MORGAN PALAEO ASSOCIATES

PALYNOLOGICAL/PETROLEUM GEOLOGICAL CONSULTANTS

POSTAL ADDRESS: Box 161, Maitland, South Australia 5573
DELIVERIES: 1 Shannon Tce, Maitland, South Australia 5573
Phone (088) 32 2795 Fax (088) 32 2798

FINAL PALYNOLOGY OF BHPP LA BELLA #1,

OFFSHORE OTWAY BASIN, VICTORIA, AUSTRALIA

BY

ROGER MORGAN AND NIGEL HOOKER

for BHP PETROLEUM

June 1993

REF:W.OTW.RPBELLA1

FINAL PALYNOLOGY OF BHPP LA BELLA #1

OFFSHORE OTWAY BASIN, VICTORIA, AUSTRALIA

BY

ROGER MORGAN AND NIGEL HOOKER

CONTENTS **PAGE**

I SUMMARY

635.0m(swc), 695.0m(swc) : *bellus* Zone or older : Miocene or older : offshore marine : immature

832.0m(swc) : extremely lean and indeterminate

896.5m(swc), 997.0m(swc), 1027.0m(swc), 1040.0m(swc), 1064.0m(swc) : lower to mid *tuberculatus* Zone : Oligocene : offshore marine : immature

1115.0m(swc), 1151.0m(swc), 1200.5(swc) : probably Oligocene : lean with heavy reworked Cretaceous (lower *X. australis* dinoflagellate Zone) at 1151m : offshore marine : immature

1255.0m(swc), 1264.0m(swc) : upper *asperus* Zone (*comatum* dinoflagellate Zone) : Late Eocene : offshore marine : immature

1340.0m(swc), 1364.0m(swc) : lower *asperus* Zone : Middle Eocene : intermediate to nearshore marine : immature

1489.0m(swc), 1491.0m(swc), 1494.0m(swc) : *asperopolus* Zone (1489.0 *edwardsii* dinoflagellate Zone, 1491.0m *thompsonae* dinoflagellate Zone) : Early Eocene : marginally marine at the base, passing to intermediate marine at the top : immature

1517.0m(swc), 1523.0m(swc) : upper *diversus* Zone (1523.0 *ornatum* dinoflagellate Zone) : Early Eocene : nearshore marine : immature

1544.0m(swc) : lower *diversus* Zone : Early Eocene : marginally marine : immature

1563.0m(swc), 1580.0m(swc), 1640.0m(swc), 1663.0m(swc) : upper *senectus* Zone (upper *australis* dinoflagellate Zone 1580-1663m) : early Campanian : nearshore marine : immature

1721.0m(swc), 1765.0m(swc) : upper *senectus* Zone (lower *australis* dinoflagellate Zone) : early Campanian : nearshore marine : immature

1823m(cutts), 1865.0m(swc) : middle *senectus* Zone (upper *aceras* dinoflagellate Zone : early Campanian : nearshore marine : immature

1891.0m (swc), 1949.0m(swc), 1979.0m(swc) : apparently upper *apoxyexinus* Zone (*aceras* dinoflagellate Zone ?middle subzone but unclear in swcs) : early Campanian : nearshore marine : marginally mature

2004.0m(swc) : upper *apoxyexinus* Zone (upper *cretacea* dinoflagellate Zone) : Santonian : intermediate marine : marginally mature

2020.0m(swc) : middle *apoxyexinus* Zone : Santonian : intermediate marine : marginally mature

2028.0m(swc) 2043.0m(swc), 2054.0m(swc), 2059.0m(swc), 2066.0m(swc), 2076.0m(core) : lower *apoxyexinus* Zone : Santonian : intermediate marine to very nearshore marine : marginally mature

2086.1m(core), 2096.0m(core), 2111.5m(swc), 2118.0(swc), 2145.0m(swc), 2159.0m(swc), 2164.0m(swc), 2166.0m(swc), 2179.0m(swc), 2199.0m(swc), 2232.0(swc), 2252.0m(swc), 2270.0m(swc) : *mawsoni* Zone (2252.0 - 2270.0m *infusorioides* dinoflagellate Zone) : Coniacian-Turonian : mostly very nearshore with one intermediate marine exception at 2118m and nearshore below 2232m : marginally mature

2275.5m(swc), 2284.0m(swc), 2286.0m(swc), 2309.0m(swc), 2330.0m(swc), 2398.0m(swc), 2402.0m(swc), 2454.0m(swc), 2489.0m(cutts), 2497.0m(swc), 2500.0m(swc), 2528.0m(swc), 2540.5m(swc), 2544.5m(swc), 2550m(cutts), 2567.0m(swc), 2573m(cutts), 2593.0m(swc) : *distocarinatus* Zone (2277.5, 2284, 2286, 2309, 2402 *infusorioides* Zone) : Cenomanian : above 2402m mostly nearshore marine with marginal marine (2286m), non-marine (2330m) and intermediate marine (2309m) exceptions. Section below 2454m may all be non-marine with the observed dinoflagellates being caved as they are only seen in the cuttings, not the swcs : marginally mature to 2330, early mature below 2398m.

2605.0m(swc), 2624.0m(swc), 2640m(cutts), 2671.0m(swc), 2683.0m(swc), 2690m(cutts), 2705.0m(swc), 2715(cutts), 2730.0m(swc), 2735m(cutts) : Indeterminate (all except 2646.5m are extremely lean with percentage counts invalid. At 2646.5m(swc), an abundant and diverse assemblage lacks zonal markers of Sherbrook or Otway Group sequences with rare Permian and Aptian reworking) : non-marine.

II INTRODUCTION

During drilling seven cuttings samples were studied on an urgent basis at BHPP's Portland Base and were reported in 2 faxed reports. After well completion, a further seventy four samples (70 swcs, 3 from core, 1 cutts) were submitted for detailed study. All results are summarised herein.

Palynomorph occurrence data are shown as Appendix I and include the urgent and followup samples and form the basis for the assignment of the samples to sixteen spore-pollen and dinoflagellate units of Miocene to Cenomanian age. The Cretaceous spore-pollen zonation is essentially that of Dettmann and Playford (1969), but has been significantly modified and improved by various authors since, and most recently discussed in Helby et al (1987), as shown on Figure 1. The Late Cretaceous zonation has been modified by Morgan (1992) in project work for BHPP (Figure 2). Tertiary zones are essentially those of Partridge (1976).

Maturity data was generated in the form of Spore Colour Index, and is plotted on Figure 3 Maturity Profile of La Bella #1. The oil and gas windows on Figure 3 follow the general consensus of geochemical literature. The oil window corresponds to spore colours of light-mid brown (Staplin Spore Colour Index of 2.7) to dark brown (3.6). These correspond to vitrinite reflectance values of 0.6% to 1.3%. Geochemists argue variations on kerogen type, basin type and basin history. The maturity interpretation is thus open to reinterpretation using the basic colour observations as raw data. However, the range of interpretation philosophies is not great, and probably would not move the oil window by more than 200 metres.

III PALYNOSTRATIGRAPHY

A 635.0m(swc), 695.0m(swc) : *bellus* Zone or older

Assignment of these lean samples to the *Triporopollenites bellus* Zone of Miocene age or older is indicated by youngest *Nothofagidites asperus* and *Myrtaceidites verrucosus* and confirmed by the dinoflagellates. Of the spore-pollen, *Cyathidites*, *Dilwynites*, *Falcisporites* and *Haloragacidites harrisii* are frequent to common.

Of the dinoflagellates, *Spiniferites ramosus* and *Achomosphaera alicornu* are common in low diversity assemblages. The presence of *Impletosphaeridium* sp1 Manum suggests a late Oligocene to late Miocene age from its European range. Australian records in this part of the section are inconclusive, as this section has rarely been studied.

Offshore marine environments are suggested by high dinoflagellate content despite low diversity, and low organic yields, apparently starved.

Colourless palynomorphs indicate immaturity for hydrocarbon generation.

B 832.0(swc) : extremely lean and indeterminte

This sample yielded very few palynomorphs (about 30) with *Cyathidites*, *Dilwynites*, *Spiniferites* and *Operculodinium* frequent. Age diagnostic taxa were absent.

Offshore marine environments were indicated by the equal proportions of dinoflagellates and spore-pollen in an organically lean assemblage.

Immaturity for hydrocarbons is indicated by colourless palynomorphs.

C 896.5m(swc), 997.0m(swc), 1027.0m(swc), 1040.0m(swc), 1064.0(swc) : lower to mid *tuberculatus* Zone

Assignment to the lower to middle *Proteacidites tuberculatus* Zone of Oligocene age is indicated by the dinoflagellates at the top, supported by youngest *Nothofagidites flemingii* at 1027.0m. The base is indicated by oldest *Cyatheacidites annulatus*. Amongst the spore-pollen, *Cyathidites*, *Dilwynites*, *Falcisporites*, *H. harrisii* and *Nothofagidites* are frequent to common, with *Nothofagidites flemingii*, *N. falcata* and *C. annulatus* rare and intermittent. Minor

Permian reworking was noted.

Dinoflagellates are frequent to abundant with *Spiniferites* and *Operculodinium* frequent to common in all samples. The *Chiropterygium* group occur 896.5-1027.0m (abundant at 896.5m) and are Oligocene restricted worldwide with their common occurrence in the Late Oligocene. *Impletosphaeridium* sp1 Manum also occurs 896.5-1040.0m and is late Oligocene to Late Miocene worldwide. A Late rather than Early Oligocene age is therefore favoured, but ranges of these taxa have not yet been well established in Australia.

Offshore marine environments appear likely with generally moderate to high dinoflagellate content despite low moderate diversity, combined with low organic yields.

Immaturity for hydrocarbon generation is indicated by the colourless palynomorphs.

D 1115.0m(swc), 1151.0m(swc), 1200.5m(swc) : probably Oligocene

These three samples are all very lean and 1200.5m is almost barren. They can thus not be assigned to any spore-pollen zone. Of the pollen considered in place, *Nothofagidities* spp and *Haloragacidites harrisii* dominate and indicate an early Miocene or older age. Given the Late Eocene ages seen beneath, these samples probably belong to the Oligocene, and this is supported by the dinoflagellates. Significant Cretaceous reworking is present, especially at 1151m.

Dinoflagellates are very common in these samples but are mostly long ranging. Common to abundant are *Operculodinium* spp, *Hemicystodinium zoharyi* and *Spiniferites ramosus*. *Operculodinium* is usually abundant in the lower to middle *P. tuberculatus* spore-pollen zone. At 1151m, reworked Cretaceous dinoflagellates are frequent including *Odontochitina porifera*, *Nelsoniella aceras*, *N. semireticulata* and frequent *Xenikoon australis*, suggesting the lower *australis* dinoflagellate zone of early Campanian age.

Environments are offshore marine, with dinoflagellates dominant (72%, 71% and barren downhole), but of low diversity. The limited diversity spore-pollen are consistent with an offshore location.

Colourless spores and pollen indicate immaturity for hydrocarbon generation.

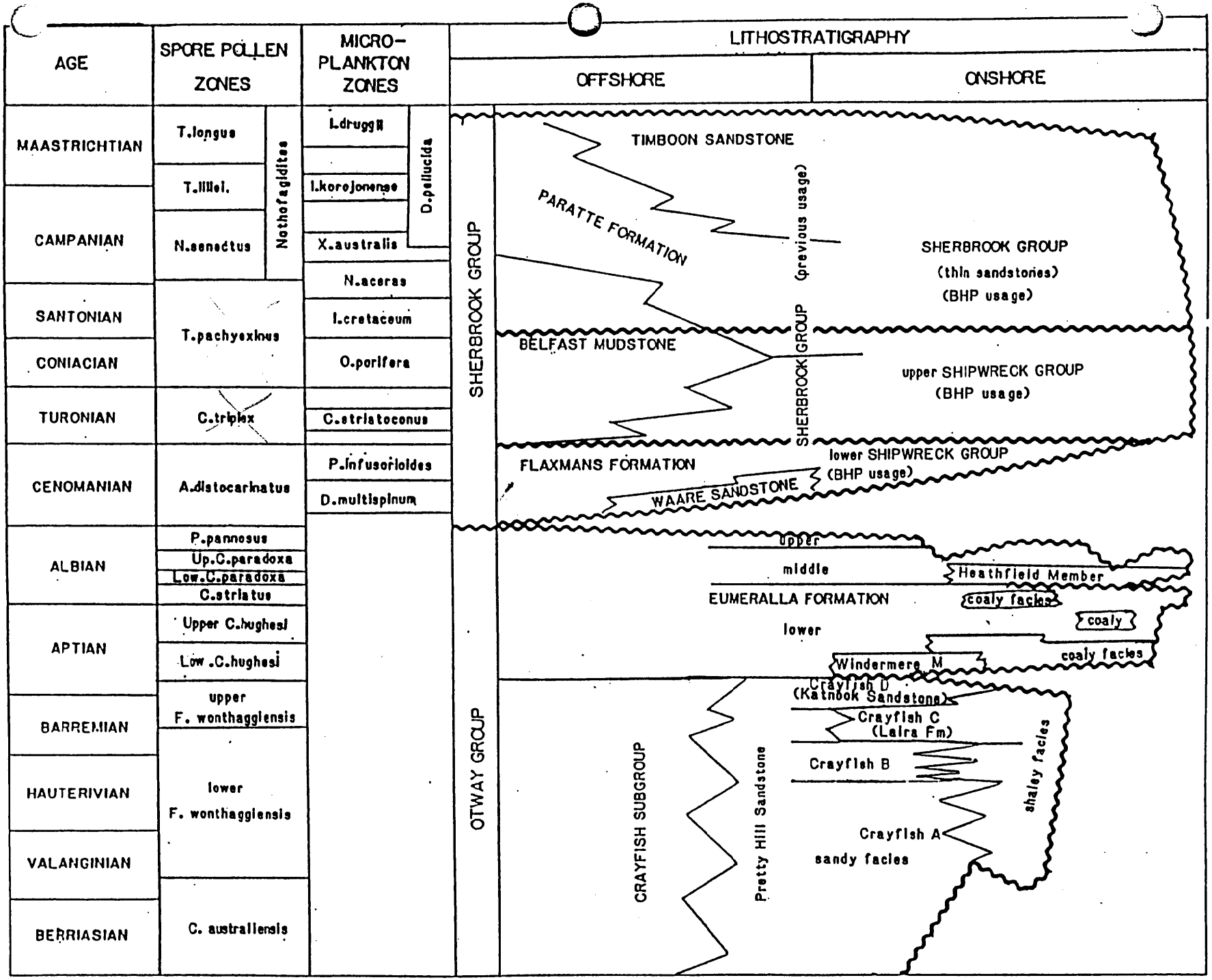


FIGURE 1. CRETACEOUS REGIONAL FRAMEWORK, OTWAY BASIN

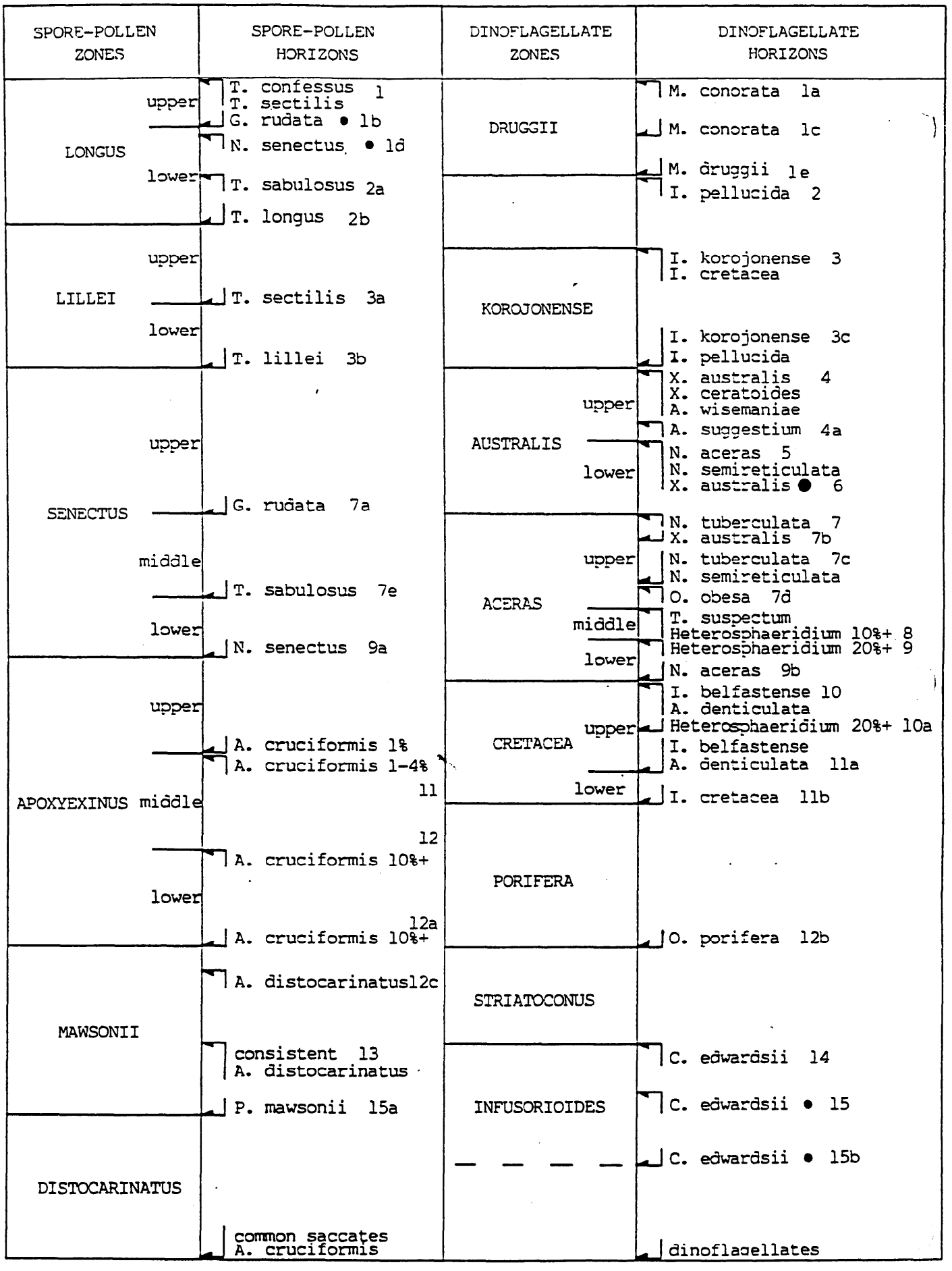


FIGURE 2 ZONATION USED HEREIN SHOWING THE NUMBERED HORIZONS AGAINST THE EXISTING FORMAL ZONATION.

• =frequent (4-10%) ● =common (11-30%)

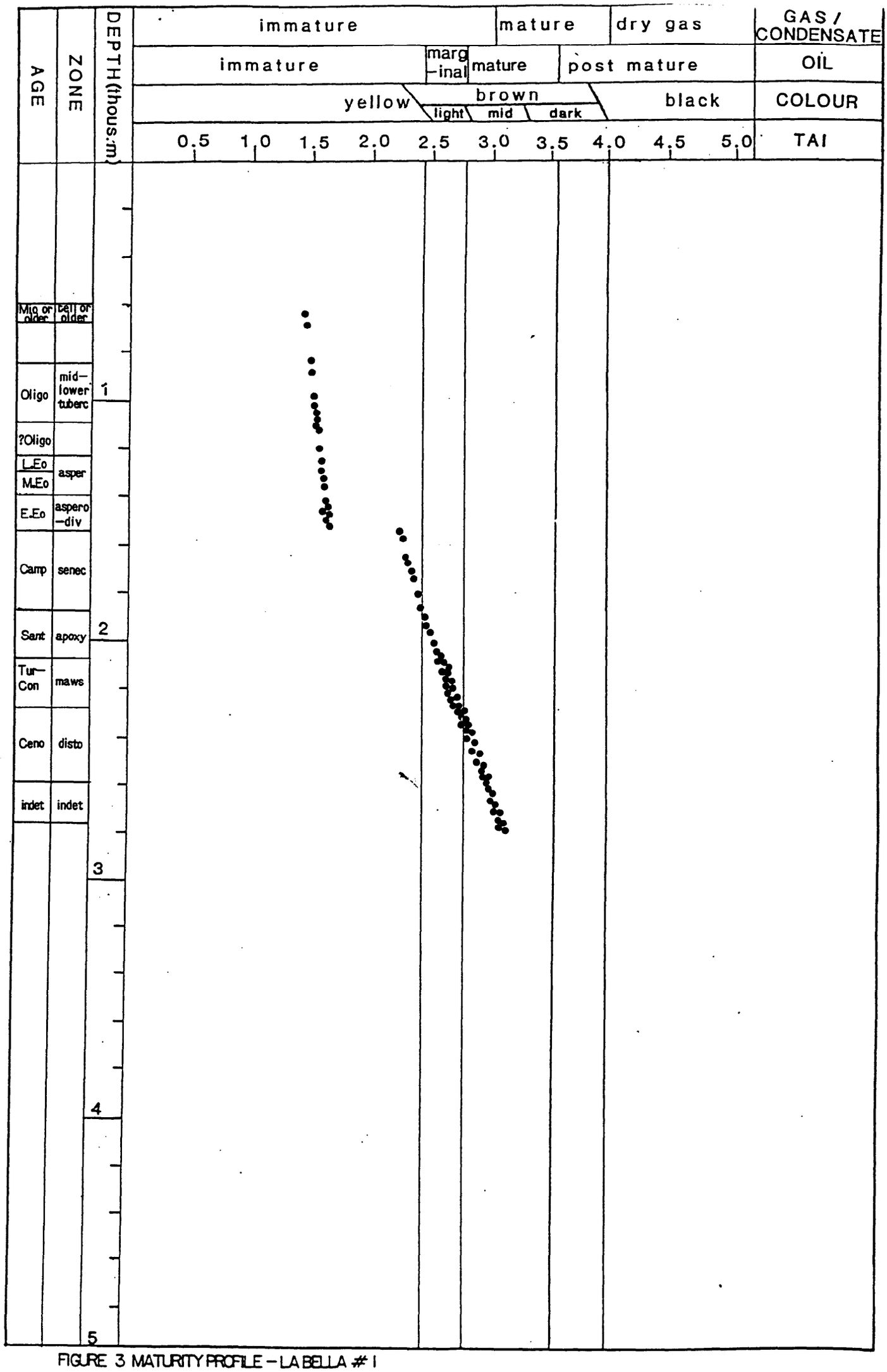


FIGURE 3 MATURITY PROFILE – LA BELLA # 1

E 1255.0m(swc), 1264.0m(swc) : upper *asperus* zone

Assignment to the upper *Nothofagidites asperus* Zone of Late Eocene age is based on the dinoflagellates, as the pollen are scarce and non-diagnostic in these very lean assemblages. Amongst the pollen, *Nothofagidites* (including *N. falcata*), *Haloragacidites* and *Proteacidites* are the most frequent. Inertinite dominates the lean yield.

Dinoflagellates are relatively common in these very lean assemblages and include frequent *Phthanoperidinium comatum* and *Systematophora placacantha*, indicating the *P. comatum* dinoflagellate zone, correlative with the upper *N. asperus* spore-pollen zone.

Offshore marine environments are indicated by the dinoflagellate content (~60% and ~30% downhole) and their relatively high diversity in such a lean assemblage.

Colourless pollen indicate immaturity for hydrocarbon generation.

F 1340.0m(swc), 1364.0m(swc) : lower *asperus* Zone

These assemblages are extremely lean but assignment to the lower *Nothofagidites asperus* Zone of Middle Eocene age is indicated at the top by youngest *Dryptopollenites semilunatus* and *Intratriporopollenites notabilis*, supported by youngest *Proteacidites pachypolus* and *P. leightonii* and the dinoflagellate data. At the base, dinoflagellate data indicate assignment. Amongst the very rare pollen, *H. harrisii*, *Nothofagidites* and *Proteacidites* are the most common.

Amongst the dinoflagellates, youngest *Homotriblium tasmaniense*, consistent *Impagidinium maculatum* and oldest *S. placacantha* and *Deflandrea phosphoritica* indicates the *heterophlycta* dinoflagellate zone, correlative with the lower *asperus* spore-pollen zone. *Microdinium* spp and *Operculodinium* spp are frequent.

Intermediate marine to nearshore marine environments are indicated by the dinoflagellate content (~35% and ~30%) and moderate diversity. Spores and pollen are clearly dominant in very lean assemblages.

Colourless palynomorphs indicate immaturity for hydrocarbons.

G 1489.0m(swc), 1491.0m(swc), 1494.0m(swc) : *asperopolus* Zone

Assignment to the *Proteacidites asperopolus* Zone of latest Early Eocene to earliest Middle Eocene is indicated at the top by youngest *Proteacidites ornatus*, *P. grandis*, *Malvacipollis diversus* (at 1489.0m) and *Myrtaceidites tenuis* (at 1491.0m). At the base, oldest *P. asperopolus* is definitive. *H. harrisii* and *Proteacidites* spp are common with *Nothofagidites* very rare. Other distinctive species include *Beaupreadites verrucosus*, *Cupanieidites orthoteichus*, *Proteacidites pachypolus* and *Santalumidites cainozoicus*.

Dinoflagellates include *Kisselovia edwardsii* and common *H. tasmaniense* at 1489.0m indicating the *edwardsii* dinoflagellate zone and *Kisselovia thompsonae* without *K. edwardsii* at 1491.0m, indicating the *thompsonae* dinoflagellate zone. Both zones are correlative with the lower half (Early Eocene part) of the *asperopolus* spore-pollen zone.

Environments are marginally marine at the base (2% low diversity dinoflagellates with 16% freshwater algae at 1494.0m) passing to nearshore (18% moderate diversity dinoflagellates and 5% freshwater algae at 1491.0m) passing to intermediate marine (55% diverse dinoflagellates with 7% freshwater algae at 1489.0m).

Colourless palynomorphs indicate immaturity for hydrocarbons.

H 1517.0m(swc), 1523.0m(swc) : upper *diversus* Zone

Assignment to the upper *Malvacipollis diversus* Zone of Early Eocene age is indicated at the top by the absence of younger markers and at the base by oldest *Santalumidites cainozoicus* (1517.0m) *Proteacidites pachypolus* (1523.0m) and *Myrtaceidites tenuis* (1517.0m). *H. harrisii*, *Malvacipollis* spp and *Proteacidites* are the most common taxa in diverse assemblages that include *C. orthoteichus*, *Periporopollenites demarcatus*, *Proteacidites tuberculiformis*, *Polycolpites esobalteus*, *I. notabilis* and *Triporopollenites ambiguus*.

Dinoflagellates are also age diagnostic and include oldest *H. tasmaniense* and *Wetzeliella ornatum* without younger markers and indicate the *ornatum* dinoflagellate zone, correlative with the upper half of the upper *diversus* spore-pollen zone. The deeper sample contains common *Operculodinium* and *H. tasmaniense* while the shallower one contains few dinoflagellates with frequent

Operculodinium.

Environments are nearshore marine with dinoflagellate contents of 11% and 35% downhole. The freshwater alga *Botryococcus* is also common (14% and 21% downhole), indicating a strong lacustrine influence. Tidal lakes or estuaries seem likely environments. Pollen and spores dominate and are of high diversity.

Colourless palynomorphs indicate immaturity for hydrocarbons.

I 1544.0m(swc) : lower *diversus* Zone

Assignment to the lower *Malvacipollis diversus* spore-pollen zone is indicated at the top by the absence of younger indicators and at the base by oldest *Malvacipollis diversus* and *Periporopollenites demarcatus*. Common taxa are *Cyathidites minor*, *Dilwynites granulatus* and *Falcisporites similis*, and *Proteacidites* are frequent.

Dinoflagellates are rare but include *Deflandrea pachyceros*, usually restricted to the Early Eocene.

Marginally marine environments are indicated by the very low dinoflagellate content (<1%) and low diversity. Significant lacustrine influence is suggested by frequent freshwater *Botryococcus* (6%). Common cuticle and common and diverse spores and pollen indicate major terrestrial influence.

Colourless palynomorphs indicate immaturity for hydrocarbons.

J 1563.0m(swc), 1580.0m(swc), 1640.0m(swc), 1663.0m(swc) : upper *senectus* Zone (upper *australis* dino Zone)

Assignment to the upper *Nothofagidites senectus* Zone of early Campanian age is indicated at the top by the absence of younger markers and confirmed by dinoflagellate data and indicated at the base by oldest *Gambierina rudata*. This shows the total absences of the *lillei* to *balmei* Zones (mid Campanian to Paleocene) representing a major unconformity. Other significant top ranges related to this truncation include *Tricolpites confessus*, *G. rudata* and *Tricolpites sabulosus*. Within the interval, *Proteacidites* spp, *Cyathidites* spp and *Falcisporites* spp are all common with *Cicatricosisporites australiensis*, *Gleicheniidites* and *Nothofagidites senectus* all frequent. Minor Permian and Triassic reworking was seen in all samples.

Amongst the dinoflagellates, youngest *Xenascus ceratoides* (1580.0m) and *Xenikoon australis* (1640.0m) at the top and the absence of older markers at the base indicates the upper *X. australis* dinoflagellate zone. Youngest *Odontochitina porifera* (1580.0m), *Areosphaeridium suggestium* (1640.0m) and *Anthosphaeridium wisemaniae* (1663.0m) confirm the assignment. A single specimen of *Nelsoniella aceras* at 1640.0m is considered reworked. Amongst the rare dinoflagellates, *X. australis* and *X. ceratoides* are the most frequent.

Nearshore marine environments are indicated by the low dinoflagellate content (6%, 5%, 11% and 13% downhole) and their low diversity. The abundant and diverse pollen and spores indicate very strong terrestrial influence.

Yellow spore colours indicate immaturity for hydrocarbons.

K 1721.0m(swc), 1765.0m(swc), upper *senectus* Zone (lower *australis* dino zone)

Assignment to the upper *N. senectus* Zone of early Campanian age is indicated at the top by the absence of younger markers and at the base by oldest *G. rudata T. confessus* and *T. sabulosus* occur consistently. *Proteacidites* spp, *Cyathidites* spp and *Falcisporites* spp are common. Minor Permian reworking was also seen.

Amongst the dinoflagellates, youngest *Nelsoniella aceras* and the major downhole influx of *X. australis* at the top indicate the lower *australis* dinoflagellate zone. *X. australis* is common in both samples with few or no other taxa.

Environments are nearshore marine with 24% and 25% dinoflagellates downhole, but very low diversity (3 and 1 species downhole). Pollen and spores are dominant and diverse.

Yellow palynomorphs indicate immaturity for hydrocarbon generation.

L 1823.0m(cutts), 1865.0m(swc) : middle *senectus* Zone (upper *aceras* dino zone)

Assignment to the middle *N. senectus* Zone of early Campanian age is indicated at the top by the absence of younger markers confirmed by dinoflagellate data and at the base by oldest *Tricolpites sabulosus*. *Falcisporites* are common, with *Cyathidites* and *Microcachryidites antarcticus* very frequent and *Proteacidites* frequent.

Amongst the dinoflagellates, *Nelsoniella tuberculata* to the top and base indicates the upper *aceras* dinoflagellate zone. Youngest *Odontochitina obesa* at 1865m indicates a point close to the base of the upper *aceras* Zone. Common is *X. australis* in both samples, as above. *Spiniferites* and *Heterosphaeridium* are frequent.

Nearshore marine environments are indicated by the low dinoflagellate content (28% and 33%) and low to moderate diversity.

Yellow spore colours indicate immaturity for hydrocarbons.

M 1891.0m(swc), 1949.0m(swc), 1979.0m(swc) : apparently upper *apoxyexinus* Zone

Assignment to the upper *Tricolporites apoxyexinus* Zone is suggested at the top by the absence of *N. senectus* and at the base by very rare *Amosopollis cruciformis*. However, *N. senectus* can be very rare near its oldest occurrence and study of a few extra swcs in this vicinity would be useful. The dinoflagellate data suggest that these samples might be lower *N. senectus* Zone. *Falcisporites* and *Cyathidites* are common while *Dilwynites granulatus* is very frequent (8-10%) in contrast with very rare (0-3%) above. *Proteacidites* are very frequent at 1891.0m (9%), but very rare (1%) below.

Amongst the dinoflagellates, consistent *N. aceras* and frequent to common *Heterosphaeridium* (8-16%) without *X. australis* indicates the *aceras* dinoflagellate zone and suggests the middle subzone. *Heterosphaeridium* spp are the common forms in all samples, with *N. aceras* frequent at 1891.0m and 1979.0m. *Heterosphaeridium* 20%+ is the marker for lower *aceras* zone but may be present between the swcs, missed by the absence of cuttings samples.

Nearshore marine environments are indicated by the low dinoflagellate content (22%, 12%, 25% downhole) and low to moderate diversity. *Botryococcus* is prominent at 1949.0m (3%) indicating significant lacustrine influence. Abundant mixed plant debris plus the abundant and diverse spores and pollen indicate the major terrestrial influence.

Light brown spore colours indicate early marginal maturity for hydrocarbons.

N 2004.0m(swc) : upper *apoxyexinus* Zone (upper *cretacea* dino zone)

Assignment to the upper *Tricolporites apoxyexinus* Zone of Santonian age is indicated at the top and base by the absence of younger and older markers respectively and confirmed by the dinoflagellates. Within the interval, spores and pollen are rare but *Falcisporites* and *Proteacidites* are the most frequent. *Amosopollis cruciformis* was not seen.

Of the dinoflagellates, youngest *Chatangiella victoriensis* and *Isabelidinium belfastense* and oldest *Isabelidinium cretacea* and *I. belfastense* indicate the upper *I. cretacea* dinoflagellate zone. Common taxa are *Heterosphaeridium* spp, *Cassidium* sp and *Trithyrodinium* spp. *Chatangiella tripartita* and *Odontochitina porifera* are prominent.

Intermediate marine environments are indicated by the high dinoflagellate content (84%) tempered by only moderate diversity.

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

O 2020.0m(swc) : middle *apoxyexinus* Zone

Assignment to the middle *T. apoxyexinus* Zone of Santonian age is indicated at the top by the downhole influx of *A. cruciformis* (2% in contrast to absent in the sample above) and at the base by the absence of older markers. Common taxa are *Cyathidites minor*, *Dilwynites granulatus* and *Falcisporites similis*. A single *Appendicisporites distocarinatus* is considered reworked. Dinoflagellates are mostly nondescript and longranging and assignment to any zone is not possible.

Environments are intermediate marine with moderate dinoflagellate content (32%) but moderate diversity. Abundant cuticle and common and diverse spores and pollen reflect the strong terrestrial influence.

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

P 2028.0m(swc), 2043.0m(swc), 2054.0m(swc), 2059.0m(swc), 2066.0m(swc), 2076.0m(core) : lower *apoxyexinus* Zone

Assignment to the lower *T. apoxyexinus* Zone of Santonian age is indicated at the top by the major downhole influx of *A. cruciformis* (18%, 14%, 14%, 3%, absent, 19% downhole compared with 2% above) and at the base by the base of this acme

and absence of older indicators. Within the interval, *A. cruciformis* is the most common taxon, with *D. granulatus*, *Falcisporites* and *Cyathidites* also common. A single specimen of *A. distocarinatus* at 2059.0m(swc) may be reworked but single specimens of *A. distocarinatus* and *A. tricornitatus* at 2076.0m may represent the true top range. Dinoflagellates are not age diagnostic.

Environments are mostly nearshore marine (35%, 17%, 18%, 32%, 18% dinoflagellates downhole with moderate diversity) with a single very nearshore marine sample at the base (7% dinoflagellates with very low diversity). Common cuticle and dominant and diverse spores and pollen indicate strong terrestrial influence.

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

Q **2086.1m(core), 2096.0m(core), 2111.5m(swc), 2118.0m(swc), 2145.0m(swc), 2159.0m(swc), 2164.0m(swc), 2166.0m(swc), 2179.0m(swc), 2199.0m(swc), 2232.0m(swc), 2252.0m(swc), 2270.0m(swc) : *mawsonii* Zone**

Assignment to the *Phyllocladidites mawsonii* Zone of Coniacian-Turonian age is indicated at the top by youngest consistent *A. distocarinatus* and at the base by oldest *P. mawsonii* supported by oldest *C. triplex*. Within the interval, common taxa are *Cyathidites* spp, *D. granulatus*, *Falcisporites* and *Microcachryidites*. *A. cruciformis* is frequent at the top (6% at 2086.1m, 5% at 2096.0m) but rare or absent beneath. *A. distocarinatus* is consistently present and is frequent at the base (5% at 2270.0m).

Dinoflagellates are mostly scarce but include youngest *Cribroperidinium edwardsii* consistent at 2252.0m and frequent at 2270.0m, indicating the *Palaeohystrichophora infusorioides* dinoflagellate zone. At 2118m a high diversity assemblage occurs and towards the base of the interval, (2230m and deeper), *Heterosphaeridium* are frequent to common.

Environments are mostly very nearshore at the top (7%, 3%, 6%, 56%, 9%, 1%, 6%, 4%, 8%, 6% low diversity dinoflagellates downhole with a single intermediate marine exception at 2118m) and nearshore at the base (49%, 19% and 29% moderate diversity dinoflagellates). Abundant cuticle and inertinite and dominant and diverse spores and pollen indicate dominant terrestrial influence.

Light brown spore colours indicate marginal maturity for oil and immaturity for

gas/condensate.

R **2277.5(swc), 2284.0m(swc), 2286.0m(swc), 2309.0(swc), 2330.0m(swc), 2398.0m(swc), 2402.0m(swc), 2454.0m(swc), 2489.0m(swc), 2497.0m(swc), 2500.0m(swc), 2528.0m(swc), 2540.5m(swc), 2544.5m(swc), 2550m(cutts), 2567.0(swc), 2573m(cutts), 2593.0m(swc) : *distocarinatus* Zone**

Assignment to the *Appendicisporites distocarinatus* Zone of Cenomanian age is indicated at the top and base by the presence of *A. distocarinatus* in the absence of younger or older markers respectively. Within the interval, yields are variable with most samples rich and diverse but with lean and indeterminate assemblages at 2497.0m and 2540.5m. Saccate pollen dominate (*Falcisporites* spp and *Microcachryidites* common) with subordinate spores (*Cyathidites* and *Osmundacidites* frequent). *A. cruciformis* is extremely rare and inconsistent, being seen only at 2398.0m. *D. granulatus* is rare to frequent (1-6%) and *Cicatricosisporites australiensis* rare to absent (0-2%) in the upper half of the section (2277.5m-2528.0m), but *D. granulatus* is extremely rare to absent and *C. australiensis* consistent to frequent (1-7%) in the lower half of the section (2544.5m-2593.0m).

Dinoflagellates are rare and inconsistent but include *C. edwardsii* at 2277.5m, 2284.0m, 2286.0m, 2309.0m and 2402.0m indicating the *P. infusorioides* dinoflagellate zone. *C. edwardsii* and *C. deflandrei* are the most consistent taxa.

The upper part of the section (2277.5-2402m) is mostly nearshore marine with a marginal marine sample at 2286m (1% dinoflagellates), a non-marine one at 2330m and an intermediate marine one (57%) at 2309m. Dinoflagellate percentage contents from the top are 11%, 20%, 1%, 57%, absent, 22%, 22%. The lower part of the section (2454m-2593m) may all be non-marine, as almost all the dinoflagellates seen are in cuttings and are absent from the swcs. Dinoflagellate percentage contents from the top are absent, ?5% (cutts), extremely lean, ?1% (single specimen in swc), absent, barren, absent, ?3% (cutts), absent, ?3% (cutts), absent. *Botryococcus* is a minor component of most assemblages indicating minor lacustrine influence.

Light brown to mid brown spore colours at 2277.5-2330m indicate marginal maturity for oil but immaturity for gas/condensate. Mid brown to light brown spore colours at 2398-2593m indicate early maturity for oil and early marginal maturity for gas/condensate.

S **2605.0m(swc), 2624.0m(swc), 2640m(cutts), 2671.0m(swc), 2683.0m(swc), 2690m(cutts), 2705.0m(swc), 2715m(cutts), 2730.0m(swc), 2735m(cutts) : extremely lean and indeterminate : 2646.5m(swc) rich but zonally indeterminate.**

These assemblages (except 2646.5m) all come from sandy lithologies and are extremely lean of palynomorphs, although several contain frequent inertinite. Of the swcs, only 2683.0m contained sufficient specimens for a valid count of 100 speciments with saccate pollen (*Falcisporites*, *Microcachyidites*) being dominant. The cuttings contain richer assemblages including very rare dinoflagellates but are almost certainly caved. *A. distocarinatus* occurs only at 2624.0m in swc. The only suggestion of an older assemblage is that at 2715m (cutts) where a richer spore flora occurs including *C. australiensis* (5%), *Concavissimisporites penolaensis*, *Crybelosporites striatus*, *Foraminisporis asymmetricus*, *Triporoletes radiatus*, *T. reticulatus* and *T. simplex*. Key age diagnostic taxa such as *Pilosisporites grandis* and *Coptospora paradoxa* were not seen and so assignment to older zones is not possible. At 2646.5m(swc), a rich assemblage lacks markers for the basal Sherbrook or upper Otway groups, but includes the Aptian *Pilosisporites notensis* (considered reworked) and rare Permian taxa (reworked).

Environments are probably non-marine although very rare dinoflagellates were seen at 2605.0m(swc), 2715m(cutts) and 2735m(cutts) but these may be caved.

Spore colours are variable possibly due to caving and are considered unreliable for maturity determination.

IV CONCLUSIONS

At the top, the sampled section is Tertiary (Eocene to Oligocene and possibly Miocene), nearshore at the base and offshore at the top. Beneath a Maastrichtian to Paleocene unconformity a Cenomanian to Campanian mostly nearshore and partly non-marine sequence occurs. At the base, an undated sequence of argillaceous sandstones may belong to the Otway Group, but this cannot be confirmed by the palynology.

For generation of hydrocarbons, the section is early mature for oil at the base (below 3400m), marginally mature in the middle (below 1900m) and immature above.

V REFERENCES

Dettmann ME and Playford G (1969) Palynology of the Australian Cretaceous : a review **In** Stratigraphy and Palaeontology. Essays in honour of Dorothy Hill, **KSW Campbell ED.** ANU Press, Canberra 174-210

Helby RJ, Morgan RP and Partridge AD (1987) A palynological zonation of the Australian Mesozoic **In** Studies in Australian Mesozoic Palynology **Assoc. Australas. Palaeontols. Mem 4** 1-94

Morgan RP (1992) Overview of new cuttings based Late Cretaceous correlations, Otway Basin, Australia **unpubl. rept. for BHPP**

Partridge AD (1976) The geological expression of eustacy in the early Tertiary of the Gippsland Basin **APEA J 16(1)** 73-79.

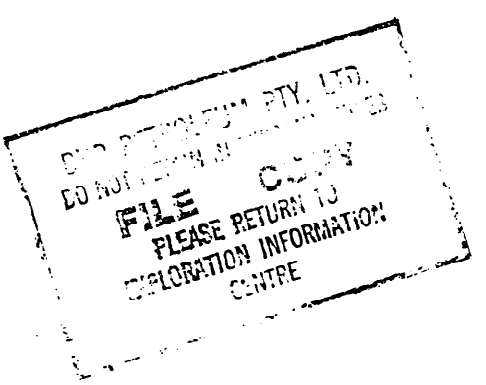
LA BELLA # 1

MORGAN PALAEO ASSOCIATES . . . Palynological Consultants
Box 161, Maitland, South Australia, 5573.
Phone (088) 32 2795 . Fax (088) 32 2798

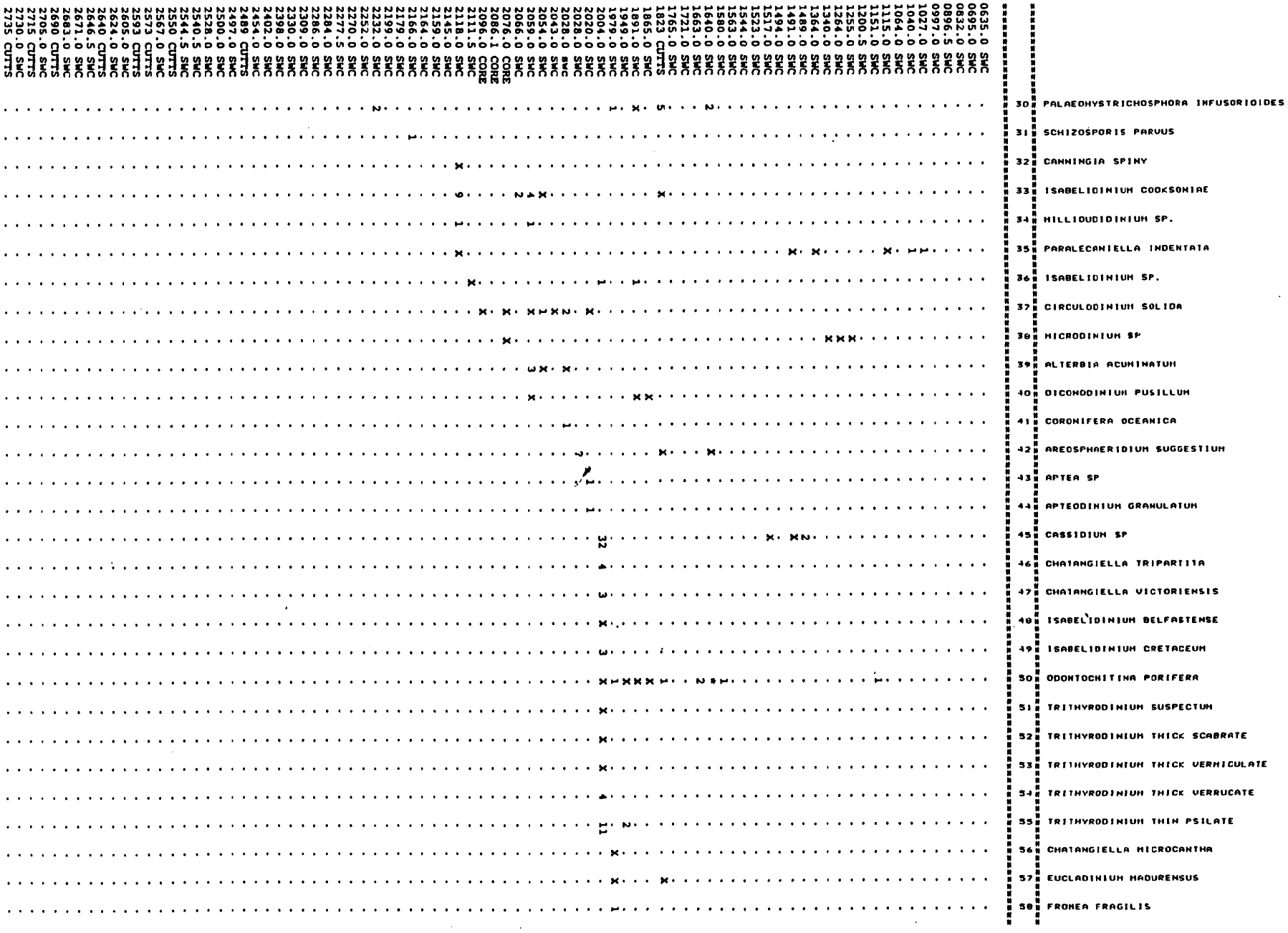
C L I E N T: BHP PETROLEUM
W E L L: LA BELLA #1
F I E L D / A R E A: OFF SHORE OTWAY BASIN

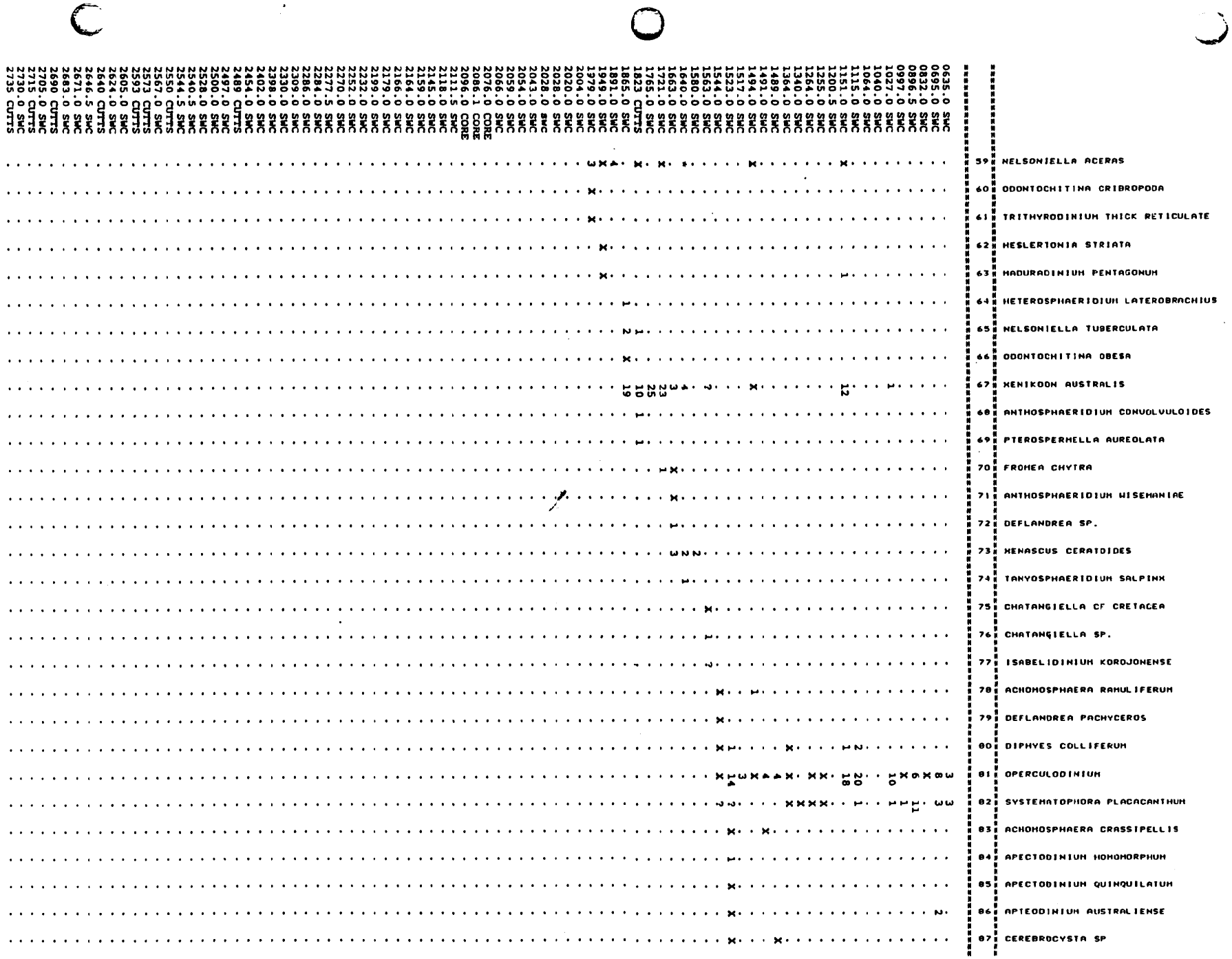
A N A L Y S T: ROGER MORGAN D A T E : AUGUST '93
N O T E S: ALL DEPTHS IN METRES
FIGURES ARE PERCENTAGES FROM 100 SPECIMEN COUNT
"X" = SEEN OUTSIDE COUNT
"XX" = COMMON OCCURENCE OUTSIDE COUNT "*" = REWORKED

RANGE CHART OF OCCURRENCES BY LOWEST APPEARANCE - by group -



	1 CIRCULODINIUM DEFLANDREI	2 EXOCHOSPHAERIDIUM PHRAGMITI	3 CHLAMYDOPHORELLA NYEI	4 CRIBROPERIDINIUM EDWARDSII	5 CRIBROPERIDINIUM SP	6 HETEROSPHAERIDIUM HETEROCA	7 CYCLONEPHELIUM MEMBRANIPHO	8 HETEROSPHAERIDIUM SOLIDA	9 OLIGOSPHAERIDIUM COMPLEX	10 PALAEOPERIDINIUM CRETACEUM	11 SPINIFERITES FURCATUS RAMO	12 TRICHODINIUM	13 CYCLONEPHELIUM COMPACTUM	14 HETEROSPHAERIDIUM CONJUNCTI	15 CALLAIOSPHAERIDIUM ASYMMETR	16 CLEISTOSPHAERIDIUM SP.	17 ODONTOCHITINA OPERCULATA	18 OLIGOSPHAERIDIUM PULCHERRI	19 VERYHACHIUM	20 NUMMUS MONOCULATUS	21 XIPHOPHORIDIUM ALATUM	22 APECTODINIUM SUMMISSIMUM	23 FLORENTINIA LACINIATA	24 HYSTRICHODINIUM PULCHRUM	25 KIOKANSIUM POLYPES	26 PTEROSPERMELLA AUSTRALIENSI	27 CHLAMYDOPHORELLA SP	28 ODONTOCHITINA COSTATA	29 APTEODINIUM SP.
0635.0 SWC	.	.	.	.	.	.	.	.	.	.	19	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
0695.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
0832.0 SWC	.	.	.	.	.	.	.	.	.	.	X	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
0896.5 SWC	.	.	.	.	.	.	.	.	.	.	32	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
0997.0 SWC	.	.	.	.	.	.	.	.	.	.	10	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.
1027.0 SWC	.	2	.	.	.	.	.	.	.	.	40	.	.	.	.	.	.	.	.	X	.	.	.	.	.	.	.	.	.
1040.0 SWC	.	.	.	.	.	.	.	.	.	.	24	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.
1064.0 SWC	.	.	.	.	.	.	.	.	.	.	9	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.
1115.0 SWC	.	.	.	.	.	.	.	.	.	.	41	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
1151.0 SWC	.	.	.	.	.	.	.	.	.	.	15	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
1200.5 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
1255.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
1264.0 SWC	.	.	.	.	.	.	.	.	.	.	X	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
1340.0 SWC	.	.	.	.	.	.	.	.	.	.	X	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
1364.0 SWC	.	.	.	.	.	.	.	.	.	.	X	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
1489.0 SWC	.	.	.	.	.	.	.	.	.	.	9	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
1491.0 SWC	.	.	.	.	.	.	.	.	.	.	3	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
1494.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
1517.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
1523.0 SWC	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	1	.	.	X	.	.	.	.	.	.	.
1544.0 SWC	.	.	X	.	.	.	.	.	.	.	X	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
1563.0 SWC	.	.	.	.	.	1	.	.	.	.	1	.	.	.	.	.	.	.	2	1	.	.	.	X	.	.	.	.	.
1580.0 SWC	.	.	.	.	.	.	.	.	.	.	1	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
1640.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
1663.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.
1721.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
1765.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
1823 CUTTS	.	.	.	.	.	1	.	.	2	.	4	1	.	X	.	.	X	.	.	.	.	.	.	.	1	.	.	.	.
1865.0 SWC	.	.	.	.	.	6	.	.	.	.	3	.	.	1	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.
1891.0 SWC	.	.	.	.	.	16	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
1949.0 SWC	.	1	.	.	.	.	.	3	.	.	X	.	.	.	.	1	X	.	.	.	.	.	.	.	X	.	.	.	.
1979.0 SWC	.	.	.	.	.	16	.	.	1	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2004.0 SWC	.	.	.	.	.	4	.	15	.	.	2	.	.	.	1	.	2	.	.	.	X	.	.	.	.	.	.	2	.
2020.0 SWC	.	1	.	.	1	11	.	.	3	.	7	.	.	1	1	.	1	2	1	.	.	.	.	X	1	.	.	.	.
2028.0 SWC	.	4	.	.	2	27	.	.	2	.	3	.	1	.	.	.	.	4	.	.	.	.	.	.	.	.	.	1	.
2028.0 swc	.	4	.	.	.	4	.	.	1	.	7	.	.	.	2	.	.	1	.	1	.	.	.	.	2	.	.	.	2
2043.0 SWC	.	.	.	.	.	6	.	2	.	.	3	.	.	.	.	.	1	.	.	2	.	.	.	.	.	.	.	.	3
2054.0 SWC	1	2	.	.	.	6	.	.	1	.	2	.	.	.	.	.	.	X	3	X	.	.	.	.	2	.	.	.	X
2059.0 SWC	2	4	.	.	.	6	.	.	1	.	1	1	.	.	.	.	3	.	1	3	.	.	.	.	2	.	.	.	3
2066.0 SWC	.	3	.	.	.	3	.	.	3	.	3	.	.	.	.	.	.	.	.	4	.	.	.	.	.	.	.	.	.
2076.0 CORE	.	.	.	.	X	6	.	.	X	.	1	.	.	.	.	.	.	.	X	X	.	.	.	.	.	.	.	.	.
2086.1 CORE	1	2	.	.	X	4	.	.	.	.	X	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2096.0 CORE	X	X	.	.	.	X	.	.	2	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2111.5 SWC	.	.	.	.	.	2	.	.	2	.	1	.	.	.	.	1	.	.	.	6	.	.	.	.	.	.	.	.	.
2118.0 SWC	5	6	1	X	.	3	.	.	6	.	3	1	.	1	.	2	3	2	.	6	.	.	.	.	6	.	.	.	.
2145.0 SWC	X	2	.	.	.	2	.	.	.	.	1	.	.	.	.	.	.	.	.	3	.	.	1	.	3	.	.	.	.
2159.0 SWC	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2164.0 SWC	.	1	X	.	.	4	.	.	1	.	.	.	.	.	.	.	.	.	.	5	.	.	.	.	.	.	.	.	.
2166.0 SWC	.	.	.	.	.	1	.	1	.	.	1	.	.	.	.	.	.	.	.	2	.	.	.	.	.	.	.	.	.
2179.0 SWC	4	.	.	.	1	X	.	.	.	.	1	.	X	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2199.0 SWC	.	.	.	.	X	3	.	.	.	1	1	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	X	.
2232.0 SWC	1	.	.	.	1	24	X	.	11	2	2	.	.	2	.	.	X	.	.	X	X	.	.	.	1	.	.	.	3
2252.0 SWC	.	1	1	.	1	10	.	.	X	2	1	.	.	1	.	.	.	1	.	.	.	.	.	.	1	.	.	.	.
2270.0 SWC	5	.	.	4	X	5	.	.	2	XX	2	.	.	.	.	.	.	5	.	.	X	.	.	.	5	.	1	X	.
2277.5 SWC	1	X	.	1	1	1	X	.	1	1	1	.	X	.	.	.	X	.	.	1	1	.	1	1	1	X	.	.	.
2284.0 SWC	3	2	.	3	.	1	.	.	2	1	1	.	1	1	.	1	.	3	.	.	.	X	.	.	.	.	.	.	.
2286.0 SWC	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2309.0 SWC	1	.	X	5	.	X	.	.	1	38	1	.	1	.	.	.	10	X	.	X	X	.	.	.	.	.	.	.	.
2330.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2398.0 SWC	5	X	.	.	.	3	.	.	2	.	5	.	3	.	X	1	1	1	1	.	.	.	.	.	.	.	.	.	.
2402.0 SWC	11	.	.	3	X	X	.	.	.	.	4	.	3	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2454.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2489 CUTTS	.	.	.	.	.	3	.	2	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2497.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2500.0 SWC	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2528.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2540.5 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2544.5 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2550 CUTTS	X	1	.	X	.	1	X	X	X	X	X	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2567.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2573 CUTTS	1	.	.	1	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2593 CUTTS	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2605.0 SWC	.	.	.	.	.	X	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2624.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2640 CUTTS	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2646.5 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2671.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2683.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2690 CUTTS	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2705.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2715 CUTTS	.	.	1	?	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2730.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2735 CUTTS	1	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.


0635.0 SWC
0695.0 SWC
0832.0 SWC
0896.5 SWC
0997.0 SWC
1027.0 SWC
1040.0 SWC
1064.0 SWC
1115.0 SWC
1151.0 SWC
1200.5 SWC
1255.0 SWC
1264.0 SWC
1340.0 SWC
1364.0 SWC
1489.0 SWC
1491.0 SWC
1494.0 SWC
1517.0 SWC
1523.0 SWC
1544.0 SWC
1563.0 SWC
1580.0 SWC
1640.0 SWC
1663.0 SWC
1721.0 SWC
1765.0 SWC
1823 CUTTS
1865.0 SWC
1891.0 SWC
1949.0 SWC
1979.0 SWC
2004.0 SWC
2020.0 SWC
2028.0 SWC
2028.0 SWC
2043.0 SWC
2054.0 SWC
2059.0 SWC
2066.0 SWC
2076.0 CORE
2086.1 CORE
2096.0 CORE
2111.5 SWC
2118.0 SWC
2145.0 SWC
2159.0 SWC
2164.0 SWC
2166.0 SWC
2179.0 SWC
2199.0 SWC
2232.0 SWC
2252.0 SWC
2270.0 SWC
2277.5 SWC
2284.0 SWC
2286.0 SWC
2309.0 SWC
2330.0 SWC
2398.0 SWC
2402.0 SWC
2454.0 SWC
2489 CUTTS
2497.0 SWC
2500.0 SWC
2528.0 SWC
2540.5 SWC
2544.5 SWC
2550 CUTTS
2567.0 SWC
2573 CUTTS
2593 CUTTS
2605.0 SWC
2624.0 SWC
2640 CUTTS
2646.5 SWC
2671.0 SWC
2683.0 SWC
2690 CUTTS
2705.0 SWC
2715 CUTTS
2730.0 SWC
2735 CUTTS
30 PALAEOHYSTRICHOSPHORA INFUSORIOIDES
31 SCHIZOSPORIS PARVUS
32 CANNINGIA SPINY
33 ISABELIDINIUM COOKSONIAE
34 HILLIOUDIDINIUM SP.
35 PARALECANIELLA INDENTATA
36 ISABELIDINIUM SP.
37 CIRCULODINIUM SOLIDA
38 MICRODINIUM SP
39 ALTERBIA ACUMINATUM
40 DICONODINIUM PUSILLUM
41 CORONIFERA OCEANICA
42 AREOSPHAERIDIUM SUGGESTIUM
43 APTEA SP
44 APTEODINIUM GRANULATUM
45 CASSIDIUM SP
46 CHATANGIELLA TRIPARTITA
47 CHATANGIELLA VICTORIENSIS
48 ISABELIDINIUM BELFASTENSE
49 ISABELIDINIUM CRETACEUM
50 ODONTOCHITINA PORIFERA
51 TRITHYRODINIUM SUSPECTUM
52 TRITHYRODINIUM THICK SCABRATE
53 TRITHYRODINIUM THICK VERMICULATE
54 TRITHYRODINIUM THICK VERRUCATE
55 TRITHYRODINIUM THIN PSILATE
56 CHATANGIELLA MICROCANTHA
57 EUCLADINIUM HADURENSUS
58 FROMEA FRAGILIS

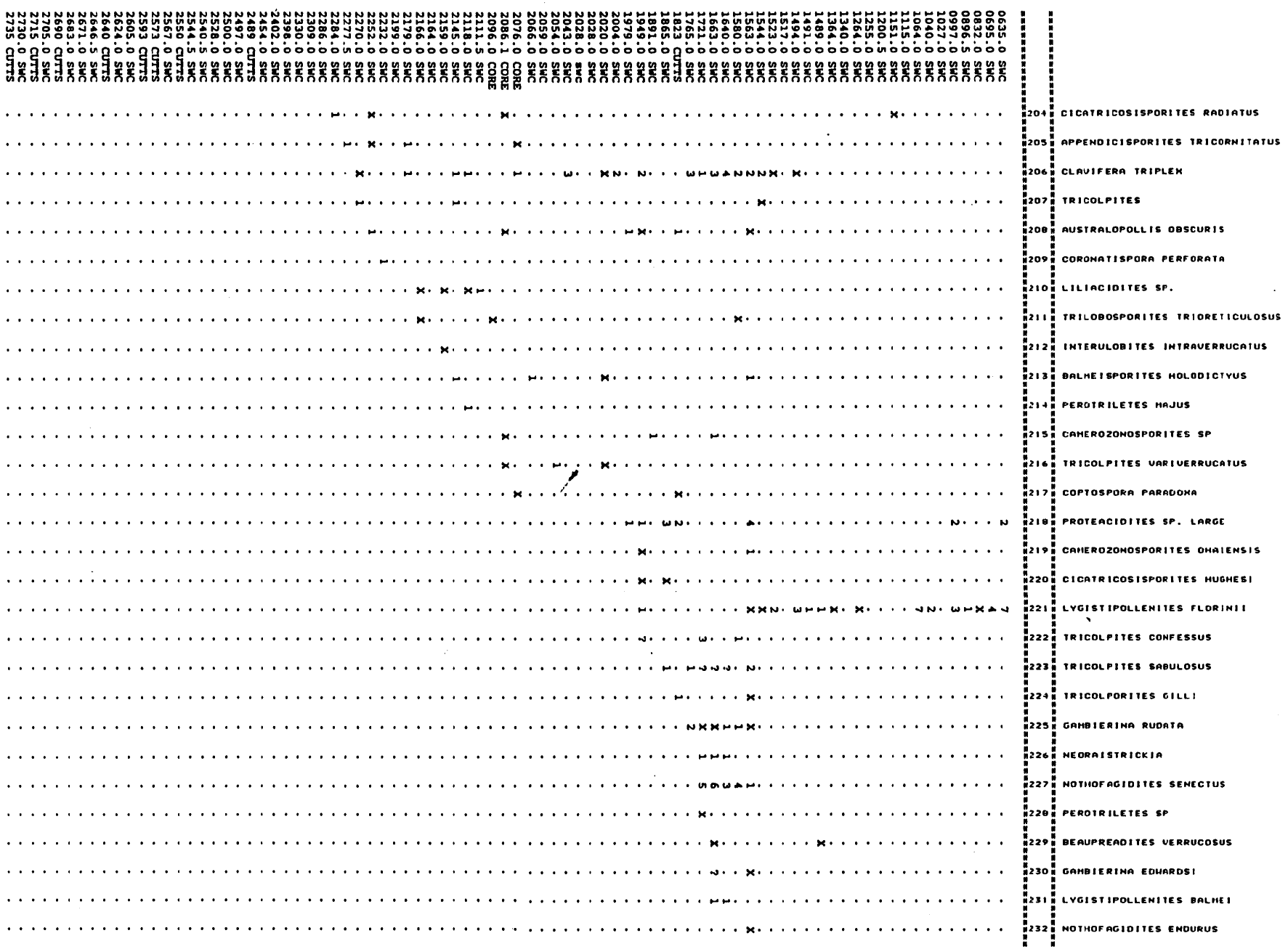

0635.0 SWC
0695.0 SWC
0832.0 SWC
0896.5 SWC
0997.0 SWC
1027.0 SWC
1040.0 SWC
1064.0 SWC
1115.0 SWC
1151.0 SWC
1200.5 SWC
1255.0 SWC
1264.0 SWC
1340.0 SWC
1364.0 SWC
1489.0 SWC
1491.0 SWC
1494.0 SWC
1517.0 SWC
1523.0 SWC
1544.0 SWC
1563.0 SWC
1580.0 SWC
1640.0 SWC
1663.0 SWC
1721.0 SWC
1765.0 SWC
1823 CUTTS
1865.0 SWC
1891.0 SWC
1949.0 SWC
1979.0 SWC
2004.0 SWC
2020.0 SWC
2028.0 SWC
2028.0 SWC
2043.0 SWC
2054.0 SWC
2059.0 SWC
2066.0 SWC
2076.0 CORE
2086.1 CORE
2096.0 CORE
2111.5 SWC
2118.0 SWC
2145.0 SWC
2159.0 SWC
2164.0 SWC
2166.0 SWC
2179.0 SWC
2199.0 SWC
2232.0 SWC
2252.0 SWC
2270.0 SWC
2277.5 SWC
2284.0 SWC
2286.0 SWC
2309.0 SWC
2330.0 SWC
2398.0 SWC
2402.0 SWC
2454.0 SWC
2489 CUTTS
2497.0 SWC
2500.0 SWC
2528.0 SWC
2540.5 SWC
2544.5 SWC
2550 CUTTS
2567.0 SWC
2573 CUTTS
2593 CUTTS
2605.0 SWC
2624.0 SWC
2640 CUTTS
2646.5 SWC
2671.0 SWC
2683.0 SWC
2690 CUTTS
2705.0 SWC
2715 CUTTS
2730.0 SWC
2735 CUTTS
59 NELSONIELLA ACERAS
60 ODONTOCHITINA CRIBROPODA
61 TRITHYRODINIUM THICK RETICULATE
62 HESLERTONIA STRIATA
63 HADURADINIUM PENTAGONUM
64 HETEROSPHAERIDIUM LATEROBRACHIUS
65 NELSONIELLA TUBERCULATA
66 ODONTOCHITINA OBESA
67 XENIKOON AUSTRALIS
68 ANTHOSPHAERIDIUM CONVOLVULOIDES
69 PTEROSPERMELLA AUREOLATA
70 FROMEA CHYTRA
71 ANTHOSPHAERIDIUM WISEMANIAE
72 DEFLANDREA SP.
73 XENASCUS CERATIDES
74 TANYOSPHAERIDIUM SALPINX
75 CHATANGIELLA CF CRETACEA
76 CHATANGIELLA SP.
77 ISABELIDINIUM KOROJONENSE
78 ACHOMOSPHAERA RAMULIFERUM
79 DEFLANDREA PACHYCEROS
80 DIPHYES COLLIFERUM
81 OPERCULODINIUM
82 SYSTEMATOPHORA PLACACANTHUM
83 ACHOMOSPHAERA CRASSIPELLIS
84 APECTODINIUM HOMOMORPHUM
85 APECTODINIUM QUINQUILATUM
86 APTEODINIUM AUSTRALIENSE
87 CEREBROCYSTA SP

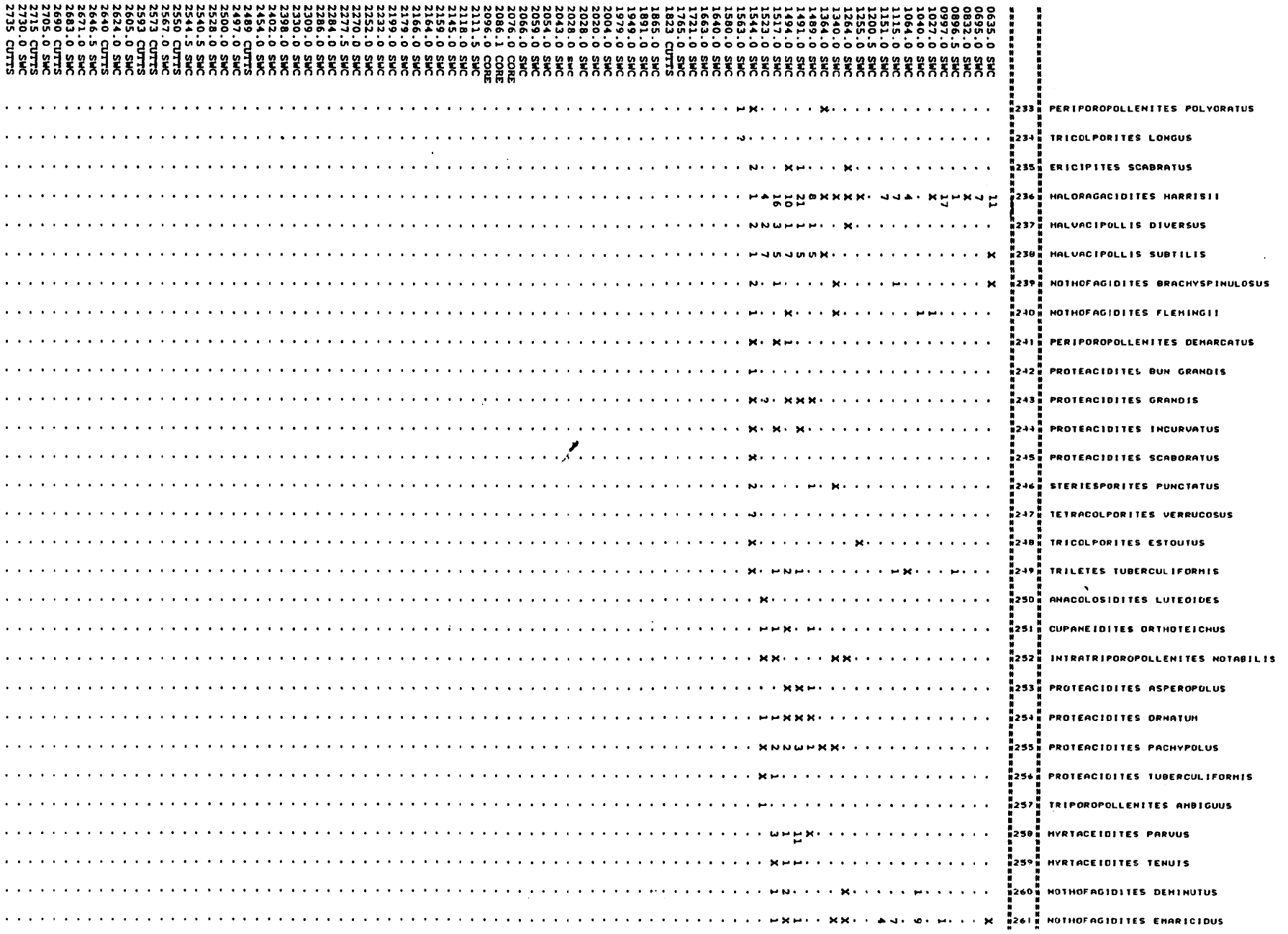
	88 CORDOSPHAERIDIUM INODES	89 CYCLOPSIELLA	90 DEFLANDREA PHOSPHORITICA	91 DEFLANDREA TRUNCATA	92 HEMICYSTODINIUM ZOHARYI	93 HOMOTRYBLIUM TASMANIENSE	94 HYSTRICHOKOLPOMA EISENACKI	95 HYSTRICHOKOLPOMA RIGAUDIAE	96 IMPAGIDINIUM VICTORIANUM	97 MILLIOUDIDINIUM TENUITABULATUS	98 MURATODINIUM FIMBRIATUM	99 RHOMBODINIUM GLABRUM	100 SAMLANDIA CHLAMYDOPHORIDITES	101 SENONIASPHAERA SP	102 WETZELIELLA HAMPDENENSIS	103 WETZELIELLA ORNATUM	104 WETZELIELLA WAIPAWAENSIS	105 DAPSILIDINIUM PSEUDOCOLLIGERUM	106 IMPAGIDINIUM MACULATUM	107 GLAPHYRODINIUM VICINUM	108 KISSELOVIA THOMPSONAE	109 WETZELIELLA SP	110 ACHILLEODINIUM BIFORMOIDES	111 CORDOSPHAERIDIUM FIBROSPINOSUM	112 DAPSILIDINIUM PASTIELSI	113 DRACODINIUM SPONGY	114 HOMOTRIBLIUM BREVIRADIATUM	115 KISSELOVIA EDWARDSII	116 THALASSIPHORA PELAGICA
0635.0 SWC	.	.	.	.	1	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
0695.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
0832.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
0896.5 SWC	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1
0997.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
1027.0 SWC	3	.	.	.	2	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.
1040.0 SWC	C	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
1064.0 SWC	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
1115.0 SWC	.	.	.	.	5	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
1151.0 SWC	.	.	.	.	16	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
1200.5 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
1255.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
1264.0 SWC	X	.	.	.	.	X	.	.	.	.	.	.	.	.	.	.	.	X	.	.	.	.	.	.	.	.	.	.	.
1340.0 SWC	.	.	X	.	.	X	.	.	X	.	.	.	.	.	.	.	.	.	X	.	.	.	.	.	.	.	.	.	.
1364.0 SWC	.	X	.	.	.	.	.	.	.	.	.	.	.	X	.	.	.	X	X	X	.	.	.	.	.	.	.	.	.
1489.0 SWC	.	.	?	.	10	15	X	.	X	X	2	.	X	.	.	1	.	.	X	2	X	.	1	X	1	X	2	X	X
1491.0 SWC	.	.	?	2	7	.	1	.	.	.	.	.	.	.	.	X	.	.	.	X	X	?	.	.	.	.	.	.	.
1494.0 SWC	1	.	.	.	X	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
1517.0 SWC	2	.	.	X	.	X	2	.	.	.	.	.	.	.	.	.	.	3	1	.	.	.	.	.	.	.	.	.	.
1523.0 SWC	4	X	?	X	1	9	X	X	X	1	X	X	X	X	X	X	X	.	.	.	.	.	.	.	.	.	.	.	.
1544.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
1563.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
1580.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
1640.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
1663.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
1721.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
1765.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
1823 CUTTS	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
1865.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
1891.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
1949.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
1979.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2004.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2020.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2028.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2028.0 swc	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2043.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2054.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2059.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2066.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2076.0 CORE	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2086.1 CORE	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2096.0 CORE	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2111.5 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2118.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2145.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2159.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2164.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2166.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2179.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2199.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2232.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2252.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2270.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2277.5 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2284.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2286.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2309.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2330.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2398.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2402.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2454.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2489 CUTTS	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2497.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2500.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2528.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2540.5 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2544.5 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2550 CUTTS	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2567.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2573 CUTTS	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2593 CUTTS	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2605.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2624.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2640 CUTTS	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2646.5 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2671.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2683.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2690 CUTTS	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2705.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2715 CUTTS	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2730.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2735 CUTTS	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.

Sample	117 WETZELIELLA PENTAGONAL	118 CHIROPTERIDIUM TABULATE	119 HYSTRICHOSPHAERIDIUM TUBIFERUM	120 IMPAGIDINIUM MARGINATA	121 IMPAGIDINIUM SP	122 TECTATODINIUM	123 PHTANOPENIDINIUM COMATUM	124 CORRUDINIUM INCOMPOSITUM	125 LINGULODINIUM MACHAEROPHORUM	126 NELSONIELLA SEMIRETICULATA	127 PALAEOCYSTIDINIUM AUSTRALINIUM	128 AREOLIGERA SP	129 OPERCULODINIUM CENTROCARPUM	130 CRASSOSPHAERA CONCINNIA	131 IMPLETOSPHAERIDIUM SP.)	132 ACHOMOSPHAERA ALCICORNU	133 CHIROPTERIDIUM ASPINATUM	134 CHIROPTERIDIUM DISPERSUM GP.	135 COMPOSITOSPHAERIDIUM SP.	136 HYSTRICHOKOLPOMA SP.	137 SCHEMATOPHORA SPECIOSUS	138 BATIACASPAERA SP.	139 CASSICULOSPHAERIDIA SP.	140 AEQUITRIRADITES TILCHAENESIS	141 ARAUCARIACITES AUSTRALIS	142 ARAUCARIACITES FISSUS	143 CALLIALASPORITES DAMPIERI	144 CALLIALASPORITES TURBATUS	145 CICATRICOSISPORITES AUSTRALIENSIS
0635.0 SWC	.	.	.	.	.	5	.	.	.	.	.	.	8	X	X	2	.	.	.	.	.	.	1	.	.	.	.	.	.
0695.0 SWC	.	.	.	.	.	3	.	.	.	.	.	.	12	.	.	40	.	.	.	.	3	12	8	.	.	.	X	.	.
0832.0 SWC	.	.	.	.	.	X	.	.	X	.	.	.	X	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
0896.5 SWC	.	.	.	.	.	4	.	.	1	.	.	.	9	.	6	2	2	21	.	X	1	.	.	.	.	.	.	.	.
0997.0 SWC	.	.	.	.	.	1	.	.	.	.	.	.	3	.	.	2	.	.	.	.	.	.	.	.	3	.	.	.	.
1027.0 SWC	.	.	.	.	.	.	.	.	1	.	.	2	9	.	.	4	X	2	5	4	.	.	.	.	.	.	.	.	.
1040.0 SWC	.	.	.	.	.	7	.	.	.	.	.	X	.	X	1	.	.	.	.	.	.	.	.	.	X	.	.	.	.
1064.0 SWC	.	.	.	.	.	.	1	.	1	.	.	.	7	.	.	.	.	.	.	.	.	.	.	.	2	.	.	.	.
1115.0 SWC	.	.	1	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
1151.0 SWC	.	.	.	.	.	1	.	.	.	X	4	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
1200.5 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
1255.0 SWC	.	.	.	.	X	X	X	X	X	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	X	.	.	.	.
1264.0 SWC	.	.	.	.	.	X	X	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
1340.0 SWC	.	.	.	.	.	X	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
1364.0 SWC	.	X	X	X	X	X	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	X	.	.	.	.
1489.0 SWC	X	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.
1491.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.
1494.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	X	.	.	.	.
1517.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2	.	.	.	.
1523.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.
1544.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	3	.	.	.	X
1563.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2	.	X	.	X
1580.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	4
1640.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	*	.	4
1663.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	*	.	4
1721.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	4
1765.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	X	.	.	.	1
1823 CUTTS	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2	.	1	.	.
1865.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	1
1891.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	3
1949.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	2	1
1979.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	2
2004.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2020.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	4	.	.	.	.
2028.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2028.0 swc	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.
2043.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	1
2054.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2	.	.	1	.
2059.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	X
2066.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	5	.	3	.	.
2076.0 CORE	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	1	1
2086.1 CORE	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	4	.	.	.	.
2096.0 CORE	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	1	1
2111.5 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	1	1	.
2118.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.
2145.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	2	3
2159.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	6	.	1	.	1
2164.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2	.	1	.	2
2166.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2	.	X	1	2
2179.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	2	.
2199.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	5
2232.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.
2252.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2	.	1	.	.
2270.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	3
2277.5 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	1	.	X
2284.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	1	.	.
2286.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	3	.	2	4	.
2309.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	3	.	.	.	X
2330.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	3	.
2398.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	4	.	1	2	.
2402.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	4	.	.	.	3
2454.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	4	.	1	1	.
2489 CUTTS	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	8	.	8	2	.
2497.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	X	.	.	.	.
2500.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2	.	1	3	X
2528.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	3	.	.	.	.
2540.5 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2544.5 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	5	.	1	3	7
2550 CUTTS	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	X	3	.	5	1	1
2567.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	X	5	.	2	1	6
2573 CUTTS	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	3	1	4	3	1
2593 CUTTS	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2	.	5	1	.
2605.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	X	X
2624.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	X
2640 CUTTS	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	7	.	8	5	.
2646.5 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	2	1	2
2671.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	X	X	X
2683.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	5	.	.	4	.
2690 CUTTS	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	4	.	4	2	3
2705.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	X	.	X	.	X
2715 CUTTS	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	7	.	1	3	5
2730.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	X	.	.
2735 CUTTS	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	L	4	1	4	10	2

	COROLLINA TOROSUS	CYATHIDITES AUSTRALIS	CYATHIDITES MINOR	CYCADOPITES FOLLICULARIS	FALCISPORITES GRANDIS	FALCISPORITES SIMILIS	KLUKISPORITES SCABERIS	MICROCACHRYIDITES ANTARCTICUS	OSMUNDACIDITES WELLMANII	PEROTRILETES JUBATUS/MORGANII	RETITRILETES AUSTROCLAVATIDITES	STERIESPORITES ANTIQUASPORITES	AEQUITRIRADITES VERRUCOSUS	CINGUTRILETES CLAVUS	CONCAVISSIMISPORITES PENOLAENSIS	CRYBELOSPORITES STRIATUS	FORAMINISPORIS ASYMMETRICUS	FOVEOTRILETES PARVIRETUS	ISCHYOSPORITES PUNCTATUS	TRIPOROLETES RADIATUS	TRIPOROLETES RETICULATUS	TRIPOROLETES SIMPLEX	APPENDICISPORITES DISTOCARINATUS	CERATOSPORITES EQUALIS	CONTIGNISPORITES GLEBULENTUS	GLEICHENIIDITES	PODOSPORITES MICROSACCATUS	CICATRICOSISPORITES CUNEIFORMIS	FOVEOGLEICHENIIDITES
	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174
0635.0 SWC	.	.	9	.	7	.	.	2	1	.	2	1	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.
0695.0 SWC	.	.	10	.	.	2	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
0832.0 SWC	.	.	X	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
0896.5 SWC	.	.	X	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
0997.0 SWC	.	.	15	.	.	13	.	4	1	.	1	.	.	.	.	.	.	.	.	.	.	.	.	1	.	1	.	.	.
1027.0 SWC	.	.	3	.	.	.	.	.	.	.	.	.	.	2	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
1040.0 SWC	.	.	7	.	.	2	.	.	8	.	X	.	.	X	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.
1064.0 SWC	.	1	9	.	.	15	.	6	1	.	3	.	.	.	.	.	.	.	.	.	.	.	.	3	.	1	.	.	.
1115.0 SWC	.	1	1	.	.	.	.	1	1	.	1	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
1151.0 SWC	.	X	3	.	.	1	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2	.	2	.	.	.
1200.5 SWC	.	.	X	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
1255.0 SWC	.	X	.	.	.	X	.	.	.	.	X	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
1264.0 SWC	.	X	X	.	.	X	.	.	X	.	X	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
1340.0 SWC	.	X	X	.	.	.	.	X	X	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
1364.0 SWC	.	X	X	.	X	X	.	.	.	.	X	X	.	.	.	.	.	.	.	.	.	.	.	.	.	X	.	.	.
1489.0 SWC	.	1	3	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	1	.	.
1491.0 SWC	.	4	2	.	1	2	.	X	.	.	.	2	.	.	.	.	.	.	.	.	.	.	.	.	.	2	1	.	.
1494.0 SWC	.	4	3	.	2	8	.	2	.	.	2	.	.	X	.	.	.	.	1	.	.	.	.	.	.	1	.	.	.
1517.0 SWC	X	2	7	.	3	1	.	2	2	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	2	.	.	.
1523.0 SWC	1	.	2	.	2	2	.	1	1	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
1544.0 SWC	.	5	11	.	5	17	.	.	1	.	1	.	.	.	.	.	.	.	.	.	.	.	.	2	.	2	1	.	X
1563.0 SWC	1	6	6	.	3	20	.	5	1	.	6	.	.	X	.	.	.	.	.	.	1	.	.	3	.	3	5	.	.
1580.0 SWC	1	18	.	.	.	24	.	5	2	.	3	.	.	.	.	.	R/W	.	.	.	X	.	.	2	.	2	.	.	.
1640.0 SWC	.	17	.	.	.	14	.	2	2	.	6	.	.	.	.	.	.	.	.	2	2	.	.	8	.	3	.	.	.
1663.0 SWC	1	13	.	.	.	18	.	3	5	.	3	.	.	.	.	.	.	.	.	1	2	.	.	2	.	5	.	.	.
1721.0 SWC	1	18	.	.	.	17	.	1	3	.	2	.	.	.	.	.	.	.	.	1	.	.	.	2	.	5	.	.	.
1765.0 SWC	.	20	.	.	.	18	.	2	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	X	.	1	.	.	.
1823 CUTTS	1	6	3	.	5	25	.	1	2	.	2	1	.	1	.	.	1	.	.	.	.	.	.	.	.	3	3	.	.
1865.0 SWC	X	4	6	X	1	22	.	8	3	.	3	X	.	X	.	.	.	.	.	.	X	.	.	1	.	3	1	.	.
1891.0 SWC	.	21	.	.	23	.	.	2	1	.	2	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
1949.0 SWC	1	5	8	1	13	11	.	6	6	.	3	1	.	.	.	.	.	.	.	.	.	.	.	5	.	4	1	.	.
1979.0 SWC	.	3	6	.	4	16	.	15	3	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2	3	.	.
2004.0 SWC	.	2	1	.	1	3	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	1	.	.	.
2020.0 SWC	4	1	10	1	1	15	.	6	X	.	X	X	.	X	.	.	.	.	.	.	.	.	X	.	.	4	2	.	.
2028.0 SWC	.	11	.	.	.	16	.	2	1	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.
2028.0 swc	1	1	4	1	4	12	.	10	1	.	1	1	.	.	.	.	.	.	.	.	.	.	.	1	.	2	5	.	.
2043.0 SWC	.	3	6	1	3	17	.	5	2	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	4	3	.	.
2054.0 SWC	1	2	5	.	2	16	.	6	3	.	1	.	.	1	.	.	.	.	.	X	.	.	.	1	.	2	1	.	.
2059.0 SWC	3	1	8	1	3	13	.	3	1	.	1	.	.	X	.	.	.	.	.	.	.	.	X	1	.	1	4	.	.
2066.0 SWC	1	7	15	.	2	20	.	9	6	.	1	2	.	X	.	.	.	.	.	.	.	.	.	.	.	2	.	.	.
2076.0 CORE	1	8	7	.	5	11	.	12	1	X	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	3	8	.	.
2086.1 CORE	2	7	11	.	6	12	.	22	X	X	1	1	.	.	.	.	X	.	X	.	.	.	X	.	.	5	5	.	.
2096.0 CORE	1	2	19	.	.	23	.	8	1	.	2	.	.	.	.	.	.	.	.	.	.	.	2	.	.	5	.	.	.
2111.5 SWC	1	6	7	.	7	24	.	9	9	.	1	2	.	.	.	.	.	.	.	.	.	.	.	.	.	5	5	.	.
2118.0 SWC	3	2	3	1	5	12	.	4	1	.	1	.	.	.	.	.	.	.	.	.	.	.	X	.	.	3	.	.	.
2145.0 SWC	.	5	7	.	3	15	.	7	3	.	1	2	.	.	.	.	.	.	.	.	.	.	2	.	.	5	2	.	.
2159.0 SWC	1	6	12	1	6	23	.	10	17	.	1	1	.	1	.	.	.	.	.	.	.	.	.	2	.	4	.	.	.
2164.0 SWC	4	7	16	.	5	22	.	11	8	.	1	.	.	.	.	.	.	.	.	.	.	.	1	1	.	3	3	.	.
2166.0 SWC	2	3	13	1	6	25	.	13	5	.	1	.	.	.	.	.	1	.	.	.	.	.	X	.	.	4	1	.	.
2179.0 SWC	1	5	3	.	5	18	.	18	6	.	X	X	.	.	.	.	.	.	.	.	.	.	X	.	.	1	.	.	.
2199.0 SWC	.	43	.	.	.	26	.	3	3	.	.	.	.	.	.	.	.	.	.	.	.	.	X	2	.	3	.	.	.
2232.0 SWC	.	2	10	.	4	7	1	5	1	.	1	.	.	1	.	.	.	.	.	.	.	.	1	1	.	1	3	.	.
2252.0 SWC	3	4	10	1	8	15	.	6	1	.	1	1	.	.	.	.	.	.	.	.	.	.	X	.	.	8	.	.	.
2270.0 SWC	1	28	.	.	.	17	.	4	.	.	.	.	.	.	.	.	.	.	.	.	X	.	5	.	.	.	.	.	.
2277.5 SWC	1	4	19	1	2	12	.	14	3	.	1	1	X	1	.	.	.	.	.	.	X	.	1	1	.	4	4	.	.
2284.0 SWC	2	4	12	.	4	19	.	14	1	.	1	3	.	.	.	.	.	.	.	.	.	.	.	.	.	4	.	.	.
2286.0 SWC	1	12	12	.	9	17	.	9	11	.	6	1	.	.	.	.	.	.	X	X	.	.	X	1	.	4	3	.	.
2309.0 SWC	1	1	3	1	1	10	.	6	1	.	1	3	.	.	X	.	.	.	.	.	X	.	.	1	.	1	2	.	.
2330.0 SWC	4	7	6	1	11	21	1	18	5	X	6	.	X	1	.	.	.	.	.	.	.	.	1	1	.	2	2	.	.
2398.0 SWC	X	4	6	.	11	22	.	16	1	.	3	1	.	.	.	.	.	X	X	.	X	.	X	.	.	4	1	.	.
2402.0 SWC	2	5	7	1	9	10	.	8	7	X	2	.	.	.	.	.	.	.	.	.	.	.	2	1	.	3	.	.	.
2454.0 SWC	3	3	11	2	7	26	.	10	7	1	6	1	.	.	.	.	X	.	3	.	.	.	X	.	.	2	2	.	.
2489 CUTTS	3	8	4	.	13	25	3	.	12	.	3	.	.	.	.	.	.	.	.	.	.	.	2	.	.	2	.	.	.
2497.0 SWC	X	X	X	.	X	X	.	XX	X	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	X	.	.	.	.
2500.0 SWC	.	9	11	X	18	15	.	10	6	.	4	2	X	.	.	.	1	.	2	.	.	.	1	6	X	2	.	.	.
2528.0 SWC	1	6	6	1	7	47	.	7	2	.	4	X	.	.	1	.	.	.	.	.	.	.	X	1	.	4	.	.	.
2540.5 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2544.5 SWC	.	4	3	.	6	12	.	30	4	.	.	.	.	.	.	.	.	.	.	1	3	.	1	2	.	1	11	.	.
2550 CUTTS	.	10	3	1	15	28	2	14	2	1	6	.	.	.	.	.	1	.	.	X	1	.	1	1	.	.	.	.	.
2567.0 SWC	1	9	11	.	13	11	.	16	9	.	6	2	X	.	.	.	X	.	X	.	.	.	.	1	.	1	1	1	.
2573 CUTTS	1	17	6	2	10	25	2	11	5	.	4	1	.	.	.	.	X	.	.	.	.	.	.	X	.	.	.	.	.
2593 CUTTS	4	8	13	.	22	25	X	6	4	.	3	.	.	.	.	.	.	.	.	.	.	.	1	1	.	1	.	.	.
2605.0 SWC	X	XX	XX	.	XX	XX	.	X	XX	.	X	.	.	.	.	.	.	.	.	.	.	.	.	X	.	.	X	.	.
2624.0 SWC	.	XX	X	.	XX	X	.	X	X	.	X	X	.	.	.	.	.	.	.	.	.	.	X	X	.	.	.	.	.
2640 CUTTS	3	9	4	.	15	20	.	13	7	.	3	.	.	.	.	.	.	.	.	1	.	.	.	1	.	1	.	.	.
2646.5 SWC	1	4	10	1	11	38	1	7	6	.	3	.	.	1	.	.	.	.	1	.	.	.	.	2	.	1	.	X	.
2671.0 SWC	X	X	XX	.	XX	XX	.	X	X	.	X	.	.	.	.	.	.	.	X	.	.	.	.	.	.	X	.	.	.
2683.0 SWC	2	9	14	1	20	22	.	4	6	.	3	.	.	1	.	.	.	.	.	.	.	.	.	2	.	5	1	.	.
2690 CUTTS	3	9	6	.	30	17	.	3	7	.	2	2	.	.	.	.	.	.	.	.	2	.	.	.	.	2	.	X	2
2705.0 SWC	X	X	X	.	XX	XX	.	XX	XX	.	X	.	.	.	.	.	.	.	.	.	.	.	?	X	X	X	X	.	.
2715 CUTTS	3	12	6	2	17	18	1	10	1	.	1	.	X	X	X	2	X	1	X	1	4	1	.	.	.	.	.	.	.
2730.0 SWC	.	.	.	X	X	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2735 CUTTS	1	9	11	3	6	24	1	8	5	1	3	3	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.

Sample	175 CYCLOSPORITES HUGHESI	176 DICTYOTOSPORITES SPECIOSUS	177 FORAMINISPORIS DAILYI	178 LYCOPODIACIDITES ASPERATUS	179 PILOSISPORITES NOTENSIS	180 VITREISPORITES PALLIDUS	181 DICTYOPHYLLIDITES	182 LEPTOLEPIDITES VERRUCATUS	183 SESTROSPORITES PSEUDOALVEOLATUS	184 PROTEACIDITES SP.	185 TRIPOROLETES BIRETICULATUS	186 RETITRILETES CIRCOLUMENUS	187 PHYLLOCLADIDITES MAWSONII	188 CICATRICOSISPORITES LUDBROOKIAE	189 COPTOSPORA PILEOSA	190 AEQUITRIRADITES SPINULOSUS	191 CAMEROZONOSPORITES LATROBENSIS	192 DILWYNITES GRANULATUS	193 PHYLLOCLADIDITES EUNUCHUS	194 RETITRILETES FACETUS	195 RETITRILETES NODOSUS	196 FORAMINISPORIS WONTHAGGIENSIS	197 DICTYOTOSPORITES COMPLEX	198 DILWYNITES TUBERCULATUS	199 VELOSPORITES TRIQUETRUS	200 AMOSOPOLLIS CRUCIFORMIS	201 ANTULSPORITES VARIGRANULATUS	202 LAEVIGATOSPORITES OVATUS	203 CONTIGNISPORITES COOKSONIAE
0635.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	10	.	.	.	.	.	.	.	.	.	.	.
0695.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
0832.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	X	.	.	.	.	X	.	.	.	.	.	.	.	.	.	.	.
0896.5 SWC	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
0997.0 SWC	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	14	.	.	.	.	.	.	.	.	.	.	.
1027.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	4	.	.	.	.	.	.	.	.	.	.	.
1040.0 SWC	.	.	.	.	.	.	1	.	.	.	.	.	1	.	.	.	.	17	.	.	.	X	.	.	.	.	.	3	.
1064.0 SWC	.	.	.	.	.	.	1	.	.	.	.	.	1	.	.	.	.	8	.	.	.	.	.	2	.	.	.	2	.
1115.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	4	.	.	.	.	.	.	.	.	.	.	.
1151.0 SWC	.	.	.	.	.	1	.	.	.	3	.	.	.	.	.	.	.	5	.	.	.	.	.	.	.	.	.	.	.
1200.5 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
1255.0 SWC	.	.	.	.	.	.	.	.	.	X	.	.	.	.	.	.	.	X	.	.	.	.	.	.	.	.	.	.	.
1264.0 SWC	.	.	.	.	.	.	.	.	.	X	.	.	X	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
1340.0 SWC	.	.	.	.	.	.	.	.	.	X	.	.	.	.	.	.	.	X	.	.	.	.	.	.	.	.	.	.	.
1364.0 SWC	.	.	.	.	.	.	.	.	.	X	.	.	X	.	.	.	.	X	.	.	.	.	.	.	.	.	.	.	.
1489.0 SWC	.	.	.	.	.	.	.	.	.	6	.	.	.	.	.	.	.	10	.	.	.	.	.	.	.	.	.	2	.
1491.0 SWC	.	.	.	1	.	1	.	.	.	11	.	.	1	.	.	.	.	13	.	.	.	.	.	.	.	.	.	.	.
1494.0 SWC	.	.	.	.	.	.	.	.	.	15	.	.	1	.	.	.	.	10	.	.	.	.	.	.	.	.	.	X	.
1517.0 SWC	.	.	.	.	.	.	.	.	.	13	.	.	1	.	.	.	.	3	.	.	.	.	.	.	.	.	.	.	.
1523.0 SWC	.	.	.	.	.	.	.	.	.	8	.	.	.	.	.	.	.	7	.	.	.	.	.	.	.	.	.	.	.
1544.0 SWC	.	.	.	.	.	.	.	X	.	8	.	.	X	.	.	.	.	17	.	.	.	.	.	.	.	.	.	X	.
1563.0 SWC	.	1	1	.	.	1	.	.	.	6	.	.	1	.	.	1	.	3	.	.	.	.	.	.	.	3	.	X	.
1580.0 SWC	.	.	.	.	.	.	2	.	.	23	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.
1640.0 SWC	.	.	.	.	*	.	4	1	.	19	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	*
1663.0 SWC	*	*	.	.	.	.	2	.	.	16	.	.	X	.	.	.	.	.	X	.	.	.	.	.	.	.	.	.	X
1721.0 SWC	.	.	.	.	.	.	.	X	.	10	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
1765.0 SWC	.	.	.	.	.	.	.	X	.	21	.	.	.	.	.	.	.	3	1	.	.	.	.	.	.	.	.	.	.
1823 CUTTS	.	X	.	.	.	.	.	.	.	1	.	.	X	.	.	.	.	6	.	.	.	.	.	.	.	1	.	1	.
1865.0 SWC	.	.	2	.	.	X	.	.	.	.	.	.	2	.	.	1	.	2	.	.	.	.	.	.	.	.	.	.	.
1891.0 SWC	.	.	.	.	.	.	.	X	.	9	.	.	.	.	.	.	.	10	.	.	.	.	.	.	.	1	.	.	.
1949.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	8	.	.	.	.	.	.	.	2	1	.	.
1979.0 SWC	.	.	.	.	.	1	.	.	.	1	.	.	2	1	.	.	.	9	1	.	.	.	.	.	.	X	.	.	.
2004.0 SWC	.	.	.	.	.	.	.	.	1	3	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	X
2020.0 SWC	.	.	.	X	.	1	.	X	.	.	.	X	.	X	.	.	.	17	.	X	.	.	.	.	.	2	X	.	.
2028.0 SWC	.	1	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	3	1	.	.	.	.	.	.	18	.	.	.
2028.0 swc	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	16	.	.	.	.	.	.	.	10	.	.	1
2043.0 SWC	.	.	.	1	.	1	.	.	.	.	.	.	.	.	.	.	.	13	.	.	.	.	.	.	.	14	.	.	.
2054.0 SWC	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	22	.	.	.	.	.	.	.	14	.	.	.
2059.0 SWC	.	.	.	.	.	X	.	.	.	.	.	.	.	.	.	.	.	21	.	.	.	.	.	.	.	3	.	.	.
2066.0 SWC	.	.	.	.	.	X	.	.	.	.	.	.	1	.	.	.	.	5	1	.	.	.	.	.	.	.	.	1	.
2076.0 CORE	.	.	.	.	.	.	.	.	.	.	.	.	X	.	.	.	.	13	.	.	.	.	.	.	.	19	.	.	.
2086.1 CORE	.	.	X	X	.	.	.	.	.	.	.	.	.	X	.	.	.	13	.	.	.	X	.	.	.	6	.	.	.
2096.0 CORE	.	.	.	.	.	.	.	1	.	.	.	.	1	.	.	.	.	15	.	.	.	.	.	.	.	5	2	1	.
2111.5 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	6	.	.	.	.	.	.	.	.	.	2	.
2118.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	3	.	.	.	.	.	.	.	.	.	.	.
2145.0 SWC	.	.	.	3	.	.	.	.	.	.	.	.	1	1	.	.	.	15	.	.	.	.	.	.	.	1	.	4	.
2159.0 SWC	.	.	.	2	.	.	.	2	.	.	.	.	.	.	.	.	.	.	3	.	.	.	.	.	.	.	.	.	.
2164.0 SWC	.	.	.	1	.	.	.	.	.	.	.	.	1	.	X	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2166.0 SWC	.	.	.	3	.	1	1	.	.	.	.	.	1	.	.	.	.	4	2	.	.	.	.	.	.	X	.	X	1
2179.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	23	X	.	.	.	.	.	.	.	.	.	.
2199.0 SWC	.	.	.	.	.	.	6	1	.	.	.	.	.	.	.	.	.	2	.	.	.	.	.	.	.	.	.	.	.
2232.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	11	.	.	.	.	.	.	.	.	.	.	.
2252.0 SWC	.	.	.	1	.	2	.	.	.	.	.	.	1	X	.	.	.	15	.	.	.	.	.	.	.	.	.	.	.
2270.0 SWC	*	.	.	.	.	.	.	.	.	.	.	.	X	.	.	.	.	10	.	.	.	.	.	.	.	1	.	.	1
2277.5 SWC	.	.	.	1	.	1	.	.	.	.	.	.	.	.	.	.	.	11	1	.	.	.	.	.	.	.	.	.	.
2284.0 SWC	.	.	.	1	.	.	.	.	.	.	.	.	?	.	.	.	.	6	1	.	.	.	.	.	.	.	.	.	.
2286.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	1	.	.	.	.	.	.	.	.	.
2309.0 SWC	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	4	3	.	.	.	.	.	.	.	.	.	1
2330.0 SWC	.	.	.	.	.	.	.	X	.	.	.	.	.	.	.	.	.	5	X	1	.	.	.	.	.	.	.	.	.
2398.0 SWC	.	.	.	.	.	X	.	X	.	.	.	.	.	.	.	.	.	2	.	.	.	.	.	.	.	X	.	X	.
2402.0 SWC	.	.	.	2	.	.	.	.	.	.	.	.	.	.	.	.	.	5	.	.	.	.	.	.	.	.	1	.	.
2454.0 SWC	.	.	.	X	.	X	.	1	.	.	.	.	.	.	X	.	.	.	1	.	.	.	X	4	X	.	.	.	.
2489 CUTTS	.	.	.	.	.	.	.	2	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2497.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2500.0 SWC	X	.	X	.	.	.	.	X	1	.	.	.	.	.	.	.	.	4	?	.	.	1	.	.	.	.	.	.	.
2528.0 SWC	1	.	.	.	X	X	.	.	.	.	.	.	.	.	.	1	5	6	X	X	X	.	.	.	.	.	.	.	.
2540.5 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2544.5 SWC	.	.	.	.	.	1	.	.	.	.	.	.	.	1	X	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2550 CUTTS	.	.	1	.	?	.	.	.	.	X	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2567.0 SWC	.	.	1	.	2	.	.	2	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2573 CUTTS	.	.	.	.	.	.	.	.	.	X	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2593 CUTTS	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2605.0 SWC	.	.	X	.	.	.	X	X	X	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2624.0 SWC	.	X	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2640 CUTTS	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2646.5 SWC	1	1	X	X	X	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2671.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2683.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2690 CUTTS	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2705.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2715 CUTTS	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2730.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2735 CUTTS	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.


0635.0 SWC
0695.0 SWC
0832.0 SWC
0896.5 SWC
0997.0 SWC
1027.0 SWC
1040.0 SWC
1064.0 SWC
1115.0 SWC
1151.0 SWC
1200.5 SWC
1255.0 SWC
1264.0 SWC
1340.0 SWC
1364.0 SWC
1489.0 SWC
1491.0 SWC
1494.0 SWC
1517.0 SWC
1523.0 SWC
1544.0 SWC
1563.0 SWC
1580.0 SWC
1640.0 SWC
1663.0 SWC
1721.0 SWC
1765.0 SWC
1823 CUTTS
1865.0 SWC
1891.0 SWC
1949.0 SWC
1979.0 SWC
2004.0 SWC
2020.0 SWC
2028.0 SWC
2043.0 SWC
2054.0 SWC
2059.0 SWC
2066.0 SWC
2076.0 CORE
2086.1 CORE
2096.0 CORE
2111.5 SWC
2118.0 SWC
2145.0 SWC
2159.0 SWC
2164.0 SWC
2166.0 SWC
2179.0 SWC
2199.0 SWC
2232.0 SWC
2252.0 SWC
2270.0 SWC
2277.5 SWC
2284.0 SWC
2286.0 SWC
2309.0 SWC
2330.0 SWC
2398.0 SWC
2402.0 SWC
2454.0 SWC
2489 CUTTS
2497.0 SWC
2500.0 SWC
2528.0 SWC
2540.5 SWC
2544.5 SWC
2550 CUTTS
2567.0 SWC
2573 CUTTS
2593 CUTTS
2605.0 SWC
2624.0 SWC
2640 CUTTS
2646.5 SWC
2671.0 SWC
2683.0 SWC
2690 CUTTS
2705.0 SWC
2715 CUTTS
2730.0 SWC
2735 CUTTS
204 CICATRICOSISPORITES RADIATUS
205 APPENDICISPORITES TRICORNITATUS
206 CLAVIFERA TRIPLEX
207 TRICOLPITES
208 AUSTRALOPOLLIS OBSCURIS
209 CORONATISPORA PERFORATA
210 LILIACIDITES SP.
211 TRILOBOSPORITES TRIORETICULOSUS
212 INTERULOBITES INTRAVERRUCATUS
213 BALMEISPORITES HOLODICTYUS
214 PEROTRILETES MAJUS
215 CAMEROZONOSPORITES SP
216 TRICOLPITES VARIVERRUCATUS
217 COPTOSPORA PARADOXA
218 PROTEACIDITES SP. LARGE
219 CAMEROZONOSPORITES OHAIENSIS
220 CICATRICOSISPORITES HUGHESI
221 LYGISTIPOLLENITES FLORINII
222 TRICOLPITES CONFESSUS
223 TRICOLPITES SABULOSUS
224 TRICOLPORITES GILLI
225 GAMBIERINA RUDATA
226 NEORAISTRICKIA
227 NOTHOFAGIDITES SENECTUS
228 PEROTRILETES SP
229 BEAUPREADITES VERRUCOSUS
230 GAMBIERINA EDWARDSI
231 LYGISTIPOLLENITES BALMEI
232 NOTHOFAGIDITES ENDURUS


0635.0 SWC
0695.0 SWC
0832.0 SWC
0896.5 SWC
0997.0 SWC
1027.0 SWC
1040.0 SWC
1064.0 SWC
1115.0 SWC
1151.0 SWC
1200.5 SWC
1255.0 SWC
1264.0 SWC
1340.0 SWC
1364.0 SWC
1489.0 SWC
1491.0 SWC
1494.0 SWC
1517.0 SWC
1523.0 SWC
1544.0 SWC
1563.0 SWC
1580.0 SWC
1640.0 SWC
1663.0 SWC
1721.0 SWC
1765.0 SWC
1823 CUTTS
1865.0 SWC
1891.0 SWC
1949.0 SWC
1979.0 SWC
2004.0 SWC
2020.0 SWC
2028.0 SWC
2043.0 SWC
2054.0 SWC
2059.0 SWC
2066.0 SWC
2076.0 CORE
2086.1 CORE
2096.0 CORE
2111.5 SWC
2118.0 SWC
2145.0 SWC
2159.0 SWC
2164.0 SWC
2166.0 SWC
2179.0 SWC
2199.0 SWC
2232.0 SWC
2252.0 SWC
2270.0 SWC
2277.5 SWC
2284.0 SWC
2286.0 SWC
2309.0 SWC
2330.0 SWC
2398.0 SWC
2402.0 SWC
2454.0 SWC
2489 CUTTS
2497.0 SWC
2500.0 SWC
2528.0 SWC
2540.5 SWC
2544.5 SWC
2550 CUTTS
2567.0 SWC
2573 CUTTS
2593 CUTTS
2605.0 SWC
2624.0 SWC
2640 CUTTS
2646.5 SWC
2671.0 SWC
2683.0 SWC
2690 CUTTS
2705.0 SWC
2715 CUTTS
2730.0 SWC
2735 CUTTS
233 PERIPOROPOLLENITES POLYORATUS
234 TRICOLPORITES LONGUS
235 ERICIPITES SCABRATUS
236 HALORAGACIDITES HARRISII
237 HALVACIPOLLIS DIVERSUS
238 HALVACIPOLLIS SUBTILIS
239 NOTHOFAGIDITES BRACHYSPINULOSUS
240 NOTHOFAGIDITES FLEMINGII
241 PERIPOROPOLLENITES DEMARCATUS
242 PROTEACIDITES BUN GRANDIS
243 PROTEACIDITES GRANDIS
244 PROTEACIDITES INCURVATUS
245 PROTEACIDITES SCABORATUS
246 STERIESPORITES PUNCTATUS
247 TETRACOLPORITES VERRUCOSUS
248 TRICOLPORITES ESTOUTUS
249 TRILETES TUBERCULIFORMIS
250 ANACOLOSIDITES LUTEOIDES
251 CUPANEIDITES ORTHOTEICHUS
252 INTRATRIPOROPOLLENITES NOTABILIS
253 PROTEACIDITES ASPEROPOLUS
254 PROTEACIDITES ORNATUM
255 PROTEACIDITES PACHYPOLUS
256 PROTEACIDITES TUBERCULIFORMIS
257 TRIPOROPOLLENITES AMBIGUUS
258 MYRTACEIDITES PARVUS
259 MYRTACEIDITES TENUIS
260 NOTHOFAGIDITES DEMINUTUS
261 NOTHOFAGIDITES EMARICIDUS

	POLYCOLPITES ESOBALTEUS	SANTALUM CAINOZOICUS	TRICOLPORITES	MALVACIPOLLIS GRANDIS	PROTEACIDITES ANNULARIS	VERRUCOBISPORITES KOPUKUENSIS	PROTEACIDITES LEIGHTONI	TRIORITES MAGNIFICUS	DRYPTOPOLLENITES SENILUNATUS	NOTHOFAGIDITES FALCATA	PROTEACIDITES KECTONARGINUS	CYATHEACIDITES ANNULATUS	HERCOSPORITES ELLIOTTII	BANKSIERACIDITES ARCUATUS	MYRTACEIDITES VERRUCOSUS	NOTHOFAGIDITES ASPERUS	BOTRYOCOCCUS	CAUCH SP	NUMMUS MONOCULATUS	NUMMUS SP	REWORKING - TRIASSIC	REWORKING - PERMIAN	REWORKING - JURASSIC	REWORKING - CRETACEOUS	
	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	
0635.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	1	.	1	1	.	.	.	.	.	.	.	.	0635.0 SWC
0695.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	0695.0 SWC
0832.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	0832.0 SWC
0896.5 SWC	.	.	.	.	.	.	.	.	.	X	.	.	.	.	.	.	.	.	.	.	.	.	.	.	0896.5 SWC
0997.0 SWC	.	.	.	.	.	.	.	.	.	1	2	X	1	3	.	.	.	.	.	.	.	.	.	.	0997.0 SWC
1027.0 SWC	.	.	.	X	.	.	.	.	.	1	X	.	.	.	.	.	.	.	.	.	.	.	.	.	1027.0 SWC
1040.0 SWC	.	.	.	.	.	.	.	.	.	3	.	.	.	X	.	.	6	.	.	.	.	.	.	.	1040.0 SWC
1064.0 SWC	.	.	.	.	.	.	.	.	.	1	1	1	1	.	.	.	9	.	.	.	.	1	.	.	1064.0 SWC
1115.0 SWC	.	.	.	.	.	X	.	.	.	.	X	.	.	.	.	.	.	.	.	.	.	.	.	.	1115.0 SWC
1151.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2	.	.	.	.	.	.	.	1151.0 SWC
1200.5 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1200.5 SWC
1255.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1255.0 SWC
1264.0 SWC	.	.	X	.	.	.	.	.	.	X	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1264.0 SWC
1340.0 SWC	.	.	.	.	.	X	.	.	X	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1340.0 SWC
1364.0 SWC	.	.	.	.	.	.	X	?	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1364.0 SWC
1489.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	7	.	.	.	.	.	.	.	1489.0 SWC
1491.0 SWC	.	.	.	.	.	X	.	.	.	.	.	.	.	.	.	.	5	.	.	.	.	.	.	.	1491.0 SWC
1494.0 SWC	.	2	.	1	X	.	.	.	.	.	.	.	.	.	.	.	16	.	.	.	.	.	.	.	1494.0 SWC
1517.0 SWC	X	X	1	.	.	.	.	.	.	.	.	.	.	.	.	.	14	.	.	.	.	.	.	.	1517.0 SWC
1523.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	21	.	.	.	.	.	.	.	1523.0 SWC
1544.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	6	.	.	.	.	.	.	.	1544.0 SWC
1563.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2	.	.	.	X	X	.	X	1563.0 SWC
1580.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	X	X	X	.	1580.0 SWC
1640.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	X	.	.	1640.0 SWC
1663.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	X	X	.	.	1663.0 SWC
1721.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	X	.	.	1721.0 SWC
1765.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	X	.	.	1765.0 SWC
1823 CUTTS	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2	.	.	.	.	.	.	.	1823 CUTTS
1865.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2	.	.	.	.	.	.	.	1865.0 SWC
1891.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1891.0 SWC
1949.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	3	.	.	.	.	.	.	.	1949.0 SWC
1979.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	1	.	.	1979.0 SWC
2004.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2004.0 SWC
2020.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	X	.	.	.	.	2020.0 SWC
2028.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2028.0 SWC
2028.0 swc	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	2028.0 swc
2043.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	4	.	.	.	.	.	.	.	2043.0 SWC
2054.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2054.0 SWC
2059.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2059.0 SWC
2066.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2066.0 SWC
2076.0 CORE	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2076.0 CORE
2086.1 CORE	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	2086.1 CORE
2096.0 CORE	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	4	.	.	1	.	.	.	.	2096.0 CORE
2111.5 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2111.5 SWC
2118.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2118.0 SWC
2145.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2	.	.	.	.	.	.	.	2145.0 SWC
2159.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2159.0 SWC
2164.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2164.0 SWC
2166.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	2166.0 SWC
2179.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	5	.	1	X	.	.	.	.	2179.0 SWC
2199.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2199.0 SWC
2232.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2232.0 SWC
2252.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2252.0 SWC
2270.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2270.0 SWC
2277.5 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2277.5 SWC
2284.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	1	.	.	.	.	2284.0 SWC
2286.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	2286.0 SWC
2309.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	2309.0 SWC
2330.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	3	.	.	.	.	.	.	.	2330.0 SWC
2398.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	2398.0 SWC
2402.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	5	.	X	.	*	*	.	.	2402.0 SWC
2454.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	4	.	.	.	X	.	.	.	2454.0 SWC
2489 CUTTS	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2489 CUTTS
2497.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2497.0 SWC
2500.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2500.0 SWC
2528.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	X	.	.	.	2528.0 SWC
2540.5 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2540.5 SWC
2544.5 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2	.	.	.	.	.	.	.	2544.5 SWC
2550 CUTTS	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	X	.	.	.	X	.	.	.	2550 CUTTS
2567.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2	X	.	.	.	.	.	.	2567.0 SWC
2573 CUTTS	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2573 CUTTS
2593 CUTTS	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	3	.	.	.	.	X	.	.	2593 CUTTS
2605.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	X	.	.	.	2605.0 SWC
2624.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	X	.	.	.	2624.0 SWC
2640 CUTTS	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	3	.	.	2640 CUTTS
2646.5 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	3	.	.	.	.	1	.	.	2646.5 SWC
2671.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2671.0 SWC
2683.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	2	.	.	.	2683.0 SWC
2690 CUTTS	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2	.	.	2690 CUTTS
2705.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	X	.	.	.	2705.0 SWC
2715 CUTTS	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2	.	.	.	.	.	.	.	2715 CUTTS
2730.0 SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2730.0 SWC
2735 CUTTS	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2	.	.	.	.	.	.	.	2735 CUTTS

SPECIES LOCATION INDEX

Index numbers are the columns in which species appear.

INDEX NUMBER	SPECIES
10	ACHILLEODINIUM BIFORMOIDES
32	ACHOMOSPHAERA ALCICORNU
83	ACHOMOSPHAERA CRASSIPELLIS
78	ACHOMOSPHAERA RAMULIFERUM
190	AEQUITRIRADITES SPINULOSUS
140	AEQUITRIRADITES TILCHAENESIS
158	AEQUITRIRADITES VERRUCOSUS
39	ALTERBIA ACUMINATUM
200	AMOSOPOLLIS CRUCIFORMIS
250	ANACOLOSIDITES LUTEOIDES
68	ANTHOSPHAERIDIUM CONVOLVULOIDES
71	ANTHOSPHAERIDIUM WISEMANIAE
201	ANTULSPORITES VARIGRANNULATUS
84	APECTODINIUM HOMOMORPHUM
85	APECTODINIUM QUINQUILATUM
22	APECTODINIUM SUMMISIMUM
168	APPENDICISPORITES DISTOCARINATUS
205	APPENDICISPORITES TRICORNITATUS
43	APTEA SP
86	APTEODINIUM AUSTRALIENSE
44	APTEODINIUM GRANULATUM
29	APTEODINIUM SP.
141	ARAUCARIACITES AUSTRALIS
142	ARAUCARIACITES FISSUS
128	AREOLIGERA SP
42	AREOSPHAERIDIUM SUGGESTIUM
208	AUSTRALOPOLLIS OBSCURIS
213	BALMEISPORITES HOLODICTYUS
275	BANKSIEACIDITES ARCUATUS
138	BATIACASPAERA SP.
229	BEAUPREADITES VERRUCOSUS
278	BOTRYOCOCCUS
15	CALLAOISPHAERIDIUM ASYMMETRICUM
143	CALLIALASPORITES DAMPIERI
144	CALLIALASPORITES TURBATUS
191	CAMEROZONOSPORITES LATROBENSIS
219	CAMEROZONOSPORITES OHAIENSIS
215	CAMEROZONOSPORITES SP
32	CANNINGIA SPINY
139	CASSICULOSPHAERIDIA SP.
45	CASSIDIUM SP
279	CAUCA SP
169	CERATOSPORITES EQUALIS
87	CEREBROCYSTA SP
75	CHATANGIELLA CF CRETACEA
56	CHATANGIELLA MICROCANTHA
76	CHATANGIELLA SP.
46	CHATANGIELLA TRIPARTITA
47	CHATANGIELLA VICTORIENSIS
33	CHIROPTERIDIUM ASPINATUM
34	CHIROPTERIDIUM DISPERSUM GP.
118	CHIROPTERIDIUM TABULATE
3	CHLAMYDOPHORELLA NYEI
27	CHLAMYDOPHORELLA SP
145	CICATRICOSISPORITES AUSTRALIENSIS
173	CICATRICOSISPORITES CUNEIFORMIS
220	CICATRICOSISPORITES HUGHESI
188	CICATRICOSISPORITES LUDBROOKIAE
204	CICATRICOSISPORITES RADIATUS
159	CINGUTRILETES CLAVUS
1	CIRCULODINIUM DEFLANDREI
37	CIRCULODINIUM SOLIDA
206	CLAVIFERA TRIPLEX
16	CLEISTOSPHAERIDIUM SP.
135	COMPOSITOSPHAERIDIUM SP.
160	CONCAVISSIMISPORITES PENOLAENSIS
203	CONTIGNISPORITES COOKSONIAE
170	CONTIGNISPORITES GLEBULENTUS
217	COPTOSPORA PARADOXA
189	COPTOSPORA PILEOSA
111	CORDOSPHAERIDIUM FIBROSPINOSUM
88	CORDOSPHAERIDIUM INODES
146	COROLLINA TOROSUS
209	CORONATISPORA PERFORATA
41	CORONIFERA OCEANICA
124	CORRUDIMUM INCOMPOSITUM
130	CRASSOSPHAERA CONCINNIA
4	CRIBROPERIDINIUM EDWARDSII
5	CRIBROPERIDINIUM sp
161	CRYBELOSPORITES STRIATUS
251	CUPANEIDITES ORTHOTEICHUS
273	CYATHEACIDITES ANNULATUS
147	CYATHIDITES AUSTRALIS
148	CYATHIDITES MINOR
149	CYCADOPITES FOLLICULARIS
13	CYCLONEPHELIUM COMPACTUM
7	CYCLONEPHELIUM MEMBRANIPHORUM
89	CYCLOPSIELLA
175	CYCLOSPORITES HUGHESI
112	DAPSILIDINIUM PASTIELSI
105	DAPSILIDINIUM PSEUDOCOLLIGERUM
79	DEFLANDREA PACHYCEROS
90	DEFLANDREA PHOSPHORITICA
72	DEFLANDREA SP.
91	DEFLANDREA TRUNCATA
40	DICONODINIUM PUSILLUM
181	DICTYOPHYLLIDITES
197	DICTYOTOSPORITES COMPLEX
176	DICTYOTOSPORITES SPECIOSUS
192	DILWYNITES GRANULATUS
198	DILWYNITES TUBERCULATUS
80	DIPHYES COLLIFERUM
113	DRACODINIUM SPONGY
270	DRYPTOPOLLENITES SEMILUNATUS
235	ERICIPITES SCABRATUS
57	EUCLADINIUM MADURENSUS
2	EXOCHOSPHAERIDIUM PHRAGMITES
150	FALCISPORITES GRANDIS
151	FALCISPORITES SIMILIS
23	FLORENTINIA LACINIATA
162	FORAMINISPORIS ASYMMETRICUS
177	FORAMINISPORIS DAILYI
196	FORAMINISPORIS WONTHAGGIENSIS
174	FOVEOGLEICHENIIDITES
163	FOVEOTRILETES PARVIRETUS
70	FROMEA CHYTRA
58	FROMEA FRAGILIS
230	GAMBIERINA EDWARDSI
225	GAMBIERINA RUDATA
107	GLAPHYRODINIUM VICINUM
171	GLEICHENIIDITES
236	HALORAGACIDITES BARRISII
92	HEMICYSTODINIUM ZOHARYI
274	HERKOSPORITES ELLIOTTII
62	HESLERTONIA STRIATA
14	HETEROSPHAERIDIUM CONJUNCTUM
6	HETEROSPHAERIDIUM HETEROCANTHUM
64	HETEROSPHAERIDIUM LATEROBRACHIUS
8	HETEROSPHAERIDIUM SOLIDA
114	HOMOTRIBLIUM BREVIRADIATUM
93	HOMOTRYBLIUM TASMANIENSE
24	HYSTRICHODINIUM PULCHRUM
94	HYSTRICHOKOLPOMA EISENACKI
95	HYSTRICHOKOLPOMA RIGAUDIAE
136	HYSTRICHOKOLPOMA SP.
119	HYSTRICHOSPHAERIDIUM TUBIFERUM
106	IMPAGIDINIUM MACULATUM
120	IMPAGIDINIUM MARGINATA
121	IMPAGIDINIUM SP
96	IMPAGIDINIUM VICTORIANUM
131	IMPLETOSPHAERIDIUM SP.1
212	INTERULOBITES INTRAVERRUCATUS
252	INTRATRIPOROPOLLENITES NOTABILIS
48	ISABELIDINIUM BELFASTENSE
33	ISABELIDINIUM COOKSONIAE
49	ISABELIDINIUM CRETACEUM
77	ISABELIDINIUM KOROJONENSE
36	ISABELIDINIUM SP.
164	ISCHYOSPORITES PUNCTATUS
25	KIOKANSIUM POLYPES
115	KISSELOVIA EDWARDSII
108	KISSELOVIA THOMPSONAE
152	KLUKISPORITES SCABERIS
202	LAEVIGATOSPORITES OVATUS
182	LEPTOLEPIDITES VERRUCATUS
210	LILIACIDITES SP.
125	LINGULODINIUM MACHAEROPHORUM
178	LYCOPODIACIDITES ASPERATUS
231	LYGISTIPOLLENITES BALMEI
221	LYGISTIPOLLENITES FLORINII
63	MADURADINIUM PENTAGONUM
237	MALVACIPOLLIS DIVERSUS
265	MALVACIPOLLIS GRANDIS
238	MALVACIPOLLIS SUBTILIS
153	MICROCACHRYIDITES ANTARCTICUS
38	MICRODINIUM SP
34	MILLIOUDIDINIUM SP.
97	MILLIOUDIDINIUM TENUITABULATUS
98	MURATODINIUM FIMBRIATUM
258	MYRTACEIDITES PARVUS
259	MYRTACEIDITES TENUIS
276	MYRTACEIDITES VERRUCOSUS
59	NELSONIELLA ACERAS
126	NELSONIELLA SEMIRETICULATA
65	NELSONIELLA TUBERCULATA
226	NEORAISTRICKIA
277	NOTHOFAGIDITES ASPERUS
239	NOTHOFAGIDITES BRACHYSPINULOSUS
260	NOTHOFAGIDITES DEMINUTUS
261	NOTHOFAGIDITES EMARICIDUS
232	NOTHOFAGIDITES ENDURUS
271	NOTHOFAGIDITES FALCATA
240	NOTHOFAGIDITES FLEMINGII
227	NOTHOFAGIDITES SENECTUS
280	NUMMUS MONOCULATUS
281	NUMMUS SP
20	NUMUS MONOCULATUS
28	ODONTOCHITINA COSTATA
60	ODONTOCHITINA CRIBROPODA
66	ODONTOCHITINA OBESA
17	ODONTOCHITINA OPERCULATA
50	ODONTOCHITINA PORIFERA
9	OLIGOSPHAERIDIUM COMPLEX
18	OLIGOSPHAERIDIUM PULCHERRIMUM
81	OPERCULODINIUM
129	OPERCULODINIUM CENTROCARPUM
154	OSMUNDACIDITES WELLMANII
127	PALAEOCYSTIDINIUM AUSTRALINIUM
30	PALAEOHYSTRICHOSPHORA INFUSORIOIDES
10	PALAEOPERIDINIUM CRETACEUM
35	PARALECANIELLA INDENTATA
241	PERIPOROPOLLENITES DEMARCATUS
233	PERIPOROPOLLENITES POLYORATUS
155	PEROTRILETES JUBATUS/MORGANII
214	PEROTRILETES MAJUS
228	PEROTRILETES SP
123	PHTANOPENIDINIUM COMATUM
193	PHYLLOCLADIDITES EUNUCHUS
187	PHYLLOCLADIDITES MAWSONII
179	PILOSISPORITES NOTENSIS
172	PODOSPORITES MICROSACCATUS
262	POLYCOLPITES ESOBALTEUS
266	PROTEACIDITES ANNULARIS
253	PROTEACIDITES ASPEROPOLUS
242	PROTEACIDITES BUN GRANDIS
243	PROTEACIDITES GRANDIS
244	PROTEACIDITES INCURVATUS
268	PROTEACIDITES LE1GHTONI
254	PROTEACIDITES ORNATUM
255	PROTEACIDITES PACHYPOLUS
272	PROTEACIDITES RECTOMARGINUS
245	PROTEACIDITES SCABORATUS
184	PROTEACIDITES SP.
218	PROTEACIDITES SP. LARGE
256	PROTEACIDITES TUBERCULIFORMIS
69	PTEROSPERMELLA AUREOLATA
26	PTEROSPERMELLA AUSTRALIENSIS
156	RETITRILETES AUSTROCLAVATIDITES
186	RETITRILETES CIRCOLUMENUS
194	RETITRILETES FACETUS
195	RETITRILETES NODOSUS
285	REWORKING - CRETACEOUS
284	REWORKING - JURASSIC
283	REWORKING - PERMIAN
282	REWORKING - TRIASSIC
99	RHOMBODINIUM GLABRUM
100	SAMLANDIA CHLAMYDOPHORIDITES
263	SANTALUM CAINOZOICUS
137	SCHEMATOPHORA SPECIOSUS
31	SCHIZOSPORIS PARVUS
101	SENONIASPHAERA SP
183	SESTROSPORITES PSEUDOALVEOLATUS
11	SPINIFERITES FURCATUS/RAMOSUS
157	STERIESPORITES ANTIQUASPORITES
246	STERIESPORITES PUNCTATUS
82	SYSTEMATOPHORA PLACACANTHUM
74	TANYOSPHAERIDIUM SALPINX
122	TECTATODINIUM
247	TETRACOLPORITES VERRUCOSUS
116	THALASSIPHORA PELAGICA
12	TRICHODINIUM
207	TRICOLPITES
222	TRICOLPITES CONFESSUS
223	TRICOLPITES SABULOSUS
216	TRICOLPITES VARIVERRUCATUS
264	TRICOLPORITES
248	TRICOLPORITES ESTOUTUS
224	TRICOLPORITES GILLI
234	TRICOLPORITES LONGUS
249	TRILETES TUBERCULIFORMIS
211	TRILOBOSPORITES TRIORETICULOSUS
269	TRIORITES MAGNIFICUS
185	TRIPOROLETES BIRETICULATUS
165	TRIPOROLETES RADIATUS
166	TRIPOROLETES RETICULATUS
167	TRIPOROLETES SIMPLEX
257	TRIPOROPOLLENITES AMBIGUUS
51	TRITHYRODINIUM SUSPECTUM
61	TRITHYRODINIUM THICK RETICULATE
52	TRITHYRODINIUM THICK SCABRATE
53	TRITHYRODINIUM THICK VERMICULATE
54	TRITHYRODINIUM THICK VERRUCATE
55	TRITHYRODINIUM THIN PSILATE
199	VELOSPORITES TRIQUETRUS
267	VERRUCOSISPORITES KOPUKUENSIS
19	VERYHACHIUM
180	VITREISPORITES PALLIDUS
102	WETZELIELLA HAMPDENENSIS
103	WETZELIELLA ORNATUM
117	WETZELIELLA PENTAGONAL
109	WETZELIELLA SP
104	WETZELIELLA WAIPAWAENSIS
73	XENASCUS CERATOIDES
67	XENIKOON AUSTRALIS
21	XIPHOPHORIDIUM ALATUM