



Wellbore History

GENERAL

Well 34/7-6 was drilled centrally on the Snorre Field in the Tampen Spur area of the North Sea. The objectives were to test the reservoir quality of the Statfjord Formation and the extent of the low GOR oil encountered in the 34/7-3 and 34/7-4 wells. Further objectives were to test the proposed subdivision and reservoir characteristics of the Triassic Lunde and Lomvi formations.

OPERATIONS AND RESULTS

Appraisal well 34/7-6 was spudded with the semi-submersible installation Treasure Saga on 17 March and drilled to TD at 3685 m in the Triassic Teist Formation. No significant problem was encountered in the drilling phase. After DST 1 parts of the test string stuck, leaving a fish with top at 2533 m in the hole. The fish was pushed down 12 m to give space for further testing. The well was drilled with spud mud down to 965 m, with gypsum/polymer mud from 965 m to 3015 m, and with Drispac/Ligcon mud from 3015 m to TD.

Apart from the sandy Utsira Formation of Late Oligocene - Pliocene age, and sandstone units of Early Oligocene age (1215 - 1280 m) and Middle - Late Eocene age (1370 - 1420 m) within the Hordaland Group, the upper section down to the Jurassic proved mainly claystones. The Jurassic consists of a silty Dunlin Group and a sandy Statfjord Group. The Triassic had sandstones alternating and interbedded with claystones down to TD.

Silty laminae in the Shetland Group had traces of shows from about 2110 m. These were described as gold yellow fluorescence with no cut. From 2155 m and down to 2500 m silt and sandstone show golden yellow fluorescence and slow streaming cloudy yellow fluorescence cut. Occasionally light brown staining and weak odour are observed from 2500 m. Hydrocarbons were encountered from top Statfjord Group at 2510 m down to an oil-water contact at 2610 m in the uppermost part of the Upper Lunde Formation. The contact lie in a shaley interval and is set from pressure gradient measurements. There were no shows below the OWC.

A total of 151 m core was recovered in 13 cores. Ten cores were cut (recovered 93.6 m, 86.7%) in the Statfjord Group and across the stratigraphic border zone into the Upper Lunde Formation of the Hegre Group. Cores 11 and 12 were cut further down in Upper Lunde Formation (recovered 38.5 m, 96.3%). Core 13 was cut in the Lomvi Formation (recovered 18.5 m, 100%).The core - log depth shifts for the individual cores varied from -1.3 m to -5.0 m. FMT segregated fluid samples were taken at 2561.4 m, 2584.4 m, and 2595.4 m.

The well was permanently abandoned on 30 May 1985 as an oil appraisal well.

TESTING

Four DST's were carried out in the Statfjord Group and Lunde Formation.

DST 1 tested the Upper Lunde at 2679 - 2687 m. The test produced water at a final rate of 225 m3 /day. The bottom hole temperature was 93.7 °C.

DST 2 tested the Eiriksson Formation from perforations at 2549.5 - 2552.0 m, 2555.0 - 2563.0 m, and 2568.0 - 2572.5 m. The flow rate was 519 Sm3 oil/day through a 7.9 mm choke. The GOR was 66 Sm3/Sm3 at separator conditions (11.7 bar, 29.4 °C). The oil density was 0.834 g/cm3. The bottom hole temperature was 90.9 °C.

DST 3A tested the Nansen Formation at 2518.5 - 2522.5 m. The flow rate was 393 Sm3 oil/day through a 6.4 mm choke. The GOR was 52 Sm3/Sm3 at separator conditions (15 bar, 16.7 °C). The oil density was 0.837 g/cm3. The bottom hole temperature was 90.2 °C.

DST 3B tested both Eiriksson and Nansen formations from perforations at 2548.5 - 2552.0 m, 2555.0 - 2563.0 m, and 2568.5 m. The flow rate was 1729 Sm3 oil/day through a 14.3 mm choke. The GOR was 49 Sm3/Sm3 at separator conditions (36.2 bar, 52.8 °C); at stock tank conditions, the GOR was 85 Sm3/Sm3. The oil density was 0.8389 g/cm3. The bottom hole temperature was 89.9 °C.

LITHOSTRATIGRAPHY & HISTORY FOR WELL 34/7-6