

Improving characterisation of the tight Lower Cretaceous marly chalk reservoir, Central North Sea - a nannofossil biostratigraphic, sequence stratigraphic and sedimentological approach

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Lower Cretaceous reservoir-grade chalks and marly chalks have been a secondary target for hydrocarbon exploration and production in Denmark for decades. However, the urgent focus on climate change and the recent end to hydrocarbon exploration in Denmark has shifted the industry's attention towards field development.

Development of the Valdemar-Boje-Adda area of the Danish sector of the North Sea has required an up-to-date understanding of the architecture of the low permeability Lower Cretaceous hydrocarbon reservoir. We have carried out an extensive nannofossil biostratigraphic, well log and sedimentological investigation on selected wells from the area.

Industrial biostratigraphic interpretation usually relies on confidential, field-specific, oil company / consultancy company zonation schemes. We have applied published boreal nannofossil zonation schemes; BC Zones (Bown et al. 1998) and LK Zones (Jeremiah 2001) to the upper Hauterivian to Barremian Tuxen Formation (nannofossil Zones BC7 –16, LK 26–15) and the upper Barremian to lower Aptian Sola Formation (BC16–21, LK 15–12), which coupled with new log interpretation and sedimentological logging, provide a new stratigraphic model for the area.

The improved stratigraphic framework has increased our understanding of the structural history and sedimentary development of the area and has been implemented in reappraisal of the Adda Field; present studies are focused on extending this framework to assist further development of the Lower Cretaceous chalks in the Tyra Field to the south-east.

References:

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