



LITHOSTRATIGRAPHY & HISTORY FOR WELL: 33/9-17

Wellbore History

GENERAL

Well 33/9-17 is located immediately north of the Statfjord field, northwest of the Statfjord Nord field with the Murchison field to the west.

The primary objective of the well was to evaluate the hydrocarbon potential of intra-Draupne sandstone informally named the Munin sandstone unit. It was designed to find commercial hydrocarbons in a structural/stratigraphic play above 3080 meters sub-sea, the interpreted oil/water contact. The secondary objective was to evaluate the Middle Jurassic sandstones of the Brent Group.

OPERATIONS AND RESULTS

Well 33/9-17 was spudded on 2 April 1994 with the semi-submersible rig Treasure Saga and reached a total driller's depth of 3233 m RKB in the Middle Jurassic Brent Group. The well was drilled with seawater and swept with high viscosity mud down to the 12 1/4" section, while KCl/polymer/Glycol mud was used when drilling the 12 1/4" section and to TD.

The Munin sandstone unit (3050 - 3131m) was mostly water bearing with localized hydrocarbon shows. Average water saturation within the reservoir is 89.2%. The unit consisted of 47.3 meters of net reservoir out of a gross interval of 81 meters (N/G = 58.4%). The net reservoir was of excellent quality. Average Munin porosity was 22.6% and permeability was generally over 1 Darcy. The Brent Group (3187 -3233m) has 22.9 meters of good quality reservoir rock from a gross sandstone thickness of 37 meters, but is water bearing. Average porosity for the reservoir rock is 19.7%.

None of the analysed potential source rocks of this well are within the oil window and only limited early generation of hydrocarbons has taken place. The Viking Group claystones do, however, seem to have generated some hydrocarbons. These hydrocarbon products appear to be fairly sulphur-rich.

The best source rocks found in well 33/9-17 are represented by the claystones in the upper and lower sections of the Draupne Formation and in the Munin sandstone unit. These are very rich source rocks and are oil prone. The lower section of the Draupne Formation appears to contain an almost lacustrine assemblage of kerogen.

The Brent Group contains TOC-rich claystones, but they appear to be more gas prone although they could have some oil potential. The Tertiary and Cretaceous sections have at best a fair potential for gas generation although the base of the Cromer Knoll Group grades to the Draupne Formation and could be said to have some potential for oil generation.

Three cores were cut through the Mime Formation of the Cromer Knoll Group and the Draupne Formation of the Viking Group. The last core penetrated some 13 m of the Munin sandstone unit. The Munin sandstone cores had good porosity. An RFT sample taken at 3087 m (logger's depth) in the Munin sandstone unit contained water. RFT formation pressures were obtained in Draupne (Munin sandstone unit), Tarbert Formation and Ness Formation. Traces of oil shows were observed in sandy laminations within claystones of the Draupne Group immediately overlying the Munin sandstones. In the Middle Jurassic Brent Group, no oil shows were observed in sandstones of the Tarbert and Ness Formations and no cores were cut here.

Well 33/9-17 discovered only traces of hydrocarbons within the Munin sandstone unit. These hydrocarbons were not detected during drilling (MWD) but are evident within the whole core (core depths 3045m and 3055m, measured depths 3050.5mand 3060.5m). Petrophysical analysis confirmed the existence of low oil saturations within the Munin sandstone unit.

The well was plugged and abandoned as a safety bore with oil shows in the Munin sandstone unit on 4 May 1994.

TESTING

No drill stem test was performed.