

Duck Bay

32/54

APPENDIX 2
PALEONTOLOGICAL REPORTS
REPORT ON TERTIARY STRATIGRAPHY IN
DUCK BAY NO. 1 WELL

by

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Cuttings, side wall cores, and Cores Nos. 1 and 2 from Arco - Woodside's Duck Bay No. 1 well have been examined. Unfortunately the high degree of contamination in most cuttings samples prevented accurate determinations of formation boundary depths.

Sidewall core samples were taken at 2254 ft, 2273 ft, 2290 ft, 2300 ft, 2312 ft, 2347 ft, 2370 ft, 2450 ft, 2600 ft, and 2670 ft, and showed virtually no contamination by drilling mud. Core Nos. 1 and 2 - taken at 2320-2340 ft. and 2340-2360 ft. respectively - have very limited recovery and could not be used for biostratigraphic determinations.

The stratigraphy, based on both foraminiferal content and the microscopic examination of sediments, is outlined below in drilled order.

40 - 310 feet : Haunted Hills Group

Clayey sands and gravels. Faunas are lacking.

310 - 410 feet : Jenny's Point Formation

Greenish brown calcareous sands - between 310 and 350 feet - overlie mid-grey sandy marls - from 350 to 410 feet. These sediments contain glauconite which has been partially oxidized to limonite.

Both the sands and marls are quite shelly, the gastropod Turritella sp. being common. Foraminifera include Cancris philippinensis, Nonion victoriense, and common miliolids (typical shallow water forms), representing a Kalimnan assemblage.

410 - ^{510 ft.} 499 feet : Tambo River Formation

A grey, partially glauconitic, sandy marl between 410 and 420 feet differs from those directly above it only in that it contains fragments of bryozoa and occasional pieces of the worm tube Ditrupa sp. Also the microfauna contains Orbulina universa, but is otherwise the same as that given above. It appears from the

Duck Bay

33/54

transitional nature of the faunal assemblage that the age is Mitchellian.

510 ft

490 - 1900 feet F Gippeland Limestone

These sediments are represented by the typical limestone/marl sequence, the proportion of clay - and hence marl - increasing downwards.

Organic material is more abundant in the upper parts of the section. Bryozoan fragments are particularly common between 420 and 1070 feet and less so between 1070 and 1390 feet. In the dark grey clayey marls between 1390 and 1900 feet, only a few chalky bryozoan remains are found.

All stages - namely the Bairnsdalian, Balcombian, Batesfordian and Longfordian - are recognized. The diagnostic Batesfordian form Lepidocyclus sp. occurs below 1280 feet: its lower limit is indeterminate due to down-hole contamination by the species, but it is probably the Batesfordian - Longfordian boundary which is at approximately 1390 feet. Globigerina woodi is the most diagnostic planktonic species found in the Longfordian clayey marls.

1900 - 2280 feet : Lakes Entrance Formation

The formation is divided into three main lithologies; from 1900 to 2190 feet, a light brownish grey (green when wet) puggy marl; from 2190 to 2240 feet, as above, but becoming sandy (including grains of glauconite and pyrite); and from ^{2240 ft}2190 to 2280 feet, fine micaceous sand containing traces of glauconite and pyrite.

The marls contain a typical Janjukian foraminiferal assemblage (of Carter's Faunal Unit 5) which includes the diagnostic planktonic species Globigerina ampliapertura euapertura.

The basal sands are barren, and a Faunal Unit 4 assemblage, which might be expected here (Hocking and Taylor, 1964) has not been isolated.

2700 ft

2280 - approx. 2700 feet : Latrobe Valley Coal Measures

Fine micaceous sands between 2280 and 2520 feet contain fragments of brown coal, and are often quite gravelly (especially in Cores 1 and 2). No foraminifera were found in these sediments.

The uppermost bed of brown coal is encountered at approximately 2520 feet. It appears to be a major seam approximately 60 feet thick, although it may well be broken by small sand intercalations. A comparable thickness of coal is found in the adjacent Sperm Whale Head (Boole Poole No. 1) bore.

Snake Bay 34/54

Below the brown coal a further sequence of sands is developed which also fails to yield any foraminifera.

Summary Table

<u>Rock Unit</u>	<u>Depth (ft)</u>	<u>Faunal Unit and Local Tertiary Stage (after Carter, 1964)</u>
	- 40 -	
Haunted Hill Group		
	310	
Jenny's Point Formation		Kalinman
	410	
Tambe River Formation		Mitchellian
	420	
		F. U. Bairnedalian -
		9-11 Batesfordian
Gippsland Limestone	1280)	
	1390)	'Lepidocyclina'
	- - - - -	horizon
		F. U. 6-9 Longfordian
	1900	
Lakes Entrance Formation		F.U. 5
	2190	Janjukian
		?F.U. 4
	2280	
Latrebe Valley C.N.		Anglesan
	Approx. 2800	

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Duck Bay

35/54

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