrobe Group and basal Lakes Entrance Formation sediments ranging in age from Late Cretaceous (Lower T. longus Zone) to Early Miocene (P. tuberculatus Zone). The only apparent unconformity is between sidewall cores at 1983.0 m and 1986.0 m respectively where the age changes from Middle N. asperus Zone to P. tuberculatus Zone.

Floral yields range negligible to very good but were in general low. Best yields were obtained from Lower M. diversus Zone to P. asperopolus Zone interval. Quality of preservation decreases downhole.

In total seventy seven sidewall cores and four cuttings samples were examined.

SUMMARY

AGE	UNIT *	ZONE	DEPTH (m)
Early Miocene	LAKES ENTRANCE FM	P. tuberculatus	1980.0-1983.0
log break at 1985.0m			
Late Eocene	UN-NAMED GLAUCONITIC MARL	Middle N. asperus	1986.0
log break at 1988.0m			
Late Eocene	GURNARD FM. [MEMBER A]	Middle N. asperus	1990.0-1999.5
log break at 2000.0m			
Late Eocene	GURNARD FM. [MEMBER B]	Lower N. asperus	2002.6-2024.0
log break at 2025.0m			
Middle Eocene	LATROBE GROUP (coarse clastics)	Lower N. asperus	2026.0
Early Eocene		P. asperopolus	2030.3-2136.5
Early Eocene		Upper M. diversus	2172.0-2188.9
		Middle M. diversus	2226.1-2355.5
		Lower M. diversus	2399.0-2430.0
		Upper L. balmei	2437.1-2713.0
		Lower L. balmei	2765.0-2891.1
		Upper T. longus	3034.5-3325
		Lower T. longus	3350-3494

T.D. 3521.0m

* Units and boundaries after Rexilius (1984)

GEOLOGICAL COMMENT

The recognition of Middle N. asperus Zone from a glauconitic marl (sidewall core 201 at 1986.0m) is somewhat disconcerting as this lithology is normally associated with the Late Entrance Formation of Oligocene and younger age. However, as recorded in the summary data table the top-most confident Middle N. asperus Zone ages is at 1996.1m within the Gurnard "formation" member A of Rexilius (1984). Samples above this level are largely assigned to Middle N. asperus Zone because they lack Upper N. asperus Zone indicators. If some of this section really is Upper N. asperus Zone in age then the apparent unconformity disappears.

DISCUSSION OF ZONES

The zone boundaries have been established using criteria proposed by Stover and Evans (1974), Stover and Partridge (1973) and Partridge (1976) with subsequent proprietary revisions including Macphail (1983).

1) Lower T. longus Zone (Maastrichtian) 3494.0m - 3350.55m

The lowermost sample in the well is assigned a Lower T. longus Zone age on the basis of frequent Gambierina rudata plus Tricolpites longus. Proteacidites reticuloconcavus, Proteacidites wahooensis and Triporopollenites sectilis occur in this sample.

No other sample can be assigned to this zone with the same confidence. In fact many are recorded as being T. longus in age simply because they contain frequent to common G. rudata. The topmost sample assigned to the zone is from cuttings at 3350-55m containing G. rudata (common) and Tetracolporites verrucosus but not Stereisporites punctatus.

2) Upper T. longus Zone (Maastrichtian) 3320.25m - 3045.5m

The base of the Upper T. longus Zone is placed at 3320.25m, at the first appearance of S. punctatus. However, since this is a cuttings sample it carries only a low degree of confidence. The base can be placed with more certainty at 3283.0m. This sidewall core contains S. punctatus, Proteacidites gemmatus, T. verrucosus, and Gambierina edwardsii. Floral assemblages from this zone are typically poorly preserved and of low yields.

The youngest sample assigned with a high confidence to the Upper T. longus Zone is sidewall core 71 at 3117.5m which contains frequent G. rudata plus S. punctatus and T. verrucosus. A sidewall core at 3045.5m is also assigned to the Upper T. longus Zone but with a reduced degree of confidence because the assemblage includes Sterisporites regium and Tricolpites waiparaensis.

3) Lower L. balmei Zone (Early-Late Paleocene) 2891.1m - 2765.0m

Sidewall core 108 at 2891.1 containing Lygistepollenites balmei, G. rudata and frequent T. verrucosus is recognised as the base of the Lower L. balmei Zone. Sidewall core 103 at 2916.0m is recorded as being no younger than Lower L. balmei Zone. The preservation of samples from this zone is a slight improvement on the material recovered from the underlining zones. Floral yields remain generally low.

4) Upper L. balmei Zone (Late Paleocene) 2713.0m - 2437.1m

The Upper/Lower L. balmei Zone boundary lies between sidewall cores at 2.713.0m and 2765.0m. The basal sample assigned to the Upper zone contains Proteacidites grandis and the dinoflagellate species Apectodinium homomorpha. L. balmei is common-frequent throughout the zone. Proteacidites annularis makes sporadic appearances throughout the zone and Verrucosisporites kopukuensis makes its only appearance in sidewall core 142 at 2584.5. The topmost sample (sidewall core 153 at 2437.1m) is confidently assigned to this zone containing as it does common L. balmei plus Nothofagidites endurus, Proteacidites incurvatus and G. rudata. Floral preservation and yields increase upsection.

5) Lower M. diversus Zone (Early Eocene) 2430.0m - 2399.0m

The basal two samples are assigned to this zone largely on the presence of Cupanieidites orthoteichus. The younger sample, however, has a high confidence rating (= 0). Since it contains common Malvacipollis diversus, Spinozonocolpites prominatus, Crassiretitriletes vanraadshoovenii, C. orthoteichus plus the dinoflagellate species Apectodinium hypercantha and Fibrocysta bipolare. These species unequivocally place the sample in the Lower M. diversus Zone (A. hypercantha dinoflagellate zone) and makes it equivalent to the onshore Rivernook member. Despite its certain age determination this final sample has the poorest preservation and lowest yield of the three samples assigned to the Lower M. diversus Zone.

6) Middle M. diversus Zone (Early Eocene) 2355.5m - 2226.1m

No samples can be assigned to the Middle M. diversus zone with a high degree of confidence. The appearance of Proteacidites tuberculotumulatus and Tricolporites adelaidensis in sidewall core 160 at 2355.5m is taken as the base of the zone. The presence of Tricolporites moultonii, Myrtaceidites tenuis and several other species of Proteacidites are sufficient to assign the other samples to this zone.

7) Upper M. diversus Zone (Early Eocene) 2188.9m - 2172 Om

Only two samples are assigned to this zone. The lowermost one (sidewall core 171 at 2188.9m) can only be dated as no older than Upper M. diversus since in contains M. tenuis and Proteacidites pachypolus. Proteacidites ornatus demonstrates the sample is no younger than P. asperopolus Zone in age.

8) P. asperopolus Zone (Early Eocene) 2136.5m - 2030.3m

The presence of Proteacidites asperopolus without a varied Nothofagidites assemblage is sufficient for this zonal determination. Samples containing M. tenuis are assigned to this zone more confidently.

One exception is sidewall core 182 at 2030.3m which although containing P. asperopolus and M. tenuis also has a large admixture of Nothofagidites species (N. falcatus, N. emarcidus/heterus). This is probably due to downhole contamination. Nevertheless the zonal assignment is given a low confidence rating.

9) Lower N. asperus (Middle Eocene) 2026.0m - 2002.6m

The first appearance of Tricolpites simatus in a nothofagidites dominated assemblage in sidewall core 183 at 2026.0m is enough to provide a low confidence zone base. The dinoflagellate species A. diktyoplokus characteristic of the Lower N. asperus Zone occurs sporatically through the zone and the presence of this species increases the confidence in the age determination.

10) Middle N. asperus Zone (Late Eocene) 1999.5m - 1986.0m

Most samples are assigned to this zone with only a low degree of confidence. The zonal assignment relying on the presence of a varied Nothofagidites flora and the absence of either Upper or Lower N. asperus Zone indicators.

A high confidence however is assigned to SWC 197 at 1996.1m which yielded a diverse dinoflagellate flora including *Vozzhennikovia extensa*, *Corrudinium corrugatum* and *Corrudinium incompositum*.

11) *P. tuberculatus* Zone (Oligocene) 1980.0m - 1983.0m

The presence of *Cyatheacidites annulatus* in both samples assigned to this zone is sufficient for a very confident zone determination. The Early Miocene age follows the foraminiferal age dating by Rexilius (1984).

REFERENCES

MACPHAIL, M.K., 1983. A revision of the Maastrichtian T. longus Zone based on palynological data from the Hapuku-1 and Pilotfish-1A wells, Gippsland Basin. Esso Australia Ltd, Palaeontological Report 1983/19.

PARTRIDGE, A.D. 1976. The geological expression of eustacy in the Early Tertiary of the Gippsland Basin. APEA J. 16, 73-79.

REXILIUS, J.P., 1984. Foramniferal analysis of Veilfin-1, Gippsland Basin, Victoria. Esso Australia Ltd, Palaeontological Report 1984/21.

STOVER, L.E. & EVANS, P.R., 1974. Upper Cretaceous spore-pollen zonation, offshore Gippsland Basin, Australia. Spec. Publ. Geol. Soc. Aust., 4, 55-72 (imprint 1973).

STOVER, L.E. & PARTRIDGE, A.D., 1973. Tertiary and Late Cretaceous spores and pollen from the Gippsland Basin, Southeastern Australia. Proc. Roy. Soc. Vict., 85, 237-86.

PALYNOLOGY DATA SHEET

BASIN: GIPPSLAND ELEVATION: KB: 21.0 GL: -65.0

WELL NAME: VEILFIN-1 TOTAL DEPTH: 3521

AGE	PALYNOLOGICAL ZONES	HIGHEST DATA Preferred Depth	Rtg	Alternate Depth	Rtg	Two Way Time	LOWEST DATA Preferred Depth	Rtg	Alternate Depth	Rtg	Two Way Time
NEOGENE	*T. pleistocenicus*										
	M. lipsis										
	C. bifurcatus										
	T. bellus										
PALEOGENE	*P. tuberculatus*	1980.0	0				1983.0	0			
	Upper *N. asperus*										
	Mid *N. asperus*	1986.0	2				1999.5	2	1996.1	0	
	Lower *N. asperus*	2002.6	0				2026.0	2			
	P. asperopolus	2030.3	2	2033.5	1		2136.5	0			
	Upper *M. diversus*	2172.0	1				2188.9	2	2172.0	1	
	Mid *M. diversus*	2226.1	2				2355.5	1			
	Lower *M. diversus*	2399.0	0				2430.0	2			
	Upper *L. balmei*	2437.1	0				2713.0	2			
	Lower *L. balmei*	2765.0	1				2891.1	1	2821.1	2	
LATE CRETACEOUS	*T. longus*	3045.5	2	3117.5	0		3494.0	1			
	T. lilliei										
	N. senectus										
	U. *T. pachyexinus*										
	L. *T. pachyexinus*										
	C. triplex										
	A. distocarinatus										
EARLY CRET.	*C. paradoxus*										
	C. striatus										
	F. asymmetricus										
	F. wonthaggiensis										
	C. australiensis										
	PRE-CRETACEOUS										

COMMENTS: The Upper/Lower T. longus boundary lies between SWC 14 at 3283.0 and SWC 2 at 3478.0m.

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. Hannah/M. Macphail DATE: 14/12/84

DATA REVISED BY: DATE:

TABLE 1: INTERPRETATIVE DATA SUMMARY. WELL IN-1

DEPTH	SWC	PRESERVATION	PALYNOMORPH YIELD	ZONE (Confidence rtg)	AGE	COMMENTS
1980.0	203	Good	Low	*P. tuberculatus* (0)	Oligocene	*Cyatheacidites annulatus*
1983.0	202	Fair-Good	Low	*P. tuberculatus* (0)	Oligocene	*C. annulatus*, *Foveotriletes crater*
1986.0	201	Good	Very Low	Middle *N. asperus* (2)	Late Eocene	*Nothofagidites falcatus*, *Proteacidites pachypolus*
1988.0	200	Poor-Fair	Neglig.	Indeterminate		
1990.0	199	Fair	Very Low	Middle *N. asperus* (2)	Late Eocene	*Proteacidites tuberculatus*
1992.3	198	Fair	Neglig.	*N. asperus*		Zone subdivision undifferentiated
1996.1	197	Good	Good	Middle *N. asperus* (0)	Late Eocene	*P. pachypolus*, *P. rectomarginis* & dinoflagellate species *Vozzhennikovia extensa*, *Corrudinium corrugatum*, *Corrudinium incompositum*
1999.5	196	Fair	Good	Middle *N. asperus* (2)	Late Eocene	*N. falcatus*, *P. pachypolus*, *C. corrugatum*
2002.6	195	Fair	Fair-Good	Lower *N. asperus* (0)	Mid Eocene	*N. falcatus* and dinoflagellate species *Areosphaeridium diktyoplokus*
2004.0	194	Good	Neglig.	Indeterminate		
2005.9	193	Good	Neglig.	Indeterminate		

DEPTH	SWC	PRESERVATION	PALYNOMORPH YIELD	ZONE (Confidence rtg)	AGE	COMMENTS
2008.0	192	Poor	Moderate	Lower N. asperus (0)	Mid Eocene	N. falcatus, A. diktyoplokus
2009.0	191	Fair	Good	Lower N. asperus (0)	Mid Eocene	Tricolpites simatus, A. diktyoplokus
2014.1	189	Good	Low	Lower N. asperus (0)	Mid Eocene	Proteacidites asperopolus, A. diktyoplokus
2017.5	187	Fair	Neglig.	N. asperus		Zone subdivision undifferentiated
2020.0	186	Good	Very Low	Indeterminate		
2022.0	185	Good	Very Good	Lower N. asperus (0)	Mid Eocene	Abundant, varied Nothofagidites assemblage, P. asperopolus, T. simatus, Tricolporites delicatus
2024.0	184	Fair	Very Low	Lower N. asperus (2)	Mid Eocene	Nothofagidites, emarcidus/heterus
2026.0	183	Good	Very Low	Lower N. asperus (1)	Mid Eocene	T. simatus
2030.3	182	Good	Very Good	P. asperopolus (2)	Early Eocene	Myrtaceidites tenius, P. asperopolus plus mixing of N. asperus Zone flora. (N. falcatus, N. emarcidus/heterus)
2033.5	181	Good	Low	P. asperopolus (0)	Early Eocene	M. tenuis, P. asperopolus

TABLE 1: INTERPRETATIVE DATA SUMMARY: VEILFIN-1

DEPTH	SWC	PRESERVATION	PALYNOMORPH YIELD	ZONE (Confidence rtg)	AGE	COMMENTS
2043.0	180	Poor	Low	Indeterminate		
2118.5	176	Fair-Good	Very Good	P. asperopolus	(1) Early Eocene	M. tenuis, P. asperopolus
2136.5	174	Fair-Good	Very Good	P. asperopolus	(0) Early Eocene	Clavastephanocolporites meleosus, P. asperopolus
2172.0	172	Fair	Good	Upper M. diversus	(1) Early Eocene	M. tenuis, Proteacidites crassus, Proteacidites pachypolus
2188.9	171	Very Good	Very Good	Upper M. diversus M. diversus	(2) Early Eocene	M. tenuis, P. pachypolus
2226.1	168	Fair	Very Good	Middle M. diversus	(2) Early Eocene	Malvacipollis diversus, Proteacidites leightonii, Proteacidites ornatus
2259.2	166	Fair	Good	Middle M. diversus	(2) Early Eocene	Proteacidites tuberculotumulatus, Tricolpites moultanii, M. tenuis
2328.0	162	Poor-Good	Good	Middle M. diversus	(2) Early Eocene	T. moultanii
2355.5	160	V.Poor-Fair	Fair	Middle M. diversus	(2) Early Eocene	P. tuberculotumulatus, Tricolporites adelaidensis

TABLE 1: INTERPRETATIVE DATA SUMMARY: VEILFIN-1

DEPTH	SWC	PRESERVATION	PALYNOMORPH YIELD	ZONE (Confidence rtg)	AGE	COMMENTS
2399.0	156	Poor-Fair	Low	Lower M. diversus (0)	Early Eocene	A. hyperacantha Zone; M. diversus common, Spinizonocolpites prominatus, Crassiretitriletes vanraadshoovenii, Cupanieidites orthoteichus and dinoflagellate species Apectodinium hypercantha, Fibrocysta bipolare
2412.7	155	Good	High	Lower M. diversus (2)	Early Eocene	C. orthoteichus
2430.0	154	Moderate	Moderate	Lower M. diversus (2)	Early Eocene	C. orthoteichus, P. pachypolus
2437.1	153	Fair	Fair	Upper L. balmei (0)	Late Paleocene	Common Lygistepollenites balmei, Nothofagidites endurus, Proteacidites incurvatus, Gambierina rudata
2480.2	150	Very Poor	Good	Upper L. balmei (1)	Late Paleocene	L. balmei (common) Proteacidites annularis

TABLE 1: INTERPRETATIVE DATA SUMMARY: VEILFIN-1

DEPTH	SWC	PRESERVATION	PALYNOMORPH YIELD	ZONE (Confidence rtg)		AGE	COMMENTS
2528.0	146	Good	Good	L. balmei	(1)		L. balmei (frequent) Polycolpites langstonii, Integricorpus antipodus
2584.5	142	Fair	Fair	Upper L. balmei	(1)	Late Paleocene	L. balmei (frequent) P. annularis, Verrucosisporites kopukuensis
2640.0	138	Fair	High	Indeterminate			
2644.0	137	Fair	Good	Upper L. balmei	(2)	Late Paleocene	L. balmei (common), N. endurus
2678.0	135	Very Poor	Fair	L. balmei			L. balmei (common) & dinoflagellate species Glaphyrocysta retiintexta, Palaeocystodinium golzowense
2683.9	134	Fair	Good	Upper L. balmei	(2)	Late Paleocene	L. balmei (abundant), Australopollis obscurus, Gleicheniidites circinidites, P. langstonii
2709.0	131	Very Poor	Neglig.	Indeterminate			
2713.0	130	Very Poor	Low	Upper L. balmei	(2)	Late Paleocene	Proteacidites grandis & dinoflagellate species: Apectodinium homomorpha

TABLE 1: INTERPRETATIVE DATA SUMMARY: VEILFIN-1

DEPTH	SWC	PRESERVATION	PALYNOMORPH YIELD	ZONE (Confidence rtg)	AGE	COMMENTS
2719.0	129	Poor	Low	Indeterminate		
2747.0	125	Poor	Low	Indeterminate		
2765.0	122	V. Poor	Fair	Lower L. balmei (2)	Early-Late Paleocene	L. balmei (common), G. retiintexta
2780.6	121	Good	Low	Lower L. balmei (2)	Early-Late Paleocene	L. balmei, G. rudata, A. obscurus, Proteacidites anguatus, Haloragacidites harrisii
2787.6	120	Fair	Fair	Lower L. balmei (2)	Early-Late Paleocene	L. balmei, Juxtacolpus peiratus
2805.2	117	Poor	Low	Indeterminate		
2821.1	115	Very Poor	Very Low	Lower L. balmei (2)	Early-Late Paleocene	G. rudata, T. verrucosus
2891.1	108	Fair	Good	Lower L. balmei (1)	Early-Late Paleocene	L. balmei, G. rudata, Tetracolporites verrucosus
2901.5	105	Poor	Low	Indeterminate		
2916.0	103	Very Poor	Very Low	No younger than Lower L. balmei		Proteacidites gemmatus, L. balmei

DEPTH	SWC	PRESERVATION	PALYNOMORPH YIELD	ZONE (Confidence rtg)		AGE	COMMENTS
2937.0	100	Poor	Very Low	Indeterminate			
2942.0	99	Very Poor	Very Low	Indeterminate			
2947.0	98	Very Poor	Very Low	Indeterminate			
2984.8	92	Very Poor	Very Low	Indeterminate			
3045.5	83	Very Poor	Low	Upper *T. longus*	(2)	Late Cretaceous	*Stereisporites regium*, *Tricolpites waiparaensis*
3088.0	76	Very Poor	Low	*T. longus*			*G. rudata* (common)
3099.5	73	Poor	Low	*T. longus*			*G. rudata* (common)
3117.5	71	Very Poor	Low	Upper *T. longus*	(0)	Late Cretaceous	frequent *G. rudata*, *Stereisporites punctatus*, *T. verrucosus*
3139.0	66	Poor	Low	Indeterminate			
3158.2	60	Very Poor	Low	Upper *T. longus*	(2)	Late Cretaceous	*G. rudata* (common), *Proteacidites molosexinus*, *Proteacidites otwayensis*, *T. verrucosus*
3178.0	56	Poor	Very Low	Indeterminate			
3206.0	29	Very Poor	Very Low	*T. longus*			

DEPTH	SWC	PRESERVATION	PALYNOMORPH YIELD	ZONE (Confidence rtg)		AGE	COMMENTS
3234.0	28	Very Poor	Neglig.	Upper T. longus	(0)		S. punctatus, T. verrucosus, G. rudata
3240.2	19	Poor	Very Low	Indeterminate			
3247.3	18	Very Poor	Very Low	Upper T. longus	(2)		S. punctatus, Tricolpites sabulosus
3267.8	16		Barren				
3283.0	14	Very Poor	Low	Upper T. longus	(0)		G. edwardsii, Proteacidites cleinei, P. gemmatus, S. punctatus, T. verrucosus
3331.0	12	Very Poor	Very Low	Indeterminate			
3320-25	CTS	Poor	Low	Upper T. longus	(3)		S. punctatus, T. verrucosus
3340-45	CTS	Very Poor	Low	T. longus			G. rudata (common), T. verrucosus
3350-55	CTS	Very Poor	Low	Lower T. longus	(3)		G. rudata (common), T. verrucosus
3365-70	CTS	Very Poor	Low	T. longus			G. rudata (abundant), P. cleinei
3414.1	6	Very Poor	Low	T. longus		Late Cretaceous	G. rudata (abundant)
3432.0	5	Very Poor	Very Low	T. longus		Late Cretaceous	G. rudata (common)
3435.6	4	Very Poor	Very Low	T. longus		Late Cretaceous	T. verrucosus, G. edwardsii

DEPTH	SWC	PRESERVATION	PALYNOMORPH YIELD	ZONE (Confidence rtg)		AGE	COMMENTS
3459.0	3	Poor	Low	no younger than Upper *T. longus*		Late Cretaceous	*G. rudata*, *Proteacidites palisadus*
3478.0	2	Poor	Moderate	Lower *T. longus*	(2)	Late Cretaceous	*G. rudata* (abundant)
3494.0	1	Very Poor	Very Low	Lower *T. longus*	(1)	Late Cretaceous	*G. rudata* (frequent), *Proteacidites reticuloconcavus*, *Proteacidites wahooensis*, *Tricolpites longus*, *Triporopollenites sectilus*

PART 2

BASIC DATA

TABLE 3: BASIC DATA SUMMARY

DISTRIBUTION CHARTS

TABLE 3: BASIC DATA SUMMARY: VEILFIN-1

DEPTH	SWC	PRESERVATION YIELD	PALYNOMORPH YIELD
1980.0	203	Good	Low
1983.0	202	Fair-Good	Low
1986.0	201	Good	Very Low
1988.0	200	Poor-Fair	Neglig.
1990.0	199	Fair	Very Low
1992.3	198	Fair	Neglig.
1996.1	197	Good	Good
1999.5	196	Fair	Good
2002.6	195	Fair	Fair-Good
2004.0	194	Good	Neglig.
2005.9	193	Good	Neglig.
2008.0	192	Poor	Moderate
2009.0	191	Fair	Good
2014.1	189	Good	Low
2017.5	187	Fair	Neglig.
2020.0	186	Good	Very Low
2022.0	185	Good	Very Good
2024.0	184	Fair	Very Low
2026.0	183	Good	Very Low
2030.3	182	Good	Very Good
2033.5	181	Good	Low
2043.0	180	Poor	Low
2118.5	176	Fair-Good	Very Good
2136.5	174	Fair-Good	Very Good
2172.0	172	Fair	Good
2188.9	171	Very Good	Very Good
2226.1	168	Fair	Very Good
2259.2	166	Fair	Good

TABLE 3: BASIC DATA SUMMARY: VEILFIN-1

DEPTH	SWC	PRESERVATION YIELD	PALYNOMORPH YIELD
2328.0	162	Poor-Good	Good
2355.5	160	V.Poor-Fair	Fair
2399.0	156	Poor-Fair	Low
2412.7	155	Good	High
2430.0	154	Moderate	Moderate
2437.1	153	Fair	Fair
2480.2	150	Very Poor	Good
2528.0	146	Good	Good
2584.5	142	Fair	Fair
2640.0	138	Fair	High
2644.0	137	Fair	Good
2678.0	135	Very Poor	Fair
2683.9	134	Fair	Good
2709.0	131	Very Poor	Neglig.
2713.0	130	Very Poor	Low
2719.0	129	Poor	Low
2747.0	125	Poor	Low
2765.0	122	V. Poor	Fair
2780.6	121	Good	Low
2787.6	120	Fair	Fair
2805.2	117	Poor	Low
2821.1	115	Very Poor	Very Low
2891.1	108	Fair	Good
2901.5	105	Poor	Low
2916.0	103	Very Poor	Very Low
2937.0	100	Poor	Very Low
2941.0	99	Very Poor	Very Low
2947.0	98	Very Poor	Very Low

TABLE 3: BASIC DATA SUMMARY: VEILFIN-1

DEPTH	SWC	PRESERVATION YIELD	PALYNOMORPH YIELD
2984.8	92	Very Poor	Very Low
3045.5	83	Very Poor	Low
3088.0	76	Very Poor	Low
3099.5	73	Poor	Low
3117.5	71	Very Poor	Low
3139.0	66	Poor	Low
3158.2	60	Very Poor	Low
3178.0	56	Poor	Very Low
3206.0	29	Very Poor	Very Low
3234.0	28	Very Poor	Neglig.
3240.23	19	Poor	Very Low
3247.3	18	Very Poor	Very Low
3267.8	16		Barren
3283.0	14	Very Poor	Low
3331.0	12	Very Poor	Very Low
3320.25	CTS	Poor	Low
3340.45	CTS	Very Poor	Low
3350.55	CTS	Very Poor	Low
3365.70	CTS	Very Poor	Low
3414.1	6	Very Poor	Low
3432.0	5	Very Poor	Very Low
3435.6	4	Very Poor	Very Low
3459.0	3	Poor	Low
3478.0	2	Poor	Moderate
3494.0	1	Very Poor	Very Low