

31. DEEP SEA DRILLING PROJECT, LEG 6 FORAMINIFERA FROM SELECTED SAMPLES

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BIOSTRATIGRAPHIC SUMMARY OF AVAILABLE SAMPLES

Hole 44.0 (lat. 19° 18.52'N, long. 169° 00.95'W)

Core	Depth Below Sea Bed meters	Age Determination
1	39.9 to 49.1	Section 4: Zone P.19/20; Oligocene.
2	49.1 to 58.2	Section 1: earliest Zone P.18 or latest Zone P.17; near Oligocene/Eocene boundary
3	58.2 to 62.8	Section 3: within interval Zone P.16 ; Late Eocene.
4	66.1 to 74.7	Section 3: Zone P.14; near Late/Middle Eocene boundary.

Hole 47.0 (lat. 32° 27'N, long. 157° 43'E)

Core	Depth Below Sea Bed meters	Age Determination
1	0.0 to 9.1	Sections 1, 2, 3, 4, 5 and 6: Zone N.22; Pleistocene.

Note: In the work recorded here for samples from Leg 6, only the most important and biostratigraphically significant components of the faunas have been noted. No attempt has been made to give an exhaustive faunal analysis of the samples seen. The zonal determinations given for Zones P.13 to N.23 follow largely the definitions given by Blow (1969). It should be noted that the "P" nomenclature for zones prior to Zone P.13, *i.e.*, Zones P.1 to P.12 inclusive do NOT follow the system published by Berggren recently in the scheme he attributed to "Blow and Berggren unpublished." In the scheme followed in this work (and which will be published by the writer alone) the relationship of the zones to epochs is shown opposite.

It should also be noted, that in a recent publication (Blow, 1970) the writer, has combined the old Zones P.19 and P.20 (=N.1) into a new single zone, *i.e.*, Zone P.19/20 which covers, approximately, the middle part of the Oligocene.

As in the writer's work for previous legs, this summary only gives the interpretation of the successions as based on the actual samples investigated. The work does not include data reported by others on a more complete coverage of core samples from the various holes.

Zone P.15	Upper Eocene (part)
Zone P.14	
Zone P.13	
Zone P.12	
Zone P.11	Middle Eocene
Zone P.10	
Zone P.9	
Zone P.8	
Zone P.7	Lower Eocene
Zone P.6	
Zone P.5	
Zone P.4	
Zone P.3	
Zone P.2	
DANIAN s.s.	Paleocene
Zone P.1	
Interval Mω-Pα	Probably latest Cretaceous (see note in text)
M zones	Cretaceous

Hole 47.1 (lat 32° 27'N, long. 157° 43'E)

Core	Depth Below Sea Bed meters	Age Determination
1	96.0 to 105.2	Section 2: Heterogenous. Probably Zone P.2; Paleocene.

Hole 47.2 (lat. 32° 27'N, long. 157° 43'E)

Core	Depth Below Sea Bed meters	Age Determination
1	9.1 to 18.3	Sections 2, 3 and 4: Zone N.22; Pleistocene.
2	18.3 to 27.4	Sections 2, 3, 4, 5 and 6: Zone N.22 (lower part); Pleistocene.
3	27.4 to 36.6	Sections 2 and 3: Indeterminate. Section 4: within interval [Zone N.22 early part]; Zone N.19
4	36.6 to 45.7	Pliocene to earliest Pleistocene. Sections 1, 2, 3, 4 and 5: within interval [Zone N.21]; [Zone N.20]; Pliocene.
5	45.7 to 54.9	Sections 2, 3, 4, 5 and 6: Indeterminate.
6	54.9 to 64.0	Sections 2 and 3: Indeterminate.
7	64.0 to 73.2	Sections 2, 3, 4 and 5. Zone P.9; top Early Eocene.
8	73.2 to 82.3	Sections 1 and 2: Zone P.8; Early Eocene. Section 3: Zone P.7; Early Eocene.
9	82.3 to 91.4	Sections 4 and 5: Zone P.6; Latest Paleocene. Section 6: Zone P.5; Latest Paleocene.
10	91.4 to 100.6	Section 1: Zone P.5; Later Paleocene. Sections 2, 3 and 5: Zone P.4; Later Paleocene.
11	100.6 to 109.7	Sections 1 and 2: Zone P.3; Earlier Paleocene. Sections 3, 4, 5 and 6: Zone P.2; Earlier Paleocene.
12	109.7 to 118.9	Sections 1, 2 and 3: Zone P.1; basal Paleocene (Danian). Sections 4, 5 and 6: Faunal Interval Mω-Pα; Pre-Danian, latest Maestrichtian.
13	118.9 to 128.0	Section 2: Maestrichtian. Section 3: Maestrichtian.

Hole 48.2 (lat. 32° 24'N, long. 158° 01'E)

Core	Depth Below Sea Bed meters	Age Determination
1	50.9 to 60.0	Section 1: within interval [Zone N.21]; Pliocene. Section 2: Zone N.19; Pliocene. Section 3: Indeterminate. Section 4: Zone N.19; Pliocene. Section 5: Zone N.19; Pliocene with admixed Maestrichtian. Section 6: Maestrichtian with some Pliocene contamination.
2	60.0 to 69.2	Sections 2, 4, 5 and 6: mid-part Maestrichtian.
3	69.2 to 71.9	Sections 2 and 3: lower part Maestrichtian.

Hole 49.0 (lat. 32° 24'N, long. 156° 33'E)

Core	Depth Below Sea Bed meters	Age Determination
1	0.0 to 9.1	Sections 2, 3, 5 and 6: Indeterminate.
2	17.4 to 18.1	Section 1: Indeterminate.

Hole 49.1 (lat. 32° 24'N, long. 156° 33'E)

Core	Depth Below Sea Bed meters	Age Determination
1	5.2 to 11.6	Sections 1, 2 and 3: Indeterminate.

Hole 50.1 (lat. 32° 25'N, long. 156° 34'E)

Core	Depth Below Sea Bed meters	Age Determination
1	4.9 to 14.0	Sections 1, 2, 3, 4, 5 and 6: ?Pliocene/Pleistocene.
2	14.3 to 23.2	Sections 1, 2, 3, 4 and 5: Indeterminate.
3	23.2 to 32.3	Sections 2, 3, 4, 5 and 6: Indeterminate.

Hole 54.0 (lat. 15° 36.6'N, long. 140° 18.10'E)

Core	Depth Below Sea Bed meters	Age Determination
1	83.2 to 92.4	Section 3: Indeterminate.
2	137.8 to 146.9	Sections 1, 2, 3 and 4: Indeterminate.
4	203.9 to 213.1	Section 2: Indeterminate.

Hole 55.0 (lat. 9° 18.1'N, long. 142° 32.9'E)

Core	Depth Below Sea Bed meters	Age Determination
1	0.0 to 9.1	Sections 1 and 2: Zone N.23; Holocene. Sections 3, 4, 5 and 6: Zone N.22; Pleistocene.
2	9.1 to 18.3	Sections 1, 2 and 3: lower Zone N.22 or Zone N.21; earliest Pleistocene or late Pliocene. Sections 4, 5 and 6: Zone N.21; probably Late Pliocene.
3	18.3 to 27.4	Sections 1 and 3: Zone N.21; Late Pliocene. Sections 4 and 5: Zone N.16; Tortonian, Late Miocene.
4	27.4 to 36.6	Section 1: Zone N.16; Tortonian, Late Miocene. Sections 3 and 5: Zone N.15; basal Late Miocene or topmost Middle Miocene.
5	36.6 to 45.7	Section 1: Zone N.15; probably topmost Middle Miocene.
6	45.7 to 54.9	Sections 2, 3, 4, 5 and 6: Indeterminate. Section 1: Zone N.14; Serravallian, Middle Miocene. Section 3: within interval [Zone N.14] [Zone N.13]; Serravallian, Middle Miocene.
7	54.9 to 64.0	Sections 1 and 3: Zone N.10; Langhian, Middle Miocene. Section 6: Zone N.9; Langhian, Middle Miocene.
8	64.0 to 73.2	Section 1: Zone N.9. Sections 3 and 5: within interval [Zone N.9] [Zone N.8]; Langhian, Middle Miocene.
10	82.3 to 91.4	Sections 2, 3, 4 and 5: Mainly Indeterminate, but Section 4 referable to Zone N.8/N.7 with derived older material.
11	91.4 to 100.6	Section 1: Probably lower Zone N.7; Burdigalian, Early Miocene. Section 3: within interval [Zone N.6] [Zone N.5 upper part]; Aquitanian, Early Miocene. Section 5: Zone N.5; Aquitanian, Early Miocene.
12	103.3 to 112.5	Sections 1 and 2: Zone N.5; Aquitanian, Early Miocene. Sections 3, 4 and 5: Zone N.4; Aquitanian, basal Miocene.

Hole 55.0 (lat. 9° 18.1'N, long. 142° 32.9'E) (Continued)

Core	Depth Below Sea Bed meters	Age Determination
13	112.5 to 121.6	Sections 1, 3 and 5: Zone N.4; Aquitanian, basal Miocene.
14	121.6 to 130.8	Sections 1 and 5: Zone N.4; Aquitanian, basal Miocene.

Hole 56.2 (lat. 8° 22.4'N, long. 143° 33.6'E)

Core	Depth Below Sea Bed meters	Age Determination
1	73.2 to 82.2	Sections 4 and 6: Zone N.17; Messinian, Late Miocene.
2	82.2 to 91.4	Sections 4 and 6: Zone N.16; Tortonian, Late Miocene.
3	91.4 to 100.6	Section 6: Zone N.16; Tortonian, Late Miocene.
10	223.4 to 233.5	Section 6: Zone N.4; Aquitanian, basal Miocene.

Hole 57.0 (lat. 8° 40.9'N, long. 143° 32.0'E)

Core	Depth Below Sea Bed meters	Age Determination
1	297.5 to 302.1	Section 1: within interval [Zone N.4] late Oligocene or earliest Miocene.
2	327.7 to 330.7	Section 2: within interval [Zone N.4] [Zone N.3]; late Oligocene or earliest Miocene.

Hole 57.1 (lat. 8° 40.9'N, long. 143° 32.0'E)

Core	Depth Below Sea Bed meters	Age Determination
1	43.9 to 53.0	Sections 1 and 2: Indeterminate. Sections 3, 4, 5 and 6: within interval [Zone N.18] [Zone N.17]; Messinian, Late Miocene.
2	306.9 to 316.1	Sections 1 and 2: Zone N.3 (=P.22); Late Oligocene.
3	316.1 to 320.6	Sections 1 and 2: Zone N.3 (=P.22); Late Oligocene.
4	320.6 to 329.2	Sections 2 and 3: within interval [Zone N.3] [Zone N.2 upper part]; Late Oligocene.

Hole 57.2 (lat. 8° 40.9'N, long. 143° 32.0'E)

Core	Depth Below Sea Bed meters	Age Determination
1	34.7 to 43.9	Section 1: Probably Zone N.20, or younger; Pliocene.

Hole 58.2 (lat. 9° 14.1'N, long. 144° 25.1'E)

Core	Depth Below Sea Bed meters	Age Determination
1	136.6 to 143.3	Sections 1, 2, 3, 4, 5 and 6: Indeterminate.

FAUNAS OF SAMPLES EXAMINED

(Determinations by W. H. Blow)

Hole 44.0

Sample 6-44.0-1-4, 145-150 cm:

Rich planktonic foraminiferal fauna with *Globigerina ampliapertura*, *G. sellii*, *G. tapuriensis*, *G. prasaepis*, *G. pseudovenezuelana*, *G. tripartita*, *G. galavisi*, *G. gortanii*, *G. gortanii*, *Globorotalia* (*T.*) cf. *increbescens*, *G. (T.) gemma*, *G. (T.) permicra*, *Globigerinita pera*, *G. martini scandretti*, *Pseudohastigerina barbadoensis*, *Cassigerinella chipolensis*.

Age: Zone P.19/20; Oligocene.

Sample 6-44.0-2-1, 145-150 cm:

Globigerina pseudovenezuelana, *G. cf. prasaepis*, *G. tripartita*, *G. galavisi*, *Pseudohastigerina naguewichiensis*, *P. barbadoensis*, *Globigerinita martini scandretti*, *G. martini martini*, *G. unicava primitiva*, *Globorotalia (T.) gemma*, *G. (T.) permicra*.

Age: Either earliest Zone P.18 or latest Zone P.17; near Oligocene/Eocene boundary.

Sample 6-44.0-3-3, 145-150 cm:

Rather poor planktonic foraminiferal fauna. *Globigerinita pera*, *G. unicava primitiva*, *G. martini* (*s.l.*), *Globigerina galavisi*, *G. pseudovenezuelana*, *Pseudohastigerina barbadoensis*, *P. naguewichiensis*.

Age: Within the interval [Zone P.17
Zone P.16]; Late Eocene.

Sample 6-44.0-4-3, 145-150 cm:

Globigerinatheka barri, *Globigerapsis index*, *Globigerina senni*, *G. galavisi*, *G. tripartita*, *G. cf. pseudovenezuelana*, *Globorotalia* (*Morozovella*) "spinulosa" (of Bolli, 1957), *G. (A.) rugosaculeata*, *G. (A.) cf. collactea*, *Truncorotaloides* spp., *Globorotalia* (*T.*) *centralis*, *Globigerinita africana*, *Globigerina gortanii praeturritilina*.

Age: Zone P.14; near Late/Middle Eocene boundary.

Hole 47.0

Sample 6-47.0-1-1, 66-68.5 cm:

Globorotalia (*G.*) *truncatulinoides* (*s.l.*), *G. (G.) tumida*, *G. (G.) hirsuta*, *G. (T.) crassaformis*, *G. (T.) ronda*, *G. (T.) crassaformis* *crassaformis*, *G. (T.) inflata*,

Globigerina eggeri, *Sphaeroidinella dehiscens*, *dehiscens*, etc.

Age: Zone N.22; Pleistocene.

Sample 6-47.0-1-2, 76-78 cm:

As above.

Sample 6-47.0-1-3, 76-78 cm:

As above.

Sample 6-47.0-1-4, 71-73 cm:

As above.

Sample 6-47.0-1-5, 73-75 cm:

As above.

Sample 6-47.0-1-6, 80-82 cm:

As above.

Hole 47.1

Sample 6-47.1-1-2, 80-81 cm:

Globorotalia (?*Turborotalia*) *uncinate*, *G. (T.) trinidadensis*, *G. praecursoria*, *Globigerina spiralis*, *G. (T.) pusilla*, *Globorotalia* (*Morozovella*) *velascoensis*, *G. (M.) occlusa*, *G. (M.) acutispira*, *G. (T.) pseudobulloides*, *G. (T.) compressa*, etc.

Age: Heterogenous fauna. Many zones of the Paleocene mixed together. However oldest interval seems to be Zone P.2. Therefore determination given as Zone P.2, with contamination from later Paleocene.

Hole 47.2

Sample 6-47.2-1-2, 77-79 cm:

Globorotalia (*G.*) *truncatulinoides* (*s.l.*), *G. (G.) tumida*, *G. (T.) crassaformis*, *ronda*, *Globigerina eggeri*, *Pulleniatina obliquiloculata* (*s.l.*), *Sphaeroidinella dehiscens*, etc.

Age: Zone N.22; Pleistocene.

Sample 6-47.2-1-3, 73-75 cm:

As above.

Sample 6-47.2-1-4, 78-80 cm:

As above.

Sample 6-47.2-2-2, 71-73 cm:

As above.

- Sample 6-47.2-2-3, 78-80 cm:
As above.
- Sample 6-47.2-2-4, 82-83 cm:
As above.
- Sample 6-47.2-2-5, 70-72 cm:
As above but with *G. (T.) tosaensis* (*s.l.*) in addition.
Age: As above.
- Sample 6-47.2-2-6, 73-81 cm:
As above.
- Sample 6-47.2-3-2, 70-72 cm:
Comminuted fauna with few recognizable taxa.
Age: Indeterminate.
- Sample 6-47.2-3-3, 70-72 cm:
As above.
Age: Indeterminate.
- Sample 6-47.2-3-4, 78-80 cm:
Globorotalia (G.) tumida tumida, *G. (T.) crassaformis ronda*, *G. (T.) crassaformis crassaformis*, *Sphaeroidinella dehiscens dehiscens*.
Age: Within the interval [Zone N.22 early part];
[Zone N.19]
Pliocene to earliest Pleistocene.
- Sample 6-47.2-4-1, 78-80 cm:
Globorotalia (G.) tumida tumida, *G. (T.) crassaformis ronda*, *G. (T.) crassaformis crassaformis*, *G. (T.) pseudopima*, *Globigerina eggeri eggeri*, *Globigerinoides conglobatus*, *G. ruber*, *Orbulina* sp., *Sphaeroidinella dehiscens dehiscens*, *Pulleniatina obliquiloculata* (*s.l.*), etc.
Age: Within the interval [Zone N.21];
[Zone N.20]; Pliocene.
- Sample 6-47.2-4-2, 76-78 cm:
As above.
- Sample 6-47.2-4-3, 70-72 cm:
As above.
- Sample 6-47.2-4-4, 82-83 cm:
As above.
- Sample 6-47.2-4-5, 78-80 cm:
As above.
- Sample 6-47.2-5-1, 81-83 cm:
As above.
- Sample 6-47.2-5-2, 79-81 cm:
Much comminuted fauna with few recognizable taxa.
Age: Indeterminate.
- Sample 6-47.2-5-3, 74-76 cm:
As above.
- Sample 6-47.2-5-4, 73-75 cm:
As above.
- Sample 6-47.2-5-5, 70-72 cm:
As above.
- Sample 6-47.2-5-6, 67-69 cm:
As above.
- Sample 6-47.2-6-2, 79-81 cm:
As above.
- Sample 6-47.2-6-3, 75-77 cm:
As above.
- Sample 6-47.2-7-2, 65-67 cm:
Globorotalia (Morozovella) aragonensis, *G. (M.) aragonensis cancasica*, *G. (Acarinina) densa*, *G. (A.) aspensis*, *Globigerina inaequispira* (group), *G. (A.) broedermannii*.
Age: Zone P.9; top Early Eocene.
- Sample 6-47.2-7-3, 70-72 cm:
Globorotalia (Morozovella) aragonensis, *G. (M.) lensiformis*, *Globorotalia (Acarinina) broedermannii*, *G. (A.) densa*, *G. (A.) aspensis*, *Globigerina senni*, *Globigerinita taroubaensis*.
Age: Zone P.9; top Early Eocene.
- Sample 6-47.2-7-4, 70-72 cm:
As above.
- Sample 6-47.2-7-5, 64-66 cm:
Globorotalia (M.) aragonensis, *G. (M.) lensiformis*, *G. (M.) formosa gracilis*, *G. (M.) formosa* cf. *formosa*, *G. (A.) aspensis*, *G. (A.) soldadoensis angulosa*, *G. (A.) cf. densa*, *G. (A.) broedermannii*.
Age: Lower Zone P.9; Early Eocene.
- Sample 6-47.2-8-1, 77-79 cm:
G. (M.) formosa formosa, *G. (M.) formosa gracilis*, *G. (M.) aragonensis*, *G. (M.) lensiformis*, *G. (M.) cf. marginodentata*, *Globorotalia (A.) soldadoensis angulosa*, *G. (A.) soldadoensis* (*s.s.*).
Age: Zone P.8; Early Eocene.
- Sample 6-47.2-8-2, 71-73 cm:
As above plus rare *G. (M.) subbotinae*.
Age: Zone P.8; Early Eocene.
- Sample 6-47.2-8-3, 83-85 cm:
Globorotalia (Morozovella) aequa (rare), *G. (M.) quertra*, *G. (M.) formosa gracilis*, *G. (M.) formosa* cf. *formosa*, *G. (M.) subbotinae*, *G. (Acarinina) wilcoxensis*, *G. (A.) soldadoensis angulosa*, *G. (A.) broedermannii*, *G. (M.) occlusa*.
Age: Zone P.7; Early Eocene.

- Sample 6-47.2-8-4, 73-81 cm:
As above but plus *G. (M.) velascoensis* (common),
G. (M.) occlusa (common) and *Globorotalia (G.) pseudomenardii* (rare).
Age: Zone P.6; Latest Paleocene. (Note: the occurrence of *G. (G.) pseudomenardii* is considered *in situ* from evidence seen elsewhere.)
- Sample 6-47.2-8-5, 80-82 cm:
As above but *G. (M.) subbotinae* and *G. (M.) formosa gracilis*; both very rare.
Age: Lower Zone P.6; Late Paleocene.
- Sample 6-47.2-8-6, 64-66 cm:
G. (Morozovella) velascoensis, *G. (M.) aequa*, *G. (M.) occlusa*, *G. (A.) soldadoensis*, *G. (G.) pseudomenardii*, *G. (A.) convexa* (group), etc.
Age: Zone P.5; Later Paleocene.
- Sample 6-47.2-9-1, 64-66 cm:
Globorotalia (G.) pseudomenardii, *G. (M.) velascoensis*, *G. (M.) occlusa*, *G. (M.) aequa*, *G. (Acarinina) broedermanni*, *G. (A.) cf. subspherica*, *G. (A.) convexa* (group), *G. (A.) soldadoensis*.
Age: Zone P.5; Later Paleocene.
- Sample 6-47.2-9-2, 67-69 cm:
Globorotalia (G.) pseudomenardii, *G. (M.) velascoensis*, *G. (M.) occlusa*, *G. (M.) angulata*, *G. (G.?) cf. albeari*, *G. (A.) subspherica*, *G. (A.) convexa* (group), *G. (A.?) chascanona*.
Age: Zone P.4; Later Paleocene.
- Sample 6-47.2-9-3, 70-72 cm:
As above.
Age: Zone P.4; Later Paleocene.
- Sample 6-47.2-9-5, 74-76 cm:
As above.
Age: Zone P.4; Later Paleocene.
- Sample 6-47.2-10-1, 72-74 cm:
Globorotalia (M.) angulata, *G. (Acarinina) uncinata*, *G. (A.) convexa* (group), *G. (Turborotalia) compressa*, *G. (T.) pusilla*, *G. (T.) pseudobulloides*, etc.
Age: Zone P.3; Earlier Paleocene.
- Sample 6-47.2-10-2, 80-82 cm:
Globorotalia (M.) angulata, *G. (Acarinina) uncinata* (and varieties), *G. (A.) convexa* group, *G. (T.) pusilla*, *G. (T.) pseudobulloides*, *G. (T.) compressa*.
Age: Zone P.3; Earlier Paleocene.
- Sample 6-47.2-10-3, 78-80 cm:
Globorotalia (Acarinina) uncinata, *G. (T.?) praecursoria*, *G. (T.?) cf. trinidadensis*, *G. (T.?) cf. inconstans*, *Subbotina trivalvis*, *G. (T.) pseudobulloides*, *G. (T.) compressa*, *Globigerina (?) spiralis*.
Age: Zone P.2; Earlier Paleocene.
- Sample 6-47.2-10-4, 83-85 cm:
As above.
Age: Zone P.2; Earlier Paleocene.
- Sample 6-47.2-10-5, 70-72 cm:
As above.
Age: Zone P.2; Earlier Paleocene.
- Sample 6-47.2-10-6, 69-71 cm:
As above.
Age: Zone P.2; Earlier Paleocene.
- Sample 6-47.2-11-1, Top:
Globorotalia (T.) trinidadensis, *G. (T.) pseudobulloides*, *G. (T.) cf. compressa*, *G. (T.) quadrata*, *G. (T.) cf. danica*, *G. (T.) ?varianta*, *Globocomisa daubjergensis*, *G. conusa* (both very rare), *Globigerina trivalvis*, *G. cf. triloculinooides*, *G. cf. microcellulosa*, *Guembelitria* sp., *Chiloguembelina midwayensis*, *Chiloguembelina* cf. *morsei*, *Eoglobigerina* spp., *Eoglobigerina?* *edita*, *G. (T.) perclara*.
Age: Zone P.1; Danian, basal Paleocene.
(Note: The sample may represent a horizon significantly below the top of Zone P.1.)
- Sample 6-47.2-11-1, 148-150 cm:
As above.
Age: Zone P.1; Danian, basal Paleocene.
- Sample 6-47.2-11-2, 148-150 cm:
Globorotalia (T.) trinidadensis, *G. (T.) pseudobulloides*, *G. (T.) danica*, *G. (T.) cf. compressa*, *G. (T.) perclara*, *G. (T.) ?varianta*, *Globigerina trivalvis*, *Eoglobigerina eobulloides*, *E. cf. edita*, *Globigerina cf. microcellulosa*, *Eoglobigerina* spp., *Chiloguembelina* spp., *Guembelitria* spp.
Age: Zone P.1; Danian, basal Paleocene.
- Sample 6-47.2-11-3, 0-5 cm:
Globorotalia (T.) trinidadensis, *G. (T.) pseudobulloides*, *G. (T.) danica*, *G. (T.) cf. compressa*, *G. (T.) perclara*, *G. (T.) ?varianta*, "Globigerina" *trivalvis*, *Eoglobigerina eobulloides*, *E. cf. edita*, "Globigerina" cf. *microcellulosa*, *G. (T.) aff. compressa* var., *Eoglobigerina* spp., *Chiloguembelina* spp., *Guembelitria* spp.
Age: Zone P.1; Danian, basal Paleocene.
- Sample 6-47.2-11-3, 148-150 cm:
Globorotalia (T.) cf. trinidadensis, *G. (T.) pseudobulloides*, *G. (T.) danica*, *G. (T.) cf. compressa*, *G. (T.) perclara*, *G. (T.) ?varianta*, "Globigerina" *trivalvis*, *Eoglobigerina eobulloides*, *E. cf. edita*, "Globigerina" cf. *microcellulosa*, *G. (T.) aff. compressa* var., *Eoglobigerina* spp., *Chiloguembelina* spp., *Guembelitria* spp.
Age: ?Zone P.1; basal Danian, basal Paleocene.

Sample 6-47.2-11-4, 148-150 cm:

Globorotalia (T.) cf. *pseudobulloides*, *G. (T.) danica*, *G. (T.) aff. compressa* var., *G. (T.) perclara*, *G. (T.) varianta* (small variety only), "Globigerina" cf. *trivialis*, *Eoglobigerina eobulloides*, *E. pentagona*, *E. tetragona*, *Guembelitria?* cf. *trifolia*, *Chiloguembelina* spp., *Guembelitria* spp., *Eoglobigerina* spp.

Age: Faunal Interval M ω -P α ; Pre-Danian, ?latest Maestrichtian.

Sample 6-47.2-11-5, 148-150 cm:

As above plus *Globorotalia* (T.) *polycamera* and *Eoglobigerina* cf. *taurica*.

Age: Faunal Interval M ω -P α ; Pre-Danian, ?latest Maestrichtian.

Sample 6-47.2-11-6, 148-150 cm:

G. (T.) cf. pseudobulloides, *G. (T.) cf. danica*, *G. (T.) aff. compressa* var., *G. (T.) polycamera*, *Eoglobigerina eobulloides*, *E. cf. taurica*, *Eoglobigerina* spp., *Guembelitria?* cf. *trifolia*, *Chiloguembelina* spp., *Guembelitria* spp.

Age: Faunal Interval M ω -P α ; Pre-Danian, ?latest Maestrichtian.

Note on Core 11:

In Core 11, a comparatively few specimens of undoubted Maestrichtian Globotruncanidae occur in all the samples studied, but these forms are overwhelmingly dominated by true Globigerinidae and Globorotaliidae. The writer believes the few specimens of *Rugoglobigerina*, *Hedbergella* and *Globotruncana* are not *in situ* in any of the Core 11 samples. Furthermore, from the writer's work on the type Danian and the Danian of Sweden and elsewhere in Denmark, the writer considers that the form "*G. (T.) cf. compressa*" listed here occurs from the base of the Danian stage. Zone P.1, therefore, is considered to represent the lower to middle Danian at least. *G. (T.) trinidadensis* (and its probable senior synonym *G. (T.) inconstans*) occurs throughout all of Zone P.1 and is thought to be an essentially ecological variant of *G. (T.) pseudobulloides*. Although it is evident that some mechanical mixing occurred within Core 11, the writer is of the opinion that the base of Zone P.1 is either within Section 3 or within the topmost part of Section 4 which was not seen. The faunal interval M ω -P α is probably the same interval as the *G. (E.) eobulloides* Zone of Russian workers. In parts of the North African area, the extinction of *Globotruncana* spp. is followed by an interval with small *Rugoglobigerina* spp. and *Pseudoguembelina* spp., which the writer considers as equivalent to the "*G.*" *eugubina* Zone of Luterbacher and Silva; this latter interval is definitely late Maestrichtian but is slightly older than the Faunal Interval M ω -P α here distinguished. The writer has carried out

scanning electron microscope studies of the so-called smooth walled Eoglobigerinids and finds that the wall texture is the same (making allowances for scale) as the later Cenozoic forms. Strict attention to the stratotype Danian would place faunal interval M ω -P α in the latest Cretaceous notwithstanding the Cenozoic aspect of its Globigerinid fauna.

Sample 6-47.2-12-2, 68-70 cm:

Globotruncana contusa, *G. aegyptica*, *Praeglobotruncana citae*, *Hedbergella monmonthensis*, *Pseudoguembelina excolata*, *Pseudotextularia fructicosa*, *Rugoglobigerina* cf. *macrocephala*.

Age: Maestrichtian.

Sample 6-47.2-13-3, 73-75 cm:

As above plus *Globotruncana stuarti*, *Abathomphalus intermedia*, *Rugoglobigerina hexacamerata*, *Pseudotextularia acervulinoides*, etc.

Age: Maestrichtian.

Hole 48.2

Sample 6-48.2-1-1, 70-82 cm:

Globorotalia (T.) *acostaensis pseudopima*, *G. (G.) multicamerata*, *G. (G.) crassula* (s.l.), *G. (T.) crassaformis ronda*, *Globigerina decoraperta*, *G. conglobata*, *Globigerinoides elongatus*, *Sphaeroidinella dehiscens dehiscens*, *Orbulina* sp.

Age: Within interval [Zone N.21]; Pliocene.
Zone N.20

Sample 6-48.2-1-2, 72-74 cm:

Sphaeroidinella dehiscens dehiscens forma immatura, *Sphaeroidinellopsis subdehiscens paenedehiscens*, *Globorotalia* (T.) *acostaensis acostaensis*, *G. (T.) crassaformis ronda*, *Globigerina conglobata*, *G. nepenthes*, *Globigerinoides conglobatus conglobatus*, *G. ruber*, *G. quadrilobatus* (s.l.), *Globorotalia* (G.) *tumida tumida*.
Age: Zone N.19; Pliocene.

Sample 6-48.2-1-3, 66-68 cm:

Much comminuted fauna; no recognizable taxa.

Age: None.

Sample 6-48.2-1-4, 71-73 cm:

Much comminuted fauna with few recognizable taxa, *Sphaeroidinella dehiscens dehiscens forma immatura*, *Sphaeroidinellopsis subdehiscens* (s.l.), *Globigerina nepenthes*, *Globigerina conglobata*.

Age: Zone N.19; Pliocene.

Sample 6-48.2-1-5, 72-74 cm:

As above but with much Maestrichtian bioturbation?
Age: Zone N.19; Pliocene with admixed Maestrichtian.

Sample 6-48.2-1-6, 66-68 cm:
Predominantly Globotruncanidae, but with some Pliocene globigerinid species. *Globotruncana conlusa patelliformis*, *G. aegyptica*, *G. stuarti*, *G. gansseri*, *Abathomphalus intermedia*, *Rugoglobigerina macrocephala*, *R. hexacamerata*, *Hedbergella monmonthensis*, *Praeglobotruncana (P.) cf. citae*, *Pseudotextularia acervulinoides*, *P. difformis*, *P. fructicosa*, *Pseudoguembelina excolata*.

Age: About mid-part Maestrichtian mixed with Pliocene.

Sample 6-48.2-2-2, 73-75 cm:
As above, but without younger contamination.
Age: Mid-part Maestrichtian.

Sample 6-48.2-2-4, 69-71 cm:
As above.
Age: Mid-part Maestrichtian.

Sample 6-48.2-2-5, 68-70 cm:
As above plus *Globotruncana fornicata*.
Age: Mid-part Maestrichtian.

Sample 6-48.2-2-6, 69-70 cm:
As above.
Age: Mid-part Maestrichtian.

Sample 6-48.2-3-2, 56-58 cm:
Globotruncana fornicata, *G. stuarti*, *G. elevata stuartiformis*, *G. cf. arca*, *G. aegyptica (s.l.)*, *Rugoglobigerina macrocephala*, *R. hexacamerata*, *Planomalina (Globigerinelloides) sp.*, *Praeglobotruncana (P.) citae*, *Pseudotextularia varians*, *P. acervulinoides* (rare), *Pseudoguembelina excolata*.
Age: Lower part Maestrichtian.

Sample 6-48.2-3-3, 102-104 cm:
As above.

Hole 49.0

Sample 6-49.0-1-2, 70-72 cm:
No significant fauna.
Age: None.

Sample 6-49.0-1-3, 65-67 cm:
As above.

Sample 6-49.0-1-5, 74-76 cm:
As above.

Sample 6-49.0-1-6, 74-76 cm:
As above.

Sample 6-49.0-2-1, 118-120 cm:
No significant fauna.
Age: None.

Hole 49.1

Sample 6-49.1-1-1, 87-89 cm:
No significant fauna.
Age: None.

Sample 6-49.1-1-2, 30-32 cm:
No significant fauna.
Age: None.

Sample 6-49.1-1-3, 70-72 cm:
No significant fauna.
Age: None.

Hole 50.1

Sample 6-50.1-1-1, 78-80 cm:
No significant foraminifera.
Age: None.

Sample 6-50.1-1-2, 70-72 cm:
As above.

Sample 6-50.1-1-3, 73-75 cm:
Highly comminuted planktonic foraminiferal fauna with few recognizable taxa.
Age: Indeterminate (?Pliocene/Pleistocene).

Sample 6-50.1-1-4, 70-72 cm:
As above.
Age: Indeterminate (?Pliocene/Pleistocene).

Sample 6-50.1-1-5, 70-72 cm:
As above.
Age: Indeterminate (?Pliocene/Pleistocene).

Sample 6-50.1-1-6, 70-72 cm:
As above.
Age: Indeterminate (?Pliocene/Pleistocene).

Sample 6-50.1-2-1, 120-122 cm:
No planktonic foraminiferal fauna.
Age: None.

Sample 6-50.1-2-2, 70-72 cm:
As above.

Sample 6-50.1-2-3, 70-72 cm:
As above.

Sample 6-50.1-2-4, 74-76 cm:
As above.

Sample 6-50.1-2-5, 75-77 cm:
As above.

Sample 6-50.1-3-2, 60-62 cm:
As above.

- Sample 6-50.1-3-3, 70-72 cm:
As above.
- Sample 6-50.1-3-4, 70-72 cm:
As above.
- Sample 6-50.1-3-5, 70-72 cm:
As above.
- Sample 6-50.1-3-6, 72-74 cm:
As above.
- Hole 54.0**
- Sample 6-54.0-1-3, 65-67 cm:
No planktonic foraminiferal fauna.
Age: None.
- Sample 6-54.0-2-1, 79-81 cm:
As above.
- Sample 6-54.0-2-2, 72-74 cm:
As above.
- Sample 6-54.0-2-3, 74-75 cm:
As above.
- Sample 6-54.0-2-4, 65-67 cm:
As above.
- Sample 6-54.0-4-2, 101-103 cm:
As above.
Age: None.
- Hole 55.0**
- Sample 6-55.0-1-1, 73-75 cm:
Globorotalia (G.) tumida tumida, *G. (G.) tumida flexuosa*, *G. (G.) hirsuta hirsuta*, *G. (G.) cultrata cultrata*, *Sphaeroidinella dehiscens dehiscens*, *S. dehiscens excavata*, *Pulleniatina obliquiloculata finalis*, *Hastigerina siphonifera siphonifera*, *H. pelagica*, *Globigerinoides conglobatus conglobatus*, *G. quadrilobatus (s.l.)*, *G. ruber*, *Globigerina conglomerata*, *G. eggeri eggeri*.
Age: Zone N.23; Holocene.
- Sample 6-55.0-1-2, 78-80 cm:
As above.
Age: Zone N.23; Holocene.
- Sample 6-55.0-1-3, 65-67 cm:
Globorotalia (G.) truncatulinoides truncatulinoides, *G. (G.) tumida tumida*, *G. (G.) cultrata menardii*, *G. (T.) acostaensis humerosa*, *G. (T.) acostaensis pseudopima*, *Pulleniatina obliquiloculata obliquiloculata*, *P. obliquiloculata finalis*, *Sphaeroidinella dehiscens dehiscens*, *Globigerinoides conglobatus conglobatus*, *G. ruber*, *G. quadrilobatus (s.l.)*, *Globigerina conglomerata*, *G. eggeri eggeri*, *Hastigerina siphonifera siphonifera*, *Candeina nitida nitida*.
Age: Zone N.22; Pleistocene.
- Sample 6-55.0-1-4, 66-68 cm:
As above.
Age: Zone N.22; Pleistocene.
- Sample 6-55.0-1-5, 68-70 cm:
As above.
- Sample 6-55.0-1-6, 78-80 cm:
As above.
- Sample 6-55.0-2-1, 62-64 cm:
Globorotalia (G.) tumida tumida, *G. (T.) acostaensis pseudopima*, *G. (T.) acostaensis humerosa*, *Globigerina eggeri eggeri*, *G. calida praecalida*, *Pulleniatina obliquiloculata obliquiloculata*, *Globigerinoides quadrilobatus fistulosus*, *G. quadrilobatus (s.l.)*, *Globigerinoides conglobatus conglobatus*, *G. ruber*, *Sphaeroidinella dehiscens dehiscens*, etc.
Age: Lower Zone N.22 or Zone N.21; earliest Pleistocene or late Pliocene.
- Sample 6-55.0-2-2, 75 cm:
Pulleniatina obliquiloculata obliquiloculata, *Candeina nitida nitida*, *Sphaeroidinella dehiscens dehiscens*, *Globorotalia (G.) tumida tumida*, *G. (G.) cultrata menardii*, *G. (T.) crassaformis ronda*, *G. (T.) acostaensis pseudopima*, *G. (T.) acostaensis humerosa*, *G. (T.) acostaensis (s.s.)*, *Globigerinoides conglobatus conglobatus*, *G. ruber*, *G. quadrilobatus fistulosus*, *Globigerina calida praecalida*, *G. conglomerata*, *G. eggeri eggeri*.
Age: Lower Zone N.22 or Zone N.21; earliest Pleistocene or late Pliocene.
- Sample 6-55.0-2-3, 74-75 cm:
As above.
- Sample 6-55.0-2-4, 76-78 cm:
As above but with *Pulleniatina obliquiloculata precursor*, in addition.
Age: Probably Zone N.21; Late Pliocene.
- Sample 6-55.0-2-5, 65-67 cm:
As above.
- Sample 6-55.0-2-6, 72-74 cm:
As above.
- Sample 6-55.0-3-1, 74-76 cm:
As above with *Globorotalia (T.) tosaensis (s.l.)*.
Age: Zone N.21; late Pliocene.
- Sample 6-55.0-3-3, 81-83 cm:
As above.
- Sample 6-55.0-3-4, 145-150 cm:
Globigerina nepenthes, *Globoquadrina altispira* (group), *Globoquadrina dehiscens dehiscens*, *Globorotalia (G.) cultrata cultrata*, *G. (G.) merotumida*, *G. (G.) cultrata limbata*, *G. (T.) acostaensis acostaensis*, *Sphaeroidinellopsis seminulina seminulina*, *S. subdehiscens subdehiscens*.
Age: Zone N.16; Tortonian, Late Miocene.

Sample 6-55.0-3-5, 83-85 cm:
Heterogenous sample material from Zone N.21 mixed
with material from Zone N.16.

Sample 6-55.0-4-1, 66-68 cm:
Globorotalia (*T.*) *acostaensis* *acostaensis*, *G.* (*G.*) *cultrata* *limbata*, *Sphaeroidinellopsis* *subdehiscens* *sub-*
dehiscens, *S. seminulina* *seminulina*, *Globigerina nepen-*
thes (abundant), *G. venezuelana*, *G. cf. foliata*, *Globo-*
quadrina altispira (group), *G. dehiscens dehiscens*,
Globigerinoides bollii, *G. quadrilobatus* (group).

Age: Zone N.16; Tortonian, Late Miocene.

Sample 6-55.0-4-3, 82-84 cm:
Rich planktonic foraminiferal fauna with *Globorotalia*
(*G.*) *cultrata* *cultrata*, *G.* (*G.*) *cultrata* *limbata*, *G.* (*T.*)
continuosa, *Globigerinoides bollii*, *G. quadrilobatus*
(group), *Globigerina nepenthes*, *G. venezuelana*, *Globo-*
quadrina altispira (group), *G. dehiscens dehiscens*,
Sphaeroidinellopsis *subdehiscens* *subdehiscens*, *S. semi-*
nulina *seminulina*, *Orbulina* spp.

Age: Zone N.15; basal Late Miocene or topmost
Middle Miocene.

Sample 6-55.0-4-5, 79-82 cm:
As above.

Sample 6-55.0-5-1, 62-65 cm:
As above.

Sample 6-55.0-5-2, 70-72 cm:
Fauna much comminuted.
Age: Indeterminate.

Sample 6-55.0-5-3, 81-84 cm:
As above.

Sample 6-55.0-5-4, 71-73 cm:
As above.

Sample 6-55.0-5-5, 78-80 cm:
As above.

Sample 6-55.0-5-6, 68-70 cm:
As above.

Sample 6-55.0-6-1, 78-80 cm:
Globorotalia (*T.*) *siakensis*, *Sphaeroidinellopsis* *semi-*
nulina *seminulina*, *S. subdehiscens* *subdehiscens*, *Glo-*
bigerina nepenthes, *Globoquadrina dehiscens advena*,
G. altispira (group).

Age: Zone N.14; Serravallian, Middle Miocene.

Sample 6-55.0-6-3, 68-70 cm:
Globigerina venezuelana, *Sphaeroidinellopsis* *subdehis-*
cens *subdehiscens*, *S. seminulina* (s.s.), *Globoquadrina*

dehiscens advena, *G. dehiscens dehiscens*, *G. altispira*
(group), *Globigerinoides quadrilobatus* (group), *Glo-*
borotalia (*T.*) *siakensis*.

Age: Within the interval [Zone N.14]
Zone N.13 ; Serravallian.

Sample 6-55.0-7-1, 74-76 cm:
Globorotalia (*T.*) *peripheroacuta*, *G.* (*T.*) *periphero-*
ronda, *G.* (*T.*) *siakensis*, *Globigerina* cf. *bulbosa*, *G.*
venezuelana, *Globoquadrina altispira altispira* (abun-
*dant), *G. altispira globosa*, *G. dehiscens dehiscens*, *G.*
dehiscens advena, *Orbulina* spp., *Sphaeroidinellopsis*
seminulina (s.s.), *S. seminulina kochi*, *Cassigerinella*
chipolensis.*

Age: Zone N.10; Langhian, Middle Miocene.

Sample 6-55.0-7-3, 72-74 cm:
As above, but phylogenetically primitive *G.* (*T.*) *peri-*
pheroacuta only.

Age: Lower Zone N.10; Langhian.

Sample 6-55.0-7-6, 68-70 cm:
As above but with *Globigerina* cf. *bulbosa* and *G.* (*T.*)
peripheroacuta.
Age: Zone N.9; Langhian, Middle Miocene.

Sample 6-55.0-8-1, 83-85 cm:
As above.
Age: Zone N.9; Langhian, Middle Miocene.

Sample 6-55.0-8-3, 75-77 cm:
Globoquadrina altispira (group-abundant), *Globorotalia*
(*T.*) *siakensis*, *G.* (*T.*) *peripheroronda*, *G.* (*T.*) *birnageae*,
Globoquadrinadehiscens dehiscens, *G. dehiscens advena*,
Globigerina falconensis, *G. venezuelana*, *Globigerinoides*
quadrilobatus (group).

Age: Within interval [Zone N.9]
Zone N.8 ; Langhian.

Sample 6-55.0-8-5, 86-88 cm:
As above.

Sample 6-55.0-10-2, 72-74 cm:
Mainly *Radiolaria* - no significant planktonic foraminifera.
Age: Indeterminate.

Sample 6-55.0-10-3, 72-74 cm:
As above.

Sample 6-55.0-10-4, 73-75 cm:
Strongly heterogenous sample, faunal elements from
Zones N.3, N.4 mixed with N.7/N.8.

Sample 6-55.0-10-5, 74-76 cm:
Mainly *Radiolaria*, no significant planktonic foraminifera.
Age: Indeterminate.

Sample 6-55.0-11-1, 98-100 cm:
Globigerinita stainforthi stainforthi, *Globigerinatella insueta*, *Globorotaloides* sp., *Globigerinoides quadrilobatus trilobus*, *G. subquadratus*, *Globoquadrina dehiscens dehiscens*, *G. dehiscens cf. advena*, *G. dehiscens cf. praedeuhiscens*, *G. altispira altispira*, *G. larmeui larmeui*, *Globorotalia (T.) scitula praescitula*, *G. (T.) siakensis*, *G. (T.) peripheroronda*.
Age: Probably lower Zone N.7; Burdigalian.

Sample 6-55.0-11-3, 72-74 cm:
Globigerinita dissimilis (s.l.), *Globoquadrina dehiscens dehiscens*, *G. dehiscens praedeuhiscens*, *Globigerinoides quadrilobatus trilobus*, *G. cf. subquadratus*.

Age: Within interval [Zone N.6
Zone N.5 upper part]

Sample 6-55.0-11-5, 67-69 cm:
Globoquadrina dehiscens dehiscens, *G. dehiscens praedeuhiscens*, *G. altispira* (group), *Globigerina binaiensis*, *Globigerinita dissimilis* (s.l.), *Globigerinoides quadrilobatus* (group), *Globorotalia (T.) siakensis*.
Age: Zone N.5; Aquitanian.

Sample 6-55.0-12-1, 67-69 cm:
As above plus *Globoquadrina altispira globularis*.
Age: Zone N.5; Aquitanian.

Sample 6-55.0-12-2, 74-76 cm:
As above.

Sample 6-55.0-12-3, 73-75 cm:
As above plus *Globorotalia (T.) kugleri*.
Age: Zone N.4; basal Aquitanian.

Sample 6-55.0-12-4, 69-71 cm:
Globigerinoides quadrilobatus immaturus, *Globorotalia (T.) kugleri*, *Globoquadrina altispira globularis*, *G. altispira cf. globosa*, *G. dehiscens praedeuhiscens*, *G. baroemoenensis*, *Globigerina binaiensis*, *Globigerinita dissimilis* (s.l.).
Age: Zone N.4; basal Aquitanian.

Sample 6-55.0-12-5, 80-82 cm:
As above.

Sample 6-55.0-13-1, 66-68 cm:
As above, but no specimens referable to *Globigerinoides* observed.
Age: Within [Zone N.4
Zone N.3] interval.

Sample 6-55.0-13-3, 66-68 cm:
Globigerinoides quadrilobatus immaturus (2 specimens), *G. quadrilobatus primordius* (very rare), *Globorotalia (T.) kugleri*, *G. (T.) mendacis*, *G. (T.) pseudokugleri*, *G. (T.) siakensis*, *Globoquadrina altispira globularis*, *G. baroemoenensis*, *G. binaiensis*, *G. dehiscens praedeuhiscens*.

Age: Zone N.4; basal Aquitanian.

Sample 6-55.0-13-5, 68-70 cm:
As above.

Sample 6-55.0-14-1, 145-150 cm:
As above.

Sample 6-55.0-14-5, 146-150 cm:
As above, but with 2 specimens only referable to *G. quadrilobatus*.
Age: Zone N.4; basal Aquitanian.

Hole 56.2

Sample 6-56.2-1-4, 70-72 cm:
Globorotalia (G.) tumida plesiotumida, *G. (G.) merotumida*, *G. (G.) cultrata limbata*, *G. (G.) cf. multicamerata*, *G. (T.) acostaensis acostaensis*, *Globigerinoides conglobatus canimarensis*, *G. obliquus extremus*,

Globigerina nepenthes, *G. venezuelana*, *Globoquadrina altispira* (group), *G. dehiscens dehiscens*, *Sphaeroidinellopsis subdehiscens cf. paenedehiscens*.

Age: Zone N.17; Messinian, Late Miocene.

Sample 6-56.2-1-6, 79-81 cm:
As above.

Sample 6-56.2-2-4, 80-83 cm:
Globorotalia (G.) cultrata limbata, *G. (G.) cf. merotumida*, *G. (T.) acostaensis acostaensis*, *Globigerinoides conglobatus canimarensis*, *Globigerina nepenthes*, *G. venezuelana*, *Globoquadrina altispira* (group), *G. dehiscens* (s.l.), *Sphaeroidinellopsis subdehiscens subdehiscens*, *S. seminulina seminulina*.
Age: Zone N.16; Tortonian, Late Miocene.

Sample 6-56.2-2-6, 69-72 cm:
As above.

Sample 6-56.2-3-6, 145-150.3 cm:
As above.

Sample 6-56.2-10-6, 101-103 cm:
Globorotalia (T.) kugleri, *G. (T.) pseudokugleri*, *G. (T.) siakensis*, *Globigerinita dissimilis* (s.l.), *Globigerina binaiensis*, *G. cf. sellii*, *G. praebulloidies*, *Globoquadrina dehiscens praedeuhiscens*, *G. altispira cf. globosa*, *G. altispira globularis*, *Globigerinoides quadrilobatus immaturus*, *G. quadrilobatus primordius*.
Age: Zone N.4; basal Miocene, Aquitanian.

Hole 57.0

Sample 6-57.0-1-1, 94-96 cm:

Poor planktonic foraminiferal fauna with *Globorotalia* (*T.*) cf. *kugleri*, *G.* (*T.*) *mendacis*, *G.* (*T.*) *clemenciae*, *Globigerina* *praebulloides* *praebulloides*, *G.* *praebulloides* *occlusa*, *Globigerinita* *dissimilis* *dissimilis*, *G.* *unicava* *unicava*, *Globorotaloides* *suteri*.

Age: Within the interval [Zone N.4]; late Oligocene
[Zone N.3]
or earliest Miocene.

Sample 6-57.0-2-2, 68-70 cm:

As above.

Hole 57.1

Sample 6-57.1-1-1, 91-93 cm:

Fauna totally comminuted, no recognizable planktonic foraminiferal taxa.

Age: None.

Sample 6-57.1-1-2, 26-28 cm:

As above.

Sample 6-57.1-1-3, 64-66 cm:

Fauna mainly comminuted but *Globigerina nepenthes*, *Sphaeroidinellopsis subdehiscens paenedehiscens* and *Globorotalia* (*G.*) *tumida plesiotumida* present.

Age: Within interval [Zone N.18]; Late Miocene.
[Zone N.17]

Sample 6-57.1-1-4, 76-78 cm:

As above.

Sample 6-57.1-1-5, 78-80 cm:

As above.

Sample 6-57.1-1-6, 85-87 cm:

As above.

Sample 6-57.1-2-1, 97-99 cm:

Globigerina ouachitaensis ciperoensis forma atypica, *G.* *sellii*, *G.* *venezuelana*, *G.* *praebulloides* (*s.l.*), *G.* cf. *angulisuturalis*, *Globorotalia* (*T.*) *mendacis*, *G.* (*T.*) *clemenciae*, *G.* (*T.*) cf. *siakensis*, *Globorotaloides* *suteri*, *Globigerinita dissimilis* (*s.l.*).

Age: Zone N.3 (=P.22); Late Oligocene.

Sample 6-57.1-2-2, 72-75 cm:

As above.

Sample 6-57.1-3-1, 90-92 cm:

As above.

Sample 6-57.1-3-2, 80-83 cm:

As above.

Sample 6-57.1-4-2, 81-83 cm:

G. (*T.*) *mendacis*, *G.* (*T.*) cf. *siakensis*, *G.* (*T.*) *opima nana*, *G.* (*T.*) *opima* cf. *opima*, *Globigerina* *sellii*, *G.* *angulisuturalis*, *G.* *ouachitaensis ciperoensis*, *G.* *praebulloides* *leryi*, *G.* *praebulloides* (*s.l.*), *Globigerinita dissimilis* (*s.l.*), *Globorotaloides* *suteri*.

Age: Within interval [Zone N.3]
[Zone N.2 upper part] ; Late Oligocene.

Sample 6-57.1-4-3, 85-89 cm:

As above.

Hole 57.2

Sample 6-57.2-1-1, 75-77 cm:

Strongly comminuted planktonic foraminiferal fauna with few recognizable taxa. *G.* (*G.*) *tumida tumida* present.

Age: Probably Zone N.20 or younger; Pliocene.

Hole 58.2

Sample 6-58.2-1-1, 89-91 cm:

No significant fauna.

Age: None.

Sample 6-58.2-1-2, 64-65 cm:

As above.

Sample 6-58.2-1-3, 70-72 cm:

As above.

Sample 6-58.2-1-4, 70-72 cm:

As above.

Sample 6-58.2-1-5, 66-68 cm:

As above.

Sample 6-58.2-1-6, 88-90 cm:

As above.

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