

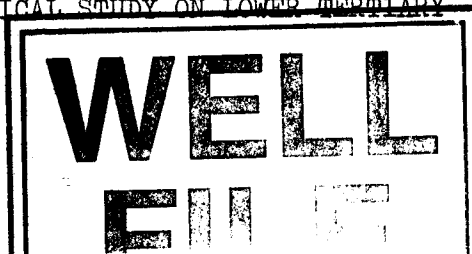
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WELL 25/1-4

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PALYNOLOGICAL STUDY ON LOWER TERTIARY



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Palynological study on Lower Tertiary

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Reference : Order No. 031024

This study was carried out by the Dt.G.C. - Laboratory at the
ELF R.E. Research Center of Boussens.

- J. DUCAZEAUX - Report No. 4/1063 R : Well 25/1-4 - Palynological study on
Lower Tertiary.

This report summarizes the results obtained from palynological analyses which have been carried out on material supplied from the interval 1922 - 2745 m. Fifty core samples (cores n^r 1 to 8 - 1922-1923 m), twenty sidewall core samples and ten cutting samples have been analysed. The microplankton assemblages are generally very rich.

Palynological zonation is summarized in Table 1.

PALYNOLOGICAL ZONATION

- 1922 - 1949,6 m - nt III zone

- . Rich microplanktonic assemblage with :

Aerosphaeridium dictyoplokus
Achromosphaera alcicornu
Wetzeliella articulata
Samlandia reticulifera...

. Occasional terrestrial elements : Caryapollenites, Coryluspollenites, Alnipollenites, Tiliapollenites.

Environment : Open marine

Age : LUTETIAN.

- 1953,70 - 1970,50 m - nt II c zone

- . Rich dinoflagellate assemblage with new species :

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

. Occasional terrestrial elements : Caryapollenites, Coryluspollenites, Alnipollenites, Inaperturopollenites hiatus.

Environment : Open marine

Age : YPRESIAN.

- 1971 - 2040 m - nt II b zone

- . The planktonic assemblage displays an abrupt change :

- Disappearance of *M. ursulae*
- Appearance of *Wetzeliella homomorpha*
Wetzeliella coleothrypta
Wetzeliella D.417 B.

.../...

. The terrestrial elements show a slight increase in quantitative distribution.

Environment : Restricted marine conditions

Age : YPRESIAN.

- 2067 - 2153 m - probably nt II b zone

. The microplanktonic assemblage is characterized by :

- the lack of *W. coleothrypta*
- the occasional occurrence of *W. homomorpha*
- the abundance of *Cyclonephelium* genera
- the persistence of :

Homothryblium tenuispinosum
Wetzeliella D.417 B.

. The pollen grains are moderately frequent.

Although slightly different by its composition from the foregoing interval which is assigned accurately to the nt II b zone, the microfloral assemblage encountered between 2067 - 2153 m is doubtfully attributed to the same zone. Nevertheless, it could belong also to the Upper nt II a zone but this assignment cannot be evidenced by palynological analyses.

Environment : More marine than the foregoing assemblage

Age : YPRESIAN ?

- 2176 - 2218 m - UPPER nt II a zone

. A sharp increase in terrestrial elements occurred at 2176 m. A count of 100 pollen grains reveals 66 % *Inaperturopollenites hiatus*. Other pollen grains include *Caryapollenites*, *Tiliapollenites*, *Coryluspollenites*.

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

First appearance of :

Deflandrea Oesbifeldensis
Cyclonephelium ordinatum.

It worth noticing the presence at 2218 m of a peculiar microflora made up of 88 % *Cordosphaeridium gracilis*.

Environment : Estuarine or deltaic with large terrestrial influences. At 2218 m occurs a readily marine episode.

Age : PALEOCENE.

.../...

- 2247 - 2322 m - MIDDLE nt II a zone

- . The abundant pollen population is dominated by *I. hiatus* (73 to 78 %).

. The percentage of the marine organisms never exceeds 3 % of the total of the organisms and the frequency of the genus *Deflandrea* is particularly conspicuous.

Environment : Estuarine or deltaic with predominating terrestrial influences.

Age : PALEOCENE.

- 2350 - 2441 m - LOWER nt II a zone

. The pollen assemblages show an abrupt change in generic composition. A count of 100 pollen grains at 2350 m reveals 57 % *Caryapollenites* for 8 % *I. hiatus*.

. The rich dinoflagellate assemblages is characterized by the occurrence of :

Wetzeliella hyperacantha.

Environment : Estuarine or deltaic with large terrestrial influences.

Age : PALEOCENE.

- 2465 - 2557 m - nt I b zone

- . Moderately rich dinoflagellate assemblage characterized by :

Areoligera senonensis
Deflandrea D.207

- . Continental microflora :

- disappearance of *Caryapollenites*
- high frequency of *Disaccates* and *Tsugaepollenites*.

Environment : Marine.

Age : LOWER PALEOCENE to DANIAN.

- 2580 - 2630 m - nt I a zone

- . Rich dinoflagellate assemblage with :

Palaeoperidinium basilium
Areoligera senonensis
Paleocystodinium D.414...

.../...

. Continental microflora with high frequency of Disaccates and Tsugaepollenites.

Environment : Open marine

Age : DANIAN

- 2640 - 2670 m - probably nt I a zone

. Moderately rich dinoflagellate assemblage :

- Occasional occurrence of :

Palaeoperidinium basilium

Areoligera senonensis

- Presence of :

Eisenackia crassitabulata.

. The continental microflora remains the same.

Environment : Open marine

Age : DANIAN.

| LITHOLOGICAL SUBDIVISIONS | DEPTHS | CORES SAMPLES SWC and CUTT. SAMPLES | ZONATION | AGE |
|-------------------------------|--------|--|----------------------------|-----------|
| Shales | 1900 | Cores 1 to 8 | nt III 1949,7 | LUTETIAN |
| | | | nt IIc 1953,7 1970,5 | 1953,70 |
| 1968 Sands | 2000 | | nt IIb 1971 | |
| | | | 2040 | YPRESIAN |
| 2057 Sands and shaly beds | 2100 | | 2067 | |
| | | | nt IIb probably 2153 | 2153 |
| 2151 Shales and sandy beds | 2200 | | 2176 | |
| | | | Upper nt IIa 2218 | 2174 |
| 2224 TUFF Sands | | | 2247 | |
| | | | Middle nt IIa | PALEOCENE |
| 2315 Sands and shaly beds | 2300 | | 2322 | |
| | | | 2350 | |
| | | | Lower nt IIa | |
| 2397 Shales and sandy beds | 2400 | | 2441 | 2441 |
| | | | 2465 | 2465 |
| 2502 Shales | 2500 | nt Ib 2557 | Lower PALEOCENE to DANIAN | |
| | | 2580 | 2580 | |
| | | nt Ia 2630 | DANIAN | |
| 2643 Sands | | nt Ia probably 2640 2670 | 2670 | |
| 2685 Chalk | 2700 | 2695 | 2695 | |
| | | nc IX | MAASTRICHTIAN | |