



Wellbore History

GENERAL

Well 6507/3-5 S was drilled on the Alve Field on the Nordland High of the Norwegian Sea. It was drilled both as a producer for earlier proven reserves in the Garn and Not Formations of the Middle Jurassic Fangst Group and as an exploration well. In the exploration part of well 6507/3-5 S the objective was to delimit the volume of hydrocarbons in the Early Jurassic sandstones of the Lower Fangst/Båt Group, Ile and Tilje Formation, underlying the Garn and Not Formations, and to map the productive properties of this reservoir.

OPERATIONS AND RESULTS

Well 6507/3-5 S was spudded with the semi-submersible installation Ocean Vanguard on 28 February 2008 and drilled to TD at 4265 m in the Early Jurassic Åre Formation. After the 36" top hole a 9 7/8" pilot hole was drilled from 456 m to 1226 m to check for shallow gas. No shallow gas was seen. The following 26" section was slide drilled from 548 m in an attempt to make a kick-off, but in fact kick-off from the pilot hole was not achieved until a depth of ca 850 m. The angle built up to ca 36 deg at ca 1400 m. Inclination was kept within 35 to 37 deg down to ca 3200 m, and then dropped back towards the vertical at TD. The well was drilled with sea water and bentonite pills down to 1243 m, with Aquadrill (KCl, Glycol) mud from 1243 m to 2480 m, and with Carbosea oil based mud from 2480 m to TD.

From 3154 to 3319 m frequent thin sand zones were encountered within the Kvitnos and Lange Formations. These sands had a net thickness of ca 10 m. Most of them had clear HC-indication from the MWD resistivity reading as well as a good gas response in the mud returns. Wire line logging was not done in this part of the well due to unstable hole conditions. The Garn/Not gas was proven as expected, with a slightly shallower gas-water contact than pre-well (3633m MSL vs. earlier 3646 m). The well discovered gas in Early and Middle Jurassic sandstones in the Ile -, Ror - and Tilje Formations, and a thin oil-leg in Tilje Fm. Log data from the well indicated a most likely gas oil contact in the Tilje Formation at 3708 m TVD MSL, and an oil water contact (OWC) in the Tilje Formation sandstones at 3755 m TVD MSL.

Shows (fluorescence) were observed on cores from the reservoir in Garn, Not and Tilje Formations, but after comparison with the base oil they were found questionable.

Two cores were cut in the well, at 3959 to 4013 m in the Garn and Not Formations and at 4144 to 4180.8 m in the Tilje Formation. MDT wire line fluid samples were taken at 3960.5 m in t (gas) in Garn Formation, 4049.5 m in the Ile Formation (gas/condensate), 4083.3 m in the Tofte Formation (oil), 4119.5 m in Tilje Formation (gas/condensate), 4160.8 m in Tilje Formation (oil), and at 4166.6 m in Tilje Formation (oil). Most of the samples were heavily contaminated with base oil from the mud (32 - 75 %), only the Garn and the deepest Tilje Formation samples had minor contamination (5 - 12%)

The exploration well bore was plugged and permanently abandoned back to 3818 m. The well above 3818 m was suspended. A development well, 6507/3-L-2H, was to be sidetracked from this well in late 2008.

TESTING

No drill stem test was performed.

LITHOSTRATIGRAPHY & HISTORY FOR WELL: 6507/3-5 S