



Wellbore History

GENERAL

The Dønna Terrace forms a large down faulted block on the western margin of the Trøndelag Platform, situated between the Nordland Ridge and the Vøring Basin. The structure to be tested by 6507/2-2 is situated on the western edge of the Dønna Terrace. This structure was earlier tested by well 6507/2-1, which however left a considerable untested column up-dip from the well position. The main target of the well was the Jurassic reservoirs of Garn, Ile, and Tilje Formation. The secondary objectives were to test the prospectivity of the Cretaceous sands in the Lysing and Lange Formations or at least to obtain stratigraphic information from these formations.

OPERATIONS AND RESULTS

Wildcat well 6507/2-2 was spudded with the semi-submersible installation Polar Pioneer on 21 October 1991 and drilled to TD at 3958 m in Early Jurassic sediments of the Åre Formation. The well had 37% downtime due mainly to repeated occurrences of stuck drill pipe. Drilling went relatively smooth down to setting of the 9 5/8" casing shoe at 2760 m. After having cut two cores in the 8 1/2" section the well was shut in due to an influx at 3336 m. The well was killed with increased mud weight, but the pipe was found to be stuck. The pipe could not be freed and was cut at 3175 m. The well was then plugged back and sidetracked from 2989 m and drilled to 3326 m with minor problems. A 7" liner was run and set with shoe at 3324 m and the 6" section was then drilled to 3737 where parts of the bit sub was lost in the hole. This led to 20 days lost while attempting to recover the fish and sidetrack past the fish. Eventually the fish was partly recovered and drilling commenced to TD. The well was drilled with seawater and hi-vis pills down to 685 m and with a KCl/polymer mud from 685 m to TD.

Oil shows were recorded on sandstone laminae in the interval 2208 ? 2750 m in the Shetland Group. The Cretaceous Lysing Formation was encountered at 2817.5 m, and the Lange Formation at 2831 m. A total of 23 m net sand was interpreted in the Cretaceous interval. Both Lysing and Lange Formation proved to be gas filled and the reservoirs were tested and exhibited fair to good production rates. Top Jurassic was encountered at 3380 m with a 292.5 m thick Melke Formation. Top Garn Formation came in at 3672.5 m. A total of 65.8 m net sand with an average porosity of 14.8% was penetrated in the Early and Middle Jurassic. The Jurassic sands were water filled, but weak to moderate shows were recorded on all cores from the Jurassic.

Six cores were cut in the well. The two first were cut in the first hole from 2822 m to 2849.4 m in the Lysing and top Lange Formation and from 3278 m to 3296 m in the hydrocarbon-bearing Intra-Lange Formation sandstone. Cores 3 to 6 were cut in the sidetrack. Core 3 was cut over a second Intra-Lange sand from 3330 m to 3339.4 m; core 4 was cut from 3685 m to 3700 m in the Middle Jurassic Fangst Group, while core 5 and 6 were cut at 3770 m to 3778.5 m and at 3921 m to 3930 in sandstones of the Early Jurassic Båt Group. RFT fluid samples were taken at 3270.5 m (water and filtrate), 3280 m, 2825 m (water/filtrate and gas), and 3331.6 m (water/filtrate and gas).

The well was permanently abandoned on 16 March 1992 as a gas condensate discovery.

TESTING

Two DST tests were performed in the Cretaceous.

DST 1A from the interval 3285.4 m to 3294.4 m in an intra- Lange Formation sandstone flowed 676000 Sm³ gas and 107 Sm³ oil/condensate per day through a 25.4mm choke. The GOR was 4950 Sm³/Sm³, the condensate density was 0.796 g/cm³, the gas gravity (air =1) was 0.63, and the gas contained 0.65 % CO₂ and 0.2 ppm H₂S. The bottom hole temperature recorded in the test was 118.4 deg C.

DST 1B from the interval 3285.4 m to 3294.4 m in the intra- Lange Formation sandstone flowed 865000 Sm³ gas and 80 Sm³ oil/condensate per day through a 25.5 mm choke. The GOR was 10800 Sm³/Sm³, the condensate density was 0.787 g/cm³, the gas gravity (air =1) was 0.645, and the gas contained 0.7 % CO₂ and 0.1 ppm H₂S. The bottom hole temperature recorded in the test was 99.1 deg C.

LITHOSTRATIGRAPHY & HISTORY FOR WELL: 6507/2-2