



PE990539

APPENDIX-3

PALMER-1, FORAMINIFERAL BIOSTRATIGRAPHY

by

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PART-1

INTERPRETATIVE DATA

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INTRODUCTION
by
A.D. Partridge

The analysis of the foraminiferal sequence in Palmer-1 given in this report was made by David Taylor and presented as a "data package" on February 2, 1982.

The aim of the study, and the reason for the format of this report, was to make a rapid reconnaissance examination of fifty one sidewall core samples to give a breakdown of the marine sequence into foraminiferal zones and ages. No attempt has been made to fully document the foraminiferal assemblages or to prepare a detailed environmental and geological interpretation of the sequence. The rationale for this approach was to limit costs and to reduce the time spent by the principal investigator, David Taylor, on what is essentially routine age determinations and report preparation. It is also argued that since the Gippsland Basin is now a mature petroleum province detailed discussion of the individual foraminiferal zones in the well is not essential as it has been adequately treated in earlier reports.

EXPLANATION OF MATERIALS

by

David Taylor

Processed sidewall core samples from Palmer-1 were submitted for examination and delineation of planktonic biostratigraphy; particularly in the "Greensand" and carbonate above the Latrobe Sands. In this well, the highest sample documented was at 775 metres which contained a poorly preserved mid to late Miocene fauna.

Other fauna in the samples are noted only when obvious; no detailed searching nor precise identifications of benthonics were conducted. The micro-grain character of the residue (approx. 125 microns) was estimated.

The interval from 1184 metres to 1140 metres appears to represent an unusually complete Oligocene planktonic foraminiferal sequence with assemblages assignable to Zones J-2, J-1, I-2, I-1 and H-2. The benthonic faunas of this interval demonstrate oxygen depletion at time of depletion with a sporadic dominance of buliminaceans in assemblages akin to those of the New Zealand Whangaroroan Stage. Above the I/H boundary, biostratigraphic designation becomes increasingly difficult because of a combination of the high energy depositional environment and subsequent diagenesis.

PALMER-1 - SUMMARY TABLE

SAMPLE	DEPTH(m)	ZONE	AGE
SWC 51	1192	Indeterminate	-
SWC 52	1190	Indeterminate	-
SWC 53	1153	Indeterminate	-
SWC 54	1186	Indeterminate	-
SWC 55	1184	J-2	Early Oligocene
SWC 56	1182	J-2	Early Oligocene
SWC 57	1180	J-2	Early Oligocene
SWC 58	1178	J-2	Early Oligocene
SWC 59	1176	J-2	Early Oligocene
SWC 60	1172	J-2	Early Oligocene
SWC 61	1170	J-2	late Early Oligocene
SWC 62	1168	J-1	Late Oligocene
SWC 63	1164	J-1	Late Oligocene
SWC 64	1160	I-2	Late Oligocene
SWC 65	1156	I-2	Late Oligocene
SWC 66	1152	I	Late Oligocene
SWC 67	1145	I	Late Oligocene
SWC 68	1144	I	Late Oligocene
SWC 69	1140	H	Late Oligocene - Early Miocene
SWC 70	1136	H	Late Oligocene - Early Miocene
SWC 71	1132	H	Late Oligocene - Early Miocene
SWC 72	1130	H	Late Oligocene - Early Miocene
SWC 73	1118	H	Late Oligocene - Early Miocene
SWC 74	1106	H-1	Early Miocene
SWC 75	1094	H-1	Early Miocene
SWC 76	1082	G	Early Miocene
SWC 77	1070	G	Early Miocene
SWC 78	1058	G/F	late Early Miocene
SWC 79	1046	G/F	late Early Miocene
SWC 80	1034	F	late Early Miocene
SWC 81	1022	F	late Early Miocene
SWC 82	1010	F	late Early Miocene
SWC 83	998	F	late Early Miocene
SWC 84	986	F	late Early Miocene
SWC 85	974	F	late Early Miocene
SWC 86	962	F	late Early Miocene
SWC 87	950	F	late Early Miocene

SAMPLE	DEPTH(m)	ZONE	AGE
SWC 88	938	Indeterminate	-
SWC 89	926	Indeterminate	-
SWC 90	914	Indeterminate	-
SWC 91	902	F	late Early Miocene
SWC 92	890	Indeterminate	-
SWC 93	978	Indeterminate	-
SWC 94	866	Indeterminate	-
SWC 95	854	Indeterminate	-
SWC 96	842	Indeterminate	-
SWC 97	830	Indeterminate	-
SWC 98	818	? D	Middle Miocene
SWC 99	806	Indeterminate	-
SWC100	744	Indeterminate	-
SWC101	782	Indeterminate	-
SWC102	775	Indeterminate	-

M I C R O P A L E O N T O L O G I C A L D A T A S H E E T

B A S I N : GIPPSLAND

ELEVATION: KB: 21 GL: -42.6

W E L L N A M E : PALMER # 1

TOTAL DEPTH: 1720 metres

A G E	FORAM. ZONULES	H I G H E S T D A T A					L O W E S T D A T A				
		Preferred Depth	Rtg	Alternate Depth	Rtg	Two Way Time	Preferred Depth	Rtg	Alternate Depth	Rtg	Two Way Time
PLIO-TOCENE	A ₁										
	A ₂										
PLIO-CENE	A ₃										
	A ₄										
	B ₁										
M I O C E N E	L A T E	B ₂									
		C									
	M I D D L E	D ₁					818	2			
		D ₂					818	2			
		E ₁									
		E ₂									
	E A R L Y	F	902	2			1058	2	1034	1	
		G	1046	2	1070	1	1082	1			
		H ₁	1094	1							
	O L I G O C E N E	L A T E	H ₂				1140	1			
I ₁			1144			1152	1				
I ₂		1156	0			1160	1				
E A R L Y		J ₁	1164	1			1168	1			
		J ₂	1170	1			1184	1			
E O C - E N E		K									
	Pre-K										

COMMENTS: Good early to late Oligocene sequence which appears to be
continuous but becomes fuzzy in Zone H-2. See details on cards.

- CONFIDENCE RATING:
- 0: SWC or Core - Complete assemblage (very high confidence).
 - 1: SWC or Core - Almost complete assemblage (high confidence).
 - 2: SWC or Core - Close to zonule change but able to interpret (low confidence).
 - 3: Cuttings - Complete assemblage (low confidence).
 - 4: Cuttings - Incomplete assemblage, next to uninterpretable or SWC with depth suspicion (very low confidence).

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

DATA RECORDED BY: PALTECH PTY. LTD.

DATE: February 2nd, 1982.

DATA REVISED BY: _____

DATE: _____

PART-2

BASIC DATA

Keys to Codes and Abbreviations
Analysis of Samples

KEY TO DATA CODES AND ABBREVIATIONS

CC #2	= conventional core #2
SWC	= sidewall core
NFF	= no foraminifera found
J-2	= planktonic foram Zone J-2
K/J-2	= exact zonal entity uncertain combined zonal interval.
f	= fine grain size (.25)
m	= medium grain size (.25-5)
c	= coarse grain size (.5-1mm)
ang	= angular grains
subang	= subangular grains
subrd	= subround grains
rd	= round grains
qtz	= quartz
pyr	= pyrite
lim	= limonite
glauc	= glauconite
lst	= limestone
mic. lst	= micritic limestone
sdst	= sandstone
siltst	= siltstone
mdst	= mudstone
calc. siltst	= calcareous siltstone
calc. aren	= calcarenite
recryx	= recrystallised
plank	= significant grain component of planktonic foraminifera.

SWC 51 at 1192 metres:

Lithology: Silty very fine quartz. Sandstone with carb. matter -
r. fine to medium and subrounded quartz and dolomite.

Fauna: Arenaceous Benthonics only.

SWC 52 at 1190 metres:

Lithology: Dolomite as aggregations of fine crystals. 5%
pelletal glauc.

Fauna: Arenaceous Benthonics and fish fragments only.

SWC 53 at 1188 metres:

Lithology "Greensand" - pellets and lumps of glauc. clay r.
dolomite.

Fauna: Calcareous Benthonics and fish fragments only.

SWC 54 at 1186 metres:

Lithology: Calcareous clay with glauc. r. dolomite and quartz.

Fauna: Calcareous Benthonics and indeterminate planks.

SWC 55 at 1184 metres:

Lithology: 70% calc. and glauc. clay - some ang. quartz and dolomite

Fauna: Planktonics: Preservation poor.

Globigerina angiporoides angiporoides

Globigerina praebulloides

Globigerina brevis

Benthonics:

Anomalinoides aotea

Anomalinoides vitrinoda

Gyroidinoides

Cibicides

Trifarina

Alabamina

Haplophragmoides

Bathysiphon

Ammodiscus

Ammobaculites

Trochammina

Other Fauna: Echinoid

Count: 500

% Planks: 20%

Environment: Whangaroan Transgressive.

SWC 56 at 1182 metres:

Lithology: Dom. forams, dolomite quartz and r. glauc.

Fauna: Planktonics: Preservation poor - mainly internal moulds

Globigerina brevis

Globigerina angiporoides angiporoides

Globigerina praebulloides

?Globoquadrina tripartita

Globorotalia munda

Globorotalia nana

Benthonics:

Bolivinopsis

Bolivina

Bulimina

Siphouvigerina

Bathysiphon.

Ammodiscus

Cassidulina

Cibicides

Haplophragmoides

Other Fauna: Echinoid, pelecypods, fish fragments.

Count: 1000

% Planks: 10%

Environment: Whangaroan Transgressive.

SWC 57 at 1180 metres:

Lithology: 90% foram, common bit. coal fragments r. cluster pyrite, r. pellets glauc.

Fauna: Planktonics:

Globigerina angiporoides angiporoides

Globigerina praebulloides

Globigerina brevis

Globorotalia gemma

Turborotalids indeterminate.

Benthonics:

Osangularia bengelensis

Cibicides perforatus lobatulus

Pseudoclavulina rudis (very common)

Cibicides pseudoungerianus

Gyroidinoides.

Sphaeroidina bulloides

Anomalinoides aotea

Bolivina smooth wall type dominant.

Siphouvigerina cararionsis

Bathysiphon

Bolivinopsis

Angulogerina otatara

Dominance of: Buliminacea

Other Fauna: Fish fragments, r. echinoid spines.

Count: 1000

% Planks: 30%

Environment: Whangaroan Transgressive

Comments: Preservation poor/recryx.

SWC 58 at 1178 metres:

Lithology: 50% glauc. clay. 50% foram.

Fauna: Planktonics:

Globigerina angiporoides angiporoides

Globigerina brevis

Chiloguembelina

Globorotalia gemma

Globorotalia continuosa

Benthonics:

Bolivinopsis - dominant.

Bathysiphon

Karreriella bradyi

Bolivina (smooth) very common

Cibicides perforatus very common

Brevoralis very common

Siphouvigerina carariensis dominant.

Gyroidinoides

Astrononion lenticulina

Bulimina truncanella

Angulogerina otatara

Dominance of Buliminacea

Count: 2000

% Planks: 20%

Environment: Whangaroan Transgressive. Similar to J in Wurruk
Wurruk in Sale.

Comments: Preservation improving, plank. structures partially
destroyed. Approximately 70% is approximately .25mm.

SWC 59 at 1176 metres:

Lithology: 70% Calc. shale, 30% forams.

Fauna: Similar assemblages to SWC's 58 and 60.

SWC 60 at 1172 metres:

Lithology: 50% pell. & glauc. clay. 50% forams, r. pyrite. aggs.

Fauna: Planktonics:

Globigerina angiporoides angiporoides

Globigerina brevis

Globorotalia gemma

Cassigerinella chipolensis

Globorotalia testarugosa

Benthonics:

Bolivina spp. smooth, dominant.

Siphouvigerina can dominant.

Bulimina truncanella common

Angulogerina otatara common

Bolivinopsis cubensis

Karrerina bradyi

Cibicides spp. as previous, very common

Dominance of: Buliminacea

Other Fauna: Est. pell. fragments.

Count: 2000

% Planks: 20%

Environment: Whangaroan Transgressive.

Comments: Preservation improving upwards comments as for SWC 58.

SWC 61 at 1170 metres:

Lithology: 90% foram, c. glauc.

Fauna: Planktonics:

Globorotalia testarugosa

Globorotalia gemma

Globigerina angiporoides angiporoides

Turborotalids indeterminate.

Benthonics:

Bolivina anastomosa dominant

Bolivina zedirecta very common

Trifarina bradyi

Cibicides mediocris

Cibicides subhaidingeri

Cibicides perforatus/opacus

Siphouvigerina canariensis

Siphouvigerina probosciadea very common

Angulogerina otatara

Bathysiphon

Gyroidinoides

Cassidulina subglobosa

Dominance of: Buliminacea
Other Fauna: Echinoid sp. common ost.
Environment: Whangaroan Transgressive.
Comments: Preservation sugary but improving, comments as for 58.

SWC 62 at 1168 metres:

Lithology: 90% forams, glauc. as below

Fauna: Planktonics:

Globigerina angiporoides angiporoides

Globigerina euapertura

Globigerina praebulloides

Globorotalia nana

Globorotalia continuosa

Benthonics:

Siphouvigerina dominant.

Bolivina dominant.

As below at 1170 + Notorotalia

Count: 2500

% Planks: 30%

SWC 63 at 1164 metres:

Lithology: 70% forams, 30% glauc. clay marl.

Fauna: Planktonics: Preservation fair-sugary

Globigerina angiporoides angiporoides

Globigerina euapertura

Globigerina praebulloides

Globigerina labiacrassata

Globorotalia testarogosa

Globorotalia nana

Benthonics: As below at 2170 + Notorotalia

Dominance of: Buliminacea

Other Fauna: Echinoid spines.

Count: 2500

% Planks: 30%

SWC 64 at 1160 metres:

Lithology: 90% forams, r. glauc. marl.

Fauna: Planktonics: Improved preservation from 1164 metres.

Globigerina labiacrassata

Globigerina praebulloides

Globigerina euapertura

Globorotalia opima

Globorotalia nana

Globorotalia testarugosa

Globorotalia extans

Benthonics:

Cassidulina subglobosa

Cassidulina laevigata common

Cibicides lobatulus common

Cibicides vortex

Bolivina (smooth)

Lenticulina

Anomalinoides procolligera

Pullenia

Sphaeroidina

Tritaxia

Other Fauna: Echinoid spines.

Count: 5000

% Planks: 30%

SWC 65 at 1156 metres:

Lithology: 80% forams, 20% green pellets of glauc. clay marl.

Fauna:

Planktonics:

Guembelitra

Globorotalia testarugosa

Globorotalia extans

Globorotalia opima

Globorotalia nana

Globigerina euapertura

Globigerina praebulloides

Globigerina labiacrassata

Benthonics:

Bolivina smooth

Bolivina anastomosa

Tritaxia

Angulogerina

Cibicides spp.

Anomalinoides spp.

Sphaeroidina

Pullenia

Count: 5000

% Planks: 30%

SWC 66 at 1152 metres:

Lithology: 90% forams

Fauna:

Planktonics:

Globigerina euapertura

Globigerina labiacrassata

Globigerina praebulloides

Globigerina ciperoensis

Globorotalia opima

Globorotalia nana

Other Fauna: Echinoid spines, bryozoa.

Count: 1000

% Planks: 25%

SWC 67 at 1148 metres

Lithology: 60% forams, 30% marls, minor glauc. pellets, Coal quartz.

Fauna: Planktonics:

Globorotalia opima

Globorotalia obesa

Globorotalia continuosa

Globoquadrina venezuelana

Globigerina euapertura

Globigerina praebulloides

Globigerina ciperoensis

Benthonics:

Bolivina

Bulimina

Euvigerina

Anomalinoides

Cibicides

Agglutinated

Karreria

Other Fauna: ostra; echinoid spines.

Count: 2500

% Planks: 40%

SWC 68 at 1144 metres:

Lithology: As for 1148 metres.

Fauna: Planktonics:

Globigerina euapertura

Globigerina praebulloides

Globigerina ciperoensis

Globigerina labiacrassata

Globorotalia opima

Globorotalia continuosa

Globorotalia obesa

Globoquadrina venezuelana

Benthonics:

As for 1148 metres.

Count: 2500

% Planks: 40%

SWC 69 at 1140 metres:

Lithology: 60% forams, 30% orange lime. calc. siltstone, minor coal, glauc. quartz.

Fauna:

Planktonics:

Globigerina woodi connecta

Globigerina woodi woodi

Globigerina praebulloides

Globigerina ciperoensis

Globorotalia continuosa

Globorotalia nana

Mainly small sized specimens of Turborotalids.

Benthonics:

Bolivina anastomosa

Bulimina truncanella

Cassidulina subglobosa

Arenaceous

Cibicides

Anomalinoides

Other Fauna: Echinoid pelecypods.

Count: 1000

% Planks: 40%

SWC 70 at 1136 metres:

Lithology: 90% forams.

Fauna:

Planktonics:

Globigerina woodi woodi

Globigerina praebulloides

Globigerina ciperoensis

Globorotalia nana

Globorotalia continuosa

Globoquadrina venezuelana

Globoquadrina dehiscens (s.l.)

Benthonics:

Cibicides lobatulus

Karrerria

Bolivina

Bulimina

Cassidulina subglobosa

Other Fauna: Echinoid; pel. fragments.

Count: 2000

% Planks: 40%

SWC 71 at 1132 metres:

Lithology: 70% forams, 20% marls, minor glauc. quartz.

Fauna: Planktonics:

Globigerina woodi woodi

Globigerina praebulloides

Globorotalia continuosa

Globorotalia nana

Benthonics:

Siphouvigerina

Bulimina

Bolivina

Cassidulina subglobosa

Cibicides

Anomalinoides

Other Fauna: Echinoid, pelecypods.

Count: 2500

% Planks: 30%

SWC 72 at 1130 metres:

Lithology: As for 1132 metres.

Fauna: Planktonics:

Globigerina woodi connecta

Globigerina woodi woodi

Globigerina praebulloides

Globorotalia continuosa

Globorotalia nana

Benthonics:

As for 1132 metres.

Other Fauna: As for 1132 metres.

Count: 2500

% Planks: 25%

SWC 73 at 1118 metres:

Lithology: Biogenic debris and forams. Some limestone pyrite.

Fauna: Planktonics:

Globigerina woodi connecta

Globigerina woodi woodi

Globigerina praebulloides

Globorotalia continuosa

Globorotalia nana

Benthonics:

Anomalinoides

Gaudyrina

Textularia

Pseudoclavulina

Cibicides

Karrerria.

Anomalinoides

Astrononion

Sphaeroidina

Bolivina

Other Fauna: Everything but fragments.

Count: 2500

% Planks: 20%

Environment: High energy.

SWC 74 at 1106 metres:

Lithology: Biogenic debris and forams.

Fauna: Planktonics:

Similar assemblage to SWC 73 at 1118 metres but increased percentage of Globigerina woodi connecta - Globigerinoides trilobus.

Benthonics:

Similar assemblage to SWC 73 at 1118 metres.

Other Fauna: everything.

% Planks: ?

SWC 75 at 1094 metres:

Lithology: Biogenic debris and forams.

Fauna: Planktonics:

Globigerina woodi connecta - Globigerinoides trilobus

Globigerina woodi woodi

?Catapsydrax dissimilis

Globorotalia nana continuosa

Globorotalia bella

Benthonics:

Siphouvigerina

Bolivina and other bulimina

Anomalinoides

Arenaceous

Other Fauna: Everything, frags.

Count: 2000

% Planks: 20%

SWC 76 at 1082 metres:

Lithology: Biogenic debris and forams.

Fauna: Planktonics:
Globigerinoides trilobus
Globoquadrina dehiscens (s.s.)
Globigerina woodi connecta
Globigerina woodi woodi
Globigerina bulloides
Globigerina ciperensis
Globorotalia bella
Globorotalia continuosa
Globorotalia nana
Count: 1500
% Planks: 20%

SWC 77 at 1070 metres:

Lithology: 80% calc. shale, 20% forams.

Fauna: Planktonics:
Catapsydrax dissimilis
Globigerina woodi connecta
Globigerina woodi woodi
Globigerina praebulloides
Globorotalia continuosa
Count: 500
% Planks: 20%

SWC 78 at 1058 metres:

Lithology: 85% biogenic calc., very worn and fragmented. 10% pyrite. Some as infilling, minor ang. quartz.

Fauna: Planktonics: Preservation poor. Mainly small sized.
?Globigerinoides bisphericus
Globorotalia bella
Globorotalia continuosa
Globorotalia indeterminate
Globigerina woodi woodi
Globigerina bulloides
Globigerina indeterminate.
Dominance of: 95% of plankton approximately .2mm in size.
Benthonics:
Cibicides dominant with Cibicides lobatus
Textularia
Ehrenbergina
Gaudyrina convexa
Miliolids - worn after infilled with pyrite.
Anomalinoides
Discorotalia

Other Fauna: Bryozoa - dominant. Echinoid spines,
ostracods, gastropods, pelecypods.

Count: 2000

% Planks: 20%

SWC 79 at 1046 metres:

Lithology: Biogenic debris, 10% pyrite.

Fauna: Planktonics:

Globigerina woodi woodi

Globigerinoides trilobus

Globorotalia bella continuosa

Globigerina indeterminate

Globorotalia indeterminate.

Dominance of: 90% of plankton approximately .2mm in
size.

Benthonics:

Cibicides brevis

Astrononion

Gyroidinoides.

Miliolids

Ammodiscus

Haplophragmoides.

Bathysiphon

Bolivina

Count: 2000

% Planks: 10%

SWC 80 at 1034 metres:

Lithology: 80% forams, pyrite lim.

Fauna: Planktonics:

Globigerinoides bisphericus

Globigerina woodi woodi

Globigerina bulloides

Globorotalia Indeterminate.

Dominance of: 100% approximately, 2mm.

Benthonics:

Bolivina - Dominant including Bolivina anastomoa

Group.

Discorotalia

Cibicides

Anomalinoides including procolligera

Cassidulina subglobosa

Trifarina.

Dominance of: Bolivina

Other Fauna: Echinoid spines, fish fragments.

Count: 3000

% Planks: 20%

SWC 81 at 1022 metres:

Lithology: 90% forams, r. ang. quartz.

Fauna: Planktonics:

Globigerina woodi connecta

Globigerina woodi woodi

Globigerina ciperensis

Globorotalia bella

Globorotalia continuosa

Dominance of: 90% approximately .2mm

Benthonics:

Bolivina

Bolivina anastomosa

Trifarina

Cibicides vortex

Cibicides opaquus

Cassidulina subglobosa

Cassidulina carinata

Dominance of: Bulimina

Other Fauna: Echinoid spines.

Count: 1000

% Planks: 10%

Comments: Very small residue.

SWC 82 at 1010 metres:

Lithology: 80% biogenic calc. - very worn fragments pyrite often as infill. Very r. glauc.

Fauna: Planktonics: Preservation poor.

Globigerinoides bisphericus

Globigerinoides trilobus

Globigerina woodi connecta

Globigerina woodi woodi

Benthonics:

Cibicides Dominant.

Cassidulina subglobosa

Cassidulina carinata

Bolivina

Count: 500

% Planks: ?

SWC 83 at 998 metres:

Lithology: 80% biogenic micrite, 20% pyrite.

Fauna: Planktonics:

Globigerinoides trilobus

Globigerina woodi connecta

Globigerina woodi woodi

Globigerina bulloides

Globorotalia bella

Globorotalia continuosa

Globorotalia? nana

Dominance of: 80% approximately .2mm

Benthonics:

Sphaeroidina

Cassidulina carinata

Cassidulina subglobosa

Miliolids

Cibicides - dominant.

Siphouvigerina

Other Fauna: Very worn fragments, bryozoa dominant.

Echinoid spines are abundant.

Count: 1000

% Planks: 20%

SWC 84 at 986 metres:

Lithology: As for SWC 83 at 998 metres but pyrite = 10%.

Fauna: Planktonics:

Similar assemblage to SWC 83 at 998 metres.

Benthonics:

Similar assemblage to SWC 83 at 998 metres.

SWC 85 at 974 metres.

Lithology: Biogenic calc. recryx.

Fauna: Planktonics:

Globigerina woodi connecta

Globigerina woodi woodi

Globigerina ciperoensis

Globigerinoides bisphericus

Globigerinoides trilobus

Globorotalia indeterminate.

Benthonics:

Cibicides - dominant.

Sphaeroidina

"Haplophragmoides"

Gaudyrina convexa

Karreria

Miliolids

Other Fauna: Bryozoa - dominant. Ostr.

Count: 500

% Planks: 10%

SWC 86 at 962 metres:

Lithology: Biogenic calcarenite as for SWC 85 at 974 metres with pyrite.

Fauna: Planktonics:
Similar assemblage to SWC 85 at 974 metres.
Benthonics:
Similar assemblage to SWC 85 at 974 metres.

SWC 87 at 950 metres:

Lithology: Recryx. micrite r. ang. quartz.

Fauna: Planktonics:
Globigerinoides bisphericus
Globigerinoides trilobus
Globigerina woodi woodi
Globigerina woodi connecta
Globigerina bulloides
Globigerina indeterminate
Globorotalia indeterminate.
Benthonics:
Cibicides - dominant.
Sphaeroidina
Anomalinoides
Cassidulina
Other fauna: Bryozoa fragments, Echinoid spines.
Count: 1000
% Planks: 10%

SWC 88 at 938 metres:

Lithology: Micrite - almost totally recryx. Fine calcite.

Fauna: Planktonics:
Indeterminate because of diagenesis.
Benthonics:
Cibicides
Otherwise indeterminate.

SWC 89 at 926 metres:

Lithology: Recryx. biogenic calcarenite.

Fauna: Planktonics: Very poor preservation
Globigerina indeterminate.
Benthonics:
Cibicides dominant
Carpentaria rotaliformis (abundant)
Anomalinoides

Astrononion

Textularia

Other fauna: Bryozoa very fragmented. Dominant echinoid spines.

Count: 200

% Planks: ?

SWC 90 at 914 metres:

Lithology: Biogenic calcarenite, recryx. r. pyrite.

Fauna: Planktonics: Poor preservation.

Globigerina indeterminate

Globorotalia indeterminate

Dominance of: 90%, .2mm

Benthonics:

Similar assemblage to SWC 89 at 925 metres. Adds

Sphaeroidina

Other Fauna: Bryozoa dominant. (some grey).

Echinoid spines, pelecypods.

Count: 2000

% Planks: ?

SWC 91 at 902 metres:

Lithology: Biogenic calcarenite very worn fragments. Recryx. r. pyrite.

Fauna: Planktonics:

Globigerinoides bisphericus

Globigerinoides trilobus

Globigerina indeterminate

Globigerina woodi woodi

Globigerina woodi connecta

Globigerina ciperensis

Dominance of: 90%, .2mm.

Benthonics:

As for SWC 90 at 914 metres.

Other Fauna: Bryozoa dominant. Echinoid spines, pelecypods.

Count: 2000

% Planks: ?

SWC 92 at 890 metres:

Lithology: 80% biogenic micrite. Lst. recryx. 15% biogenic pyrite.

Fauna: Planktonics: Very, very poor preservation.

N.B. Lithological comments.

Benthonics:
Cibicides
Anomalinoides
Bolivina
Textularia

SWC 93 at 878 metres:

Lithology: 90% very worn fragments. Biogenic calcarenite. r.
ang. quartz pyrite.

Fauna: Planktonics: Preservation much poorer than SWC 91 at
902 metres.

Globigerina indeterminate
Globorotalia indeterminate

Benthonics:

Cibicides
Anomalinoides

Other fauna: Bryozoa dominant. Echinoid spines.

SWC 94 at 866 metres:

Lithology: Almost completely recryx. Biogenic calcarenite.

Fauna: Planktonics: Poor preservation because of diagenesis.
Indeterminate.

Benthonics:

Cibicides
Gyroidinoides.

Other Fauna: Very worn fragments, "finely ground"
bryozoa dominant. Echinoid spines.

Environment: High energy canyon head facies as in Barracouta.

SWC 95 at 854 metres:

Lithology: Recryx. biogenic calcarenite.

Fauna: Planktonics: Poor preservation because of diagenesis.

Benthonics:

Cibicides dominant.

Sphaeroidina

Cassidulina

Other fauna: Bryozoa fragments not as finely ground
as at 866 metres. Some grey - dominant echinoid
spines.

Environment: High energy canyon head facies as in Barracouta.

SWC 96 at 842 metres:

Lithology: As for SWC 95 at 854 metres.

Fauna: Planktonics: Poor preservation due to diagenesis.

Globigerina indeterminate

Benthonics:

Poor preservation due to diagenesis

Other Fauna: Similar to SWC 95 at 854 metres.

SWC 97 at 830 metres:

Lithology: Biomicrite - recryx. fine ground bryozoa and other debris.

Fauna: Planktonics: Very poor preservation indeterminate forms only.

Benthonics:

Cibicides pseudouvigerina + indeterminate.

SWC 98 at 818 metres:

Lithology: Recryx biogenic calcarenite.

Fauna: Planktonics:

Orbulina universa

Globigerina woodi woodi

Globigerina bulloides

Globigerinoides trilobus

Globorotalia indeterminate.

Benthonics:

Cibicides

Heterolepa

Textularia

Other Fauna: Very worn bryozoa dominant. Echinoid spines.

SWC 99 at 806 metres:

Lithology: Biogenic calcarenite with finely ground bryozoa recryx. calcite. r. ang. quartz.

Fauna: Planktonic: Preservation poor, worn.

Globigerina indeterminate.

Benthonics: Preservation poor, worn.

Amphistegina (worn)

Cassidulina subglobosa

Cibicides + indeterminate.

Other Fauna: Bryozoa dominant. Echinoid spines.

Environment: High energy canyon head - Barracouta facies.

SWC 100 at 794 metres:

Lithology: As for SWC 99 at 806 metres.

Fauna: Planktonics: Similar assemblage to SWC 99 at 806 metres.

Benthonics: Similar assemblage to SWC 99 at 806 metres.

SWC 101 at 782 metres:

Lithology: Similar to SWC's 100 (794m) and 99 (806m).

Fauna: Planktonics: Similar assemblage to SWC's 100 (794m)
and 99 (806m)

Benthonics: Similar assemblages to SWC's 100 (794m)
and 99 (806m)

SWC 102 at 775 metres:

Lithology: Similar to SWC's 99 (806m), 100 (794m) and 101 (782m).

Fauna: Planktonics: Similar assemblage to SWC's 99 (806m),
100 (794m) and 101 (782m).

Benthonics: Similar assemblage to SWC's 99 (806m)
100 (794m) and 101 (782m).