



Wellbore History

GENERAL

Block 6406/8 is located on the Haltenbanken offshore Mid-Norway, in the southwestern corner of the Halten Terrace, approximately 215 km west north west of Trondheim. The primary objective of exploration well 6406/8-1 was to test the hydrocarbon potential in the Middle Jurassic Fangst group and the Lower Jurassic Båt group (Ror and Tilje formations). Possible intra-Cretaceous sands related to a seismic marker were considered as second target. Well 6406/8-1 was the first well drilled on the licence. It is located on a domal structure at the Base Cretaceous Unconformity. The prognosed TD for the well was 5027 m.

OPERATIONS AND RESULTS

Well 6406/8-1 was spudded with the semi-submersible installation SSDV Vinni on 15 September 1987 and drilled to final TD at 4914 m in the Early Jurassic Åre Formation. The well was drilled water based.

It was drilled initially to a total depth of 4942 m where it had penetrated the Fangst Group. The well kicked and the drill string was lost in the hole. Due to incomplete fishing operation a sidetracked well was drilled. The sidetrack was spudded on 22 January 1988 at 4262 m. The Fangst Group was once again penetrated and an intermediate logging was performed. Drilling commenced to 4914 m. Due to hazardous drilling with gains and stuck pipe it was agreed that 4914 m was to become the TD of this well. A final logging operation was made comprising FMT and RFT. The Fangst Group down to top Ile Formation was interpreted from data available from the first hole. Due to failed MWD and no wire line logs below 4500 m in the first hole the Båt Group is interpreted from the sidetrack. Horner corrected wire line log BHTs at TD gave a formation temperature of 172 deg C.

Some gas dissolved in water was tested in the Ile Formation; otherwise no moveable hydrocarbons were seen in the well. Dull yellow spots and weak pale green cut fluorescence was described on sandstone from 3145 to 3190 m. Dull orange fluorescence and no cut was described on sandstone from 3985 to 4000 m. Orange/bright orange fluorescence with whitish cut fluorescence was seen on limestone from 4045 to 4060 m. All along the cores from 4368 to 4493 m, 5 to 20 % spots on sandstone with dull orange direct fluorescence and pale milky cut fluorescence was seen.

Five cores were cut in the Fangst Group from 4370 m to 4499 m and one core was cut in the Båt Group, Ror Formation from 4649.5 m to 4659 m. No fluid samples were taken on wire line. The well was permanently abandoned on 11 April 1988 as a dry well with shows.

TESTING

Two DST tests were performed in the well. DST 1 tested the Tilje Formation in the interval 4701 - 4718.0 m. It gave no flow to surface and all results showed a water bearing and tight formation. Maximum temperature during the 4 hours test was 161 deg C. DST 2 tested the Ile Formation between 4413.5 - 4453.5 m. The first two attempts (DST 2 and DST 2B) from this interval were aborted due to technical problems and bad weather. The third attempt (DST 2C) flowed ca 1050 Sm3 gas and 145 m3 water /day through a 16/64" choke. The gas gravity was 0.765 (air=1). Gas samples were taken in this test and analyses showed a gas containing 77% methane, 3% ethane, and 19% CO2 (volume/volume). The maximum temperature was 166.3 deg C, which is ca 10 deg higher than a linear temperature gradient drawn from the log-derived BHT at TD.

Due to poor pressure recordings on wire line in the Fangst Group and uncertain formation water salinity, no test was performed in the Garn Formation.

LITHOSTRATIGRAPHY & HISTORY FOR WELL: 6406/8-1