

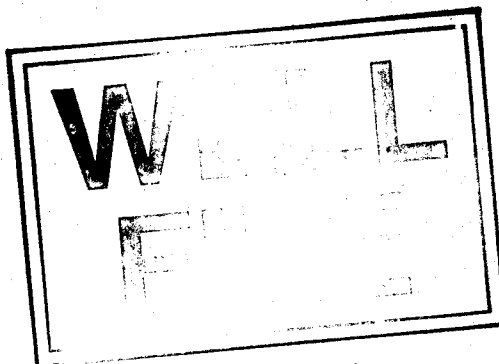
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WELL 25/2-2 (NORGE)

PALYNOLOGICAL STUDY ON THE LOWER TERTIARY



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LISTE DE DIFFUSION

DESTINATAIRES :

DIRECTION EXPLORATION	1
S.I.D.	2
DIVISION 2 - NORVEGE	20

This report summarizes the results obtained from palynological analyses which have been carried out on material supplied from the interval 1915 - 2701 m. Seven core samples (cores n^o 1-2-3 - 1991 - 2012,50 m), thirty-three sidewall core samples and three cutting samples have been analysed. The microplankton assemblages are generally rich. 4 samples are not fossiliferous.

Palynological zonation is summarized in Table 1.

PALYNOLOGICAL ZONATION

- 1915 m - nt III zone

1 sidewall core sample.

. Rich microplanktonic assemblage with :

Areosphaeridium dictyoplokus
Achromosphaera alaicornu
Cordosphaeridium gracilis
Samlandia reticulifera.

. Occasional terrestrial elements. The saccate pollen grains represent the major part of the continental microflora.

Environment : Open marine

Age : LUTETIAN.

- 1937 m - 1950 m - nt II c zone

1 sidewall core sample

1 cutting sample.

. Rich dinoflagellate assemblage with new species :

Membranilarnacia ursulae
Wetzeliella ovalis
Wetzeliella articulata D.416 C
Homothybium tenuispinosum.

It is worth noting, at 1937 m, the absence of typical forms of Membranilarnacia ursulae in which processes are distally united by a net-like membrane. However, there is a high frequency of the species Cordosphaeridium D.353 B in which each process distally support a discrete area of net-like membrane. The species D.353 B could be deriving from M. ursulae by a reduction in the extend of distal membrane development. The species M. ursulae is observed in great number in the cutting sample 1950 m.

- . The saccate pollen grains represent the major part of the terrestrial microflora.

Environment : Open Marine

Age : YPRESIAN.

- 1965 - 2076 m - nt II b zone

1 cutting sample
7 core samples
3 sidewall core samples.

- . The planktonic assemblage displays a change more evident in the core samples than in the cutting sample 1965 in which very heavy caving is encountered.

Appearance of *Wetzeliella homomorpha*
Wetzeliella coleothrypta
Wetzeliella D.417 B.

It is interesting to note the presence at 2022 m of a peculiar microflora made up of 93 % *Cordosphaeridium gracilis*.

- . The pollen grains show a slight increase in quantitative distribution : *Inaperturopollenites hiatus*, *Caryapollenites*, *Tiliaepollenites*, *Corylus-pollenites*, *Plicapollis*. Abundant woody fragments are also observed in this interval.

Environment : Restricted marine conditions. At 2022 m, occurs a readily marine episode.

Age : YPRESIAN.

- 2100 m

1 sidewall core sample.

A very limited microflora of pollen and dinoflagellates is observed in this sample. In the absence of any particularly diagnostic species, this sample is considered as uncharacterized.

- 2125 - 2200 m - Upper nt II a

3 sidewall core samples
1 cutting samples.

- . A sharp increase in terrestrial elements occurs at 2125 m. A count of 100 pollen grains reveals 58 % *I. hiatus*. Other pollen grains include *Caryapollenites* (10 %), *Tiliaepollenites*, *Coryluspollenites*.

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- . At the same time, a distinct change is noted in the dinoflagellate assemblage.

First appearance of

Deflandrea oesbifeldensis
Cyclonephelium ordinatum.

From 2125 to 2175 m, the ratio of the marine microplankton/total microfossils varies between 3 and 6 %. At 2200 m, the percentage of marine microplankton increases and becomes 22 %.

Environment : Estuarine - The terrestrial influences are particularly conspicuous in these deposits. The sharp decrease of the microplankton suggests a depositional environment very close to the one of the Middle nt II a zone.

Age : PALEOCENE.

- 2211 - 2320 m - Middle nt II a zone

7 sidewall core samples.

- . The abundant pollen population is dominated by *I. hiatus* (60 to 79 %).
- . The percentage of the marine organisms/total organisms remains very low (2 to 6 %), and consequently the boundary between the Upper nt II a (to middle) and the middle nt II a cannot be determined with accuracy. The two assemblages which make direct correlation with Middle nt II a zone are situated at 2267 and 2280 m. A slightly "marine" fluctuation occurs at 2286 m.

Environment : Estuarine with predominating terrestrial influences.

Age : PALEOCENE.

- 2347 - 2387 m - Lower nt II a zone

3 sidewall core samples.

- . The pollen assemblage shows an abrupt change in generic composition. Triporate pollen grains become predominant. These pollen grains mainly belong to the genus *Caryapollenites* (78 % at 2347 m).
- . Rich dinoflagellate assemblage with first appearance of
Wetzeliella hyperacantha.

Environment : Estuarine with large terrestrial influences.

Age : PALEOCENE.

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- 2400 - 2470 m - nt I b zone

3 sidewall core samples.

- . Moderately rich dinoflagellate assemblage characterized by
 Areoligera senonensis.
- . Continental microflora :
 - disappearance of *Caryapollenites*
 - high frequency of *Disaccates* and *Tsugaepollenites*.

Environment : Marine.

Age : LOWER PALEOCENE to DANIAN.

- 2512 - 2688 m - nt I a zone

4 sidewall core samples.

- . Rich dinoflagellate assemblage characterized by
 - Palaeoperidinium basilium*
 - Areoligera senonensis*
 - Paleocystodinium D.414*
 - Deflandrea D.207*.
- . Continental microflora with high frequency of *Disaccates* and *Tsugaepollenites*.

Environment : Open marine

Age : DANIAN.

- 2695 - 2701 m

Occasional pollen grains (*Disaccates* - *Tsugaepollenites*) and still rarer dinoflagellates (*A. senonensis* ?) are observed in these samples. A Danian age may be inferred for this microflora.

WELL 25/2-2 - PALYNOLOGICAL STUDY

LITHOLOGICAL SUBDIVISIONS	DEPTH	CORE SAMPLES SWC & CUTT. SAMPLES	ZONATION	AGE
			1915 nt III	1915 LUTETIAN
			1937 1950 nt II c	1937
1950 Sands	2000		1965 nt II b	YPRESIAN
2021 Sands and shaly beds			2076	2076
2089 Sands	2100		2100 Uncharacterized	?
2123 Shales and sandy beds			2125 Upper to Middle nt II a	2125
2195 TUFF	2200		2200	
Sands and shaly beds			2211 Middle nt II a	PALEOCENE
2276 Sands	2300		2320 2330 2347 Lower nt II a	
2363 Shales and sandy beds	2400		2387 2400 nt I b	2387 2400 LOWER PALEOCENE TO DANIAN
2456 Shales and carbonaceous beds	2500		2470	2470
2516 Shales and carbonaceous beds			2512	2512
2562 Sands	2600		nt I a	DANIAN
2690 Sands & carbon. beds	2700		2688 2695 ?	2688 DANIAN ?
2703 Chalk			2701	2701

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