PE990043

PALYNOLOGY OF 23 SUBSURFACE SAMPLES,

GIPPSLAND BASIN

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FOR CLUFF RESOURCES

FEBRUARY, 1991.

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CONTENTS

I SUMMARY

The samples studied yielded the following zonal assignments.

Burong-1 :
4100 ft. (cutts) : mixed L. balmei zone (Paleocene) with minor late Cretaceous

4120 ft. (cutts) : C. paradoxa zone (late Albian)

Carrs Creek-1 :
3860 ft. (cutts), 4470 ft. (cutts) : mixed Tertiary, mostly Eocene

4570 ft. (cutts) : C. triplex zone (Coniacian-Turonian)

Dutson Downs-1 :
4590 ft. (cutts) : apparently L. balmei zone (Paleocene)

4740 ft. (cutts), 5360 ft. (cutts) : T. longus (Maastrichtian) to N. senectus (Campanian)

6020 ft. (cutts) : mixed C. triplex (Coniacian-Turonian) and C. striatus (early Albian)

Merriman-1 :
4708-14 ft. (CORE) : T. longus zone (Maastrichtian)

5057-81 ft. (CORE), 5740 ft. (cutts), 5950 ft. (cutts) : apparently all C. triplex zone (Coniacian-Turonian)

North Seaspray-1 :
3650 ft. (cutts) : C. paradoxa zone (late Albian)

3840 ft. (cutts), 4060 ft. (cutts) : C. striatus zone

(early Albian)

Seaspray-1 :
4590 ft. (cutts) : T. longus zone (Maastrichtian)

4790 ft. (cutts), 4879 ft. (cutts) : C. paradoxa zone (late Albian)

Wellington Park-1 :
3719-39 ft. (CORE) : L. balmei zone (Paleocene)

3816-19 ft. (CORE), 4550 ft. (cutts) : apparently all C. paradoxa zone (late Albian)

7380 ft. (CORE) : indeterminate mid Jurassic to mid Cretaceous

These data provide palynological confirmation for the Golden Beach Formation in Carrs Creek-1, Dutson Downs-1, and Merriman-1 and suggest its absence from the other wells. Heavy caving of the Tertiary in the cuttings samples could have masked older assemblages, however.

II INTRODUCTION

Babek Vazhebdedh of Cluff Resources submitted 23 samples for palynology from 7 Gippsland Basin wells. The study was aimed to test for the presence of late Cretaceous strata equivalent to the Golden Beach Formation, as discussedd by Lowry (1987). Raw data is presented in Appendix I.

The published palynostratigraphic framework for the Cretaceous of Australia is most recently reviewed by Helby, Morgan and Partridge (1987). Dinoflagellates had been only rarely recorded from the Cretaceous of the Gippsland Basin, although Marshall (1988) provided taxonomic study of some Santonian dinoflagellates. In unpublished work, Marshall (1987a) describes dinoflagellates from new cuttings samples in Pisces-1, Marshall (1987b) describes taxonomy and some stratigraphy of Campanian dinoflagellates and in (1987c) describes some Santonian algal cysts. These all provide clues to the Coniacian-Turonian dinoflagellate sequence, but none provides the basis for a working zonation. The zonal scheme of Helby, Morgan and Partridge is shown in figure 1.

In the Tertiary, the Gippsland zonal scheme was most recently published by Partridge (1976), but the scheme is essentially similar to that for New Zealand for which substantial new data is available in Wilson (1988). Significant new Gippsland data is available in unpublished and privately circulated material, Harris (1985), Morgan (1988) and Marshall and Partridge (1988). The zonal framework of Partridge (1976) is shown in fig. 1.

Organic maturity data was generated in the form of the Spore Colour Index. The oil and gas windows follow the general consensus of geochemical literature. The oil window corresponds to spore colours of light-mid brown (2.7) to dark brown (3.6). This would correspond to Vitrinite Reflectance values of 0.6% to 1.3%. However, factors such as detailed kerogen type, basin type, basin history and heating curves all affect precise interpretation, and analytical machine-based maturity parameters are probably more reliable.

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

FIGURE 1 ZONATION FRAMEWORK

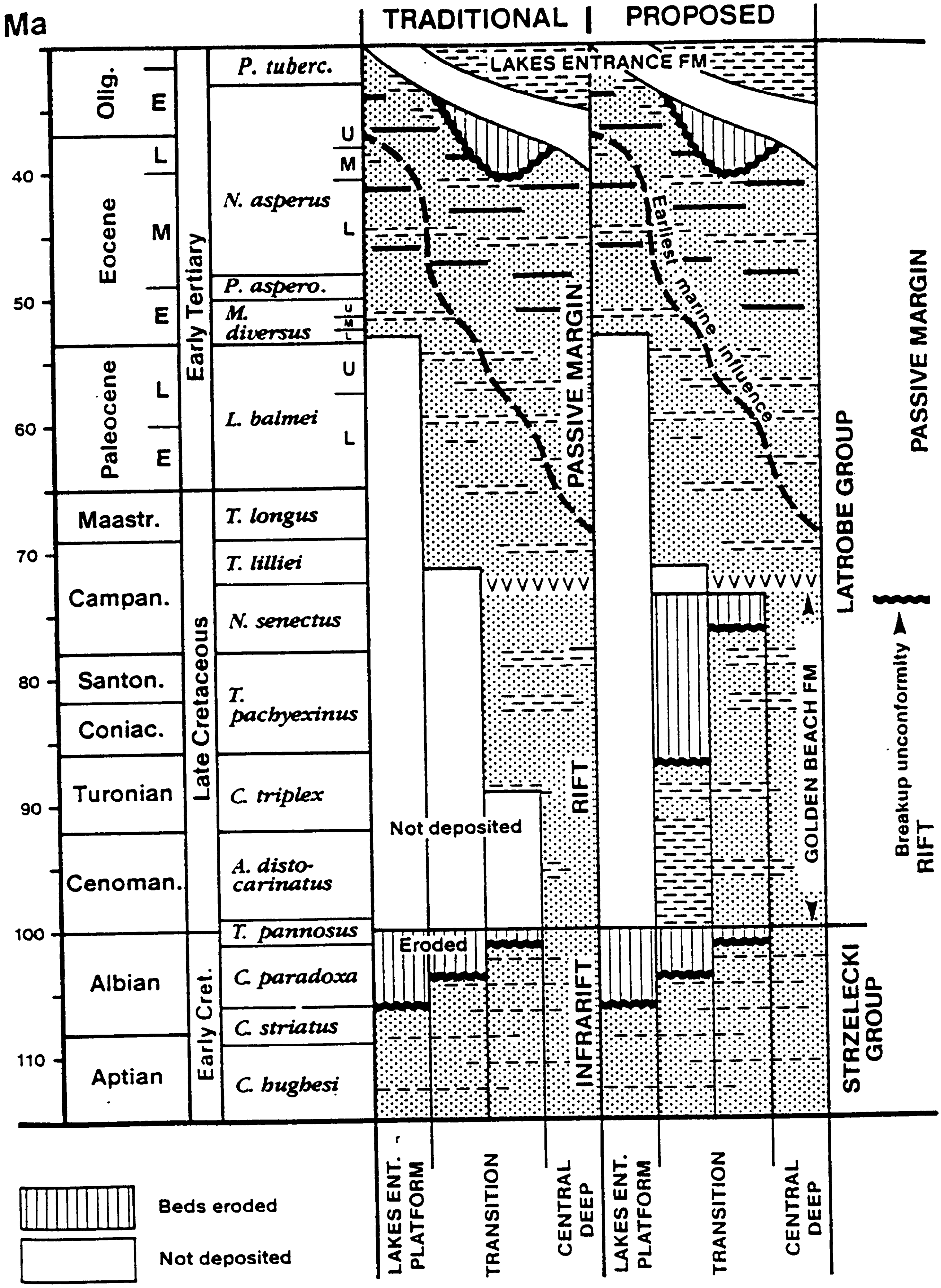

Figure 2 — Time-space diagram generalised for Cretaceous to Eocene in the offshore Gippsland Basin.

III PALYNOSTRATIGRAPHY

A. BURONG-1

- 4100 ft. (cutts) : mixed L. balmei zone and younger with minor late Cretaceous

The age is uncertain as rare Eocene restricted taxa (P. pachypolus and M. tenuis occur mixed with Paleocene and older taxa (L. balmei, G. rudata, T. verrucosus) and very rare Maastrichtian and older taxa (T. confessus). H. harrisii is dominant with frequent G. rudata and Nothofagidites spp. The most obvious interpretation is a Paleocene balmei zone assignment with minor reworked Cretaceous. However, a Maastrichtian upper longus zone assignment is also possible. Nothing older was seen.

Environments appear to be non-marine with abundant and diverse spores and pollen and no marine indicators.

Light brown spore colours suggest marginal maturity for oil generation.

- 4120 ft. (cutts) : C. paradoxa Zone

This assemblage is relatively clean, dominated by O. wellmannii and assigned on the presence of C. paradoxa and the associated spore dominated floras including Aequitriradites spp., C. australiensis, F. dailyi and T. trioreticulosus. Rare Triassic reworking was seen.

Environments are non-marine fluvial on account of the abundant and diverse spore dominated assemblage and absence of marine indicators.

Light to mid brown spore colours suggest early maturity for oil generation.

B. CARRS CREEK-1

- 3860 ft. (cutts), 4470 ft. (cutts) : mixed Tertiary, mostly Eocene

These assemblages are dominated by H. harrisii, Nothofagidites spp. and Proteacidites spp. Eocene indicators include M. diversus, M. tenuis, P. pachypolus and common N. deminatus. Nothing older than Eocene was seen, but heavy caving may be masking something older.

- 4570 ft. (cutts) : C. triplex Zone

This assemblagel is totally dominated by small Dilwynites and contains frequent P. mawsonii. More important, it contains the distinctive algal Rimosicysta spp, which are P. mawsonii zone restricted.

Non-marine environments are indicated by the absence of saline indicators, but lacustrine influence is suggested by the algal assemblage.

Light brown spore colours suggest marginal maturity for oil.

C. DUTSON DOWNS-1

- 4590 ft. (cutts) : apparently L. balmei zone

Assignment is made on L. balmei without older indicators. H. harrisii and N. emarcidus are common.

Non-marine environments are suggested by the common cuticle and diverse spores and pollen without marine indicators.

Yellow to light brown spore colours indicate immaturity for hydrocarbons.

- 4740 ft. (cutts)-5360 ft. (cutts) : apparently T. longus to N. senectus zones

These samples are almost identical with that above apart from the presence of rare Late Cretaceous forms including T. sabulosus (longus to senectus restricted). T. longus (longus restricted) and T. confessus (longus to pachyexinus restricted). It is interpreted as upper late Cretaceous with heavy Tertiary caving, but caving is so heavy that it could be older and masked.

Non-marine environments are indicated by the lack of marine indicators and the abundant cuticle and spore-pollen.

Light brown spore colours suggest marginal maturity for oil.

- 6020 ft. (cutts) : mixed C. triplex zone with C. striatus zone

The early Cretaceous striatus zone is indicated by the association of C. striatus with P. notensis without C. paradoxa. Other spores supporting the Early Cretaceous age include C. holodictyus, Aequitriradites spp., F. wonthaggiensis and Triporoletes spp. The Turonian-Coniacian triplex zone is indicated by the algal Rimosicysta and frequent P. mawsonii but are considered caved. The triplex zone must therefore occur above this point in the well. Dominant however, is the Paleocene balmei assemblage, caving very heavily.

Non-marine striatus environments are non-marine. Lacustrine triplex environments are suggested by the associations described above.

Light to mid brown spore colours suggest early maturity in the striatus zone assemblages.

D. MERRIMAN-1

- 4708-14 ft. (CORE) : upper T. longus zone

This lean and cuticle dominated assemblage is assigned at the base on oldest S. punctatus and at the top on youngest O. sentosa and frequent G. rudata, and the absence of L. balmei. Frequent forms include G. rudata and S. punctatus.

Non-marine possibly lacustrine environments are indicated by the very rare nondescript dinoflagellates in the cuticle and spore-pollen dominated assemblage.

Yellow to light brown spore colours suggest early marginal maturity for oil.

- 5057-81 ft. (CORE), 5740 ft. (cutts), 5950 ft. (cutts) : apparently all C. triplex zone

Assignment of the core is straightforward on youngest C. "pileosus" and oldest P. mawsonii. Common forms include P. mawsonii and M. antarcticus. The two cuttings samples beneath contain heavy Paleocene balmei caving, but also contain triplex zone indicators (common Dilwynites and algal Rimosicysta spp) and nothing older. They are therefore assigned to the *triplex* zone.

Non-marine environments with some lacustrine influence are indicated by the algal acritarchs, diverse pollen and spores and abundant cuticle.

Yellow to light brown spore colours indicate early marginal maturity for oil.

E. NORTH SEASPRAY-1

- 3650 ft. (cutts) : *C. paradoxa* zone

Although the assemblage is dominated by Paleocene *L. balmei* zone and Eocene *diversus* zone taxa, the rare presence of *Aequitriradites* spp., *C. paradoxa*, *C. striatus*, *P. linearis* and *T. reticulatus* indicate the *paradoxa* zone.

Non-marine environments are indicated by the abundant cuticle, dominant spore-pollen, and absence of marine indicators.

Light brown spore colours indicate marginal maturity for hydrocarbons.

- 3840 ft. (cutts), 4060 ft. (cutts) : *C. striatus* zone

These sample are almost identical with that above, but amongst the rare elements, markers for the *paradoxa* zone cannot be found. Oldest *C. striatus* therefore indicates the older *striatus* zone, although its base could be caved.

Non-marine environments and marginal maturity for oil are indicated as above.

F. SEASPRAY-1

- 4590 ft. (cutts) : probably T. longus zone

Although Paleocene L. balmei taxa dominate the sample, the rare occurrence of Cretaceous taxa such as N. senectus (longus to senectus restricted), T. verrucosus (balmei to longus restricted) and T. sectilis (longus to lillei restricted) indicate the longus zone assignment.

Non-marine environments are indicated by the absence of marine indicators and the diverse pollen and spores.

Yellow to light brown spore colours indicate early marginal maturity for oil.

- 4790 ft. (cutts), 4879 ft. (cutts) C. paradoxa zone

Although again Paeocene caving is dominant, rare Aequitriradites, C. paradoxa, C. striatus, Foraminispora spp. and Triporoletes spp. indicate the paradoxa zone.

Non-marine environments are indicated by diverse spores and pollen. The single spiny acritarch at 4879 ft. is considered caved.

Light to mid brown spore colours indicate early maturity for oil.

G. WELLINGTON PARK-1

- 3719-39 ft. (CORE) : L. balmei zone

Assignment is clearly indicated at the top by youngest L. balmei and T. verrucosus and at the base by oldest S. punctatus and T. verrucosus without older indicators. Common forms are P. mawsonii and Proteacidites spp. A single T. waiparaensis is considered reworked.

Non-marine environments are indicated by the diverse pollen and spores and absence of marine indicators.

Yellow spore colours indicate immaturity for oil generation.

- 3816-19 ft. (CORE), 4550 ft. (cutts) : apparently all C. paradoxa zone

Assignment of the core sample is straghtforward on youngest P. notensis (and the other Early Cretaceous associates) and oldest C. paradoxa. Common forms include Cyathidites and Falcisporites. Permian and Triassic reworking were seen. The cuttings at 4550 ft. contain the same assemblage but could clearly be caved into something slightly older.

Non-marine environments are indicated on the absence of saline indicators and the diverse pollen and spores.

Light to mid brown spore colours indicate early maturity for oil.

- 7380 ft. (CORE) : Jurassic-Cretaceous : indeterminate

This sample is very lean of palynomorphs and all are longranging taxa. The presence of C. dampieri, C. penolaensis and R. nodosus indicates a Middle Jurassic to mid Cretaceous age range, but more precision is not possible.

Non-marine environments are suggested, but too few palynomorphs have been seen to be confident.

Mid to dark brown spore colours indicate peak maturity for oil generation.

IV CONCLUSIONS

Clearly the current study was directed use palynology to test the log based already mapped distribution of the Golden Beach Formation. The Gippsland sequence along the northern margin usually comprises the early Cretaceous hughesi to paradoxa Strzelecki Group, a pannosus-distocarinatus unconformity corresponding to Southern Ocean breakup, an early Late Cretaceous triplex Golden Beach Formation, a pachyexinus-senectus unconformity corresponding to Tasman Sea breakup, and the lillei to asperus Latrobe Group. This is discussed in more detial in Lowry (1987) and summarized here in figure 2.

In all the cuttings samples, the younger Latrobe Group caves heavily and may confuse interpretation. Nevertheless, most wells are straight-forward.

In Burong-1, longus Latrobe Group appears to directly overlie paradoxa Strzelecki Group on an unconformity in the gap 4100 ft. to 4120 ft. The Golden Beach Formation appears to be absent.

In Carrs Creek-1, only cuttings are available, and these may mask the true situation. On the palynology, Eocene Latrobe Group appears to directly overliew triplex Golden Beach Formation, with the unconformity in the gap 4470 ft. to 4570 ft.

In Dutson Downs-1, again only cuttings are available and appear to have masked assemblages, making them appear to be deeper. The sequence appears to comprise balmei to possibly senectus Latrobe group (4590 to 5360 ft.), triplex Golden Beach Formation (somewhere in the gap 5360 to 6020 ft.) and Strzelecki Group (6020 ft.). Logs suggest Golden Beach Formation at 1442-1781m (4731-5848 ft.) (Lowry 1987) and may well be right.

In Merriman-1, longus Latrobe Group overlies triplex Golden Beach Formation with the unconformity in the gap 4714 ft. to 5057 ft. The well appears to still be in Golden Beach Formation at 5950 ft., but these cuttings could be masking something older.

In North Seaspray-1, Strzelecki Group spans the sampled interval, although balmei-diversus Latrobe Group caving is heavy.

In Seaspray-1, longus Latrobe Group directly overlies paradoxa Strzelecki Group with the unconformity in the gap 4590 ft. to 4790 ft. The Golden Beach Formation is missing.

In Wellington Park-1, balmei to possibly longus Latrobe Group directly overlies paradoxa Strzelecki Group with the unconformity in the gap 3739 to 3816 ft. The Golden Beach Formation is missing.

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LYNOLOGICAL DATA OF 7 WELLS incl. BURONG #1, MERRIMAN #1

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CLIENT: Cluff Resources

WELL: 7 inc. Burong, Carr's Creek, Merriman, Nth Seaspray

FIELD/AREA: Gippsland Basin (Northen Margin)

ANALYST: Roger Morgan DATE: February '91

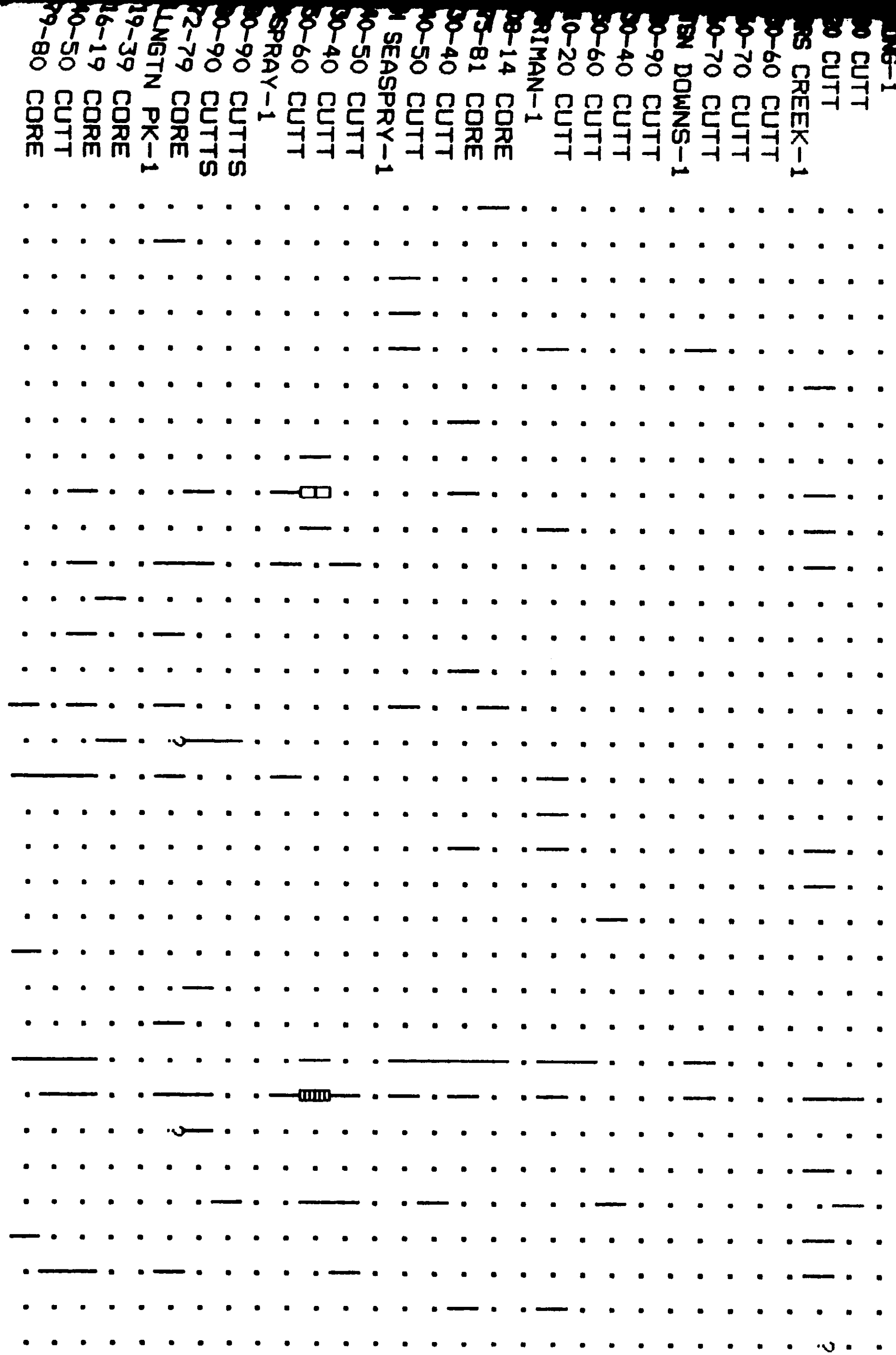
NOTES: all sample depths are in metres

NGE CHART OF GRAPHIC ABUNDANCES BY BY GROUP: DINOS and S/POLLEN

Key to Symbols

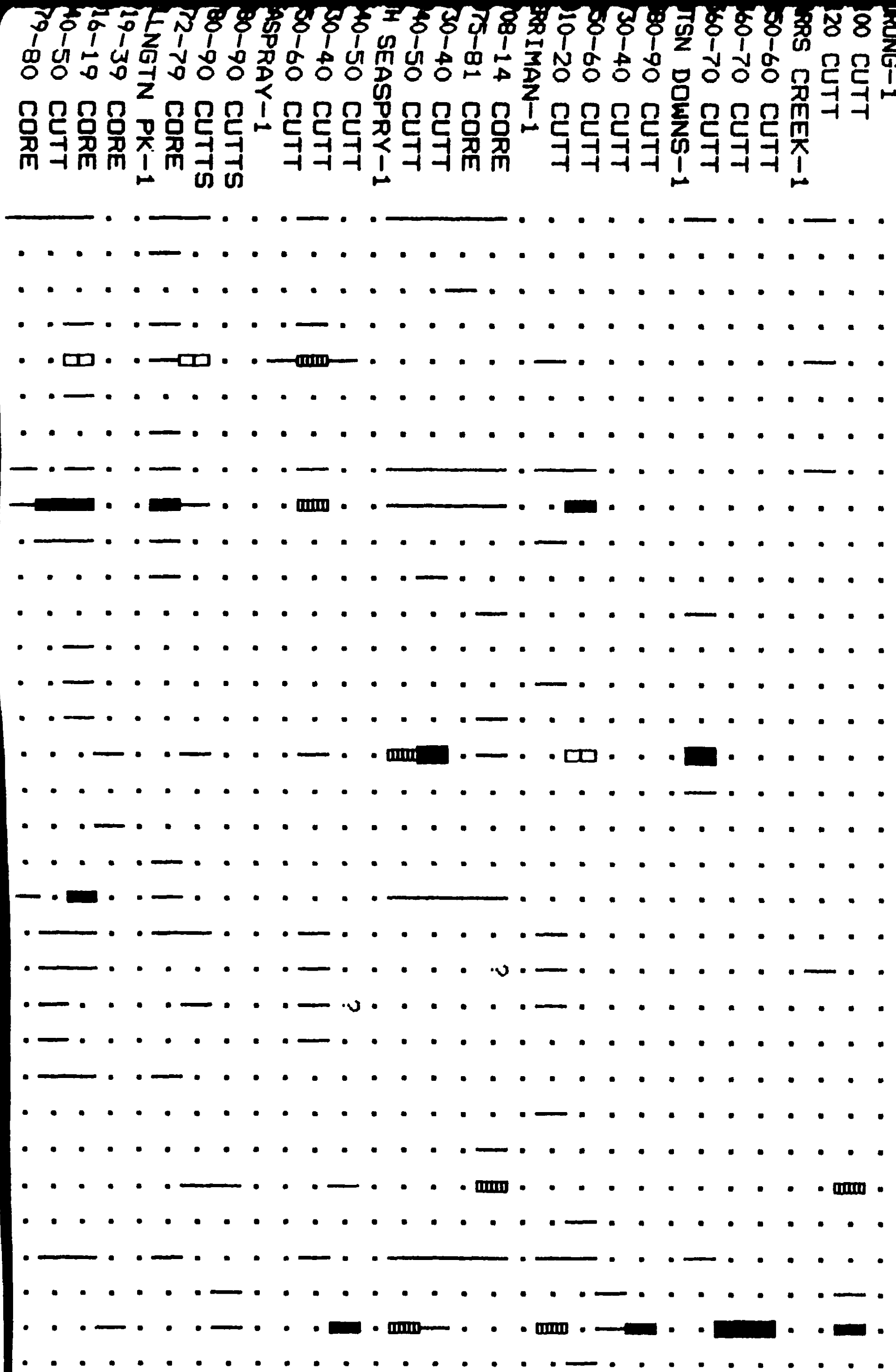
= Very Rare
= Rare
= Few
= Common
= Abundant

? = Questionably Present
• = Not Present



= Abundant
= Questionably Present
= Not Present

1 DEFLANDREA SPP
2 MICHRYTRIDIUM
3 OPERCULODINIUM SPP
4 RIMOSICYSTA ASPERA
5 RIMOSICYSTA EVERSA
6 SCHIZOSPORIS
7 SUBTILISPHAERA
8 AEQUITRIRADITES HISPIDUS
9 AEQUITRIRADITES SPINULOSUS
10 AEQUITRIRADITES TILCHAENESIS
11 AEQUITRIRADITES VERRUCOSUS
12 AMOSOPOLLIS CRUCIFORMIS
13 ANNULISPORITES
14 APPENDICISPORITES DISTOCARINATUS
15 ARAUCARIACITES AUSTRALIS
16 AUSTRALOPOLLIS OBSCURUS
17 BACULATISPORITES
18 BALMEISPORITES GLENELGENSIS
19 BALMEISPORITES HOLODICTYUS
20 BALMEISPORITES TRIDICTYUS
21 BANKSIEACIDITES ARCUATUS
22 CALLIALASPORITES DAMPIERI
23 CAMEROZONOSPORITES AMBIGENS
24 CAMEROZONOSPORITES SP
25 CERATOSPORITES EQUALIS
26 CICATRICOSISPORITES AUSTRALIENSIS
27 CICATRICOSISPORITES CUNEIFORMIS
28 CICATRICOSISPORITES HUGHESI
29 CLAVIFERA TRIPLEX
30 CONCAVISSIMISPORITES PENOLAENSIS
31 COPTOSPORA PARADOXA
32 COPTOSPORA PILEOSUS
33 COPTOSPORA SP



34 COROLLINA TOROSUS
35 CORONATISPORA PERFORATA
36 CRYBELOSPORITES BERBEROIDES
37 CRYBELOSPORITES BRENNERI
38 CRYBELOSPORITES STRIATUS
39 CRYBELOSPORITES STYLOSUS
40 CYATHIDITES ASPER
41 CYATHIDITES AUSTRALIS
42 CYATHIDITES MINOR
43 CYATHIDITES PUNCTATUS
44 CYCADOPITES FOLLICULARIS
45 CYCLOSPORITES HUGHESI
46 DICTOPHYLLIDITES SPP
47 DICTYOTOSPORITES COMPLEX
48 DICTYOTOSPORITES SPECIOSUS
49 DILWYNITES GRANULATUS
50 DILWYNITES TUBERCULATUS
51 ELPHEDRIPITES NOTENSIS
52 FALCISPORITES GRANDIS
53 FALCISPORITES SIMILIS
54 FORAMINISPORIS ASYMMETRICUS
55 FORAMINISPORIS DAILYI
56 FORAMINISPORIS WONTHAGGIENSIS
57 FOVEOSPORITES CANALIS
58 FOVEOSPORITES MORETONENSIS
59 FOVEOSPORITES MULTIFOVEOLATUS
60 FOVEOTRILETES PARVIRETUS
61 GAMBIERINA RUDATA
62 GEPHRYAPOLLENITES CRANWELLAE
63 GLEICHENIIDITES
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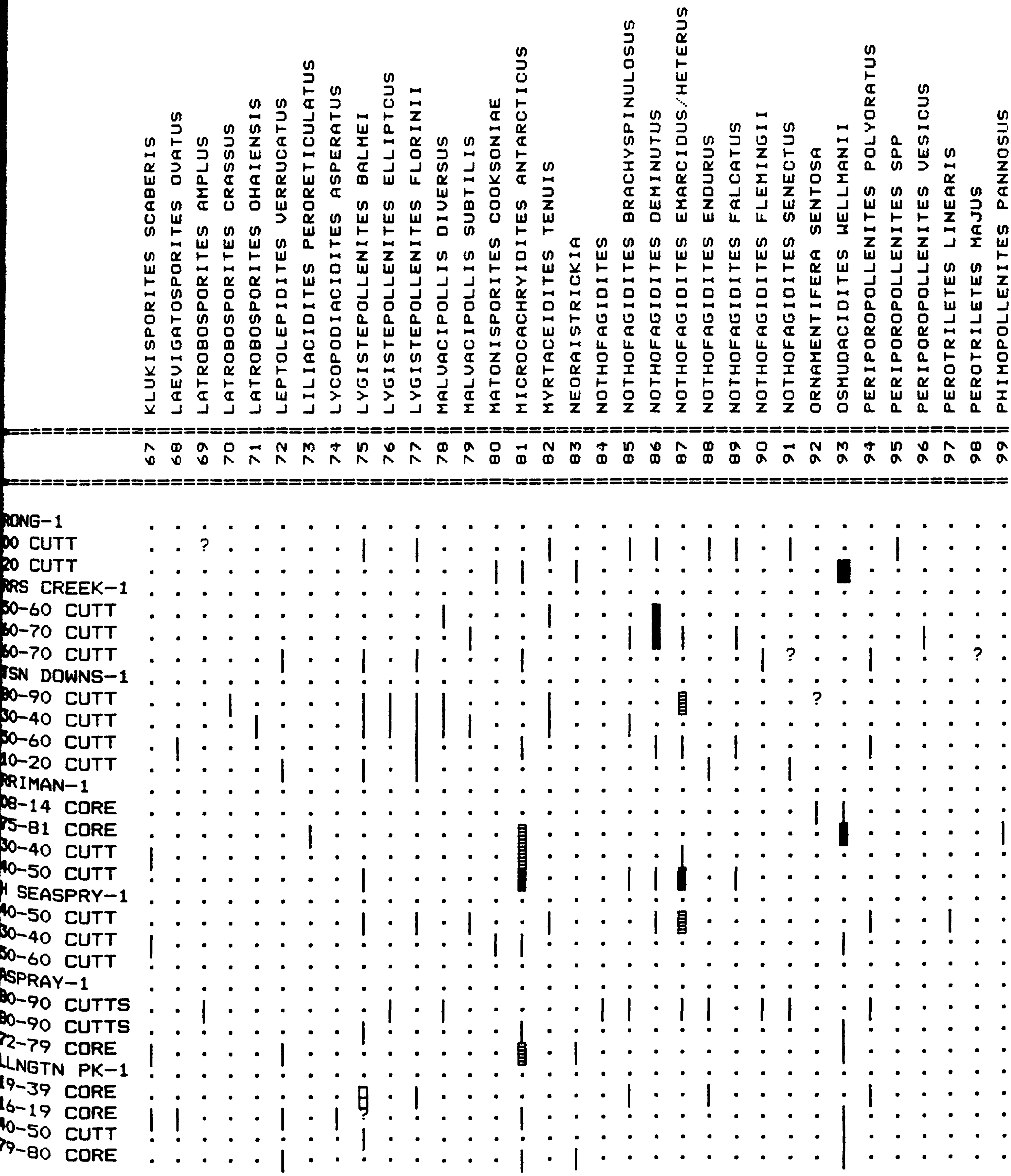
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72 LEPTOLEPIDITES VERRUCATUS
73 LILIACIDITES PERORETICULATUS
74 LYCOPODIACIDITES ASPERATUS
75 LYGISTEPOLLENITES BALMEI
76 LYGISTEPOLLENITES ELLIPTCUS
77 LYGISTEPOLLENITES FLORINII
78 MALVACIPOLLIS DIVERSUS
79 MALVACIPOLLIS SUBTILIS
80 MATONISPORITES COOKSONIAE
81 MICROCACHRYIDITES ANTARCTICUS
82 MYRTACEIDITES TENUIS
83 NEORAISTRICKIA
84 NOTHOFAGIDITES
85 NOTHOFAGIDITES BRACHYSPINULOSUS
86 NOTHOFAGIDITES DEMINUTUS
87 NOTHOFAGIDITES EMARCIDUS/HETERUS
88 NOTHOFAGIDITES ENDURUS
89 NOTHOFAGIDITES FALCATUS
90 NOTHOFAGIDITES FLEMINGII
91 NOTHOFAGIDITES SENECTUS
92 ORNAMENTIFERA SENTOSA
93 OSMUDACIDITES WELLMANII
94 PERIPOROPOLLENITES POLYORATUS
95 PERIPOROPOLLENITES SPP
96 PERIPOROPOLLENITES VESICUS
97 PEROTRILETES LINEARIS
98 PEROTRILETES MAJUS
99 PHIMOPOLLENITES PANNOSUS
RONG-1
00 CUTT
20 CUTT
RRS CREEK-1
50-60 CUTT
60-70 CUTT
60-70 CUTT
TSN DOWNS-1
80-90 CUTT
30-40 CUTT
50-60 CUTT
10-20 CUTT
RRIMAN-1
08-14 CORE
75-81 CORE
30-40 CUTT
40-50 CUTT
H SEASPRY-1
40-50 CUTT
30-40 CUTT
50-60 CUTT
ASPRAY-1
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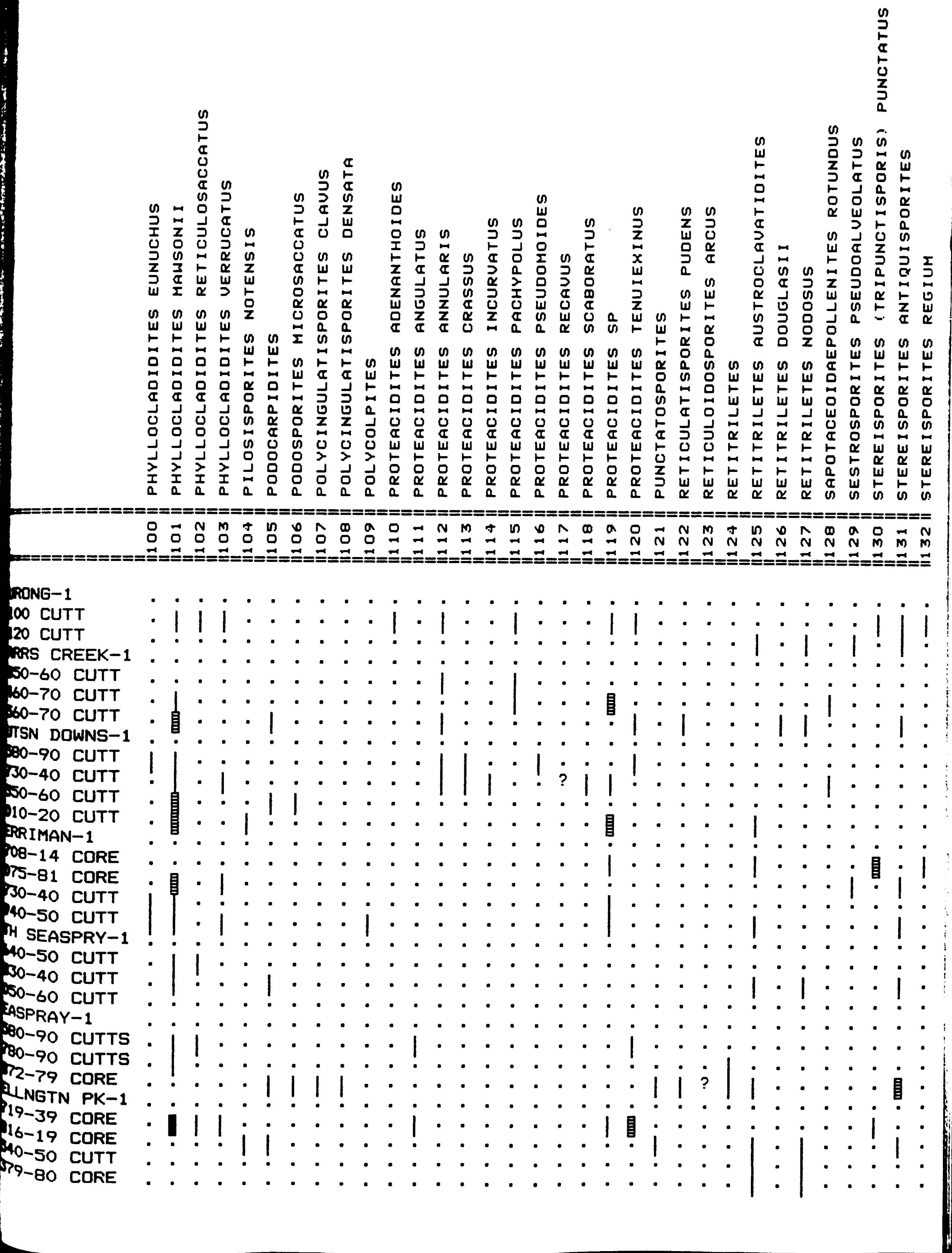
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105 PODOCARPIDITES
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108 POLYCINGULATISPORITES DENSATA
109 POLYCOLPITES
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111 PROTEACIDITES ANGULATUS
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114 PROTEACIDITES INCURVATUS
115 PROTEACIDITES PACHYPOLUS
116 PROTEACIDITES PSEUDOMOIDES
117 PROTEACIDITES RECAVUS
118 PROTEACIDITES SCABORATUS
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120 PROTEACIDITES TENUIEXINUS
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132 STEREISPORITES REGIUM
RONG-1
00 CUTT
20 CUTT
RRS CREEK-1
50-60 CUTT
60-70 CUTT
60-70 CUTT
TSN DOWNS-1
80-90 CUTT
30-40 CUTT
50-60 CUTT
10-20 CUTT
RRIMAN-1
08-14 CORE
75-81 CORE
30-40 CUTT
40-50 CUTT
H SEASPRY-1
40-50 CUTT
30-40 CUTT
50-60 CUTT
ASPRAY-1
80-90 CUTTS
80-90 CUTTS
72-79 CORE
LLNGTN PK-1
19-39 CORE
16-19 CORE
40-50 CUTT
79-80 CORE
?

	133 STERIESPORITES POCOKII	134 STOVERISPORITES LUNARIS	135 TETRACOLPORITES VERRUCOSUS	136 TRICOLPITES CONFESSUS	137 TRICOLPITES GILLII	138 TRICOLPITES LONGUS	139 TRICOLPITES SABULOSUS	140 TRICOLPITES SP	141 TRICOLPITES WAIPARAENSIS	142 TRICOLPORITES ANGURIUM	143 TRICOLPORITES PAENESTRIATUS	144 TRILETES	145 TRILOBOSPORITES TRIBOTRYS	146 TRILOBOSPORITES TRIORETICULOSUS	147 TRIORITES MAGNIFICUS	148 TRIPOROLETES RADIATUS	149 TRIPOROLETES RETICULATUS	150 TRIPOROLETES SIMPLEX	151 TRIPOROPOLLENITES	152 TRIPOROPOLLENITES SECTILIS	153 VELOSPORITES TRIQUETRUS	154 VITREISPORITES PALLIDUS	
BURONG-1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	BURONG-1
4100 CUTT	.	.	|	|	|	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	4100 CUTT
4120 CUTT	|	.	.	.	.	.	.	.	.	.	.	.	.	|	.	.	|	.	.	.	.	.	4120 CUTT
CARRS CREEK-1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	CARRS CREEK-1
3850-60 CUTT	.	.	.	.	.	.	.	.	.	|	.	.	.	.	.	.	.	.	.	.	.	.	3850-60 CUTT
4460-70 CUTT	.	.	.	.	.	.	.	.	.	|	|	.	.	.	.	.	.	.	.	.	.	.	4460-70 CUTT
4560-70 CUTT	.	.	.	.	|	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	4560-70 CUTT
DUTSN DOWNS-1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	DUTSN DOWNS-1
4580-90 CUTT	.	.	.	.	.	.	.	.	.	|	.	.	.	.	.	.	.	.	.	.	.	.	4580-90 CUTT
4730-40 CUTT	.	.	.	.	.	.	|	.	.	|	.	.	.	.	|	.	.	.	.	.	.	.	4730-40 CUTT
5350-60 CUTT	.	.	.	|	|	|	|	.	.	.	.	.	.	.	.	|	.	.	.	.	.	|	5350-60 CUTT
6010-20 CUTT	.	|	.	.	.	.	.	.	.	.	.	.	.	.	.	.	|	.	.	.	.	.	6010-20 CUTT
MERRIMAN-1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	MERRIMAN-1
4708-14 CORE	.	.	.	.	.	.	.	|	.	.	.	.	.	.	.	.	.	.	.	.	.	.	4708-14 CORE
5075-81 CORE	.	.	.	.	.	.	.	|	.	.	.	.	.	.	.	|	|	.	.	.	.	.	5075-81 CORE
5730-40 CUTT	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	|	.	.	.	.	.	.	5730-40 CUTT
5940-50 CUTT	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	|	.	.	.	.	5940-50 CUTT
NTH SEASPRY-1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	NTH SEASPRY-1
3640-50 CUTT	.	.	.	.	.	.	.	|	.	.	.	.	.	.	.	.	|	.	.	.	.	.	3640-50 CUTT
3830-40 CUTT	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	|	.	.	.	.	|	.	3830-40 CUTT
4050-60 CUTT	.	.	.	.	.	.	.	.	.	.	.	.	|	.	.	.	|	.	.	.	.	.	4050-60 CUTT
SEASPRAY-1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	SEASPRAY-1
4580-90 CUTTS	.	.	|	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	|	.	.	4580-90 CUTTS
4780-90 CUTTS	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	|	|	|	.	.	.	.	4780-90 CUTTS
4872-79 CORE	|	.	.	.	.	.	.	.	.	.	.	|	.	.	.	|	|	.	|	.	.	|	4872-79 CORE
WELLNGTN PK-1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	WELLNGTN PK-1
3719-39 CORE	.	.	|	.	.	.	.	.	|	.	.	.	.	.	.	.	.	.	.	.	.	.	3719-39 CORE
3816-19 CORE	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	|	|	.	.	.	.	3816-19 CORE
4540-50 CUTT	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	|	.	.	.	.	.	4540-50 CUTT
7379-80 CORE	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	7379-80 CORE