18. EOCENE DIATOMS AND SILICEOUS SPONGE SPICULES FROM THE NORTHWESTERN ATLANTIC OCEAN, DSDP SITES 417 AND 418

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Deep Sea Drilling Project Legs 51 to 53, drilled in the Nares Abyssal Plain south of Bermuda, concentrated on recovery of old oceanic crust. During drilling, a short interval of Eocene pelagic clay was recovered that is rich in radiolarian debris with intercalated layers of radiolarian ooze. Associated fossils were reported aboard ship to be sponge spicules and silicoflagellates. Shore-laboratory study of these sediments has shown that the radiolarians are fragmented and etched, especially in zeolite-rich samples. Sponge spicules are of low diversity and moderate to poor preservation. Silicoflagellates are missing; diatoms occur sparsely within the interval. The diatoms are fragmented and belong to only a few solution-resistant taxa such as *Arachnoidiscus, Liostephania, Melosira* (s. ampl.), and *Pyrgupyxis*. On experimental evidence (Mikkelsen, 1977), the poorly preserved state of the abundant radiolarians and sparse diatoms should preclude the presence of silicoflagellates; that is supported by these observations. A few specimens of fragmented *Arachnoidiscus* and more common *Melosira*, typical shallow-water genera, suggest downslope transport of some of the biogenic components to this deep site, probably from the North American shelf or Blake Plateau, where more abundant Eocene diatomites and spiculites are known (Beall and Fischer, 1969; Bukry, 1978).

Of 49 samples examined from Site 417 and adjacent Site 418, only nine contain sparse to common diatoms and siliceous sponge spicules (Figure 1). Representative forms presented in Plate 1 illustrate the preservation state of specimens. A single solution-thinned specimen of the ebridian *Ebriopsis* sp. cf. *E. antiqua* was observed in Sample 417A-14-2, 15-17 cm (124 m).

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Sample (Interval in cm)	Depth (m)	Microfossil Abundance: Diatoms	Microfossil Abundance: Silicoflagellates	Microfossil Abundance: Ebridians	Microfossil Abundance: Sponge spicules	Diatoms: *Arachnoidiscus* sp.	Diatoms: *Liostephania* spp.	Diatoms: *Melosira concentrica*	Diatoms: *M.* sp. cf. *M. sulcata coronata*	Diatoms: *M. sulcata sulcata*	Diatoms: *Pyrgupyxis* sp.	Diatoms: *Sceptroneis* sp.	Diatoms: *Triceratium* sp.	Diatoms: *Trinacria* sp.	Diatoms: *Xanthiopyxis oblonga*	Sponge Spicules: Acanthaster	Sponge Spicules: Clavidisc	Sponge Spicules: Diancistron	Sponge Spicules: Dichotriaene	Sponge Spicules: Discaster	Sponge Spicules: Oxea [straight and curved]	Sponge Spicules: Spheraster	Sponge Spicules: Spiraster	Sponge Spicules: Strongyle [smooth and spined]	Sponge Spicules: Triod	Sponge Spicules: Tylostyle	–: Microfossil A	–: Microfossil B
417A-14-2, 15-17	124	R	–	R	F					?	X					X		X			X		X	X	X	X		X
417A-14-4, 39-40	127	R	–	–	F						X										X							
417A-15-2, 33-34	133	–	–	–	R																X							
417A-15-4, 20-21	136	F	–	–	F	X	X	X	X	X	X	X	X		X	X		X			X	X				X	X	
417A-15-4, 80-81	136	R	–	–	R						X										X					X		X
417A-16-2, 55-57	143	R	–	–	C		X	X		X	X			X		X	X	X		X	X	X	X	X	X	X		X
417A-16-4, 93-95	147	R	–	–	C		X		X		X					X		X	X	X	X	X	X	X	X	X	X	X
417A-16-6, 126-128	150	R	–	–	C		X	X		X	X					X		X			X	X		X	X	X	X	X
418A-6-1, 90-92	159	–	–	–	C											X					X	X			X	X		

Figure 1. *Occurrence of diatoms, siliceous sponge spicules, ebridians, and silicoflagellates in samples of Eocene sediment from DSDP Hole 417A (lat 25°06.63'N, long 68°02.48'W, water depth 5478 m) and adjacent Hole 418A (lat 25°02.08'N, long 68°03.45'W, water depth 5511 m). Works illustrating Eocene diatoms include Schrader and Fenner (1976), Glezer et al. (1974), Gombos (1977), and Fenner (1979). For descriptions of sponge spicules see Bukry (1978). C = common, F = few, R = rare.*

PLATE 1

Diatoms (Figures 1 to 10), siliceous sponge spicules (Figures 11 to 17, and 21), and noncalcareous microfossils of uncertain origin (Figures 18 to 20) from the Eocene of DSDP Hole 417A. Figures 1-7, 9, 10, 12, 15, and 21 are magnified 800×; scale bar equals 10 μm. Figures 8, 11, 13, 14, and 16-20 are magnified 350×; scale bar equals 20 μm.

Figure 1 — *Arachnoidiscus* sp. Sample 417A-15-4, 20-21 cm (136 m sub-bottom).

Figures 2-4 — *Liostephania* spp. Sample 417A-16-4, 93-95 cm (147 m).

Figure 5 — *Melosira* sp. cf. *M. sulcata coronata* Grunow. Sample 417A-16-4, 93-95 cm (147 m).

Figure 6 — *Melosira concentrica* Schulz. Sample 417A-15-4, 20-21 cm (136 m).

Figure 7 — *Melosira* sp. or *Pseudopodosira* sp. Sample 417A-15-4, 20-21 cm (136 m).

Figure 8 — *Pyrgupyxis* sp. Sample 417A-16-2, 55-57 cm (143 m).

Figure 9 — *Trinacria* sp. Sample 417A-16-2, 55-57 cm (143 m).

Figure 10 — *Xanthiopyxis oblonga* Ehrenberg. Sample 417A-15-4, 20-21 cm (136 m).

Figure 11 — Acanthaster (recticiliate). Sample 417A-16-4, 93-95 cm (147 m).

Figure 12 — Diancistron. Sample 417A-16-4, 93-95 cm (147 m).

Figures 13, 14 — Oxeas (curved).
13. Megasclere, Sample 417A-16-4, 93-95 cm (147 m).
14. Microsclere, Sample 417A-16-4, 93-95 cm (147 m).

Figure 15 — Oxea? (atypical sinuous canal). Sample 417A-15-4, 20-21 cm (136 m).

Figure 16 — Strongyle. Sample 417A-16-4, 93-95 cm (147 m).

Figure 17 — Tylostyle. Sample 417A-16-4, 93-95 cm (147 m).

Figures 18, 19 — Microfossil A. Sample 417A-16-4, 93-95 cm (147 m).

Figure 20 — Microfossil B. Sample 417A-16-4, 93-95 cm (147 m).

Figure 21 — Spheraster. Sample 417A-16-4, 93-95 cm (147 m).

PLATE 1