

MICROPALAEONTOLOGICAL ANALYSIS  
WHALESHARK-1, PERMIT VIC-P-24  
GIPPSLAND BASIN

FOR  
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FEBRUARY, 1993

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## I. SUMMARY

Whaleshark-1 was drilled in offshore petroleum permit Vic-P-24, Gippsland Basin to a depth of 2870mKB. A total of 15 sidewall core samples from the interval 1561m to 2721m have been examined for foraminifera. A summary of the planktonic foraminiferal breakdown is given below:-

### Planktonic Foraminiferal Sub-division

1561m	Zone A-3	Late Pliocene
1693m-2290m	Zone A-4	lower Late-Early Pliocene
2445m	Zones B-2 & C	Late-upper Middle Miocene
2606m	?Zone C	?Middle Miocene
2617m	Zones F/G boundary	upper Early Miocene
2693m	Zone H-2	latest Late Oligocene
2720m-2721m	Zone I-1	upper Late Oligocene

### Environment of Deposition

Samples 1561m-2606m inclusive	upper bathyal
Samples 2617m-2721m inclusive	middle bathyal

## II. INTRODUCTION

A total of 15 sidewall core samples from the interval 1561m to 2721m have been examined for foraminifera.

Foraminiferal assemblages identified in the well section have been plotted on the distribution chart (Figure No. 1).

### III. BIOSTRATIGRAPHIC ANALYSIS

The planktonic foraminiferal letter scheme of Taylor (in prep.) is used for biostratigraphic subdivision.

**1. 1561m : Zone A-3 (Late Pliocene)**

The association of *Globorotalia puncticulata* and *Neogloboquadrina humerosa* indicates assignment to Zone A-3.

**2. 1693m-2290m : Zone A-4 (lower Late-Early Pliocene)**

Assignment to Zone A-4 is based on the association of *Globorotalia crassaformis*, *Globorotalia puncticulata* and *Globorotalia sphericomiozea*. The *Globorotalia margaritae* group occurs sporadically in the upper part of the interval (1693m-1762m).

**3. 2445m : Zones B-2 & C (Late-upper Middle Miocene)**

The impoverished planktonic foraminiferal fauna at 2445m includes *Globorotalia miotumida miotumida* and *Globorotalia scitula* and lacks *Globorotalia miotumida conomiozea* and on this basis is assigned to Zones B-2 and C.

**4. 2606m : ?Zone C (?Middle Miocene)**

The very poorly preserved planktonic foraminiferal assemblage includes a single specimen of *Globorotalia miotumida miotumida* together with minor *Globorotalia scitula*. The assemblage is interpreted to be probably Zone C in age.

**5. 2617m : Zones F/G boundary (upper Early Miocene)**

The rich and well preserved planktonic foraminiferal fauna at 2617m is assigned to the boundary between Zone F and Zone G. The assemblage includes rare *Globigerinoides bisphericus* together with common *Globigerinoides trilobus* and minor specimens of the elongate morphotype of *Globigerinoides trilobus*.

**6. 2693m : Zone H-2 (latest Late Oligocene)**

The rich and well preserved planktonic foraminiferal fauna at 2693m includes *Globigerina woodi woodi* and lacks *Globigerina woodi connecta*. On this basis the sample is assigned to Zone H-2.

**7. 2720m-2721m : Zone I-1 (upper Late Oligocene)**

Assignment to Zone I-1 is based on the occurrence of *Globoquadrina dehiscens* s.l. and the lack of *Globigerina woodi woodi*.

#### IV. ENVIRONMENT OF DEPOSITION

##### 1. **Samples 1561m–2606m inclusive : Upper bathyal**

The limestones in the interval are interpreted to have been deposited in an upper bathyal setting. The benthonic foraminiferal faunas include the following bathymetrically-significant taxa: *Euvigerina peregrina* (few), *Pullenia bulloides* (single-few), *Osangularia* (single specimen at 1561m and a few specimens at 1762m).

##### 2. **Samples 2617m–2721m inclusive : Middle bathyal**

The planktonic foraminiferal ooze samples (all samples dominated by planktonics-greater than 95% planktonics) include the following bathymetrically-diagnostic benthonic foraminiferal taxa: *Hyperammina* (rare-few), *Bathysiphon* (few), *Cyclammina* (single-rare), *Glomospira* (single), *Cribrostomoides* (rare-few), *Planulina wuellerstorfi* (single at 2617m) and *Osangularia bengalensis* (rare-few). Deposition in a middle bathyal environment is envisaged.

V. REFERENCES

TAYLOR. D.J., (in prep.). Observed Gippsland biostratigraphic sequences of planktonic foraminiferal assemblages.

APPENDIX NO. 1 : SUMMARY OF MICROPALAEONTOLOGICAL DATA, WHALESHARK-1

SAMPLE (mKB)	FORAM YIELD	FORAM PRESERV.	FORAM DIVERSITY
SWC30, 1561	high	poor-very poor	high
SWC29, 1693	moderate	very poor	moderate
SWC28, 1747	high	poor	high
SWC27, 1755	moderate	very poor	moderate
SWC26, 1762	high	poor	high
SWC25, 1987	moderate	very poor	moderate-high
SWC24, 2143	low	very poor	low
SWC23, 2285	high	very poor	moderate-high
SWC22, 2290	high	poor	high
SWC21, 2445	low	very poor	moderate
SWC20, 2606	moderate-low	very poor	moderate-high
SWC19, 2617	high	good	high
SWC18, 2693	high	poor	moderate-low
SWC17, 2720	high	very poor	moderate-high
SWC16, 2721	high	poor-very poor	high



SPECIES	1581	1683	1747	1755	1762	1887	2143	2285	2290	2445	2606	2617	2893	2720	2721
PLANKTONIC FORAMINIFERA															
<i>Globigenina bulloides</i>	c	r	c	f	a	s	f	f	c	r					
<i>Globigeninoides sacculiferus</i>	r														
<i>Orbulina suturalis</i>	f			r	r			f							
<i>Orbulina universa</i>	c	r	r	r	c	c	f	c	f	s	c				
<i>Neoglobobulimina duterrei</i>	r														
<i>Globorotalia inflata</i>	r														
<i>Neoglobobulimina pachyderma</i>	f	s	f		f				c						
<i>Globigeninoides trilobus trilobus</i>	f	s	f	f	c	s		r	c	s	s	c			
<i>Globorotalia scitula</i>	r	s			f			s	r	r					
<i>Globigenina decoraperta</i>	f			s	r				r						
<i>Globigeninella aequilateralis</i>	r				r			s							
<i>Neoglobobulimina humerosa</i>	f				r	s		r							
<i>Globigenina falconensis</i>	r		s	s					s						
<i>Globorotalia punctulata</i>	c	r	r	r	r			s							
<i>Globorotalia crassaformis</i>	r	s	r	r	r	f	s	c							
<i>Globigeninoides quadribatus</i>	f		f	f	c	r	r	f	r	f	r	f			
<i>Globorotalia sphericomiozea</i>	f	r	r	r	f			f	r						
Indeterminate/Juvenile planktonics	c	c	c	c	c	r	f	f	a	f	f		a	a	a
<i>Globigeninoides ruber</i>	s	r													
<i>Globorotalia aff. margaritae</i>	s														
<i>Globorotalia margaritae</i>				s											
<i>Globorotalia acostaensis</i>					c		r	f	a						
<i>Globigenina apertura</i>					s										
<i>Globorotalia margaritae primitiva</i>					s			s							
<i>Globorotalia miozea conoides</i>								f	r	r					
<i>Globorotalia conomiozea</i>								r							
<i>Globorot. miozea conoid. sphericom.</i>								s							
<i>Sphaeroidinella seminulina</i>								s							
<i>Globorotalia motumida motumida</i>									s	s					
<i>Globorot. motum. motum. mioz. con.</i>									r						
<i>Globigenina woodi woodi</i>									s	c					
<i>Globorotalia mayeri mayeri</i>									s	a					
<i>Orbulina bilobata</i>									s						
<i>Globigenina praebulloides</i>										c	c		r		
<i>Globorotalia praescitula</i>										f					
<i>Globorotalia zealandica</i>										f					
<i>Globigenina woodi connecta</i>										f					
<i>Globigeninoides altapertura</i>										f					
<i>Globoquadrina dehiscens s.s.</i>										r					
<i>Globorotalia bella</i>										r					
<i>Catapsydrax unicavus</i>										r	r				
<i>Globigeninoides trilobus (elongate)</i>										r					
<i>Globigeninoides bisphenicus</i>										s					
<i>Globorotalia continua</i>										s					
<i>Globoquadrina dehiscens s.l.</i>											r	s	r		
<i>Globigenina aff. euapertura</i>											c				
<i>Globigenina angustumbilicata</i>											r				
<i>Globigenina woodi brazieri</i>											r				
<i>Catapsydrax stainforthi</i>											s		r		
<i>Globorotalia mayeri group</i>											s	s	s		
<i>Globigenina spp.</i>											c	c	c		
<i>Catapsydrax dissimilis</i>											r	r			
<i>Guembelina spp.</i>											s				
<i>Globigenina euapertura</i>													s		
<i>Globorotalia aff. opima</i>													s		
<i>Globigenina venezuelana</i>													f	f	
<i>Globigenina tripartita</i>														s	
OTHER SKELETAL MATERIAL															
Ostracods	r	s	r	r	f	f		s	f	s	s				s
Echinoid debris	f		s		f	f		c							r
Fish teeth													r		s

FIGURE 1 ctd. Micropaleontological distribution chart for Whaleshark-1. Key: s-single, r-rare, f-few, c-common, a-abundant.

SPECIES	1561	1693	1747	1765	1782	1987	2143	2285	2290	2445	2608	2617	2693	2720	2721
<b>BENTHONIC FORAMINIFERA</b>															
<i>Brizalina alata</i>	f				r			f	f						
<i>Lasiodonolites scalaris</i>	f	f	f	s	f			f	f						
<i>Cassidinina delicatula/bradyi</i>	a	c													
<i>Cassidinoides inflatus</i>	f							s	s	f					
<i>Bulmina aculeata</i>	f			s	c	f				f					
<i>Glauvina spp.</i>	f				s										
<i>Fursuedoina schrieberiana</i>	f							f							
<i>Globocassidulina subglobosa</i>	f					f						r		r	f
<i>Protoglobobulimina affinis</i>	f														
<i>Cibicides semiperforatus</i>	s														
<i>Quadrinorplina laevigata</i>	f	s		s	s										
<i>Cibicides medocis</i>	s														
<i>Eponides spp.</i>	f	s			f				f					f	s
<i>Pullenia bulloides</i>	f				r	r		s	f			s	s		
<i>Hormosira spp.</i>	s														
<i>Celanthus hispidum</i>	f	s	f		f										
<i>Planulina spp.</i>	s														s
<i>Cibicides spp.</i>	f	c	a	c	a	r	f	f	f	f	f	f	r	r	r
<i>Anomalinaoides evolutus</i>	f														
<i>Dentalina spp.</i>	s														s
<i>Hedostoma spp.</i>	f														s
<i>Bolivina compressa</i>	f														s
<i>Trifarina bradyi</i>	s														r
<i>Leuconina spp.</i>	f	s	f											r	r
<i>Pullenia quinqueloba</i>	f				r										s
<i>Melonis affinis</i>	f														
<i>Florus spp.</i>	s	s			r	s		f							r
<i>Sphaerodina bulloides</i>	f	s			f	s	f	s	f	f	f	f	s	r	
<i>Brizalina robusta</i>	f				s	s		s							
<i>Florus incisus</i>	s														
<i>Enosolenia spp.</i>	f	f	f		r										c
<i>Eggerella bradyi</i>	s														
<i>Gyrodina subzealandica</i>	f	s													
<i>Celanthus pseudonodosum</i>	f				c	f	s	s							
<i>Ozangulana spp.</i>	s														s
<i>Signolina spp.</i>	f														s
<i>Euxygerina peregrina</i>	f	f	f	f	c	f	s	f	f	s	f	f			s
<i>Bulmina marginata</i>	f														
<i>Lagena spp.</i>	c	c	c	c	a	c	f	c	f	f	c	f			s
<i>Celanthus crispum</i>	f														
<i>Brizalina spp.</i>	f	s	s	s											
<i>Gyrodina spp.</i>	f														f
<i>Bulmina spp.</i>	f	s							f	f	f				s
<i>Euxygerina schwageri</i>	s														
<i>Anomalina/Anomalinaoides spp.</i>	f	f	f	f	c	f	f	f	f	f	f	f	s		f
<i>Globocassidulina oblonga</i>	f	f													
<i>Fissurina spp.</i>	s	f	s		f										
<i>Hanzawaia spp.</i>	f	s													
<i>Euxygerina problema</i>	s	s	s	r	r	s									s
<i>Euxygerina finta</i>	f	f	c	c	f	f	s	f	f	f	f	f			
<i>Celanthus spp.</i>	f	c	c	f											s
<i>Astronion spp.</i>	f	c	r			s	r	f	f	f	f				
<i>Resalina spp.</i>	f														
<i>Siphonogemma proboscidea</i>	s	s			f										r
<i>Retamophina minuta</i>	s	s													
<i>Brizalina subacuminata</i>	f														
<i>Favulina spp.</i>	f	r	s		s										
<i>Cibicides vortex</i>	f					r									
<i>Textularia otolara</i>	f														
<i>Bolivina aff. maionica</i>	f														
<i>Globocassidulina gemma</i>	f														
<i>Alabarcina spp.</i>	s														
<i>Ammonia spp.</i>	s														
<i>Asterigera cyclops</i>					f	c	s		f	c	s	f			f
<i>Bolivina spp.</i>	s	f				f	r		f	s		f	s		f
<i>Bolivina aff. bradyi</i>	f														
<i>Quinqueloculina spp.</i>	f														
<i>Astronion cenoblast</i>	f														
<i>Anomalina macrodabra</i>	f														s
<i>Gyrodina regia</i>	s														
<i>Discobolina bicostata</i>	s														
<i>Siphonina australis</i>	s														
<i>Baggina philippensis</i>	s														
<i>Rectobulvina aff. indica</i>	s														
<i>Palulina retia</i>	s														
<i>Eponides berthelotanus</i>	s														
<i>Parietodes olonwaensis</i>	s														
<i>Globocassidulina crassa</i>	s														
<i>Neonella spp.</i>	s														
<i>Indeterminate hiloides</i>	s														
<i>Rectobulvina spp.</i>	f														
<i>Eponides subhaingeri</i>	f														
<i>Cibicides thara</i>	s														
<i>Indeterminate fauna</i>									f	c					
<i>Cancris intermedius</i>															
<i>Baggina spp.</i>															
<i>Cassidinoides bradyi</i>															
<i>Cibicides perforatus</i>															
<i>Cyclammina spp.</i>															
<i>Ammodiscus spp.</i>															
<i>Ozangulana bengalensis</i>															
<i>Bathysiphon spp.</i>															
<i>Cyclammina elegans</i>															
<i>Textularia cretosa</i>															
<i>Textularia spp.</i>															
<i>Gyrodina soldani</i>															
<i>Cibicides perforatus</i>															
<i>Gyrodina cubitatis</i>															
<i>Hypammina spp.</i>															
<i>Gyrodina bracliviana</i>															
<i>Eggerella spp.</i>															
<i>Glomospira spp.</i>															
<i>Pyralina cyndroides</i>															
<i>Brizalina afazanensis</i>															
<i>Ondorsalis umbonatus</i>															
<i>Melonis spp.</i>															
<i>Planulina wuellerstorfi</i>															
<i>Glomospira spp.</i>															
<i>Haplophragmoides spp.</i>															
<i>Vulvulina spp.</i>															
<i>Indeterminate agglutinaria</i>															
<i>Dorothia spp.</i>															
<i>Gyrodina zealandica</i>															
<i>Pullenia miocenica</i>															
<i>Glomospira charodes</i>															

FIGURE 1. Micropaleontological distribution chart for Whaleshark-1. Key: s-single, r-rare, f-few, c-common, a-abundant