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REPORT TITLE

PALYNOLOGY OF NORTH SEA WELL
(N) 15/9-1, 3350 m. - 3732 m.

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SUMMARY

Presumed Triassic at 3732 m. is succeeded by deltaic Bajocian/Callovian from 3729 to 3643 m., marine deltaic Callovian at 3626.80 to 3530 m., marine-outer deltaic Oxfordian at 3525 - 3430 m., marine Kimmeridgian at 3409 - 3373 m. and deltaic-marine Aptian from 3370 - 3350 m.

KEY WORDS

This report is an assessment of the biostratigraphy of Norwegian North Sea well (N)15/9-1. The results are based on dinoflagellate cysts and other palynomorps extracted from wet samples and cores between 3350 m. and 3732 m. (total depth).

3350 - 3370 m. APTIAN

Biostratigraphy

Dinoflagellate cysts recorded from this interval include Cauca parva, Dingodinium alberti, Chlamydophorella nyei and Gonyaulacysta cassidata.

D. alberti is known from Neocomian to Aptian deposits and C. parva from Aptian and Albian deposits. The interval is therefore dated as Aptian.

Nannofossil evidence supports this determination (see IKU report 0-62/1/77).

Environment

Transgressive deltaic. A gradual transgression from inner deltaic conditions at 3367 m. to marine-deltaic at 3349 - 52 m. The base of the interval (3370 m.) shows somewhat more marine influence than 3367 m.

3373 - 3409 m. KIMMERIDGIAN (?TO VOLGIAN)

Biostatigraphy

Samples at 3373 and 3376 m. yielded Leptodinium subtile, Lithodinia cf. staffinensis, and Pterospermopsis aureolata together with numerous species of Gonyaulacysta.

P. aureolata has previously been recorded from the Volgian suggesting that the upper part of this interval could be of Volgian age. However, P. aureolata may be environmentally controlled. The assemblage is otherwise typically Kimmeridgian.

The lower part of the interval yielded L. subtile, Sirmiodinium grossi,

Gonyaulacysta jurassica, G. spp. and Glossodinium dimorphum.

G. jurassica is not thought to range later than Kimmeridgian,and G. dimorphum ranges from topmost Oxfordian to Volgian. A Kimmeridgian age is indicated.

Environment

Low energy marine with restricted circulation.

3430 - 3525 m. OXFORDIAN

Biostratigraphy

Adnatosphaeridium aemulum, Scriniodinium galleritum, S. crystallinum and Gonyaulacysta cladophora cladophora were recorded sporadically in this interval. The assemblage is typically Oxfordian and most of the species do not range higher than basal Kimmeridgian.

The base of the interval is well defined by the occurrence of Wanaea fimbriata and Wanaea digitata in the core sample at 3521 m.

It seems logical to set the Oxfordian/Callovian boundary at the marked change in environment recorded between 3525 and 3530 m.

Environment

Predominantly marine outer deltaic. Increased terrestrial influence is recorded at 3502 and 3430 m.

3530 - 3626.80 m. CALLOVIAN

Biostratigraphy

Significant dinoflagellate cysts are rare in the upper part of this interval though the upper limit of the Callovian is satisfactorily defined by the base of the overlying unit.

Tenua spp., Chytroeisphaeridia spp. Nannoceratopsis pellucida (dinoflagellate cysts), Chasmatosporites apertus, Corrugatisporites amplectiformis and Leptolepidites equatibossus (spore species) are recorded throughout the interval and are indicative of a Middle Jurassic age.

The base of the interval is set at 3626.80 m. (core) from which Adnatosphaeridium aemulum, Wanaea acollaris, Scriniodinium galleritum, Ctenidodinium sp. and N. pellucida were recovered.

W. acollaris is common in Early Callovian and Late Bathonian deposits. A. aemulum is not thought to occur earlier than Callovian.

Environment

Alternating between deltaic and shallow marine.

3643 - 3729 m. BAJOCIAN TO CALLOVIAN

Biostratigraphy

Palynological evidence is inconsistent in this interval. Adnatosphaeridium aemulum (Callovian - Oxfordian) was recorded from 3643 m. and 3726 m. This implies a Callovian age if the specimens are not caved (caved material is suspected in this interval). At 3643 m. a single specimen of Nannoceratopsis gracilis was recovered. This species is common in Bajocian, Aalenian and older Jurassic sediments. However, a single specimen can not be regarded as conclusive evidence, and the preservation suggests that it may be reworked.

A precise age can not be proposed for this interval.

Environment

Deltaic to inner deltaic, possibly tidal at 3666 m. with high energy conditions.

3732 m. ?TRIASSIC

Biostratigraphy

Indigenous organic matter is almost completely lacking. There is no basis for dating this sample which is of presumed Triassic age.

Environment

Fresh water, lacustrine or fluvial or subaerial environment is possible. A marine or deltaic environment is unlikely.

Reference

IKU report 062/1/77 Biostratigraphy of Statoil 15/9-1 Norwegian North Sea Well.