

36. BIOSTRATIGRAPHIC SYNTHESIS: LATE OLIGOCENE AND NEogene OF THE WESTERN TROPICAL PACIFIC

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The drill-cores obtained by Leg 7 of the Deep-Sea Drilling expedition provide a basis for a detailed biostratigraphy of pelagic microfossil groups in the western tropical Pacific. Representation of the Neogene is practically complete (though siliceous microfossils are not satisfactorily preserved in the post-Miocene sediments), and the Oligocene is represented by intermittent cores. Much work remains to be done on the microfossils of these drilled sequences, but results presented in preceding chapters on the planktonic foraminifera, calcareous nannofossils and radiolarians can be integrated to form a biostratigraphy of the late Oligocene and Neogene more detailed and comprehensive than that yet available for any other oceanic region.

The integrated results are here presented in two tables and a figure. Table 1 lists paleontological events (tops and bottoms of ranges of taxa) in stratigraphic order, as observed in the Leg 7 cores. This interrelated sequence of foraminiferal, calcareous nannofossil and radiolarian events offers the opportunity for very detailed correlation of western tropical Pacific sediments. Table 2 shows the relationships of the zonations used for the three principal microfossil groups investigated. Figure 1 presents a correlation of the sequences drilled at Sites 62 through 66.

In Table 1, the lower limits of ranges of taxa are indicated as "B" (for bottoms) and the upper limits are indicated as "T" (for tops). Whether these limits are morphotypic or evolutionary can be determined by reference to the special chapters on the three microfossil groups. For the calcareous microfossil groups, the sequence of paleontological events presented in this table is that observed at Site 62 (for the upper part of the section) and at Site 64 (for the lower part of the section), and members of groups of events occurring at the same level (as far as can be determined from the information presently available for Sites 62 and 64) are

arranged alphabetically according to the names of the taxa. For the radiolarians, the sequence of events presented is not the same as that observed at Sites 62 and 64, if more reliable evidence on the sequence is available from other sites (see explanation of Table 6 in the chapter by Riedel and Sanfilippo). The level at which each paleontological event occurred is given in terms of core sections and (in parentheses) depth in meters below the sea floor at Site 62 or Site 64.

Table 2 shows the relationship of the Neogene zonations based on calcareous nannofossils, pelagic foraminifera and radiolarians, as observed at Sites 62, 63 and 64. The thicknesses of the zones as plotted are approximately proportional to the thicknesses at Sites 62 and 64, and some idea of the durations can be gained from the Site Summary chapters, where they are plotted against a time scale. The columns on either side of the foraminiferal one are used to indicate (by crossed lines) ranges of uncertainty in the correlation of zonal boundaries, and hachured zones in the foraminiferal column indicate ranges of uncertainty in placement of "N" zonal boundaries.

Figure 1 presents a simplified correlation-diagram of the sequences at Sites 62 through 66. The column for Site 65 is placed farthest to the right because its radiolarian assemblages are admixed by extensive reworking, and correlations are therefore subject to error. Only a few of the many possible correlation lines are included, in order that the diagram should remain legible. Solid lines are used to connect adjacent sites when a paleontological event occurred in *cored* intervals at both sites, and broken lines when an event occurred in an *uncored* interval at one or both of a pair of adjacent sites. Dotted lines across the site-column are used for certain radiolarian zonal boundaries in the lower parts of the sequences at Sites 64 and 65. Some correlation lines that cross are included to emphasize parts of the sequence requiring further investigation.

TABLE 1
Sequence of Paleontological Events (From Youngest Downward)
Recognized in the Western Pacific Drill-Cores (For explanation, see text)

Calcareous Nannofossil Events		Foraminiferal Events	Radiolarian Events
B <i>Emiliania huxleyi</i>	Within 62.1-1-1 (7)		
		T "Globanomalina" <i>praepumilio</i> 62.1-1-1 62.1-1-2 (7-8)	
		T <i>Globigerina bulloides</i> 62.1-1-1 62.1-1-2 (7-8)	
		T <i>Globigerina conglomerata</i> 62.1-1-1 <i>conglomerata</i> 62.1-1-2 (7-8)	
		T <i>Globigerina aff. falconensis</i> 62.1-1-1 <i>falconensis</i> 62.1-1-2 (7-8)	
		T <i>Globigerinata uvula</i> group 62.1-1-1 62.1-1-2 (7-8)	
		T <i>Globigerinoides quadrilobatus</i> 62.1-1-1 <i>immaturus</i> 62.1-1-2 (7-8)	
		T <i>Globorotalia crassaformis</i> 62.1-1-1 <i>crassaformis</i> 62.1-1-2 (7-8)	
		T <i>Globorotalia crassaformis</i> 62.1-1-1 <i>oceanica</i> 62.1-1-2 (7-8)	
		T <i>Globorotalia pumilio</i> 62.1-1-1 62.1-1-2 (7-8)	
		B <i>Globorotalia puniculata</i> 62.1-1-1 62.1-1-2 (7-8)	
		B <i>Hastigerina adamsi</i> 62.1-1-1 62.1-1-2 (7-8)	
		B <i>Hastigerinella digitata</i> 62.1-1-1 <i>digitata</i> 62.1-1-2 (7-8)	
		T <i>Candeina nitida</i> 62.1-1-3 <i>praenitida</i> 62.1-2-1 (10-16)	
		T <i>Globigerina decoraperta</i> 62.1-1-3 <i>decoraperta</i> 62.1-2-1 (10-16)	
T <i>Pseudoemiliana lacunosa</i>	62.1-1-CC 62.1-2-1 (15-16)	T <i>Globigerina aff. microstoma</i> 62.1-1-3 62.1-2-1 (10-16)	
		T <i>Globigerina pseudofoliata</i> 62.1-1-3 62.1-2-1 (10-16)	
		T <i>Globigerinoides elongatus</i> 62.1-1-3 62.1-2-1 (10-16)	
		T <i>Globorotalia acostaensis</i> 62.1-1-3 <i>acostaensis</i> 62.1-2-1 (10-16)	
			Radiolarian preservation inadequate

TABLE 1 - *Continued*

Calcareous Nannofossil Events	Foraminiferal Events	Radiolarian Events
	T <i>Globorotalia truncatulinoides</i> 62.1-1-3 62.1-2-1 (10-16)	
	T <i>Globorotalia tumida flexuosa</i> 62.1-1-3 62.1-2-1 (10-16)	
	T <i>Globorotalia tumida lata</i> 62.1-1-3 62.1-2-1 (10-16)	
	T <i>Globigerinoides bollii</i> 62.1-2-1 62.1-2-2 (16-17)	
	T <i>Orbulina suturalis</i> 62.1-2-1 62.1-2-2 (16-17)	
	T <i>Globigerinoides quadrilobatus trilobus</i> 62.1-2-3 62.1-2-4 (19-20)	
	T <i>Globorotalia tosaensis</i> 62.1-2-4 62.1-3-2 (20-30)	
	B <i>Globorotalia hirsuta</i> 62.1-3-2 62.1-4-1 (30-35)	
	T <i>Globorotalia inflata</i> 62.1-3-2 62.1-4-1 (30-35)	
	T <i>Globorotalia planispira</i> 62.1-3-2 62.1-4-1 (30-35)	
	T <i>Globorotalia pseudopumilio</i> 62.1-3-2 62.1-4-1 (30-35)	
	T <i>Globigerina aff. quinqueloba</i> 62.1-4-1 62.1-4-2 (35-36)	
	T <i>Sphaeroidinellopsis seminulina</i> 62.1-4-1 62.1-4-2 seminulina (35-36)	
	T <i>Globigerina falconensis</i> 62.1-4-5 62.1-4-6 falconensis (41-42)	
	T <i>Globigerina falconensis palpebra</i> 62.1-4-5 62.1-4-6 (41-42)	
T <i>Discoaster brouweri</i> Within 62.1-4-6 (42)	T <i>Globigerinoides quadrilobatus fistulosus</i> 62.1-4-5 62.1-4-6 fistulosus (41-42)	
B <i>Gephyrocapsa oceanica</i> 62.1-4-6 62.1-4-CC (42-43)		
	B <i>Globorotalia truncatulinoides (?)</i> 62.1-5-1 62.1-5-2 (44-45)	
	B <i>Pulleniatina obliquiloculata finalis</i> 62.1-5-1 62.1-5-2 (44-45)	

Radiolarian preservation inadequate

TABLE 1 - *Continued*

Calcareous Nannofossil Events	Foraminiferal Events	Radiolarian Events
	T <i>Pulleniatina obliquiloculata praecursor</i> 62.1-5-1 62.1-5-2 (44-45)	
	B <i>Globigerina aff. falconensis falconensis</i> 62.1-5-2 62.1-5-3 (45-47)	
	B <i>Globigerina calida calida</i> 62.1-5-3 62.1-5-4 (47-48)	
	B <i>Globigerina dutertrei</i> 62.1-5-3 62.1-5-4 (47-48)	
	B "Globanomalina" <i>praepumilio</i> 62.1-5-4 62.1-6-1 (48-55)	
T <i>Ceratolithus rugosus</i> 62.1-5-4 62.1-5-CC (48-52)	T <i>Globorotalia multicamerata</i> 62.1-5-4 62.1-6-1 (48-55)	
	B <i>Turborotalita iota</i> 62.1-5-4 62.1-6-1 (48-55)	
T <i>Scyphosphaera spp.</i> 62.1-5-CC 62.1-6-2 (52-56)	T <i>Globigerina decoraperta major</i> 62.1-6-1 62.1-6-2 (55-56)	
T <i>Discoaster asymmetricus</i> 62.1-6-2 62.1-6-4 (56-59)	T <i>Pulleniatina primalis</i> 62.1-6-3 62.1-6-4 (58-59)	
T <i>Discoaster pentaradiatus</i> 62.1-6-4 62.1-6-5 (59-61)		
	B <i>Globorotalia tosaensis</i> 62.1-6-6 62.1-7-1 (62-64)	
	T <i>Globigerinoides obliquus extremus</i> 62.1-6-6 62.1-7-1 (62-64)	
	B <i>Globorotalia tumida lata</i> 62.1-7-1 62.1-7-2 (64-65)	
T <i>Discoaster surculus</i> Within 62.1-7-2 (65)	T <i>Sphaeroidinellopsis subdehiscens subdehiscens</i> 62.1-7-1 62.1-7-2 (64-65)	
	B <i>Globorotalia inflata</i> 62.1-7-4 62.1-7-5 (68-70)	
B <i>Ceratolithus cristatus</i> 62.1-7-5 62.1-7-CC (70-72)	B <i>Globorotalia aff. parkerae</i> 62.1-7-5 62.1-7-6 (70-71)	
	T <i>Globigerina microfoliata</i> 62.1-7-6 62.1-8-2 (71-74)	
	B <i>Globigerinoides elongatus</i> 62.1-7-6 62.1-8-2 (71-74)	
	T <i>Globoquadrina altispira altispira</i> 62.1-7-6 62.1-8-2 (71-74)	

Radiolarian preservation inadequate

TABLE 1 - *Continued*

Calcareous Nannofossil Events	Foraminiferal Events	Radiolarian Events
	T <i>Globorotalia crassaformis ronda</i> 62.1-7-6 62.1-8-2 (71-74)	
	T <i>Globorotalia cultrata limbata</i> 62.1-7-6 62.1-8-2 (71-74)	
	T <i>Globoquadrina altispira occlusa</i> 62.1-8-2 62.1-8-3 (74-76)	
	T <i>Globoquadrina dehiscens group</i> 62.1-8-2 62.1-8-3 (74-76)	
	T <i>Globorotalia incisa</i> 62.1-8-2 62.1-8-3 (74-76)	
T <i>Discoaster variabilis</i> 62.1-8-2 62.1-8-4 (74-77)	T <i>Globorotalia pseudopachyderma</i> 62.1-8-2 62.1-8-3 (74-76)	
	B <i>Globorotalia crassaformis ronda</i> 62.1-8-3 62.1-8-4 (76-77)	
	T <i>Orbulina universa parkerae</i> 62.1-8-3 62.1-8-4 (76-77)	
T <i>Discoaster challengerii</i> 62.1-8-4 62.1-8-5 (77-79)		
T <i>Discoaster extensus</i> 62.1-8-4 62.1-8-5 (77-79)		
	B <i>Globorotalia pumilio</i> 62.1-8-5 62.1-8-6 (79-80)	
B <i>Pseudoemiliana lacunosa</i> 62.1-8-6 62.1-8-CC (80-81)	T <i>Globoquadrina altispira globosa</i> 62.1-8-6 62.1-9-1 (80-82)	
	B <i>Globorotalia crassaformis oceanica</i> 62.1-8-6 62.1-9-1 (80-82)	
	B <i>Globorotalia cultrata exilis</i> 62.1-8-6 62.1-9-1 (80-82)	
	T <i>Globorotalia margaritae</i> 62.1-8-6 62.1-9-1 (80-82)	
	T <i>Sphaeroidinella dehiscens immatura</i> 62.1-8-6 62.1-9-1 (80-82)	
	B <i>Globigerina aff. quinqueloba</i> 62.1-9-1 62.1-9-2 (82-83)	
	T <i>Globorotalia tumida plesiotumida</i> 62.1-9-3 62.1-9-4 (85-86)	
	T <i>Sphaeroidinellopsis subdehiscens paenedehiscens</i> 62.1-9-3 62.1-9-4 (85-86)	

Radiolarian preservation inadequate

TABLE 1 - *Continued*

Calcareous Nannofossil Events		Foraminiferal Events		Radiolarian Events
T	<i>Reticulofenestra pseudoumbilica</i> 62.1-9-6 62.1-9-CC (86-90)	B	<i>Globigerinoides ruber</i> 62.1-9-4 62.1-10-1 (86-93)	
B	<i>Scyphosphaera spp.</i> 62.1-9-CC 62.1-10-1 (90-93)	B	<i>Globorotalia crassaformis</i> 62.1-9-4 62.1-10-1 (86-93)	
		T	<i>Globigerinoides adriaticus</i> 62.1-10-1 62.1-10-2 (93-94)	
		B	<i>Sphaerodinella dehiscens</i> 62.1-10-2 <i>dehiscens</i> 62.1-10-3 (94-96)	
		T	<i>Globorotalia hirsuta</i> 62.1-10-3 <i>prae</i> <i>hirsuta</i> 62.1-10-4 (96-97)	
		B	<i>Globorotalia planispira</i> 62.1-10-3 62.1-10-4 (96-97)	
		B	<i>Globorotalia pseudopumilio</i> 62.1-10-5 62.1-10-6 (99-100)	
		B	<i>Pulleniatina obliquiloculata</i> 62.1-10-5 <i>obliquiloculata</i> 62.1-10-6 (99-100)	
		T	<i>Pulleniatina praeulleniatina</i> 62.1-10-5 62.1-10-6 (99-100)	
		B	<i>Pulleniatina obliquiloculata</i> 62.1-10-6 <i>praecursor</i> 62.1-11-1 (100-102)	
B	<i>Discoaster asymmetricus</i> 62.1-11-1 62.1-11-2 (102-103)	T	<i>Globigerina conglomerata</i> 62.1-11-1 <i>venezuelana</i> 62.1-11-2 (102-103)	
		T	<i>Orbulina universa</i> 62.1-11-1 <i>bilobata</i> 62.1-11-2 (102-103)	
		T	<i>Sphaerodinellopsis seminulina</i> 62.1-11-1 <i>kochi</i> 62.1-11-2 (102-103)	
		T	<i>Pulleniatina spectabilis</i> 62.1-11-3 <i>praespectabilis</i> 62.1-11-4 (105-106)	
		T	<i>Pulleniatina spectabilis</i> 62.1-11-3 <i>spectabilis</i> 62.1-11-4 (105-106)	
		T	<i>Globigerina nepenthes</i> 62.1-11-4 <i>nepenthes</i> 62.1-11-5 (106-108)	
		B	<i>Globigerina pseudofoliata</i> 62.1-11-5 62.1-11-6 (108-109)	
		T	<i>Globorotalia acostaensis</i> 62.1-11-6 <i>tegillata</i> 62.1-12-1 (109-111)	
		B	<i>Pulleniatina spectabilis</i> 62.1-11-6 <i>spectabilis</i> 62.1-12-1 (109-111)	

Radiolarian preservation inadequate

TABLE 1 - *Continued*

Calcareous Nannofossil Events	Foraminiferal Events	Radiolarian Events
	T <i>Globorotalia merotumida</i> 62.1-12-1 62.1-12-2 (111-112)	
	B <i>Globigerinoides quadrilobatus</i> 62.1-12-2 <i>sacculifer</i> α 62.1-12-3 (112-114)	
	T <i>Hastigerina siphonifera involuta</i> 62.1-12-2 62.1-12-3 (112-114)	
	B <i>Globorotalia unguilata</i> 62.1-12-3 62.1-12-4 (114-115)	
	T <i>Globigerina nepenthes picassiana</i> 62.1-12-4 62.1-12-5 (115-117)	
	B <i>Globigerina microfoliata</i> 62.1-12-5 62.1-12-6 (117-118)	
	B <i>Globigerina rubescens</i> 62.1-12-6 62.1-13-1 (118-120)	
	B <i>Sphaeroidinella dehiscens immatura</i> 62.1-12-6 62.1-13-1 (118-120)	
	T <i>Globigerina nepenthes delicatula</i> 62.1-13-1 62.1-13-2 (120-121)	
	B <i>Globorotalia margaritae</i> 62.1-13-3 62.1-13-4 (123-124)	<i>Spongaster klingi</i> 62.1-14-S <i>S. pentas</i> 62.1-18-CC (136-174)
B <i>Ceratolithus rugosus</i> 62.1-13-4 62.1-13-5 (124-126)	B <i>Globorotalia pseudopachyderma</i> 62.1-13-4 62.1-13-5 (124-126)	<i>Ommatartus penultimus</i> 62.1-13-3 <i>O. avitus</i> 62.1-13-5 (123-126)
	B <i>Globorotalia incisa</i> 62.1-14-1 62.1-14-2 (130-131)	
	B <i>Globorotalia pseudopima</i> 62.1-14-4 62.1-14-5 (134-136)	
	T <i>Globorotalia cibaoensis</i> 62.1-15-1 62.1-15-2 (139-140)	
	B <i>Globorotalia aff. subscitula</i> 62.1-15-1 62.1-15-2 (139-140)	
	B <i>Globigerina conglomerata</i> 62.1-15-2 62.1-15-3 conglomerata (140-142)	
	B <i>Globorotalia tumida</i> 62.1-15-4 flexuosa (143-145)	
	B <i>Globorotalia tumida</i> 62.1-15-4 62.1-15-5 tumida (143-145)	
T <i>Discoaster quinqueramus</i> 62.1-15-5 62.1-16-1 (145-146)	B <i>Globigerina falconensis</i> 62.1-15-5 <i>palpebra</i> 62.1-15-6 (145-146)	

TABLE 1 - *Continued*

Calcareous Nannofossil Events		Foraminiferal Events	Radiolarian Events	
B <i>Reticulofenestra pseudoumbilica</i>	62.1-16-4 62.1-16-5 (152-154)			
			T <i>Solenosphaera omnitubus</i>	62.1-16-5 62.1-17-2 (154-158)
		B <i>Sphaeroidinellopsis subdehiscens paenedehiscens</i>	62.1-18-2 62.1-18-3 (167-169)	
		T <i>Globigerina bulbosa</i>	62.1-18-3 62.1-18-4 (169-170)	
		B <i>Pulleniatina spectabilis praespectabilis</i>	62.1-18-3 62.1-18-4 (169-170)	T <i>Acrobotrys tritubus</i> 62.1-18-2 62.1-18-5 (167-172)
		B <i>Globorotalia acostaensis humerosa</i>	62.1-18-6 62.1-19-1 (173-175)	
		T <i>Globorotalia pertenuis</i>	62.1-18-6 62.1-19-1 (173-175)	
		B <i>Pulleniatina primalis</i>	62.1-20-2 62.1-20-3 (188-190)	T <i>Artostrobium doliolum</i> 62.1-20-2 62.1-22-2 (188-209)
		B <i>Globorotalia anfracta</i>	62.1-20-4 62.1-20-5 (191-193)	T <i>Phormostichoartus corona</i> 62.1-18-5 62.1-22-2 (172-209)
		B <i>Globorotalia pertenuis</i>	62.1-20-6 62.1-21-1 (194-196)	B <i>Spirocyrta scalaris</i> ?
T <i>Discoaster calcaris</i>	62.1-21-5 62.1-21-6 (202-203)	B <i>Candeina nitida nitida</i>	62.1-21-5 62.1-21-6 (202-203)	<i>Stichocorys delmontensis</i> 62.1-21-5 <i>S. peregrina</i> 62.1-21-CC (202-204)
		T <i>Globorotalia aff. continuosa</i>	62.1-22-1 62.1-22-2 (208-209)	
		B <i>Globorotalia tumida plesiotumida</i>	62.1-22-2 62.1-22-3 (209-211)	
		B <i>Globorotalia aff. continuosa</i>	62.1-22-3 62.1-22-4 (211-212)	
		B <i>Pulleniatina praepulleniatina</i>	62.1-22-3 62.1-22-4 (211-212)	T <i>Calocyctetta</i> sp. ?
		T <i>Globorotalia continuosa</i>	62.1-22-5 62.1-22-6 (214-215)	
		T <i>Globorotalia clemenciae</i>	62.1-23-1 62.1-23-2 (217-218)	
		B <i>Globorotalia acostaensis acostaensis</i>	62.1-23-5 62.1-23-6 (223-224)	<i>Ommatartus antepenultimus</i> 62.1-23-CC → <i>O. penultimus</i> 62.1-24-2 (225-227)
				B <i>Solenosphaera omnitubus</i> 62.1-23-5 62.1-24-2 (223-227)

TABLE 1 - *Continued*

Calcareous Nannofossil Events		Foraminiferal Events	Radiolarian Events	
T <i>Triquetrorhabdulus rugosus</i>	Within 62.1-25-5 (241)	B <i>Globigerinoides conglobatus</i> 62.1-24-4 62.1-24-5 (230-232)		
		B <i>Globorotalia cibaoensis</i> 62.1-24-6 62.1-25-1 (233-235)	T <i>Ommatartus hughesi</i> 62.1-24-5 62.1-24-CC (232-234)	
		T <i>Globorotalia aff. apertura</i> 62.1-25-1 62.1-25-2 (235-236)		
T <i>Discoaster quinqueramus</i>	62.1-27-5 62.1-28-2 (261-265)		<i>Cyclampterium brachythorax</i> 62.1-25-2 → <i>C. neatum</i> 62.1-26-2 (236-247)	
T <i>Discoaster adamanteus</i>	62.1-28-3 62.1-28-4 (267-268)	B <i>Globorotalia hirsuta</i> 62.1-27-1 <i>praehirsuta</i> 62.1-27-2 (255-256)		
			B <i>Acrobotrys tritubus</i> 62.1-27-2 62.1-27-4 (256-259)	
		T <i>Globigerina aff. globorotaloidea</i> 62.1-28-2 62.1-28-3 (265-267)	T <i>Dictyocoryne ontogenensis</i> 62.1-27-4 62.1-28-2 (259-265)	
B <i>Discoaster surculus</i>	Within 62.1-28-5 (270)			
T <i>Coccolithus tenuistriatus</i>	62.1-29-2 62.1-29-3 (273-275)		B <i>Spongaster klingi</i> 62.1-28-5 62.1-29-5 (270-278)	
B <i>Candeina nitida</i>	Within 62.1-30-1 62.1-30-2 (282-283)	T <i>Globoquadrina altispira</i> 62.1-29-3 <i>comica</i> 62.1-29-4 (275-276)		
		B <i>Globigerina calida</i> 62.1-29-4 <i>praecalida</i> 62.1-29-5 (276-278)		
		B <i>Orbulina universa</i> 62.1-29-4 <i>parkerae</i> 62.1-29-5 (276-278)		
		B <i>Globorotalia acostaensis</i> 62.1-29-5 <i>tegillata</i> 62.1-29-6 (278-279)		
		T <i>Globorotalia lenguaensis</i> 62.1-29-5 62.1-29-6 (278-279)		
		B <i>Candeina nitida</i> 62.1-30-1 <i>praenitida</i> 62.1-30-2 (282-283)	<i>Cannartus petterssoni</i> 62.1-29-CC → <i>Ommatartus hughesi</i> 62.1-30-2 (280-283)	
		B <i>Globigerina nepenthes</i> 62.1-30-3 <i>delicatula</i> 62.1-30-4 (285-286)	T <i>Liriospyris elevata</i> 62.1-30-2 62.1-30-5 (283-288)	
		B <i>Globigerina bulloides</i> 62.1-30-4 62.1-30-5 (286-288)	B <i>Carpocanarium spp.</i> 62.1-32-2 62.0-3-6 (303-307)	

TABLE 1 – *Continued*

Calcareous Nannofossil Events		Foraminiferal Events		Radiolarian Events	
T	<i>Discoaster bollii</i> 62.1-30-5 62.1-30-CC (288-290)				
T	<i>Discoaster hamatus</i> 62.1-30-CC 62.1-31-1 (290-292)	B	<i>Globigerina aff. globorotaloidea</i> 62.1-30-6 62.1-31-1 (289-292)	B	<i>Dictyocoryne ontongensis</i> 62.1-30-5 62.1-31-2 (288-293)
T	<i>Catinaster calyculus</i> 62.1-31-2 62.1-31-3 (293-295)				
		B	<i>Globorotalia multicamerata</i> 62.1-31-3 62.1-31-4 (295-296)	<i>Cannartus laticonus</i> → <i>Ommatartus antepenultimus</i> 62.1-30-CC 62.1-31-5 (290-298)	
		B	<i>Globorotalia aff. apertura</i> 62.1-31-3 62.1-31-4 (295-296)		
		B	<i>Hastigerina siphonifera involuta</i> 62.1-31-4 62.1-31-5 (296-298)		
		T	<i>Globorotalia siakensis</i> 62.1-31-6 62.1-32-1 (299-302)		
T	<i>Discoaster aulakos</i> 62.1-32-1 62.1-32-2 (302-303)	B	<i>Globigerinoides obliquus extremus</i> 62.1-32-1 62.1-32-2 (302-303)		
T	<i>Catinaster coalitus</i> 62.1-32-3 62.1-32-4 (305-306)				
B	<i>Discoaster pentaradiatus</i> Within 62.1-32-5 (308)	B	<i>Globoquadrina altispira comica</i> 62.1-32-4 62.1-32-5 (306-308)		
T	<i>Discoaster pseudovariabilis</i> Within 62.1-32-5 (308)				
B	<i>Discoaster bollii</i> 62.1-32-5 62.1-32-6 (308-309)	B	<i>Globigerina decoraperta</i> 62.1-32-5 62.1-32-6 (308-309)		
		B	<i>Globigerina decoraperta major</i> 62.1-32-5 62.1-32-6 (308-309)	<i>Lithopera neotera L. bacca</i> 62.1-32-2 62.1-34-3 (303-324)	
		B	<i>Globigerina nepenthes nepenthes</i> 62.1-32-5 62.1-32-6 (308-309)	T	<i>Carpocanopsis cristatum</i> 62.1-31-5 62.1-33-2 (298-312)
		T	<i>Globorotalia riedeli</i> 62.1-32-5 62.1-32-6 (308-309)	T	<i>Lithopera thornburgi</i> 62.1-35-2 62.1-35-5 (329-334)
		T	<i>Globigerina druryi</i> 62.1-32-6 62.1-33-2 (309-312)	T	<i>Lithopera baueri</i> 62.1-32-5 62.1-33-2 (308-312)
T	<i>Discoaster kugleri</i> 62.1-33-2 62.1-33-3 (312-314)				
B	<i>Discoaster calcaris</i> Within 62.1-33-3 (314)	B	<i>Discoaster hamatus</i>		
B	<i>Catinaster calyculus</i> 62.1-33-3 62.1-33-CC (314-319)	B	<i>Globigerinoides adriaticus</i> 62.1-33-3 62.1-34-1 (314-321)		

TABLE 1 – *Continued*

Calcareous Nannofossil Events		Foraminiferal Events		Radiolarian Events	
B	<i>Catinaster coalitus</i> 62.1-33-3 62.1-33-CC (314-319)	B	<i>Globorotalia merotumida</i> 62.1-33-3 62.1-34-1 (314-321)	<i>Cyclampterium tanythorax</i> 62.1-33-2 <i>C. brachythorax</i> 62.1-34-3 (312-324)	
T	<i>Discoaster exilis</i> 62.1-33-CC 62.1-34-1 (319-321)			T	<i>Stichocorys armata</i> ?
		T	<i>Globorotalia praemenardii</i> <i>praemenardii</i> 62.1-34-2 62.1-34-3 (322-324)	T	<i>Dorcadospyris alata</i> 62.1-33-CC 62.1-34-3 (319-324)
		B	<i>Globorotalia cultrata</i> <i>menardii</i> 62.1-34-4 62.1-34-5 (325-327)		
		T	<i>Globigerinita parvula</i> 62.1-34-5 62.1-34-6 (327-328)	T	<i>Cyrtocapsella cornuta</i> 62.1-34-5 62.1-34-CC (327-328)
		T	<i>Globigerina praebulloides</i> <i>praebulloides</i> 62.1-34-6 62.1-35-1 (328)		
B	<i>Discoaster challengerii</i> 62.1-34-6 62.1-34-CC (328)	T	<i>Globigerinoides subquadratus</i> 62.1-34-6 62.1-35-1 (328)		
T	<i>Discoaster trinidadensis</i> 62.1-34-CC 62.1-35-1 (328)	B	<i>Globorotalia cultrata</i> <i>cultrata</i> 62.1-34-6 62.1-35-1 (328)		
		T	<i>Globorotalia mayeri</i> 62.1-34-6 62.1-35-1 (328)		
		B	<i>Globigerina nepenthes</i> <i>picassiana</i> 62.1-35-1 62.1-35-2 (328-329)		
		T	<i>Globorotalia aff.</i> <i>peripheroacuta</i> 62.1-35-1 62.1-35-2 (328-329)		
B	<i>Discoaster extensus</i> 62.1-35-2 62.1-35-3 (329-331)	B	<i>Globorotalia cultrata</i> <i>limbata</i> 62.1-35-2 62.1-35-3 (329-331)		
		T	<i>Globorotalia minima</i> 62.1-35-2 62.1-35-3 (329-331)		
		T	<i>Globigerina nepenthoides</i> 62.1-35-4 62.1-35-5 (332-334)		
		T	<i>Globorotalia fohsi</i> 62.1-35-4 62.1-35-5 (332-334)		
B	<i>Discoaster kugleri</i> 62.1-35-4 62.1-35-5 (332-334)	T	<i>Globorotalia praemenardii</i> <i>archaeomenardii</i> 62.1-35-4 62.1-35-5 (332-334)		
		B	<i>Hastigerinella digitata</i> <i>praeditata</i> 62.1-35-5 62.1-35-6 (334-335)		
B	<i>Discoaster pseudovariabilis</i> 62.1-35-5 62.1-35-6 (334-335)	B	<i>Globigerinita glutinata</i> <i>parkerae</i> 62.1-35-5 62.1-35-6 (334-335)		
		T	<i>Hastigerina siphonifera</i> <i>praesiphonifera</i> 62.1-35-6 62.1-36-1 (335-337)		

TABLE 1 – *Continued*

Calcareous Nannofossil Events		Foraminiferal Events		Radiolarian Events	
		B <i>Hastigerina siphonifera</i>	62.1-35-6 62.1-36-1 (335-337)		
		B <i>Orbulina universa bilobata</i>	62.1-35-6 62.1-36-1 (335-337)		
		B <i>Globigerina bulbosa</i>	62.1-36-3 62.1-36-4 (340-341)		
		T <i>Globorotalia foehsi lobata</i>	62.1-36-3 62.1-36-4 (340-341)		
T <i>Discoaster nephados</i>	62.1-36-CC 62.1-37-2 (344-346)	B <i>Globorotalia lenguaensis</i>	62.1-36-5 62.1-37-1 (343-345)		
		B <i>Globorotalia praemenardii</i>	62.1-37-2 62.1-38-1 (346-351)	T <i>Stichocorys wolffii</i>	62.1-37-2 62.0-4-1 (346-396)
				B <i>Artostrobium doliolum</i>	62.1-37-CC 62.0-4-3 (350-399)
				B <i>Cannartus petterssoni</i>	62.1-35-2 62.1-35-5 (329-334)
				T <i>Carpocanopsis bramlettei</i>	62.1-35-5 62.1-36-4 (334-341)
				B <i>Liriospyris elevata</i>	62.1-37-2 62.1-37-CC (346-350)
				<i>Lithopera renzae</i> → <i>L. neotera</i>	62.1-37-2 62.1-37-CC (346-350)
B <i>Coccolithus tenuistriatus</i>	62.1-38-1 62.1-38-2 (351-352)				
		T <i>Globorotalia minutissima</i>	62.1-38-4 62.1-39-1 (355-359)	<i>Cannartus mammiferus</i> → <i>C. laticonus</i>	62.1-38-CC 62.0-4-1 (358-396)
		B <i>Globorotalia riedeli</i>	62.1-38-4 62.1-39-1 (355-359)	T <i>Cyrtocapsella tetrapera</i>	62.1-37-CC 62.0-4-CC (350-404)
				B <i>Lithopera thornburgi</i>	62.1-36-CC 62.1-37-2 (344-346)
				B <i>Lithopera baueri</i>	62.1-35-2 62.1-35-5 (329-334)
B <i>Triquetrorhabdulus rugosus</i>	62.1-39-1 62.1-39-2 (359-360)				
T <i>Sphenolithus heteromorphus</i>	62.1-39-3 62.1-39-CC (362-364)	T <i>Cassigerinella chipolensis</i>	62.1-39-4 64.1-1-1 (363-434)		

TABLE 1 - *Continued*

Calcareous Nannofossil Events	Foraminiferal Events	Radiolarian Events
	T <i>Globigerina multiloba</i> 62.1-39-4 64.1-1-1 (363-434)	T <i>Liriospyris parkerae</i> ?
	T <i>Globigerina praebulloides leroyi</i> 62.1-39-4 64.1-1-1 (363-434)	B <i>Siphocampe corbula</i> ?
	T <i>Globigerina aff. quadrilatera</i> 62.1-39-4 64.1-1-1 (363-434)	<i>Cyclampterium leptetrum</i> 62.1-37-CC → <i>C. tanythorax</i> 62.0-4-1 (350-396)
	T <i>Globigerinatella insueta</i> 62.1-39-4 64.1-1-1 (363-434)	T <i>Calocycletta virginis</i> 62.1-37-CC 62.0-4-1 (350-396)
	T <i>Globorotalia obesa</i> 62.1-39-4 64.1-1-1 (363-434)	T <i>Psychospyris grandis</i> ?
	T <i>Globorotalia peripheroronda</i> 62.1-39-4 64.1-1-1 (363-434)	T <i>Calocycletta costata</i> 62.1-37-CC 62.0-4-1 (350-396)
	T <i>Globorotalia aff. riedeli</i> 62.1-39-4 64.1-1-1 (363-434)	T <i>Dorcadospyris dentata</i> 62.1-37-CC 62.0-4-1 (350-396)
	T <i>Globigerina ciperoensis</i> 64.1-1-1 <i>antustiumbilicata</i> 64.1-1-2 (454-435)	
	T <i>Globigerina foliata</i> 64.1-1-1 64.1-1-2 (434-435)	
	T <i>Globigerinita dissimilis</i> 64.1-1-1 64.1-1-2 (434-435)	
	T <i>Globigerinoides altiaperturus</i> 64.1-1-1 64.1-1-2 (434-435)	
	T <i>Globigerinoides quadrilobatus</i> 64.1-1-1 <i>praeimmaturus</i> 64.1-1-2 (434-435)	
	T <i>Globigerinoides sicanus</i> 64.1-1-1 64.1-1-2 (434-435)	
	T <i>Globorotalia birnageae</i> 64.1-1-1 64.1-1-2 (434-435)	
	T <i>Globorotaloides variabilis</i> group 64.1-1-1 64.1-1-2 (434-435)	
	T <i>Praeorbulina glomerosa</i> 64.1-1-1 <i>curva</i> 64.1-1-2 (434-435)	
	T <i>Praeorbulina transitoria</i> 64.1-1-1 64.1-1-2 (434-435)	B <i>Dorcadospyris alata</i> 64.1-1-3 64.1-1-4 (437-438)
	B <i>Praeorbulina glomerosa</i> 64.1-1-2 <i>curva</i> 64.1-1-3 (435-437)	<i>Psychospyris intermedia</i> → <i>P. grandis</i> ?
	T <i>Globigerina pseudodruryi</i> 64.1-1-4 64.1-1-5 (438-440)	<i>Liriospyris stauropora</i> 64.1-1-4 → <i>L. parkerae</i> 64.1-1-5 (438-440)

TABLE 1 - *Continued*

Calcareous Nannofossil Events	Foraminiferal Events	Radiolarian Events
	T <i>Globigerinoides</i> <i>subquadratus</i> <i>subelongatus</i> (438-440)	<i>Cannartus violina</i> → <i>C. mammiferus</i> 64.1-1-3 64.1-1-5 (437-440)
		B <i>Lithopera</i> <i>renzae</i> 64.0-5-4 64.1-1-5 (414-434)
		T <i>Dorcadospyris</i> <i>forcipata</i> 64.1-1-3 64.1-1-4 (437-438)
		T <i>Carpocanopsis</i> <i>favosum</i> 64.1-1-3 64.1-1-5 (437-440)
	T <i>Globigerinita</i> <i>stainforthi</i> <i>stainforthi</i> (440-441)	
	B <i>Praeorbulina</i> <i>transitoria</i> 64.1-1-5 64.1-1-6 (440-441)	
	B <i>Globorotalia</i> <i>praemenardii</i> <i>archaeomenardii</i> 64.1-1-6 64.1-2-1 (441-443)	
	T <i>Globorotalia</i> <i>scitula</i> <i>praescitula</i> 64.1-1-6 64.1-2-1 (441-443)	
	T <i>Globorotalia</i> <i>peripheroronda</i> <i>forma</i> α 64.1-2-2 64.1-2-3 (444-446)	
B <i>Discoaster</i> <i>exilis</i> 64.1-2-6 64.1-3-1 (450-452)	T <i>Globigerinita</i> <i>unicava</i> <i>unicava</i> 64.1-2-6 64.1-3-1 (450-452)	
	B <i>Globigerinoides</i> <i>sicanus</i> 64.1-3-1 64.1-3-2 (452-453)	
	B <i>Globigerina</i> <i>falconensis</i> <i>falconensis</i> 64.1-3-2 64.1-3-3 (453-455)	T <i>Cannartus</i> <i>prismaticus</i> 64.1-3-1 64.1-3-3 (452-455)
	B <i>Globorotalia</i> <i>continuosa</i> 64.1-3-2 64.1-3-3 (453-455)	
	B <i>Globorotalia</i> <i>scitula</i> <i>praescitula</i> 64.1-3-2 64.1-3-3 (453-455)	
	B <i>Hastigerina</i> <i>siphonifera</i> <i>praesiphonifera</i> 64.1-3-3 64.1-3-4 (455-456)	
		T <i>Stichocorys</i> <i>diploconus</i> 64.1-3-CC 64.1-4-1 (460-462)
		B <i>Phormostichoartus</i> <i>corona</i> 64.1-3-CC 64.1-4-1 (460-462)
	B <i>Globorotalia</i> <i>minima</i> 64.1-4-2 64.1-4-3 (463-465)	
	B <i>Globorotalia</i> <i>scitula</i> group 64.1-4-2 64.1-4-3 (463-465)	T <i>Carpocanopsis</i> <i>cingulatum</i> 64.1-3-3 64.1-4-3 (455-465)

TABLE 1 – *Continued*

Calcareous Nannofossil Events	Foraminiferal Events	Radiolarian Events	
	B <i>Globigerinoides subquadratus</i> 64.1-4-6 64.1-5-1 <i>subelongatus</i> (469-471)	B <i>Carpocanopsis cristatum</i> 64.1-4-3 64.1-5-1 (465-471)	
	B <i>Globigerinoides bollii</i> 64.1-5-2 64.1-5-3 (472-474)		
	B <i>Globigerina hexagona</i> 64.1-5-3 64.1-5-4 (474-475)		
	B <i>Globigerinoides quadrilobatus</i> 64.1-5-5 <i>sacculifer typica</i> 64.1-5-6 (477-478)		
	B <i>Globorotalia peripheroronda</i> 64.1-5-5 64.1-5-6 (477-478)		
	B <i>Globigerina nepenthoides</i> 64.1-5-6 64.1-6-1 (478-566)		
	B <i>Globigerina pseudodruryi</i> 64.1-5-6 64.1-6-1 (478-566)	B <i>Calocyctella costata</i> 64.1-5-CC 64.0-6-1 (479-506)	
	T <i>Globigerina sellii</i> 64.1-5-6 64.1-6-1 (478-566)		
	T <i>Globigerina tripartita</i> 64.1-5-6 64.1-6-1 (478-566)	T <i>Lychnocanium bipes</i> 64.1-5-1 64.1-5-3 (471-474)	
	B <i>Globigerinatella insueta</i> 64.1-5-6 64.1-6-1 (478-566)		
	B <i>Globigerinoides quadrilobatus praematurus</i> 64.1-5-6 64.1-6-1 (478-566)	B <i>Stichocorys diploconus</i> 64.1-4-CC 64.1-5-1 (470-471)	
T <i>Sphenolithus belemnos</i> 64.1-5-1 64.0-6-1 (471-506)	T <i>Globigerinoides quadrilobatus primordius</i> 64.1-5-6 64.1-6-1 (478-566)		
	B <i>Globigerinoides quadrilobatus quadrilobatus</i> 64.1-5-6 64.1-6-1 (478-566)	B <i>Dorcadospyris dentata</i> 64.1-5-CC 64.0-6-1 (479-506)	
T <i>Triquetrorhabdulus carinatus</i> 64.1-5-1 64.0-6-1 (471-506)	B <i>Globigerinoides quadrilobatus trilobus</i> 64.1-5-6 64.1-6-1 (478-566)		
	B <i>Globoquadrina altispira</i> 64.1-5-6 64.1-6-1 <i>altispira</i> (478-566)	<i>Cannartus tubarius</i> 64.1-5-1 → <i>C. violina</i> 64.1-5-CC (471-479)	
	B <i>Globoquadrina altispira globosa</i> 64.1-5-6 64.1-6-1 <i>globosa</i> (478-566)	T <i>Thecocorys spongoconum</i> 64.0-6-1 64.0-6-4 (506-510)	
	B <i>Globoquadrina altispira occlusa</i> 64.1-5-6 64.1-6-1 <i>occlusa</i> (478-566)	B <i>Liriospyris staupora</i> 64.1-5-CC 64.0-6-1 (479-506)	
T <i>Discoaster saundersi</i> 64.0-6-5 64.0-6-6 (512-513)	B <i>Globorotalia clemenciae</i> 64.1-5-6 64.1-6-1 (478-566)	T <i>Botryopyle</i> sp. A 64.1-5-3 64.0-6-1 (474-506)	
	T <i>Globorotalia kugleri</i> 64.1-5-6 64.1-6-1 (478-566)	B <i>Stichocorys wolffii</i> 64.0-6-CC 64.1-6-1 (514-566)	

TABLE 1 – *Continued*

Calcareous Nannofossil Events		Foraminiferal Events		Radiolarian Events	
		T <i>Globorotalia mendacis</i>	64.1-5-6 64.1-6-1 (478-566)	Cyclampterium <i>pegetrum</i> → <i>C. leptetrum</i>	64.0-6-CC 64.1-6-1 (514-566)
		B <i>Globorotalia peripheroronda forma α</i>	64.1-5-6 64.1-6-1 (478-566)	B <i>Carpocanopsis bramlettei</i>	64.1-6-3 64.0-7-1 (569-611)
B <i>Discoaster aulakos</i>	64.0-6-6 64.1-6-1 (513-566)	T <i>Globorotalia aff. stakensis</i>	64.1-5-6 64.1-6-1 (478-566)	B <i>Cannartus tubarius</i>	64.0-6-CC 64.1-6-1 (514-566)
		B <i>Globorotaloides variabilis group</i>	64.1-5-6 64.1-6-1 (478-566)	B <i>Stichocorys armata</i>	64.0-6-1 64.1-6-1 (506-566)
		B <i>Globigerina foliata</i>	64.1-6-1 64.1-6-2 (566-567)		
		B <i>Globigerina aff. quadrilatera</i>	64.1-6-2 64.1-6-3 (567-569)		
		B <i>Globigerinoides sicanus praesicanus</i>	64.1-6-2 64.1-6-3 (567-569)		
		B <i>Globorotalia birnageae</i>	64.1-5-2 64.1-6-3 (567-569)		
		T <i>Globigerina ciperoensis angulisuturalis</i>	64.1-6-3 64.1-6-4 (569-570)		
		B <i>Globigerinoides quadrilobatus immaturus</i>	64.1-6-3 64.1-6-4 (569-570)		
		B <i>Globigerinoides subquadratus subquadratus</i>	64.1-6-3 64.1-6-4 (569-570)		
B <i>Sphenolithus heteromorphus</i>	64.1-6-4 64.0-7-1 (570-611)	B <i>Globigerina conglobata venezuelana</i>	64.1-6-4 64.1-7-2 (570-663)	T <i>Theocyrtis annosa</i>	64.1-6-3 64.0-7-1 (569-611)
		B <i>Globigerina praebulloides leroyi</i>	64.1-6-4 64.1-7-2 (570-663)		
		B <i>Globigerina praebulloides praebulloides</i>	64.1-6-4 64.1-7-2 (570-663)		
B <i>Discoaster</i>	64.0-7-3	B <i>Globigerina prasaepis</i>	64.1-6-4 64.1-7-2 (570-663)	B <i>Stichocorys delmontensis</i>	64.1-6-CC 64.0-7-1 (574-611)
B <i>Discoaster trinidadensis</i>	64.0-7-3 64.0-7-4 (614-615)	T <i>Globigerinita pera group</i>	64.1-6-4 64.1-7-2 (570-663)	T <i>Dorcadospyris ateuchus</i>	64.0-7-CC 64.1-7-1 (619-662)
		B <i>Globigerinita stainforthi stainforthi</i>	64.1-6-4 64.1-7-2 (570-663)	B <i>Carpocanopsis favosum</i>	64.0-7-3 64.1-7-3 (614-665)
		B <i>Globigerinoides altiaperturus</i>	64.1-6-4 64.1-7-2 (570-663)	B <i>Botryocyrtis spp.</i>	64.1-6-1 64.1-6-3 (566-569)
		B <i>Globigerinoides obliquus obliquus</i>	64.1-6-4 64.1-7-2 (570-663)	T <i>Dorcadospyris papilio</i>	64.0-7-CC 64.1-7-1 (619-662)
		B <i>Globigerinoides obliquus obliquus</i>	64.1-6-4 64.1-7-2 (570-663)	B <i>Cyrtocapsella cornuta</i>	64.0-7-CC 64.1-7-1 (619-662)

TABLE 1 – *Continued*

Calcareous Nannofossil Events	Foraminiferal Events	Radilarian Events
	B <i>Globigerinoides quadrilobatus primordius</i> 64.1-6-4 64.1-7-2 (570-663)	B <i>Calocyctella virginis</i> 64.0-7-CC 64.1-7-1 (619-662)
	B <i>Globoquadrina dehiscens</i> group 64.1-6-4 64.1-7-2 (570-663)	<i>Psychospyris parva</i> → <i>P. intermedia</i> ?
	B <i>Glororotalia obesa</i> 64.1-6-4 64.1-7-2 (570-663)	B <i>Cyrtocapsella tetrapera</i> 64.0-7-CC 64.1-7-1 (619-662)
	T <i>Glororotalia pseudokugleri</i> 64.1-6-4 64.1-7-2 (570-663)	
	B <i>Globigerina tripartita</i> 64.1-7-2 64.1-7-3 (663-665)	
	B <i>Globigerinita glutinata glutinata</i> 64.1-7-2 64.1-7-3 (663-665)	
	B <i>Globigerinita glutinata juvenilis</i> 64.1-7-2 64.1-7-3 (663-665)	
	T <i>Glororotalia gemma</i> 64.1-7-2 64.1-7-3 (663-665)	
	B <i>Glororotalia kugleri</i> 64.1-7-2 64.1-7-3 (663-665)	
	B <i>Glororotalia mendacis</i> 64.1-7-2 64.1-7-3 (663-665)	
	B <i>Glororotalia aff. riedel</i> 64.1-7-2 64.1-7-3 (663-665)	
	B <i>Globigerina sellii</i> 64.1-7-3 64.1-7-4 (665-666)	
	B <i>Glororotalia minutissima</i> 64.1-7-3 64.1-7-4 (665-666)	B <i>Carpocanopsis cingulatum</i> 64.1-7-3 64.0-8-2 (665-707)
	T <i>Glororotalia opima nana</i> 64.1-7-3 64.1-7-4 (665-666)	T <i>Artophormis gracilis</i> 64.1-7-1 64.1-8-1 (662-747)
	T <i>Glororotalia opima opima</i> 64.1-7-3 64.1-7-4 (665-666)	B <i>Psychospyris parva</i> ?
	T <i>Globigerina pseudovenezuelana</i> 64.1-7-4 64.1-8-1 (667-747)	T <i>Centrobotrys</i> sp. A 64.0-7-1 64.0-7-3 (611-614)
T <i>Sphenolithus distentus</i> 64.1-7-4 64.0-8-1 (666-706)	B <i>Globigerinita uvula</i> 64.1-7-4 64.1-8-1 (666-747)	T <i>Lychnocanium trifolium</i> 64.1-7-CC 64.0-8-1 (670-706)
B <i>Sphenolithus belemnos</i> 64.1-7-4 64.0-8-1 (666-706)	T <i>Globigerinita unicava primitiva</i> 64.1-7-4 64.1-8-1 (666-747)	T <i>Lithocyclia angustum</i> 64.1-7-CC 64.0-8-1 (670-706)
T <i>Sphenolithus predistentus</i> 64.0-8-1 64.0-8-2 (706-707)	B <i>Glororotalia pseudokugleri</i> 64.1-7-4 64.1-8-1 (666-747)	B <i>Lychnocanium bipes</i> 64.1-7-CC 64.0-8-1 (670-706)

TABLE 1 – *Continued*

Calcareous Nannoplankton Events		Foraminiferal Events		Radiolarian Events	
T	<i>Coccolithus eopelagicus</i> 64.0-8-3 64.1-8-1 (709-747)	B	<i>Turborotalita humilis</i> group 64.1-7-4 64.1-8-1 (666-747)	B	<i>Lychnocanium trifolium</i> 64.0-8-CC 64.1-8-1 (714-747)
T	<i>Discoaster lidzi</i> 64.0-8-3 64.1-8-1 (709-747)			B	<i>Botryopyle</i> sp. A 64.0-8-2 64.1-8-1 (707-747)
B	<i>Discoaster nephados</i> 64.0-8-3 64.1-8-1 (709-747)				<i>Cyclampterium milowi</i> → <i>C. pegetrum</i> 64.1-8-1 64.1-8-2
B	<i>Triquetrorhabdulus carinatus</i> 64.0-8-2 64.1-8-1 (709-747)			B	<i>Dorcadospyris papilio</i> 64.0-8-CC 64.1-8-1 (714-747)

TABLE 2
Relationship of Neogene Microfossil Zonations Observed at Sites 62 through 64

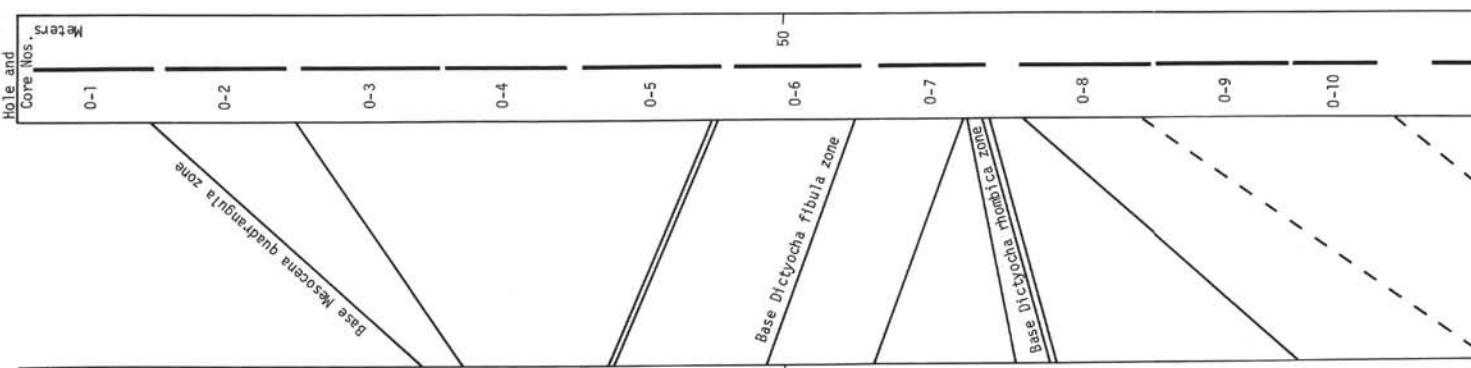
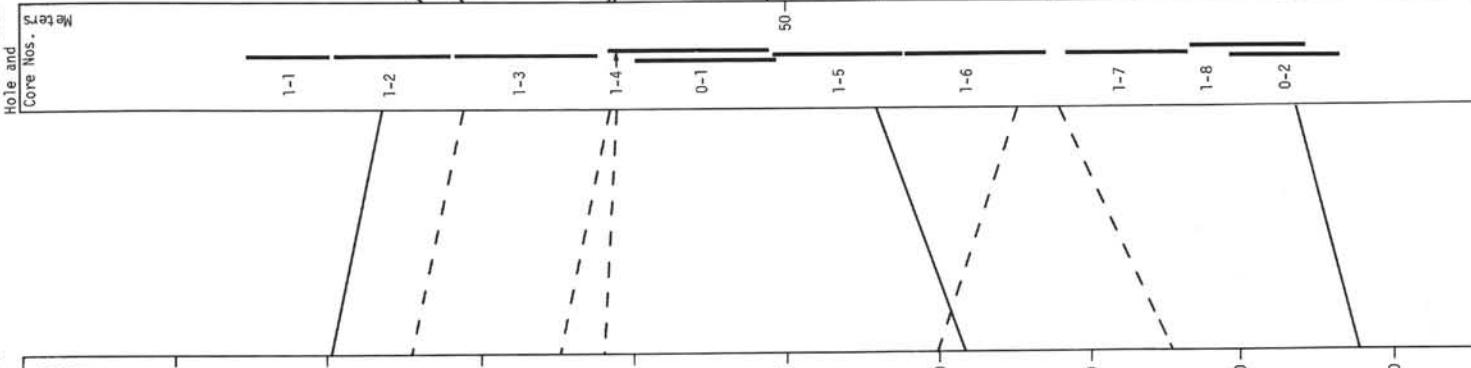
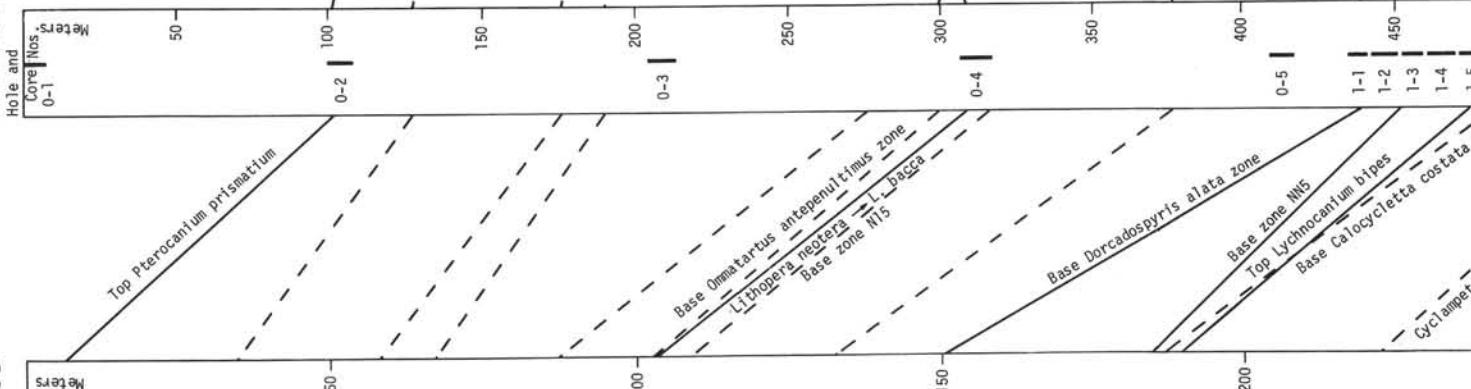
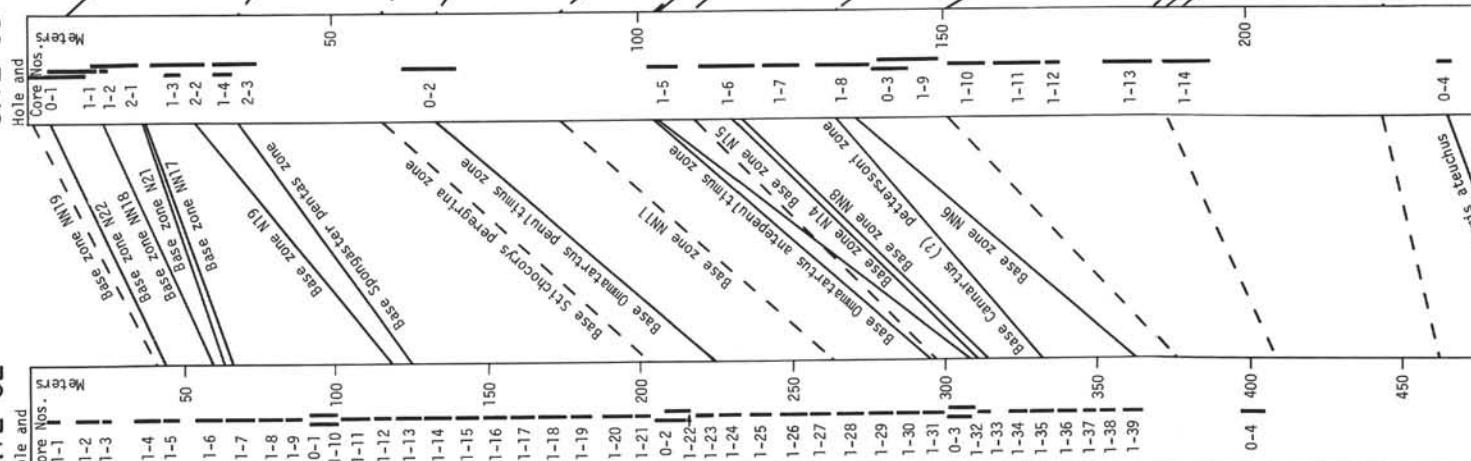
Calcareous Nannofossil Zones	Foraminiferal Zones	Radiolarian Zones	Epoch
NN21	N23		
NN20			
NN19	N22		
NN18	N21		
NN17		Quaternary to <i>Spongaster pentas</i> Zone	
NN16			
NN13-NN15	N19+N20		
NN12	N18		
NN11	N17	<i>Stichocorys peregrina</i>	
NN10	N16	<i>Ommatartus penultimus</i>	
	N15	<i>Ommatartus antepenultimus</i>	
		↓	Miocene
			Late
			Pliocene
			Quaternary

TABLE 2 – *Continued*

Calcareous Nannofossil Zones	Foraminiferal Zones	Radiolarian Zones	Epoch
NN9	N15		
NN8	N14	<i>Cannartus (?) petterssoni</i>	
NN7			
NN6	N13-N9		
NN5		<i>Dorcadospyris alata</i>	Middle
NN4	N7 + N8		
NN3 + NN2	N6	<i>Calocycletta costata</i>	Miocene
			Early
	N5-N3	<i>Calocycletta virginis</i>	
	↓	↓	

TABLE 2 – *Continued*

Calcareous Nannofossil Zones		Foraminiferal Zones		Radiolarian Zones	Epoch
NN1		N5-N3		<p><i>Calocyctetta virginis</i></p> <p><i>Lychnocanium bipes</i></p>	Oligocene

SITE 65**SITE 66****SITE 64****SITE 63****SITE 62**

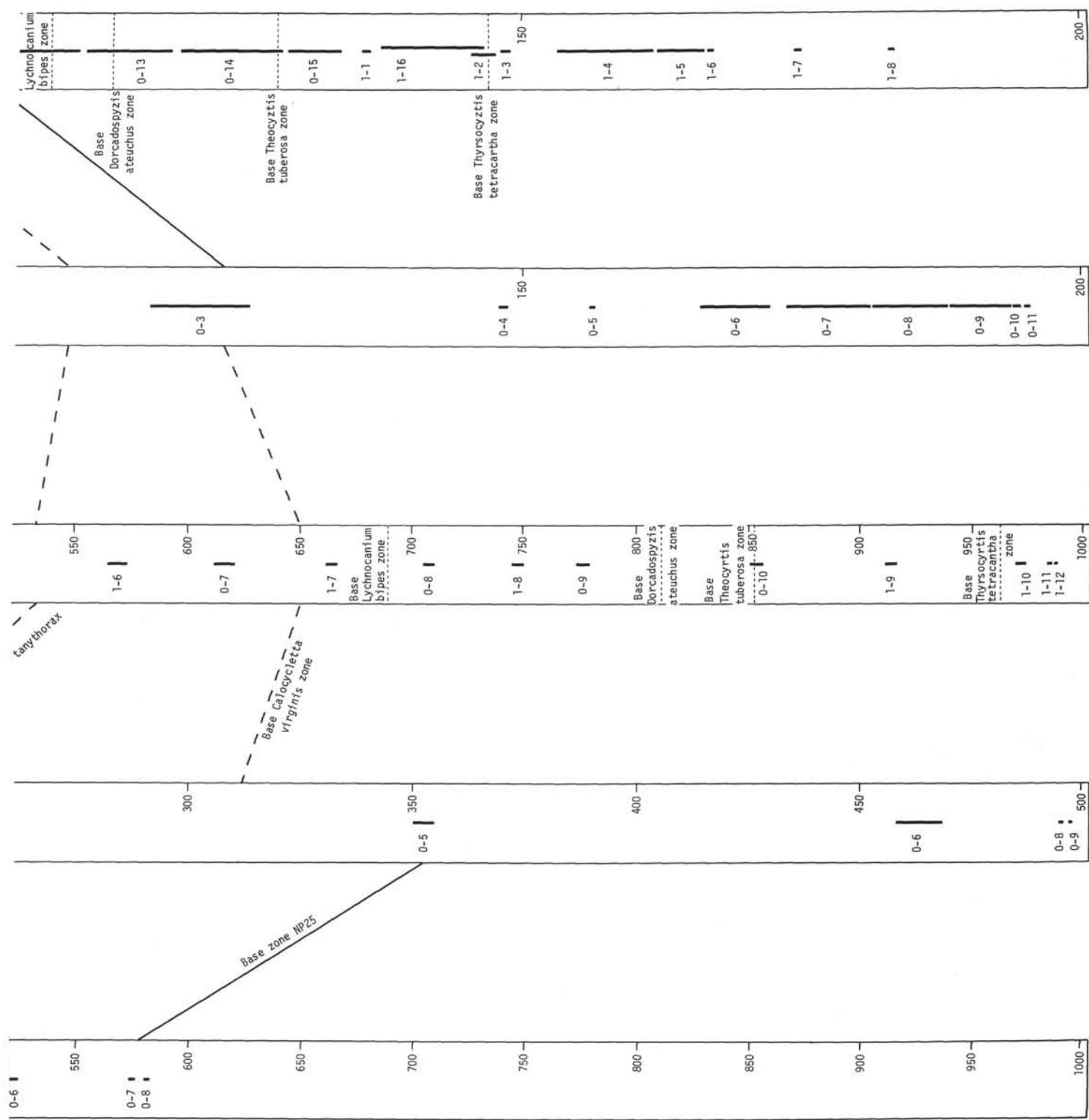


Figure 1. Simplified correlation-diagram of the sequences at Sites 62-66.