



Wellbore History

GENERAL

Well 15/9-7 was drilled as an appraisal well on the south part of the Sleipner Vest Field in the North Sea. The primary objective was to test for hydrocarbons in Callovian age sandstones in the Epsilon structure.

OPERATIONS AND RESULTS

Appraisal well 15/9-7 was spudded with the semi-submersible installation Nordraug on 26 December 1980 and drilled to TD at 3776 m in the Middle Jurassic Sleipner Formation. A total of 20 days was spent on waiting on weather. The phase of running BOP after cemented 20" casing took 15 days due to several broken guide wires combined with bad weather. The well was drilled with spud mud down to 465 m, with gypsum/polymer mud from 465 m to 2823 m, and with gel/lignosulphonate/Drispac mud from 2823 m to TD.

The primary target Hugin Formation was penetrated at 3519 m and proved to hold gas and condensate down to a true gas/water contact at 3673 m based on RFT gas gradients. The gross reservoir thickness was 185 m (3519 to 3704 m) with a net pay of 83 m with 18% porosity and 12 % water saturation. There were no oil shows above top Hugin reservoir level. Oil shows were described on the cores from the reservoir and on cuttings down to 3677 m.

A total of 156 m core was recovered in 12 cores from the interval 3516 to 3671 m. The core-log depth shift was significant for all cores: from +6.0 to +9.1 meter, the largest shifts are for the deepest cores. Segregated RFT fluid samples were taken at 3560 m (gas, mud filtrate and condensate), 3603 m (gas, mud filtrate and condensate), 3658.5 m (gas, mud filtrate and condensate +dark oil emulsion), 3687 m (mud filtrate, formation water and minor gas), and 3672.2 m (mud filtrate and water).

The well was permanently abandoned on 29 April 1981 as a gas/condensate appraisal well.

TESTING

Three drill stem tests were performed in the Hugin Formation.

DST1 tested the interval 3671 to 3674.5 m. It produced 194100 Sm³ gas and 38 Sm³ condensate /day through a 24/64" choke. The GOR was 5107 Sm³/Sm³, the condensate density was 0.797 g/cm³ and the gas gravity was 0.78 (air = 1). The gas contained 7-8% CO₂. The maximum temperature in the test was 127.8 °C.

DST2 tested the interval 3637 to 3638.5 m. It produced 322500 Sm³ gas and 93.2 Sm³ condensate /day through a 24/64" choke. The GOR was 3461 Sm³/Sm³, the condensate density was 0.790 g/cm³ and the gas gravity was 0.775 (air = 1). The gas contained 7-8% CO₂. The maximum temperature in the test was 121.1 °C.

DST3 tested the interval 3555 to 3565 m. It produced 912900 Sm³ gas and 242.8 Sm³ condensate /day through a 64/64" choke. The GOR was 3760 Sm³/Sm³, the condensate density was 0.792 g/cm³ and the gas gravity was 0.775 (air = 1). The gas contained 8-9% CO₂. The maximum temperature in the test was 118.3 °C.

LITHOSTRATIGRAPHY & HISTORY FOR WELL: 15/9-7