

FORAMINIFERAL
SEQUENCE
IN
WEST SEAHORSE # 1.

for:- HUBBAY OIL (AUSTRALIA) LTD.
December 4th, 1981.

Paltech Report 1981/22.



PALTECH PTY
LTD
MARINE MICROPALAEONTOLOGISTS
SYDNEY NEW SOUTH WALES
MIDLAND WESTERN AUSTRALIA

THE FORAMINIFERAL SEQUENCE
IN WEST SEAHORSE # 1.

Forty sidewall cores from WEST SEAHORSE # 1 were examined for foraminiferal content. On the basis of that examination the following breakdown of the sequence according to broad E-log patterns was noted:-

Sidewall Cores Depth (m)	Approx. E-log Unit Boundary	Age	Zone*	Paleoenvironment
313.5 to 455.2	Top	? to Miocene	? to D	Inner shelf, seaweed zone (10-40m)
----- 473 -----				
494.8 to 624.0		Mid to Miocene	D to E-1	Inner shelf, undifferentiated (10-40m)
----- -? -----				
662.8 to 773.1		Early to Miocene	E to F	Transitional from near shore canyon head (~40m) at base to beach front (0-10m) at top.

802.0 to 1055.0		Early to Miocene	?G to G	Submarine canyon (Depth indeterminate)
----- 1090 -----				
1100.1 to 1336.8		Early to Miocene	G to H-2	Mid shelf (40-150m) with rapid transgression at base.
----- 1344.5 -----				
1359.4 to 1392.0		?	No diagnostic foraminifera	Back barrier lagoon
----- base of sequence examined -----				

*Planktonic foraminiferal zones after Taylor (in prep.).

Planktonic foraminiferal content of the samples was generally poor, mainly due to the persistence of environments unfavourable to planktonic life (back barrier lagoon - inner shelf) or preservation of these fragile forms (canyon).

Tables I & II (herein) detail the record summarised above. A micropaleontological data sheet shows the interpreted reliability of the planktonic foraminiferal zone determinations.

The list of sidewall cores studied is shown on Tables I & II. Sidewall cores at 590.1 and 623.9m were not examined as they were near duplicates of other samples. Sidewall core at 1247m had no sample in the jar.

OLIGOCENE FAULTING BETWEEN SEAHORSE # 1 AND WEST SEAHORSE # 1.

SEAHORSE # 1 recorded a Latest Eocene to Early Oligocene (Zone K/J) shallow water facies overlain unconformably by a basin deep facies of latest Oligocene age (Zone H-2) with reworked shallow water elements of Zone K/J age. None of these sediments were recorded in WEST SEAHORSE # 1. On the evidence of this study it seems reasonable to suggest that during the latest Oligocene (Zone H-2) the shelf/slope break was between WEST SEAHORSE # 1 and SEAHORSE # 1 and that sediments of Latest Eocene to Mid Oligocene age at WEST SEAHORSE # 1 (if present originally) were exposed, eroded and transported to the nearby basin deep areas such as at the SEAHORSE # 1 site. The SEAHORSE # 1 and WEST SEAHORSE # 1 sites were not at comparable paleowater depths subsequently until mid Early Miocene (Zone G).

This evidence strongly suggests faulting during the late Oligocene (25-32m.y.) between SEAHORSE # 1 and WEST SEAHORSE # 1 with SEAHORSE # 1 on the down thrown side.

SIDEWALL CORE NUMBER () & DEPTH IN METRES	BENTHONIC FORAMS. in ENVIRONMENTAL GROUPS				RESIDUE	LITHOLOGY**	PALEO-ENVIRONMENT	MAJOR E-LOG CHARACTER CHANGES (m)	PLANK. FORAM. ZONE	AGE
	LAGOONAL*	INNER SHELF	MID SHELF	CANYON	MAJOR COMPONENTS	MINOR COMPONENTS				
(30) 313.5	Bathysiphon spp. Haplophragmoides spp.	INNER SHELF SEAWEED ZONE Milcolids Notrotalia spp. Elphidium spp. Amphistegina spp. Cibicides spp. C. lobatulus C. opagus Karreriella maoria Carpentaria spp. Heronallenia sp. Euvigerina spp.	MID SHELF Cibicides mediocris C. subhaidergeri Bulimina spp. Astronion centropax Siphovigerina canariensis	CANYON Worn miliolids Worn Cibicides "Battered" Robulus Cassidulina laevigata	b: bryozoa debris e: echinoid debris f: foraminifera g: f. ang. qtz. h: f-c ang-subrd. qtz. i: siltstone j: marl flakes k: glauc. clay l: glauc. pellets m: pyrite (var) n: indet calcite	cs. ang qtz, rock frags. pyrite aggs, spheres & tubes glaucanite pellets gastropod fragments echinoid spines fish teeth sponge spicules ostracods forams pelecypod fragments bryozoa fragments	BACK BARRIER LAGOON BEACH FRONT (0-10m) INNER SHELF (10-40m) MID SHELF (40-150m) CANYON HEAD (~40m) CANYON (?)	(m)		
(29) 345.0					b b b b b b b b				?	?
(28) 383.1					b b b b b b b b					
(27) 420.0					b b b b b b b b					
(26) 455.2					b b b b b b b b					
(25) 494.8					b b b b b b b b					
(24) 526.6					b b b b b b b b					
(23) 560.0					b b b b b b b b					
(21) 590.2					b b b b b b b b					
(19) 624.0					b b b b b b b b					
(18) 662.8					b b b b b b b b					
(17) 695.0					b b b b b b b b					
(16) 731.0		No forams found			b b b b b b b b					
(15) 773.1					b b b b b b b b					
(14) 802.0					b b b b b b b b					
(13) 837.0					b b b b b b b b					
(12) 874.3					b b b b b b b b					
(11) 915.0					b b b b b b b b					
(10) 950.0					b b b b b b b b					
(9) 985.0					b b b b b b b b					
(8) 1025.0					b b b b b b b b					
(7) 1055.0					b b b b b b b b					
(6) 1100.1					b b b b b b b b					
(5) 1137.1					b b b b b b b b					
(4) 1171.5					b b b b b b b b					
(3) 1205.9					b b b b b b b b					
(1) 1282.0					b b b b b b b b					
(89) 1330.5					b b b b b b b b					
(88) 1336.8					b b b b b b b b					
(81) 1359.4					b b b b b b b b					
(77) 1368.8					b b b b b b b b					
(75) 1373.5					b b b b b b b b					
(74) 1375.4					b b b b b b b b					
(73) 1378.6					b b b b b b b b					
(71) 1383.8					b b b b b b b b					
(48) 1383.8					b b b b b b b b					
(90) 1386.5					b b b b b b b b					
(47) 1388.0					b b b b b b b b					
(69) 1390.0					b b b b b b b b					
(46) 1392.0					b b b b b b b b					
					very small residues					

KEY: *in absence of other forams
 o <20 specimens
 x >20 specimens
 D >60% of total count
 R = reworked

r = rare
 **visual estimate of processed sample.

base of sequence examined

TABLE 2: SIGNIFICANT BENTHONIC FORAMINIFERAL DISTRIBUTION, RESIDUE LITHOLOGY & PALEOENVIRONMENTAL ASSESSMENT - WEST SEAHORSE # 1.

B A S I N: GIPPSLAND

ELEVATION: KB: 9.8m GL: -40.0m

WELL NAME: WEST SEAHORSE #1

TOTAL DEPTH: _____

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
PLEIS- TOCENE	A ₁										
	A ₂										
PLIO- CENE	A ₃										
	A ₄										
	B ₁										
	B ₂										
M I O C E N E	L A T E	C									
		M I D D L E	D ₁	420.0	2	455.2	1				
			D ₂					560.0	1		
	M I D D L E	E ₁	624.1	1							
		E ₂					662.8	2			
	E A R L Y	F	773.1	2			773.1	2			
		G	837.0	2	950.0	1	1137.1	1			
		H ₁	1171.5	2			1205.0	1			
	O L I G O C E N E	L A T E	H ₂	1282.0	2			1336.8	1		
			I ₁								
I ₂											
E A R L Y		J ₁									
		J ₂									
E O C - E N E	K										
	Pre-K										

COMMENTS:

- 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: December 1, 1981.