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INTERPRETATIVE

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MIOCENE BIOSTRATIGRAPHY MARLIN STRUCTURE.

After the recognition of a lower Miocene hiatus and abnormal thickness of middle Miocene in Kingfish-A-1, a rechecking of the Miocene sections in the 3 Marlin wells was essential. I have already reported on Marlin-A-1 and Marlin-B-1 and have now fully examined Marlin-C-1. It should be remembered that in none of the 3 sections were any cores cut or side-wall cores shot in Miocene sediment. In all cases contamination is heavy. I adhere to my original opinion (report on "Foraminiferal sequence on Marlin structure" - 17th, October, 1965), that the middle and lower Miocene foraminiferal sequence is uninterrupted in Marlin-A-1 & -B-1. The Marlin-C-1 section supports this contention. Approximate depths (in feet) of tops of Miocene Zones are tabulated below:-

ZONULE	MARLIN-A-1	MARLIN-B-1	MARLIN-C-1	
D	1800			MIDDLE
E	2300	2500	2480	MIOCENE
"Battered Robulus"	2500 to	2600 to	2500 to	
G	3580	2750	2900	
F	2700	2900	2900	LOWER
G	3000	present	present	
H	3700	3900	3900	MIOCENE

The planktonic and bolivoid/uvigerinid species sequence is normal without the interruptions of the Barracouta and Marlin sequences where F & G are absent. However in the Marlin structure there is a foraminiferal unit, with an apparently horizontal top (approximately between 2550 & 2600) which is superimposed on and cuts across the regular biostratigraphic

sequence. On the above tabulation this unit is designated "battered Robulus" unit, as the main indicator is Robulus spp., including a pustulate species which is usually restricted to Zonules H & I. All these Robulus spp. are lens-shaped in transverse section and circular to ovoid in outline with a peripheral keel. In all cases the specimens are "battered" and the keels broken. Associated with them are bi-convex (lens-shaped) Cibicides spp., including C. brevivalis with worn margins and spires. C. brevivalis normally does not occur above Zonule F. Also present is the elongate, though transversely lens-shaped, Valvulina granulosa, with a range that does not extend above Zonule H. V. granulosa was regarded as a recycled form in Zonule E of Knigfish-A-1. At 2700' in Marlin-B-1 a fragment of Lenticulina sp. was noted in Zonule E, but this species is confined to Zonule F and was reported as being recycled into Zonules D & E of Barracouta-A-1 and Ced-A-1.

It is therefore concluded that the "battered Robulus" unit comprises recycled species and is not a biostratigraphic unit, but indicates the introduction of detrital material from older deposits. The apparent preference to a lens-shape for the recycled foraminifera is obviously of hydrodynamic significance. This detrital material is more evident in Marlin-A-1, where it is common over a much thicker interval than in the other sections. The actual thickness of the "battered Robulus" interval is impossible to estimate on cuttings alone. However the down-hole contamination seems equally heavy in all 3 sections, so that the tabulation shows the relative effects of recycled material. Thus Marlin-A-1 was in the direct path of "currents" carrying such material; the other 2 sections being on the "aprons". These currents carried in lower Miocene species into fairly deep water middle Miocene sediments. The geographic source of the material cannot be determined.

5th, July, 1967.

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