FORAMINIFERAL BIOSTRATIGRAPHY AND ENVIRONMENTAL ANALYSIS OF BULLSEYE-1 WELL GIPPSLAND BASIN

by: David Taylor

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FORAMINIFERAL BIOSTRATIGRAPHY AND ENVIRONMENTAL ANALYSIS OF

BULLSEYE -1

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Forty three side wall cores were examined from Bullseys-1. These are listed on page 3 with a summary of biostratigraphic results. Side wall cores at 7075 7049, 7029 and 7000 were barren of foraminifera and those at 6950, 6900, 6860 and 6820 contained rare and nondescript specimens of planktonic foraminifera which did not permit biostratigraphic designation although a lowermost Oligocene and/or uppermost Eocene age is suspected for the interval between 6950 and 6820.

Biostratigraphically and environmentally the Bullseye sequence is very similar with others penetrated on the western margin of the Gippsland Basin both offshore (eg. Perch, Dolphin and the Groper wells) and onshore (eg. the Woodside area trending N.E. to Sale). The sequence is also similar to the generalised Bass Basin sequence although the late Eocene Salt Marsh environment of the Demons Bluff Formation is not developed.

The sequence commences with subdued and inhibited marine influence at 6950 which may be late Eocene or early Oligocene. The dominance of cassidulinids infers poor oxygenation and a pH between 6 & 7. An extensive series of lagoons, analagous to the Gippsland Lakes of today, could be envisaged from the Groper area to Sale butting against the Bassian Rise.

At 6740 a rich planktonic fauna was swept in by the encroaching transgression in early Oligocene times; ie. Zone J-1. The faunas at 6700 & 6650 contain many typically J-1 species including Chiloguembelina cubensis, which is very rare or usually absent in deeper situations in the Gippsland Basin. The high percentages of Buliminacea amongst the benthonic fauna suggests poor oxygenation at the sediment/water interface and that open marine conditions were not properly established, despite the high percentage of planktonics at the early stage of the transgression. Benthonic specific diversity was initially high, mainly due to the suspension of small, hydrodynamically mobile forms in the "flood". Zone 1-2 is represented at 6550 and 6500 although Guembelitra stavensis was not found. This Zone has only been recognised in this western margin area of the Basin.

This initial marine phase with development of a continental shelf continued to 6450, which is near the base of the late Oligocene Zone I-1. Cassidulinids and shallow water Cibicides spp (ie. C. brevolalis, C. perforatus etc.) dominate.

Shelfal conditions were established properly at the above 6400 (= top of I-1). Fairly low benthonic diversity and dominance of the shallow water Cibicides suggest a medium depth on a gently sloping shelf throughout the early Miocene and late Oligocene from the top of I-1 to F. There is no recognisable break in the sequence. There were some flucuations in depth with obvious shallowing at 6200 (=H-1), 5480 and 5050 (=F), as is evidenced by the sudden appearance of miliolids and species which adhere to sea weed or by the total absence of planktonics. These conditions prevailed into the late Miocene up to 4302 (=base of D-1). Above this level the absence of Cibicides thiara and the presence of adherent forms and miliolids indicate shallower conditions although the planktonic ration and the benthonic diversity is not diminished.

The striking thing about the sediment in the interval between Zone F and Zone D-1 (5050 to 3100) is the absence of bryozoa and the Amphistegina/Operculina foraminiferal suite, which are predominant sediment particles over this interval in the other wells on the western marginal platform. Bullseye must have been situated seaward of the "sand"/mud boundary and also in a nutrient starved region. The planktonic fauna reflects the presence of only a single hydrological layer without a rich "tropical" or New Zealandic" (the Globorotalia miozea plexus) which is abundant in the eastern offshore part of the Basin. For example Zone C is identified on a single specimen of G. miotumida.

Page 3 lists sidewall cores, biostratigraphic zonation and code numbers of samples on pages 4 & 5.

Page 4 shows distribution of planktonic foraminifera. I = over 20 specimens

. = 1 - 20 specimens

Page 5 shows distribution of benthonics in groups, planktonic ratio, relative specimen numbers and benthonic diversity.

D = Dominance ie. over 40% of benthonics

X = more than 20 specimens

. = present and of environemtnal significance.

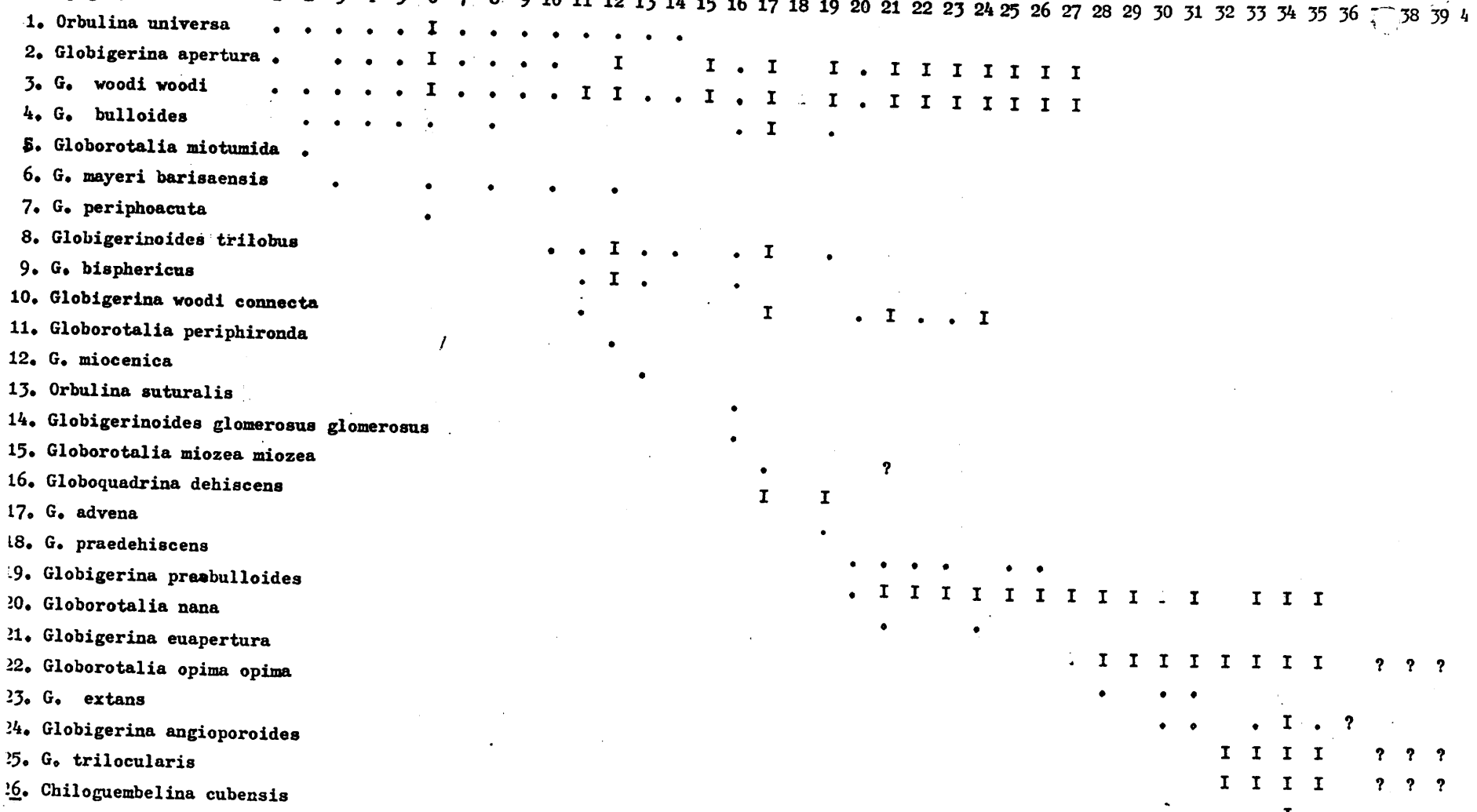
PLANKTONIC FORAMINIFERAL BIOSTRATIGRAPHY

BULLSEYE - 1

Species distribution on page 4

** Side wall core code No. on p.4	Depth	Zone	Epoch	Quality
1	2800	C	Late Miocene	2
2	2900	C	" "	0
3	3100	D-1	" "	1
4	3250	D-1	" "	2
5	3400	D-1	" "	2
6	3550	D-1	" "	0
7	3672	D-1	" "	2
8	3850	D-1	" "	1
9	4000	D-1	" "	2
10	4150	D-1	" "	1
11	4302	D-1	" "	0
12	4450	D-2	" "	0
13	4600	D-2	" "	1
14	4775	D-2	" "	2
15	4900	E-1	" "	0
16	5050	F	Early Miocene	1
17	5200	G	" "	0
18	5480	No planktonics found		
19	5640	G	Early Miocene	1
20	5900	H-1	" "	1
21	6000	H-1	" "	1
22	6100	H-1	" "	1
23	6150	H-1	" "	1
24	6200	H-1	" "	0
25	6250	H-2	Oligocene	1
26	6300	H-2	"	1
27	6350	H-2	"	1
28	6400	I-1	"	0
29	6450	I-1	"	2
30	6500	I-2	"	1
31	6550	I-2	"	1
32	6600	J-1	"	1
33	6650	J-1	"	0
34	6700	J-1	"	0
35	6740	J-1	"	2
36	6820)	indeterminate planktonic fauna		
37	6860)			
38	6900)			
39	6950)			
40	7000)	no fauna found		
41	7029)			
42	7049)			
43	7075)			

** Code numbers are not the original side wall core number as two runs were shot.


side wall core code
see page 3
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 38 39 4
1. Orbulina universa
2. Globigerina apertura
3. G. woodi woodi
4. G. bulloides
5. Globorotalia miotumida
6. G. mayeri barisaensis
7. G. periphoacuta
8. Globigerinoides trilobus
9. G. bisphericus
10. Globigerina woodi connecta
11. Globorotalia periphironda
12. G. miocenica
13. Orbulina suturalis
14. Globigerinoides glomerosus glomerosus
15. Globorotalia miozea miozea
16. Globoquadrina dehiscens
17. G. advena
18. G. praedehiscens
19. Globigerina praebulloides
20. Globorotalia nana
21. Globigerina euapertura
22. Globorotalia opima opima
23. G. extans
24. Globigerina angioporoides
25. G. trilocularis
26. Chiloguembelina cubensis

BULLSEYE - 1 BENTHONIC FORAMINIFERA & ENVIRONMENTAL ANALYSIS BULLSEYE-1 P.8 3/3

side wall core code 3/3

refer page 3

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39
shallow water Cibicides spp	D	D	D	D	D	D	D	D	D	D	D		D		X	D	D		X	X	X	X	X	X	D	D	D	D	D	D	X	D	D	X	X	X	.		
adherant Cibicides & Karreria		X	X													X								X				X									.		.
Miliolids			X													X								X															
Cassidulina subglobosa & Sphaeroidina bulloides				X	X	X	X				X	D		D	X	X	X	D	D	X	X	X	X	X	X		X		D	D	X	D	D	X	X	X	D	D	D
Cibicides thiara											X		X	X	X	X		X	X	X	X	X	X	X															
"Bolivina" spp.																									X	X					X	.	.	X					
Siphouvigerina sp																													X		X	.	.	X					
Arenaceous species																													•		•		•	•	•				
Anglogenerina spp. & Trifarina sp.																															•	.	.	X	.				
Nodosarids																															•	.			X				•
Bolivinopsis cubensis																															•						•		
% of planktonics in total foraminiferal fauna	5	15	10	20	20	20	20	20	20	20	20	20	10	5	20	5	20	0	20	30	30	40	50	50	40	30	20	15	10	10	20	30	20	60	70				
relative specimen count	100	100	100	200	200	500	100	100	100	100	200	500	200	100	100	100	500	50	500	500	500	500	700	1000	1000	1000	500	500	500	1000	1000	100	2000	500		20	50	20	20
Benthonic diversity	4	7	3	10	10	6	6	4	4	3	3	5	4	4	2	8	8	2	8	5	6	6	5	8	10	10	5	6	10	4	10	10	10	18	12	3	2	2	3
ENVIRONMENT	INNER SHELF										MID SHELF								MID SHELF										TRANSGRESSION & SHELF DEVELOPMENT POOR OXYGENATION							LAGOONAL or ESTUARINE LOW pH			
DEPTH											4302																	6450							6820			7000	
											4450																													
ZONE	D - 1										D - 2				E	F	G		G	H-1		H-1	H22		I-1		I-2	J-1			J-1			?	?		N.F.	

Form R 193 3/71

BASIN GIPPSLAND BY David Taylor

WELL NAME Bullseye-1 DATE 1.9.74 ELEV. _____

Foram Zonules

		Highest Data	Quality	2 Way Time	Lowest Data	Quality	2 Way Time
MIOCENE	A						
	Alternate						
	B						
	Alternate						
	C	2800	2		2900	0	
	Alternate						
	D_1	3100	1		4302	0	
	Alternate						
	D_2	4450	0		4775	2	
	Alternate				4600	1	
	E	4900**	0		4900**	0	
	Alternate						
	F	5050	1		5050	1	
	Alternate						
	G	5200	0		5640	1	
	Alternate						
	H_1	5900	1		6200	0	
	Alternate						
	H_2	6250	1		6350	1	
	Alternate						
OLIGOCENE	I_1	6400	0		6450	2	
	Alternate						
	I_2	6500	1		6550	1	
	Alternate						
	J_1	6600	1		6740	2	
	Alternate	6650	0		6700	0	
	J_2						
	Alternate						
EOC.	K						
	Alternate						
	Pre K						

** S.W.C. at 4900 contains late E fauna = E-1

COMMENTS: S.W.C.s 6820, 6860, 6900 and 6950 contained indeterminate planktonic faunas of late Eocene or early Oligocene aspect.
No fauna was found in S.W.C.s at 7000, 7029, 7049 & 7075.

Note: If highest or lowest data is a 3 or 4, then an alternate 0, 1, 2 highest or lowest data will be filled in if control is available.

If a sample cannot be interpreted to be one zonule, as apart from the other, no entry should be made.

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).

Date Revised _____

By _____