APPENDIX 1

PALYNOLOGICAL ANALYSIS OF MOONFISH-1 AND MOONFISH-1, SIDETRACK-1 GIPPSLAND BASIN

by

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INTERPRETED DATA

INTRODUCTION

A total of 58 palynological samples have been analysed from the Moonfish-1 well. From the original Moonfish-1 hole 4 conventional core samples and 26 cuttings samples were analysed. From the Moonfish-1, Sidetrack-1 hole 21 sidewall cores and 7 cuttings samples were analysed.

A set of four urgent samples were processed at the Department of Geography at Monash University on 18 June 1992. All other samples were processed in Perth by Laola Pty Ltd between June and August 1992. From the cuttings and conventional cores approximately 15 or 20 grams of sample was processed, while from the sidewall cores, because of their limited size, between 7 and 16 grams (average 11g) of sample was processed. Overall residue yields from the samples was moderate to high, palynomorph concentration mostly moderate and preservation poor to fair.

In the Latrobe Group and basal Seaspray Group average spore-pollen diversity was 22+ species in the sidewall cores, 18+ species in the cuttings and a low 10 species in the conventional core samples. Microplankton diversity was consistently very low from the Latrobe Group with the most consistent species being caved or interpreted as contamination. In contrast the two sidewall cores from the Seaspray Group both contained moderate diversity assemblages. From the Kipper Shale of the Golden Beach Group *insitu* spore-pollen diversity averaged a low 9 species while associate microplankton averaged 5 species per sample.

Lithological units and palynological zones from the base of the Lakes Entrance Formation to Total Depth are given in the following summary. The interpretative data with zone identifications and Old and New Confidence Ratings are recorded in Tables 1 and 2 and basic data on residue yields, preservation and diversity are recorded in Tables 3 to 5. All species that could be identified with binomial names (and which are not obviously caved species) are tabulated on the six accompanying range charts for spore-pollen and microplankton. Relinquishment lists for palynological slides and residues from samples analysed in the original Moonfish-1 and the Sidetrack-1 are provided at the end of the report.

All depths given in the report are measured depths in the respective boreholes. No summary is provided of data as TVDSS (True Vertical Depth Subsea).

PALYNOLOGY SUMMARY FOR MOONFISH-1 AND SIDETRACK-1

ALL DEPTHS ON SUMMARY ARE MEASURED DEPTHS IN RESPECTIVE BOREHOLES

AGE	UNIT/FACIES	MOONFISH-1		SIDETRACK-1	
		SPORE-POLLEN ZONES (MICROPLANKTON ZONES)	DEPTHS (mKB)	SPORE-POLLEN ZONES (MICROPLANKTON ZONES)	DEPTHS (mKB)
MIOCENE?	SEASPRAY GROUP	NOT SAMPLED		*P. tuberculatus*	1548-1603
MIDDLE EOCENE	LATROBE GROUP Undifferentiated coastal plain facies of sands, shales & coals	NOT SAMPLED		Lower *N. asperus*	1662
EARLY EOCENE				Upper *M. diversus*	1699
EARLY EOCENE				Lower *M. diversus*	1872-1913
LATE PALEOCENE				Upper *L. balmei*	1971-2017
EARLY PALEOCENE		Lower *L. balmei*	2135-2315	Lower *L. balmei*	2093-2338
MAASTRICHTIAN		Upper *T. longus*	2450-2530	Upper *T. longus*	2415-2575
MAASTRICHTIAN		NOT INTERSECTED		Lower *T. longus*	2664-2670
CAMPANIAN				*T. lilliei*	2725-2755
CONIACIAN TO TURONIAN	GOLDEN BEACH GROUP Kipper Shale	*P. mawsonii* *(R. kipperii)*	2680-3040 (2680-3040)	NOT PENETRATED	

GEOLOGICAL COMMENTS

1. The oldest rocks penetrated in the Moonfish-1 well were intersected in the original deviated hole between approximately 2625m to T.D. The thick predominantly shaly unit over this interval was found to have a Coniacian to Turonian age based on a characteristic lacustrine algae assemblage referred to the *R. kipperii* Microplankton Zone. The associate spore-pollen assemblage is referred to the *P. mawsonii* Zone. The unit is therefore correlated with the Kipper Shale formation within the Golden Beach Group.

2. Two sets of cuttings from within the above Kipper Shale gave a spurious younger age and are now considered to have been poorly collected as they are dominated by down-hole cavings.

   The samples concerned at 2650-55m and 2770-75m were independently processed by the author (cuttings A) and Laola Pty Ltd (cuttings B) as urgent samples while the well was drilling. Both sets of cuttings gave good yields of diverse, well preserved spore-pollen assemblages which were confidently assigned to the Upper *T. longus* Zone. However cuttings samples processed subsequently have in marked contrast yielded good *P. mawsonii* and *R. kipperii* Zone assemblages as shallow as 2680m. The latter assemblages display a noticeable maturation increase reflected in a darkening or carbonisation of the spore-pollen compared to the overlying Upper *T. longus* and Lower *L. balmei* Zones. Based on this difference in maturation/carbonisation it is clear that the cuttings assigned to the *P. mawsonii/R. kipperii* Zones are only moderately contaminated with down-hole caving.

   When reinspection of the cuttings at 2650-55m and 2770-75m confirmed the original Upper *T. longus* Zone assemblages without any trace of a darker carbonised component it was surmised that these urgent samples, which were sent from the rig <u>before</u> they were washed and dried, had been poorly collected and are badly contaminated with down-hole cavings.

3. The algal cysts in the Kipper Shale in Moonfish-1 are dominated by the species *Rimosicysta concava, R. cucullata* and *Wuroia corrugata* which were described from Sunfish-1. The association of these three species has not been recorded from either Kipper-1 (Marshall, 1989) or Admiral-1 (Partridge, 1990b). Although there may be some environmental control which could explain the absence of this association from the latter wells it is considered more likely that the Kipper Shale intersected in Sunfish-1 and Moonfish-1 is stratigraphically <u>either</u> younger or older than the Kipper Shale intersected in Kipper-1 and Admiral-1.

4. Due to drilling difficulties sidewall cores were only shot in Sidetrack-1. Whilst coverage is adequate, but not good, through the Late Cretaceous and Palaeocene it is clearly inadequate to identify all the zones likely to be present in Eocene section from 1971m (top *L. balmei* Zone sample) to the top of the Latrobe Group at 1606m. Only 4 samples were available for analysis over this 365 metre interval which is likely to encompass 7 spore-pollen zones. These zones could be identified by selectively sampling the cuttings, especially the coals. The latter lithology tends to wash out the mud system fairly quickly and by using density separation techniques can be floated off from the other cuttings lithologies in the laboratory to give reasonably depth reliable samples for analysis.

5. Another interval worthy of additional analysis on cuttings is between 2338m (base of *L. balmei* Zone) to 2415m (top of *T. longus* Zone) as this interval must contain the K/T (Cretaceous/Tertiary) boundary. Better locating this boundary is important as a datum horizon for cross-sections and for correlation across the basin. From inspection of the gamma/bulk density/neutron porosity logs it is considered likely the boundary should lie in the shale package between 2401-2415m.

6. Because of the limited sampling the important *A. hyperacanthum* dinoflagellate Zone was not found. It should be present as it was found in the Sweetlips-1 well to the immediate north and more landward of Moonfish-1. The predominantly spore-pollen assemblages recorded from the sidewall core at 1913m is similar to the spore-pollen assemblage from the *A. hyperacanthum* Zone in Sweetlips-1 but lacks diagnostic dinoflagellates. It is suggested that in Sidetrack-1 the *A. hyperacanthum* Zone should lie within the shaly package between 1919-1939m. This shale is the most likely candidate for the "condensed marine section" associated with the zone as it lacks coals in contrast to the overlying and underlying shaly units.

7. The sidewall core at 1872m is unusual as it contained a suite of algae which are similar to those found in the Kipper Shale. It is interpreted to represent a fresh water lake. As the shale sampled is less than 8 metres thick (1865.6-1873m) and lie below a 1.5 metre coal it is likely the lake was of only short duration and therefore fairly local.

8. The Gurnard Formation was not sampled in Moonfish-1 but on log character it is likely to lie between 1605.5-1611.5m or 1605.5-1620.5m.

BIOSTRATIGRAPHY

Zone and age determinations are based on the spore-pollen zonation scheme proposed by Stover & Partridge (1973), partially modified by Stover & Partridge (1982) and Helby, Morgan & Partridge (1987), and a dinoflagellate zonation scheme which has only been published in outline by Partridge (1975, 1976). Other modifications and embellishments to both zonation schemes can be found in the many palynological reports on the Gippsland Basin wells drilled by Esso Australia Ltd. Unfortunately this work is not collated or summarised in a single report.

Author citations for most spore-pollen species can be sourced from Stover & Partridge (1973, 1982), Helby, Morgan & Partridge (1987) or other references cited herein. Author citations for dinoflagellates can be found in Lentin & Williams (1985, 1989). Species names followed by "ms" are unpublished manuscript names. Note also that certain zone names have not been altered to conform with recent nomenclature changes to nominated species such as *Forcipites* (al. *Tricolpites*) *longus* (Stover & Evans) Dettmann & Jarzen 1988.

Phyllocladidites mawsonii **Zone**	**Coniacian**
and	**to**
Rimosicysta kipperii **Microplankton Zone**	**Turonian.**

Spore-pollen assemblages characteristic of the *P. mawsonii* Zone in association with the highly characteristic algal cyst assemblages of the *R. kipperii* Microplankton Zone were found in the original Moonfish-1 hole where they are recorded in 10 cuttings samples between 2680-3040m.

The spore-pollen recorded on Chart 3 are those species considered to be *insitu* and not caved from higher in the well. Although individual samples have a low average diversity of 9+ species of spore-pollen the overall diversity in the zone (excluding obvious caved or reworked species) is high with 38 species recorded. Species considered restricted to or ranging no younger than this zone are unfortunately very rare and are considered to only be represented by *Rugulatisporites admirabilis* ms (at 2810m), *Interulobites intraverrucatus* (at 2680m) and the small variety of *Dilwynites granulatus* which was recorded from about half of the samples. The assemblages can, however, also be characterised by *P. mawsonii* in 80% of the samples, and the consistent presence of *Cyathidites australis*, *Cicatricosisporites* spp., *Corollina torosa* and the more frequent occurrence of reworked Permian spore-pollen than is typical of the overlying Latrobe Group sediments. Although some of these species are known to range into younger rocks the specimens recorded are considered to come from this section because they are more carbonised and therefore darker than specimens found in the overlying Upper *T. longus* and *L. balmei* Zones in Moonfish-1.

The microplankton assemblages are dominated by the algal cysts *Rimosicysta* spp. and *Wuroia* spp. characteristic of the Kipper Shale. Diversity in individual samples is very low at 5 species but overall diversity is moderate at 14 species. The eponymous species *R. kipperii* is present in 4 of the samples but more consistent is the occurrence of *R. concava*, *R. cucullata* and *Wuroia corrugata* which are recorded from Sunfish-1 but not from the "type" section of the Kipper Shale in Kipper-1 (Marshall, 1989).

***Tricolporites lilliei* Zone** **Late Campanian.**

The *T. lilliei* spore-pollen Zone is recorded from two sidewall cores and a cuttings sample over the interval 2752-2765m in Sidetrack-1. The samples contain the characteristic species *Tricolporites lilliei*, *Triporopollenites sectilis* and frequent to common *Nothofagidites senectus* but lack *T. longus* Zone indicators. The presence of *Forcipites stipulatus* Dettmann & Jarzen 1988 at 2752m which is not considered to range above the *T. lilliei* Zone is used to favour this zone assignment against a younger age based on the common occurrence of *Gambierina rudata* in the sample. The latter species is more typically abundant in the younger *T. longus* Zones.

The deepest cuttings sample at 2801m appears dominated by caved specimens and is best considered indeterminate, while the limited assemblage recorded from SWC-3 at 2730m is also zone indeterminate. The few microplankton recorded over the interval 2730-2801m are considered to be either caved or contaminants.

Lower *Tricolpites longus* Zone **Maastrichtian.**

The two samples referred to the Lower *T. longus* Zone in Sidetrack-1 between 2664-2670 metres are assigned on the presence of *Forcipites* (al. *Tricolpites*) *longus* and *Tetracolporites verrucosus* before the first or oldest appearance of *Stereisporites* (*Tripunctisporis*) sp. The assemblages are dominated by *Proteacidites* spp. *Phyllocladidites mawsonii* and *Stereisporites antiquisporites*. The algae sphere *Pseudoschizaea circula* at 2664m is the only *insitu* microplankton species recorded.

Upper *Tricolpites longus* Zone **Maastrichtian.**

The Upper *T. longus* Zone is recorded from 8 cuttings samples in the original Moonfish-1 hole and from 2 cuttings and 2 sidewall core samples in Sidetrack-1.

In the original hole the zone is recognised between 2450-2530m. The duplicate cuttings samples at 2650-55m (A&B) and 2770-75m (A&B) are interpreted as completely caved, and although assigned to this zone are stratigraphically out-of-place.

In the Sidetrack-1 the zone is recognised between 2415-2499m. In both holes the base of the zone is picked on the oldest occurrence of *S. (Tripunctisporis)* sp. and the top of the youngest occurrence of *F. longus*. The assemblages are also characterised by frequent to abundant *Gambierina rudata*. Other key index species for picking top of the zone are *Proteacidites otwayensis* ms, *P. reticuloconcavus* ms, *P. prepolus* ms and *Tetradopollis securus* ms.

All microplankton recorded in the samples are considered to be caved.

Lower *Lygistepollenites balmei* Zone **Early Paleocene.**

The Lower *L. balmei* Zone is recorded in the original Moonfish-1 hole from conventional core and cuttings samples over the interval 2135-2315m. It probably extends deeper to 2375m but the three cuttings samples between 2335-2375m lack diagnostic species of the Lower subzone and correctly can only be assigned to the broader *L. balmei* Zone.

In the Sidetrack-1 the zone is recorded from 3 sidewall cores and a single cuttings sample between 2093-2338m. An additional two sidewall cores within this interval only gave indeterminate assemblages.

In both holes the top of the zone is picked on the youngest occurrence of *Proteacidites angulatus* and/or *Tetracolporites verrucosus* whilst the base of the zone is picked on the oldest occurrence of *P. angulatus* or on the youngest occurrence of Upper *T. longus* Zone indicator species. Other accessory species whose presence increases the confidence of the zone assignment include *Australopollis obscurus, Integricorpus antipodus* ms and *Polycolpites langstonii*. There are also other species which range through the broader *L. balmei* Zone that are nevertheless characterised by their abundance and consistent occurrence. These include *Lygistepollenites balmei, Nothofagidites endurus* and *Gambierina rudata*. Finally there are a few species whose FADs (First Appearance Datums) are within the Lower *L. balmei* Zone. In the Sidetrack-1 hole, where FADs can be reliably picked in the sidewall cores, these are *Haloragacidites harrisii, Malvacipollis subtilis* and *Proteacidites adenanthoides* at 2096m and *Verrucosisporites kopukuensis* at 2051m.

Although microplankton occur sporadically through the zone as displayed on Charts 2 & 6 virtually all are considered to represent specimens orignally from the Seaspray Group which are either caved in the cuttings or introduced by mud contamination into the sidewall cores.

Upper *Lygistepollenites balmei* Zone **Late Paleocene.**

The Upper *L. balmei* Zone is recorded in two sidewall cores in the Sidetrack-1 over the interval 1971-2017m.

The deeper sample is assigned to the zone on the FAD for *Anacolosidites acutullus* while the shallow sample contains the important FADs for *Proteacidites annularis* and *P. grandis*. Both samples clearly are no younger than this zone based on the common occurrence of *Lygistepollenites balmei* and the rare occurrence of *Gambierina rudata* which range no younger than this zone.

The general spore-pollen assemblage composition are similar to those in the underlying Lower *L. balmei* Zone, and the dinoflagellates recorded from the deeper sidewall core are all considered to be contamination derived from the Seaspray Group via the drilling mud.

Lower *Malvacipollis diversus* Zone **Early Eocene.**

The Lower *M. diversus* Zone is recorded only in the Sidetrack-1 in two sidewall cores at 1872m and 1913m. Both samples contain common *Dilwynites granulatus* (12-18% of spore-pollen count), abundant fungal spores and hypae (28-52% of total count) as well as the eponymous species *Malvacipollis diversus*, but otherwise are quite distinct and are discussed separately.

The sidewall core at 1872m is dominated by a low diversity microplankton suite which comprises 40% of total palynomorph count. The assemblage consists predominantly of poorly preserved algae referred to *Rimosicysta* n.sp. (46% of microplankton count); a small diaphanous dinoflagellate species whose presence is recognised by its cingulum and occurrence of accumulation bodies within the cysts (39%); and finally, poorly preserved *Saeptodinium* sp. These microplankton are interpreted to indicate a lacustrine environment as there are no known marine dinoflagellates present in the assemblage. The associate spore-pollen assemblage is fairly non-descript but contains no species which would suggest an age younger than the Lower *M. diversus* Zone.

The sidewall core at 1913m is characterised by spores which could be considered "typical" of the marine condensed section found at the base of the Lower *M. diversus* Zone. The spores are *Crassiretitriletes vanraadshoovenii*, *Cyathidites gigantis* and *Polypodiaceoisporites varus* ms. Unfortunately the associated dinoflagellates consisting of *Deflandrea obliquipes* and *Spiniferites ramosa* are not diagnostic. Overall the assemblage is similar to the basal sample from the Lower *M. diversus* Zone in Sweetlips-1 which contains the *A. hyperacanthum* dinoflagellate Zone (see Partridge, 1990a).

Upper *Malvacipollis diversus* Zone **Early Eocene.**

A single sidewall core from Sidetrack-1 at 1699m can be assigned to the Upper *M. diversus* Zone on the presence of *Proteacidites pachypolus* (2%) and *Santalumidites cainozoicus*. The latter species suggests a position high in this zone and could perhaps indicate possible assignment of this sample to the younger *P. asperopolus* Zone. Although the sample contains a high diversity assemblage (34+ species) it lacks key species such as *Myrtaceidites tenuis*, and the abundance of species are not particularly diagnostic. The assemblage is dominated by fungal spores and hypae 38% (of total count) and *Proteacidites* spp. 62% (of spore-pollen count), while spores (3%) and gymnosperm pollen (<1%) are negligible. Other types or groups often typical of the Early Eocene were not significant. For instance, *Casuarina* pollen (=*Haloragaecidites harrisii*) was <2%, while *Malvacipollis* spp. was not recorded in the count, and *Nothofagidites* spp. was about 8%. The dinoflagellates recorded in the sample are most likely contaminants.

Lower *Nothofagidites asperus* Zone **Middle Eocene.**

A single sidewall core sample from the Sidetrack hole at 1662m is assigned with low confidence to the Lower *N. asperus* Zone on the dominance of *Nothofagidites* spp. (55%) and scarcity of Casuarina pollen (<2%). Although the assemblage recorded is of high diversity (32+ species) it lacks key species for the zone. The presence of *Proteacidites pachypolus* which usually indicates an age no younger than the Lower *N. asperus* Zone is favoured against the occurrence of *Verrucosisporites cristatus* which is usually indicative of the younger Middle *N. asperus* Zone. All the dinoflagellates recorded are considered contaminants from the overlying Seaspray Group in spite of the seemingly clean nature of the sidewall core sample. Undoubtedly there was some unrecognised mud penetration of the sample.

***Proteacidites tuberculatus* Zone** **Miocene?**

Two sidewall cores between 1548-1603 metres in Sidetrack-1 are confidently assigned to the *P. tuberculatus* Zone on the occurrence in both samples of the key spores *Cyatheacidites annulatus*, *Foveotriletes crater* and *F. lacunosus*. The occurrence of *F. lacunosus* which is in association with *Guettardidites ivirensis* Khan 1976 (= cf *Reticulataepollis* sp. of Partridge 1971), *Foraminisporis ozotus* ms and *Cyperacea* pollen from the shallower sample further suggests that both samples can be assigned to the Middle or Upper subdivisions of the *P. tuberculatus* Zone (Stover & Partridge 1973, p.243).

The samples were dominated by microplankton (69-73%) but still contained high diversity spore-pollen assemblages with a composite 38 species recorded. The microplankton were of moderate diversity with a composite 16 species recorded and were dominated by *Spiniferites* spp. (51-71%). Other common species are *Operculodinium centrocarpum* (4-7%) and *Protoellipsodinium simplex* ms (6-11%) both of which are considered characteristic of the informal "*Operculodinium* spp." microplankton association.

The presence of the dinoflagellate cyst *Tuberculodinium vancompoae* at 1603m suggest a Miocene age which is consistent with the identification of foraminiferal zones F and G at the base of the Seaspray Group over the adjacent Snapper field.

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TABLE-1: INTERPRETATIVE PALYNOLOGICAL DATA FOR MOONFISH-1, GIPPSLAND BASIN.

Sheet 1 of 2

SAMPLE TYPE	DEPTH (m)	SPORE-POLLEN ZONES	*CR OLD	*CR NEW	MICROPLANKTON ZONES	*CR OLD	*CR NEW	COMMENTS
Cuttings	2135.0	Lower *L. balmei*	3	D2				*Tetracolporites verrucosus* present.
Cuttings	2175.0	Lower *L. balmei*	3	D2				Fungal spore *Pesavis* present.
Cuttings	2215.0	*L. balmei*	3	D2				
Cuttings	2235.0	*L. balmei*	3	D2				*Integricorpus antipodus* ms present.
Core-2	2264.2	Indeterminate						Virtually barren.
Core-2	2273.6	*L. balmei*	1	A3				Palynomorphs degraded.
Core-4	2292.2	Lower *L. balmei*	2	A3				*Proteacidites angulatus* present.
Core-4	2297.3	Lower *L. balmei*	1	A2				*Proteacidites angulatus* 42%.
Cuttings	2315.0	Lower *L. balmei*	3	D2				Frequent *Australopollis obscurus*.
Cuttings	2335.0	*L. balmei*	3	D2				Caved palynomorphs common.
Cuttings	2360.0	*L. balmei*	3	D2				
Cuttings	2375.0	*L. balmei*	3	D2				
Cuttings	2450.0	Upper *T. longus*	3	D2				LAD *Forcipites longus*.
Cuttings A	2455.0	Upper *T. longus*	4	D5				Common *Gambierina rudata*.
Cuttings	2525.0	Upper *T. longus*	3	D3				Zone indicators rare.
Cuttings A	2530.0	Upper *T. longus*	4	D5				Several specimens of *G. rudata*.
Cuttings A	2650-55	Upper *T. longus*	3	D3				Sample interpreted as all caved.
Cuttings B	2650-55	Upper *T. longus*	3	D2				Sample interpreted as all caved.
Cuttings	2680.0	*P. mawsonii*	3	D3	*R. kipperii*	4	D5	*Interulobites intraverrucatus* present
Cuttings	2750.0	*P. mawsonii*	3	D3	*R. kipperii*	3	D3	LAD *Rimosicysta kipperii*.
Cuttings	2760.0	*P. mawsonii*	3	D3	*R. kipperii*	4	D5	

TABLE-1: INTERPRETATIVE PALYNOLOGICAL DATA FOR MOONFISH-1, GIPPSLAND BASIN.

Sheet 2 of 2

SAMPLE TYPE	DEPTH (m)	SPORE-POLLEN ZONES	*CR OLD	*CR NEW	MICROPLANKTON ZONES	*CR OLD	*CR NEW	COMMENTS
Cuttings A	2770-75	Upper *T. longus*	3	D2				Sample all caved!
Cuttings B	2770-75	Upper *T. longus*	3	D1				Sample all caved!
Cuttings	2790.0	*P. mawsonii*	3	D3	*R. kipperii*	4	D5	
Cuttings	2810.0	*P. mawsonii*	3	D3	*R. kipperii*	3	D3	*Rugulatisporites admirabilis* ms present.
Cuttings	2830.0	*P. mawsonii*	4	D5	*R. kipperii*	3	D3	*R. kipperii* present.
Cuttings	2850.0	*P. mawsonii*	3	D2	*R. kipperii*	3	D3	Common *Rimosicysta* spp.
Cuttings	2950.0	*P. mawsonii*	3	D2	*R. kipperii*	3	D3	Common *Wuroia corrugata.*
Cuttings	3015.0	*P. mawsonii*	3	D3	*R. kipperii*	3	D3	Common *Rimosicysta* spp.
Cuttings	3040.0	*P. mawsonii*	4	D5	*R. kipperii*	4	D5	

* CR = Confidence Ratings OLD & NEW
LAD = Last Appearance Datum

Cuttings A = Processed at Monash University.
Cuttings B = Processed by Laola Pty Ltd.

TABLE-2: INTERPRETATIVE PALYNOLOGICAL DATA FOR MOONFISH-1 SIDETRACK, GIPPSLAND BASIN.

SAMPLE TYPE	DEPTH (m)	SPORE-POLLEN ZONES	*CR OLD	*CR NEW	MICROPLANKTON ZONES (OR ASSOCIATION)	*CR OLD	*CR NEW	COMMENTS
SWC 37	1548	*P. tuberculatus*	0	B1	(*Operculodinium* spp.)	0	B2	Microplankton 69%.
SWC 36	1603	*P. tuberculatus*	0	B1	(*Operculodinium* spp.)	0	B2	Microplankton 73%.
SWC 33	1662	Lower *N. asperus*	2	B4				*Proteacidites pachypolus* present.
SWC 32	1699	Upper *M. diversus*	1	B4				FAD *Santalumidites cainozoicus*
SWC 30	1872	Lower *M. diversus*	1	B4				Microplankton 40%
SWC 29	1913	Lower *M. diversus*	1	B2				Fungal spores & hypae 52%
SWC 26	1971	Upper *L. balmei*	1	B1				*Proteacidites grandis* present.
SWC 24	2017	Upper *L. balmei*	1	B4				*Anacolosidites acutullus* present.
SWC 23	2033	Indeterminate						Meagre yield.
SWC 21	2051	*L. balmei*	1	B1				Subzone uncertain.
SWC 19	2093	Lower *L. balmei*	1	B1				LAD *Proteacidites angulatus.*
SWC 18	2096	Lower *L. balmei*	1	B1				*Nothofagidites* spp. 18.5%.
SWC 15	2250	Indeterminate						
SWC 14	2263	Indeterminate						Virtually barren.
CUTTINGS	2335	Lower *L. balmei*	3	D2				
SWC 11	2338	Lower *L. balmei*	1	B2				*Tetracolporites verrucosus.*
CUTTINGS	2415	Upper *T. longus*	3	D2				LAD *Forcipites longus.*
SWC 8	2441	Upper *T. longus*	1	D2				*Gambierina rudata* common.
CUTTINGS	2490	*T. longus*	3	D4				Limited assemblage.
SWC 7	2499	Upper *T. longus*	1	B2				*G. rudata* common.
CUTTINGS	2575	Upper *T. longus*	3	D2				*G. rudata* common.

TABLE-2: INTERPRETATIVE PALYNOLOGICAL DATA FOR MOONFISH-1 SIDETRACK, GIPPSLAND BASIN.

SAMPLE TYPE	DEPTH (m)	SPORE-POLLEN ZONES	*CR OLD	*CR NEW	MICROPLANKTON ZONES (OR ASSOCIATION)	*CR OLD	*CR NEW	COMMENTS
SWC 4	2664	Lower *T. longus*	1	B2				*F. longus* & *T. verrucosus* both present.
CUTTINGS	2670	Lower *T. longus*	3	D5				*F. longus* present.
SWC 3	2730	Indeterminate						SWC contaminated.
SWC 2	2752	*T. lilliei*	1	B2				*Forcipites stipulatus* present.
CUTTINGS	2755	*T. lilliei*	3	D4				
SWC 1	2765	*T. lilliei*	1	B1				FAD *Tricolporites lilliei.*
CUTTINGS	2801	Indeterminate						Dominated by caved species.

* CR = Confidence Ratings OLD & NEW
LAD = Last Appearance Datum
FAD = First Appearance Datum

CONFIDENCE RATINGS

The concept of Confidence Ratings applied to palaeontological zone picks was originally proposed by Dr. L.E. Stover in 1971 to aid the compilation of micropalaeontological and palynological data and to expedite the revision of the then rapidly evolving zonation concepts in the Gippsland Basin. The original or OLD scheme which mixes confidence in fossil species assemblage with confidence due to sample type has gradually proved to be rather limiting as additional refinements to existing zonations have been made. With the development of the STRATDAT computer database as a replacement for the increasingly unwieldy paper based Palaeontological Data Sheet files a NEW set of Confidence Ratings have been proposed. Both OLD and NEW Confidence Ratings for zone picks are given on Table 1, and their meanings are summarised below:

OLD CONFIDENCE RATINGS

0 SWC or CORE, Excellent Confidence, assemblage with zone species of spore, 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 spore and pollen or microplankton, or both.

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

NEW CONFIDENCE RATINGS

Alpha codes: Linked to sample type

A Core

B Sidewall core

C Coal cuttings

D Ditch cuttings

E Junk basket

F Miscellaneous/unknown

G Outcrop

Numeric codes: Linked to fossil assemblage

1 **Excellent confidence:** High diversity assemblage recorded with key zone species.

2 **Good confidence:** Moderately diverse assemblage recorded with key zone species.

3 **Fair confidence:** Low diversity assemblage recorded with key zone species.

4 **Poor confidence:** Moderate to high diversity assemblage recorded without key zone species.

5 **Very low confidence:** Low diversity assemblage recorded without key zone species.

BASIC DATA

TABLE 3: BASIC SAMPLE AND PALYNOMORPH DATA FOR MOONFISH-1

TABLE 4: BASIC SAMPLE DATA FOR MOONFISH-1, SIDETRACK-1

TABLE 5: BASIC PALYNOMORPH DATA FOR MOONFISH-1, SIDETRACK-1

RELINQUISHMENT LISTS OF PALYNOLOGY SLIDES & RESIDUES

PALYNOMORPH RANGE CHARTS

CHART-1: Spore-pollen in Moonfish-1 between 2135-2775mm

CHART-2: Microplankton in Moonfish-1 between 2135-2775m

CHART-3: Palynomorphs in Moonfish-1 between 2680-3040m

CHART-4: Spore-pollen in Moonfish-1, Sidetrack-1
by Highest Appearance

CHART-5: Spore-pollen in Moonfish-1, Sidetrack-1
by Lowest Appearance

CHART-6: Microplankton in Moonfish-1, Sidetrack-1

TABLE-3: BASIC SAMPLE AND PALYNOMORPH DATA FOR MOONFISH-1, GIPPSLAND BASIN.

SHEET 1 OF 2

SAMPLE TYPE	DEPTH (m)	SAMPLE WT (g)	RESIDUE YIELD	PALYNOMORPH CONCENTRATION	PRESERVATION	No. S-P*	MICROPLANKTON ABUNDANCE	NUMBER OF MP SPECIES*
Cuttings	2135.0	20.0	High	High	Poor-good	22	Rare/caved	1
Cuttings	2175.0	23.0	High	Moderate	Fair-good	21	Very rare	1
Cuttings	2215.0	20.0	Moderate	Low	Fair	12	Rare/caved	4
Cuttings	2235.0	20.0	Moderate	Moderate	Fair	21	Rare/caved	4
Core-2	2264.2	21.3	Moderate	Very low	Poor	4		
Core-2	2273.6	20.6	High	Moderate	Very poor	11		
Core-4	2292.2	22.0	Moderate	Low	Poor-fair	9		
Core-4	2297.3	21.6	High	High	Poor-fair	15		
Cuttings	2315.0	15.0	High	High	Fair	25	Rare/caved	4
Cuttings	2335.0	15.0	High	Moderate	Poor-good	17(6)	Frequent/caved	7
Cuttings	2360.0	15.0	High	Moderate	Fair	21	Frequent/mixed	1(5)
Cuttings	2375.0	15.0	High	Moderate	Fair	18(2)	Frequent/caved	4
Cuttings	2450.0	15.0	High	Low	Fair	15	Rare/caved?	(3)
Cuttings A	2455.0		Moderate	Low	Fair	7		
Cuttings	2525.0	15.0	Moderate	Low	Poor-fair	25	Rare/caved	3
Cuttings A	2530.0		Moderate	Low	Fair	4		
Cuttings A	2650-55		High	Moderate	Fair-good	(12)		
Cuttings B	2650-55	15.0	High	Moderate	Fair	(21)	Rare/caved	(4)
Cuttings	2680.0		High	Moderate	Poor-fair	11(18)	Rare/insitu	4
Cuttings	2750.0		High	Moderate	Poor-fair	10(13)	Rare/insitu	6

TABLE-3: BASIC SAMPLE AND PALYNOMORPH DATA FOR MOONFISH-1, GIPPSLAND BASIN.

SAMPLE TYPE	DEPTH (m)	SAMPLE WT (g)	RESIDUE YIELD	PALYNOMORPH CONCENTRATION	PRESERVATION	No. S-P*	MICROPLANKTON ABUNDANCE	NUMBER OF MP SPECIES*
Cuttings	2760.0	15.0	Low	Moderate	Poor	9(2)	Rare/insitu	4
Cuttings A	2770-75		High	Low	Fair	(21)	Rare/caved	(1)
Cuttings B	2770-75	15.0	High	Moderate	Poor	(29)	Rare/caved	(3)
Cuttings	2790.0	15.0	High	Moderate	Poor-fair	7	Frequent/insitu	4
Cuttings	2810.0	15.0	Moderate	Moderate	Poor-fair	3(5)	Common/insitu	7
Cuttings	2830.0	15.0	High	Low	Poor	7	Rare/insitu	6
Cuttings	2850.0	15.0	Moderate	Moderate	Poor-fair	13	Common	7
Cuttings	2950.0	15.0	Moderate	Moderate	Poor-fair	14	Common	5
Cuttings	3015.0	15.0	Moderate	Moderate	Poor-fair	9	Common	6
Cuttings	3040.0	15.0	Moderate	Low	Poor	8	Rare	2

NOTE: Numbers in brackets in columns for number of spore-pollen and microplankton species are for number of caved species recorded in assemblages. Not all of these species are recorded on the range charts.

*DIVERSITY: Very low = 1- 5 species
Low = 6-10 species
Moderate = 11-25 species
High = 26-74 species
Very High = 75+ species

Cuttings A = Processed at Monash University.
Cuttings B = Processed by Laola Pty Ltd.

TABLE-4: BASIC SAMPLE DATA FOR MOONFISH-1 SIDETRACK, GIPPSLAND BASIN.

SHEET 1 OF 1

SAMPLE TYPE	DEPTH (m)	LITHOLOGY	SAMPLE WT (g)	RESIDUE YIELD
SWC 37	1548.0	Med. gry calc. claystone	13.7	Low
SWC 36	1603.0	Med. gry calc. claystone	15.8	Moderate
SWC 33	1662.0	Lt. gry massive claystone	13.4	High
SWC 32	1699.0	Brn waxy claystone	13.9	High
SWC 30	1872.0	Dk gry fissile shale	11.3	High
SWC 29	1913.0	Gry-brn subfissile claystone	10.9	High
SWC 26	1971.0	Lt. gry claystone	11.2	High
SWC 24	2017.0	Gry-brn claystone	9.7	High
SWC 23	2033.0	Lt brn vf-f sandstone	10.4	Very low
SWC 21	2051.0	Gry-brn claystone	10.0	High
SWC 19	2093.0	Gry-brn claystone	7.7	High
SWC 18	2096.0	Brn-gry shale	9.7	High
SWC 15	2250.0	Lt gry subfissile claystone	10.3	Low
SWC 14	2263.0	Lt gry siltstone	11.0	Very low
CUTTINGS	2335.0		15.0	High
SWC 11	2338.0	Gry shale/Brn-gry sandstone	14.4	High
CUTTINGS	2415.0		15.0	High
SWC 8	2441.0	Med-gry shale	8.4	Moderate
CUTTINGS	2490.0		15.0	Moderate
SWC 7	2499.0	Dk brn fissile shale	7.5	High
CUTTINGS	2575.0		15.0	High
SWC 4	2664.0	Dk brn fissile shale	7.8	High
CUTTINGS	2670.0		15.0	Moderate
SWC 3	2730.0	Brn-gry silstone	11.5	Moderate
SWC 2	2752.0	Dk brn fissile shale	13.0	High
CUTTINGS	2755.0		15.0	Moderate
SWC 1	2765.0	Brn-gry fissile shale	9.7	High
CUTTINGS	2801.0		15.0	Moderate

TABLE-5: BASIC PALYNOMORPH DATA FOR MOONFISH-1 SIDETRACK, GIPPSLAND BASIN

SHEET 1 OF 1

SAMPLE TYPE	DEPTH (m)	PALYNOMORPH CONCENTRATION	PRESERVATION	NO. S-P*	MICROPLANKTON ABUNDANCE	NO. MP*
SWC 37	1548	High	Fair-good	28	Abundant	12
SWC 36	1603	High	Good	27	Abundant	13
SWC 33	1662	High	Fair	32	Rare/caved?	5
SWC 32	1699	High	Fair-good	34	Rare/caved?	2
SWC 30	1872	High	Poor-fair	30	Abundant	3
SWC 29	1913	High	Fair-good	25	Rare	2
SWC 26	1971	High	Fair-good	28		
SWC 24	2017	Moderate	Fair	27	Rare/caved	4
SWC 23	2033	Very low	Poor	4		
SWC 21	2051	High	Poor-fair	37		
SWC 19	2093	High	Fair-good	34	Rare/caved	1
SWC 18	2096	Moderate	Fair	29		
SWC 15	2250	Very low	Fair-poor	9	Rare/caved	1
SWC 14	2263	Very low	Poor	2		
CUTTINGS	2335	Moderate	Fair	21	Rare/caved	2
SWC 11	2338	High	Poor-fair	21		
CUTTINGS	2415	Moderate	Fair-good	20		
SWC 8	2441	Low	Poor-fair	15	Rare/caved	1
CUTTINGS	2490	Low	Fair	11	Rare/caved	1
SWC 7	2499	Low	Poor	18		
CUTTINGS	2575	Moderate	Fair	16		
SWC 4	2664	Moderate	Poor	18	Rare	1
CUTTINGS	2670	Low	Poor-very poor	11		
SWC 3	2730	Low	Poor-fair	10		
SWC 2	2752	Moderate	Poor	21		
CUTTINGS	2755	Low	Poor	13	Rare/caved	2
SWC 1	2765	Moderate	Fair	26		
CUTTINGS	2801	Low	Poor	22	Rare/caved	2

*DIVERSITY: Very low = 1- 5 species
Low = 6-10 species
Moderate = 11-25 species
High = 26-74 species
Very High = 75+ species

RELINQUISHMENT LIST - PALYNOLOGY SLIDES

WELL NAME & NO: MOONFISH-1

PREPARED BY: A.D. PARTRIDGE

DATE: 14 DECEMBER 1992

SAMPLE TYPE	DEPTH (M)	CATALOGUE NUMBER	DESCRIPTION
Cuttings	2135.0	P196102	Kerogen slide sieved fraction
Cuttings	2135.0	P196103	Oxidized slide 2
Cuttings	2135.0	P196104	Oxidized slide 3
Cuttings	2175.0	P196105	Oxidized slide 2
Cuttings	2175.0	P196106	Oxidized slide 3
Cuttings	2215.0	P196107	Oxidized slide 2
Cuttings	2215.0	P196108	Oxidized slide 3
Cuttings	2235.0	P196109	Oxidized slide 2
Cuttings	2235.0	P196110	Oxidized slide 3
Core 2	2264.2	P196111	Kerogen slide 20 micron sieved
Core 2	2264.2	P196112	Oxidized slide 2
Core 2	2264.2	P196113	Oxidized slide 3
Core 2	2264.2	P196114	Oxidized slide 4
Core 2	2273.6	P196115	Oxidized slide 2
Core 2	2273.6	P196116	Oxidized slide 3
Core 2	2273.6	P196117	Oxidized slide 4
Core 2	2273.6	P196118	Oxidized slide 5
Core 4	2292.4	P196119	Oxidized slide 2
Core 4	2292.4	P196120	Oxidized slide 3
Core 4	2292.4	P196121	Oxidized slide 4
Core 4	2297.3	P196122	Kerogen slide 20 micron sieved
Core 4	2297.3	P196123	Oxidized slide 2
Core 4	2297.3	P196124	Oxidized slide 3
Core 4	2297.3	P196125	Oxidized slide 4
Core 4	2297.3	P196126	Oxidized slide 5
Cuttings	2315.0	P196127	Oxidized slide 2
Cuttings	2315.0	P196128	Oxidized slide 3
Cuttings	2315.0	P196129	Oxidized slide 4
Cuttings	2335.0	P196130	Oxidized slide 2
Cuttings	2335.0	P196131	Oxidized slide 3
Cuttings	2335.0	P196132	Oxidized slide 4
Cuttings	2360.0	P196133	Oxidized slide 2
Cuttings	2360.0	P196134	Oxidized slide 3
Cuttings	2360.0	P196135	Oxidized slide 4
Cuttings	2375.0	P196136	Kerogen slide 20 micron sieved
Cuttings	2375.0	P196137	Oxidized slide 2
Cuttings	2375.0	P196138	Oxidized slide 3
Cuttings	2375.0	P196139	Oxidized slide 4
Cuttings	2450.0	P196140	Oxidized slide 2
Cuttings	2450.0	P196141	Oxidized slide 3
Cuttings	2450.0	P196142	Oxidized slide 4
Cuttings A	2455.0	P196143	Oxidized slide 3b (in Silicon Oil)
Cuttings A	2455.0	P196144	Oxidized slide 3a (in Silicon Oil)
Cuttings	2525.0	P196145	Oxidized slide 2
Cuttings	2525.0	P196146	Oxidized slide 3
Cuttings	2525.0	P196147	Oxidized slide 4

RELINQUISHMENT LIST - PALYNOLOGY SLIDES

WELL NAME & NO: MOONFISH-1

PREPARED BY: A.D. PARTRIDGE

DATE: 14 DECEMBER 1992

Cuttings A	2530.0	P196148	Oxidized slide 4a (in Silicon Oil)
Cuttings A	2530.0	P196149	Oxidized slide 4a (in Silicon Oil)
Cuttings A	2650-55	P196150	Oxidized slide 1a (in Silicon Oil)
Cuttings A	2650-55	P196151	Oxidized slide 1b (in Silicon Oil)
Cuttings A	2650-55	P196152	Oxidized slide 1c (in Silicon Oil)
Cuttings B	2650-55	P196153	Oxidized slide 2
Cuttings B	2650-55	P196154	Oxidized slide 3
Cuttings B	2650-55	P196155	Oxidized slide 4
Cuttings	2680.0	P196156	Kerogen slide sieved/unsieved fractions
Cuttings	2680.0	P196157	Oxidized slide 2
Cuttings	2680.0	P196158	Oxidized slide 3
Cuttings	2680.0	P196159	Oxidized slide 4
Cuttings	2750.0	P196160	Kerogen slide sieved/unsieved fractions
Cuttings	2750.0	P196161	Oxidized slide 2
Cuttings	2750.0	P196162	Oxidized slide 3
Cuttings	2750.0	P196163	Oxidized slide 4
Cuttings	2760.0	P196164	Oxidized slide 2
Cuttings	2760.0	P196165	Oxidized slide 3
Cuttings A	2770-75	P196166	Oxidized slide 2a (in Silicon Oil)
Cuttings A	2770-75	P196167	Oxidized slide 2b (in Silicon Oil)
Cuttings A	2770-75	P196168	Oxidized slide 2c (in Silicon Oil)
Cuttings B	2770-75	P196169	Kerogen slide sieved fractions
Cuttings B	2770-75	P196170	Oxidized slide 3
Cuttings B	2770-75	P196171	Oxidized slide 4
Cuttings	2790.0	P196172	Oxidized slide 2
Cuttings	2790.0	P196173	Oxidized slide 3
Cuttings	2790.0	P196174	Oxidized slide 4
Cuttings	2810.0	P196175	Oxidized slide 2
Cuttings	2810.0	P196176	Oxidized slide 3
Cuttings	2810.0	P196177	Oxidized slide 4
Cuttings	2830.0	P196178	Kerogen slide sieved fraction
Cuttings	2830.0	P196179	Oxidized slide 2
Cuttings	2830.0	P196180	Oxidized slide 3
Cuttings	2830.0	P196181	Oxidized slide 4
Cuttings	2850.0	P196182	Oxidized slide 2
Cuttings	2850.0	P196183	Oxidized slide 3
Cuttings	2850.0	P196184	Oxidized slide 4
Cuttings	2950.0	P196185	Oxidized slide 2
Cuttings	2950.0	P196186	Oxidized slide 3
Cuttings	2950.0	P196187	Oxidized slide 4
Cuttings	3015.0	P196188	Oxidized slide 2
Cuttings	3015.0	P196189	Oxidized slide 3
Cuttings	3015.0	P196190	Oxidized slide 4
Cuttings	3040.0	P196191	Kerogen slide 20 micron sieved
Cuttings	3040.0	P196192	Oxidized slide 2
Cuttings	3040.0	P196193	Oxidized slide 3
Cuttings	3040.0	P196194	Oxidized slide 4

RELINQUISHMENT LIST - PALYNOLOGY RESIDUES

WELL NAME & NO: MOONFISH-1

PREPARED BY: A.D. PARTRIDGE

DATE: 14 DECEMBER 1992

SHEET 1 OF 1

SAMPLE TYPE	DEPTH (M)	DESCRIPTION
Cuttings	2135.0	Oxidized residue
Cuttings	2175.0	Oxidized residue
Cuttings	2215.0	Oxidized residue
Cuttings	2235.0	Oxidized residue
Core 2	2264.2	Oxidized residue
Core 2	2273.6	Kerogen residue
Core 4	2292.4	Oxidized residue
Core 4	2297.3	Kerogen residue
Cuttings	2315.0	Kerogen residue
Cuttings	2335.0	Kerogen residue
Cuttings	2360.0	Kerogen residue
Cuttings	2375.0	Oxidized residue
Cuttings	2450.0	Oxidized residue
Cuttings A	2455.0	Oxidized residue
Cuttings	2525.0	Oxidized residue
Cuttings A	2530.0	Oxidized residue
Cuttings A	2650-55	Oxidized residue (in Silicon Oil)
Cuttings A	2650-55	Oxidized residue (in Water)
Cuttings B	2650-55	Oxidized residue
Cuttings	2680.0	Oxidized residue
Cuttings	2750.0	Oxidized residue
Cuttings A	2770-75	Oxidized residue
Cuttings B	2770-75	Oxidized residue
Cuttings	2850.0	Oxidized residue
Cuttings	2950.0	Oxidized residue
Cuttings	3015.0	Oxidized residue
Cuttings	3040.0	Oxidized residue

RELINQUISHMENT LIST - PALYNOLOGY SLIDES

WELL NAME & NO: MOONFISH-1, SIDETRACK-1

PREPARED BY: A.D. PARTRIDGE

DATE: 14 DECEMBER 1992

SAMPLE TYPE	DEPTH (M)	CATALOGUE NUMBER	DESCRIPTION
SWC 37	1548.0	P196195	Kerogen slide sieved/unsieved fractions
SWC 37	1548.0	P196196	Oxidized slide 2
SWC 36	1603.0	P196197	Kerogen slide sieved/unsieved fractions
SWC 36	1603.0	P196198	Oxidized slide 2
SWC 36	1603.0	P196199	Oxidized slide 3 (1/2 cover slip)
SWC 33	1662.0	P196200	Kerogen slide sieved/unsieved fractions
SWC 33	1662.0	P196201	Oxidized slide 2
SWC 33	1662.0	P196202	Oxidized slide 3
SWC 33	1662.0	P196203	Oxidized slide 4
SWC 32	1699.0	P196204	Kerogen slide sieved/unsieved fractions
SWC 32	1699.0	P196205	Oxidized slide 2
SWC 32	1699.0	P196206	Oxidized slide 3
SWC 32	1699.0	P196207	Oxidized slide 4
SWC 30	1872.0	P196208	Kerogen slide sieved/unsieved fractions
SWC 30	1872.0	P196209	Oxidized slide 2
SWC 30	1872.0	P196210	Oxidized slide 3
SWC 30	1872.0	P196211	Oxidized slide 4
SWC 29	1913.0	P196212	Kerogen slide sieved/unsieved fractions
SWC 29	1913.0	P196213	Oxidized slide 2
SWC 29	1913.0	P196214	Oxidized slide 3
SWC 29	1913.0	P196215	Oxidized slide 4
SWC 26	1971.0	P196216	Kerogen slide sieved/unsievedfractions
SWC 26	1971.0	P196217	Oxidized slide 2
SWC 26	1971.0	P196218	Oxidized slide 3
SWC 26	1971.0	P196219	Oxidized slide 4
SWC 24	2017.0	P196220	Kerogen slide sieved/unsieved fractions
SWC 24	2017.0	P196221	Oxidized slide 2
SWC 24	2017.0	P196222	Oxidized slide 3
SWC 24	2017.0	P196223	Oxidized slide 4
SWC 23	2033.0	P196224	Kerogen slide sieved/unsieved fractions
SWC 21	2051.0	P196225	Kerogen slide sieved/unsieved fractions
SWC 21	2051.0	P196226	Oxidized slide 2
SWC 21	2051.0	P196227	Oxidized slide 3
SWC 21	2051.0	P196228	Oxidized slide 4
SWC 19	2093.0	P196229	Kerogen slide sieved/unsieved fractions
SWC 19	2093.0	P196230	Oxidized slide 2
SWC 19	2093.0	P196231	Oxidized slide 3
SWC 19	2093.0	P196232	Oxidized slide 4
SWC 18	2096.0	P196233	Kerogen slide sieved/unsieved fractions
SWC 18	2096.0	P196234	Oxidized slide 2
SWC 18	2096.0	P196235	Oxidized slide 3
SWC 18	2096.0	P196236	Oxidized slide 4
SWC 15	2250.0	P196237	Kerogen slide sieved/unsieved fractions
SWC 15	2250.0	P196238	Oxidized slide 2
SWC 15	2250.0	P196239	Oxidized slide 3 (1/2 cover slip)
SWC 14	2263.0	P196240	Kerogen slide sieved/unsieved fractions

RELINQUISHMENT LIST - PALYNOLOGY SLIDES

WELL NAME & NO: MOONFISH-1, SIDETRACK-1

PREPARED BY: A.D. PARTRIDGE

DATE: 14 DECEMBER 1992

SAMPLE TYPE	DEPTH (M)	CATALOGUE NUMBER	DESCRIPTION
Cuttings	2335.0	P196241	Kerogen slide sieved fractions
Cuttings	2335.0	P196242	Oxidized slide 2
Cuttings	2335.0	P196243	Oxidized slide 3
Cuttings	2335.0	P196244	Oxidized slide 4
SWC 11	2338.0	P196245	Kerogen slide sieved/unsieved fractions
SWC 11	2338.0	P196246	Oxidized slide 2
SWC 11	2338.0	P196247	Oxidized slide 3
SWC 11	2338.0	P196248	Oxidized slide 4
Cuttings	2415.0	P196249	Kerogen slide sieved fraction
Cuttings	2415.0	P196250	Oxidized slide 2
Cuttings	2415.0	P196251	Oxidized slide 3
Cuttings	2415.0	P196252	Oxidized slide 4
SWC 8	2441.0	P196253	Kerogen slide sieved/unsieved fractions
SWC 8	2441.0	P196254	Oxidized slide 2
SWC 8	2441.0	P196255	Oxidized slide 3
SWC 8	2441.0	P196256	Oxidized slide 4
Cuttings	2490.0	P196257	Kerogen slide sieved fraction
Cuttings	2490.0	P196258	Oxidized slide 2
Cuttings	2490.0	P196259	Oxidized slide 3
Cuttings	2490.0	P196260	Oxidized slide 4
SWC 7	2499.0	P196261	Kerogen slide sieved/unsieved fractions
SWC 7	2499.0	P196262	Oxidized slide 2
SWC 7	2499.0	P196263	Oxidized slide 3
SWC 7	2499.0	P196264	Oxidized slide 4
Cuttings	2575.0	P196265	Kerogen slide sieved fraction
Cuttings	2575.0	P196266	Oxidized slide 2
Cuttings	2575.0	P196267	Oxidized slide 3
Cuttings	2575.0	P196268	Oxidized slide 4
SWC 4	2664.0	P196269	Kerogen slide sieved/unsieved fractions
SWC 4	2664.0	P196270	Oxidized slide 2
SWC 4	2664.0	P196271	Oxidized slide 3
SWC 4	2664.0	P196272	Oxidized slide 4
Cuttings	2670.0	P196273	Kerogen slide unsieved fraction
Cuttings	2670.0	P196274	Oxidized slide 2
Cuttings	2670.0	P196275	Oxidized slide 3
Cuttings	2670.0	P196276	Oxidized slide 4
SWC 3	2730.0	P196277	Kerogen slide sieved/unsieved fractions
SWC 3	2730.0	P196278	Oxidized slide 2
SWC 3	2730.0	P196279	Oxidized slide 3
SWC 3	2730.0	P196280	Oxidized slide 4
SWC 2	2752.0	P196281	Kerogen slide sieved/unsieved fractions
SWC 2	2752.0	P196282	Oxidized slide 2
SWC 2	2752.0	P196283	Oxidized slide 3
SWC 2	2752.0	P196284	Oxidized slide 4
Cuttings	2755.0	P196285	Kerogen slide unsieved fraction
Cuttings	2755.0	P196286	Oxidized slide 2
Cuttings	2755.0	P196287	Oxidized slide 3
Cuttings	2755.0	P196288	Oxidized slide 4

RELINQUISHMENT LIST - PALYNOLOGY SLIDES

WELL NAME & NO: MOONFISH-1, SIDETRACK-1

PREPARED BY: A.D. PARTRIDGE

DATE: 14 DECEMBER 1992

SHEET 3 OF 3

SAMPLE TYPE	DEPTH (M)	CATALOGUE NUMBER	DESCRIPTION
SWC 1	2765.0	P196289	Kerogen slide sieved/unsieved fractions
SWC 1	2765.0	P196290	Oxidized slide 2
SWC 1	2765.0	P196291	Oxidized slide 3
SWC 1	2765.0	P196292	Oxidized slide 4
Cuttings	2801.0	P196293	Kerogen slide sieved fraction
Cuttings	2801.0	P196294	Oxidized slide 2
Cuttings	2801.0	P196295	Oxidized slide 3
Cuttings	2801.0	P196296	Oxidized slide 4

RELINQUISHMENT LIST - PALYNOLOGY RESIDUES

WELL NAME & NO: MOONFISH-1

PREPARED BY: A.D. PARTRIDGE

DATE: 14 DECEMBER 1992

SHEET 1 OF 1

SAMPLE TYPE	DEPTH (M)	DESCRIPTION
SWC 37	1548	Kerogen residue
SWC 32	1699	Kerogen residue
SWC 32	1699	Oxidized residue
SWC 30	1872	Kerogen residue
SWC 30	1872	Oxidized residue
SWC 29	1913	Oxidized residue
SWC 26	1971	Oxidized residue
SWC 24	2017	Kerogen residue
SWC 24	2017	Oxidized residue
SWC 21	2051	Kerogen residue
SWC 21	2051	Oxidized residue
SWC 19	2093	Oxidized residue
SWC 18	2096	Kerogen residue
SWC 18	2096	Oxidized residue
Cuttings	2335	Oxidized residue
SWC 11	2338	Oxidized residue
Cuttings	2415	Oxidized residue
SWC 8	2441	Oxidized residue
Cuttings	2490	Oxidized residue
SWC 7	2499	Kerogen residue
SWC 7	2499	Oxidized residue
Cuttings	2575	Oxidized residue
SWC 4	2664	Kerogen residue
SWC 4	2664	Oxidized residue
Cuttings	2670	Oxidized residue
SWC 3	2730	Oxidized residue
SWC 2	2752	Kerogen residue
SWC 2	2752	Oxidized residue
Cuttings	2755	Oxidized residue
SWC 1	2765	Kerogen residue
SWC 1	2765	Oxidized residue
Cuttings	2801	Oxidized residue