



FORKMINIFERA

Barracouta-1

ESSO GIPPSLAND SHELF NO.1 WELL

Preliminary Biostratigraphic Report

Interval 790 to 3,029 Feet

Cuttings and seven cores from the interval 790-3,029 feet were received on 29-1-65. Preliminary examination has been conducted on all cores and on many cutting samples. More detailed work is proceeding. The examinations involve considerable time since most of the sediment is recrystallized so the foraminifera are infilled and cannot be floated in heavy liquid. The preliminary biostratigraphic divisions are as below:

790 to 1,060 feet (including Core 1) - a predominantly benthonic fauna with species characteristic of the Mitchellian Stage (= Tambo River Formation) and Kalmian Stage (= Jemmys Point Formation). The fauna suggests fairly shallow water, but not as shallow as the Tambo River Formation and certainly not as close shore as the Jemmys Point Formation. A determination of Mitchellian Stage is favoured.

1,060 to 2,656 feet (including cores 2 to 5). The highest appearance of the rich Bairnsdalian planktonic faunas is at 1,060 feet and this level marks a definite faunal change. The first appearance of the planktonic species Orbulina universa marks the base of Carter's (1964) Faunal Unit 11 and corresponds with the base of the Bairnsdalian. The species is present at 2,656 feet (core 5) but not in cores 6 and 7. Its presence in cuttings below 2,656 feet is probably due to down hole contamination as the globular shape favours its constant recirculation. Thus the first appearance of O. universa is impossible to establish, but the fact that it is rare in core 5 and common in higher cores suggests that core 5 is near the base of its range.

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The reliability of the first appearance of Q. universa, has been much discussed in recent literature. Loeblich and Tappan (1961) have eliminated all pre-Miocene reports of the species and argue that its migration time would be geologically infinitesimal, especially as the morphology provides almost maximum bouyanoy. Eames et al (1962, p.27) feels that there are discrepancies in the time of first appearance of Q. universa throughout the world, when compared with the ranges of the miogypsinids (larger foraminifera). These discrepancies could be due to climatic variation. However all authors agree that Q. universa is a very reliable biostratigraphic index for intra basinal and intra regional correlation. For the Indo-Pacific-Australian region Glaessner (1959) provides evidence which supports a Tortonian (middle Miocene) age for the first appearance of Q. universa.

Further verification of a Bairnsdalian age of this interval is the presence of certain species of the planktonic genus Globorotalia which Jenkins (1960) found to occur within the range of Q. universa in the Lakes Entrance Oil Shaft sequence. Jenkins has three zones above the first appearance of Q. universa and these will allow further sub-division of Gippsland Shelf section. The correlated positions of cores 2 to 5 are shown on the attached "Xerox" copy of Jenkin's range chart of the Oil Shaft sequence. It is seen for instance that core 4, 2,325-51 feet, in the Gippsland Shelf well correlates with the interval 412-448 feet in the Oil Shaft. Considerable thickening of section is obvious, as the Bairnsdalian has thickened over three times compared with the onshore Gippsland sections.

The faunas in the interval 1060 to 2,656 feet indicate moderately deep shelf environments with unrestricted oceanic currents. The deposition was in deeper water than that of the interval either above or below.

2,656 to 3,029 feet (including cores 6 and 7). Faunas are poor in this interval and many specimens are believed to be derived from older sediments. As already mentioned Q. universa is absent from both cores although Q. suturalis (= Candorbulina universa of Jenkins) is present in core 7 suggesting Carter's Faunal Unit 10, the Balcombian Stage. Derived specimens include Janjukian forms as well as Batesfordian larger foraminifera. My colleague, Mr. Hocking, reports that highly worn specimens of Amphistegina sp. occur in cutting samples below 2,880 feet, while Gypsina howchini is noted in some samples below 2,835 feet. The highest occurrence of Lepidocyclina howchini is that of a worn glauconite-filled specimen at 2,770-80 feet. Below 2,890 feet, every sample contains a few worn fragments of Lepidocyclina which are in many cases attached to fragments of sandy limestone, or else have sand grains embedded in them. The high degree of rounding of the associated sand grains, and the worn nature of the Lepidocyclina suggests a long period of abrasion. It is believed that the Lepidocyclina and the sand grains have different sources, since in the onshore wells the relatively fresh Lepidocyclina are never associated with sandy sediments.

It is believed this interval represents the Balcombian. Lepidocyclina is normally restricted to the Batesfordian, although reworked Lepidocyclina have been found in definite Balcombian faunas at Hamilton (western Victoria).

What are considered as the original faunas of this interval consist of miliolids and the arenaceous Haplophragmoides with a few planktonic forms. Such a fauna indicates shallow water with restricted water circulation and a probable deleterious chemical environment.

David Taylor

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9.2.65

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PLANKTONIC FORAMINIFERA FROM AUSTRALIA

		300	400	500	600	700	800	900	1000	1100	1200	DEPTH IN FEET	
												<i>G. angustumbiliculata</i> <i>G. bradyi</i> <i>G. ciperensis angustisuturalis</i> <i>G. ciperensis ciperensis</i> <i>G. concinna</i> <i>G. camasi</i> <i>G. euapertura</i> <i>G. foliata</i> <i>G. juvenilis</i> <i>G. parva</i> <i>G. praebulloides</i> <i>G. woodi</i>	GLOBIGERININA ALBINA
												<i>G. altispira altispira</i> <i>G. dehiscens advena</i> <i>G. dehiscens dehiscens</i> <i>G. larmouzi</i> <i>G. acostiensis</i> <i>G. barisanensis</i> <i>G. conica</i> <i>G. extans</i> <i>G. mayeri</i> <i>G. menardii menardii</i> <i>G. menardii miocenica</i> <i>G. menardii miotumida</i> <i>G. menardii panda</i> <i>G. menardii prazmenardii</i> <i>G. obesa</i> <i>G. opima continuosa</i> <i>G. opima opima</i> <i>G. scitula praescitula</i> <i>G. siakensis</i> <i>G. testatugosa</i> <i>G. zaxatandica</i>	GLOBIGERININA ALBINA
												<i>G. apertasuturalis</i> <i>G. bispherica</i> <i>G. rubra</i> <i>G. triloba altiapertura</i> <i>G. triloba immatura</i> <i>G. triloba triloba</i> <i>C. glomerata circularis</i> <i>C. glomerata curva</i> <i>C. glomerata glomerata</i> <i>C. universa</i> <i>Orbulina universa</i> <i>Globigarinatella</i> (?) sp. <i>Hastigerina cf. aequilataqalis</i> <i>Catapsydrax cf. staintorhi</i> <i>Catapsydrax unicavus</i>	GLOBIGERININA CANDORBULINA OTHER GENERA
												ZONE 11 ZONE 10 ZONE 9 ZONE 8 ZONE 7 ZONE 6 ZONE 5 ZONE 4 ZONE 3 ZONE 2 ZONE 1	11 PLANKTONIC ZONES
												Correlation between Lakes Entrance Shaft sequence of Jenkins (1960) & Gippsland Shelf No.1 Cores.	
CORE nos	no	no	no	no	no	no	no	no	no	no	no		
2 & 3	4	5	6	7									
												Correlation with Carter's (1964) Faunal Unit scheme.	
												F.U. 11 F.U. 10*	

* Orbulina suturalis of Carter = all forms of the genus Candorbulina listed by Jenkins. Therefore Jenkins's Zones 8 & 9 = Carter's Faunal Unit 10. Because of poor faunas Jenkins's two zones cannot be distinguished in Gippsland Shelf No.1.

N.B. Core No.1 is above 200 feet in the Lakes Entrance Shaft sequence.

Adapted from Jenkins (1960, Text-fig.2, p.347)
 by David J Taylor - 8-2-65.

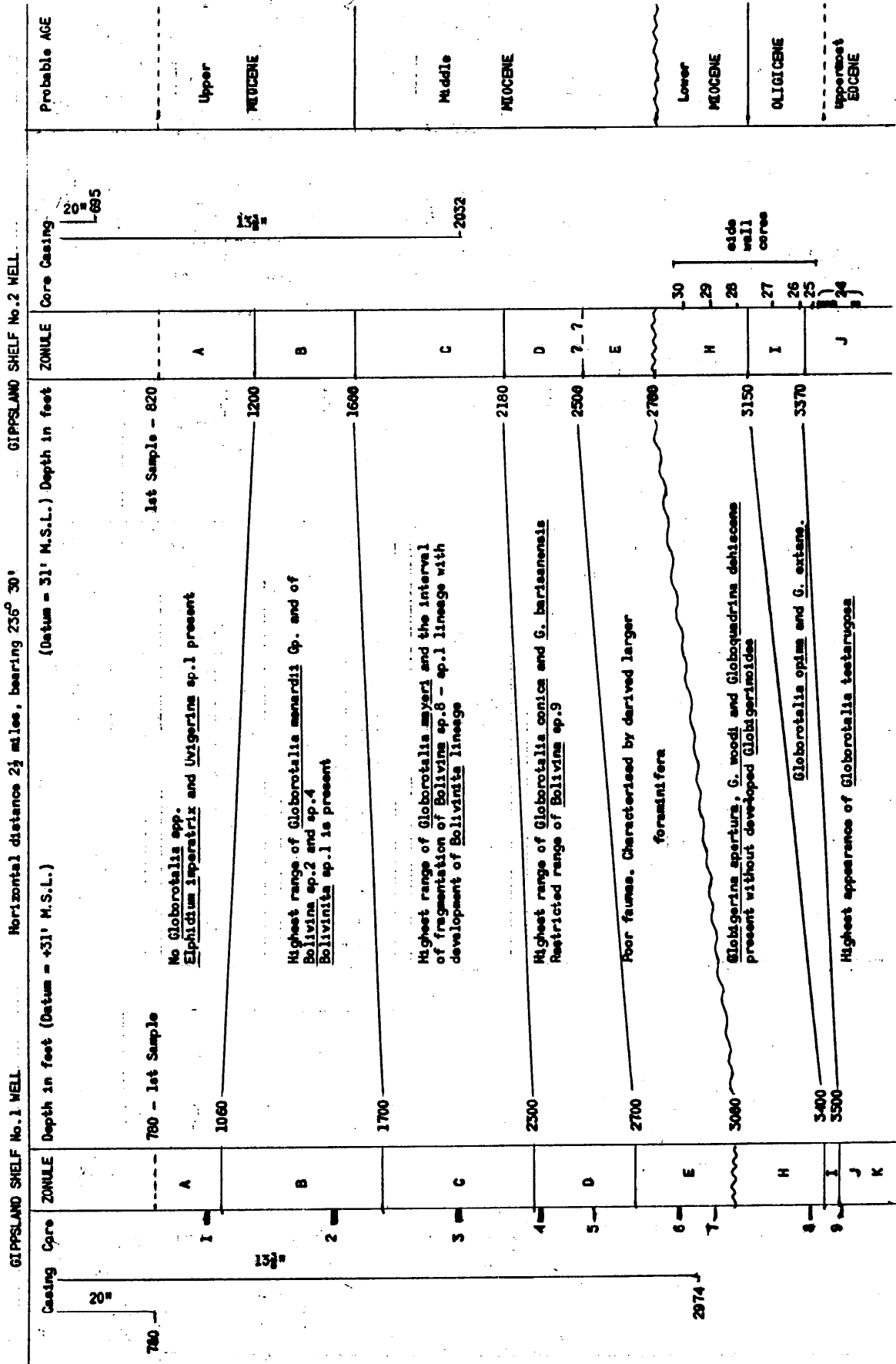


Fig. 1. BIOSTRATIGRAPHIC CORRELATION OF MID-TERTIARY SECTIONS ESSO GIPPSLAND SHELF No. 1 and No. 2 WELLS

David Taylor - Communication 15.3.65.

Has recognized marine incursions from cuttings in the Latrobe Valley Coal Measures. These indicate an uppermost Eocene to lowermost Oligocene age.

Two identified to date.

3840 ft
& 3750 ft

Of the marls mentioned in the graphic log one at least is contamination from above. The above incursions occur between apparent coals. Contain 85% planktonic foraminifera.

Incursions very well developed (F.U.4) but in short sharp bursts. Some marginal marine, Angulosa facies also present.

Have examined cores for cuttings every 50'.