



LITHOSTRATIGRAPHY & HISTORY FOR WELL: 6506/11-2

Wellbore History

GENERAL

Well 6506/11-2 was drilled on the southwestern extension of the Smørbukk Field on the Halten Terrace. The exploratory objectives of the well were to prove oil in the Tilje, Ile, and possibly Garn Formations in the southwestern part of the Smørbukk Discovery. The well would also provide essential field development data for this part of the Smørbukk Discovery in connection with the Smørbukk South Field development planning.

Shallow gas warnings were given for seven levels down to 910 m. Maximum pore pressure was expected to ca 1.60 g/cm3 when entering the Late Jurassic reservoir.

OPERATIONS AND RESULTS

Well 6506/11-2 was spudded with the semi-submersible installation Ross Rig on 8 May 1991 and drilled to TD at 4813 m in the Early Jurassic Åre Formation. No shallow gas was encountered. The well was drilled with seawater and hi-vis pills down to 830 m and with gypsum/polymer mud from 830 m to 2307 m. When running the 13 3/8" casing it got stuck. Several Imcospot/Pipelax pills were spotted to free the pipe, but without success, so the hole was plugged back and sidetracked. The sidetrack from 1257 m was drilled with gypsum/polymer mud down to 2255 m, with gypsum/PAC/Kemseal polymer mud from 2255 m to 4238 m, and with bentonite/Thermopol/Ancotemp mud from 4238 m to TD. Planned time budget for the well was 74 days, without testing. The well took 172 days. Significant time was lost due to the stuck 13 3/8" casing with subsequent sidetrack drilling. Problems during DST 1 and P&A phase also contributed significant lost time. However, the main deviation from planned time consumption reflected operational decisions during drilling. Extended logging and coring programs were approved in the course of making hole. The results also lead to confirmation of extended testing.

Maximum pore pressure, 1.71 g/cm3, was seen in the top of the Shetland Group at ca 2400 m. The pore pressure in the Late Jurassic was 1.66 g/cm3, about as expected. Several hydrocarbon-bearing sands were encountered and tested. The well proved oil and gas in the Tilje, Ile, Lange, and Lysing Formations. The Garn Formation was a massive sand, but water wet. There were oil shows throughout the Fangst and Båt Groups.

A total of 310 m core was recovered in 15 cores from most of the Fangst and Båt Groups. A total of 100 sidewall cores were attempted and 89 were recovered. FMT fluid samples were taken at 3377.7 m, 4045.9 m, 4378.4 m, and 4721.5 m.

The well was permanently abandoned on 26 October 1991 as a gas and oil discovery.

TESTING

Six DST tests were performed.

DST 1A was performed in the interval 4668 - 4704 m in base Tilje Formation, yielding a maximum flow rate of 554 Sm3/d oil and 770733 Sm3/d gas through an 80/64" choke. Oil density was 0.807 g/cm3 and the GOR was 1392 Sm3/Sm3. Maximum BHT was 160 deg C.

DST 2 was performed in the interval 4553.2 - 4597.2 m in top Tilje Formation, yielding a maximum flow rate of 481 Sm3/d oil and 440000 Sm3/d gas through an 80/64" choke. The GOR was 1392 Sm3/Sm3. Maximum BHT was 157 deg C.

DST 3 in the interval 4486 - 4510 m in the Tofte Formation flowed only 75 l of cushion fluid; it produced no formation fluid.

DST 4 at 4371 - 4420 m in the Ile Formation yielded a maximum flow rate of 714 Sm3/d oil and 1028000 Sm3/d gas through a 64/64" choke. Oil density was 0.783 g/cm3 and the GOR was 1440 Sm3/Sm3. Maximum BHT was 155 deg C.

DST 5 at 4005 - 4048 m in the Lange Formation yielded a maximum flow rate of 136 Sm3/d and 69845 Sm3/d gas through a 36/64" choke. Oil density was 0.82 g/cm3 and the GOR was 513 Sm3/Sm3. Maximum BHT was 138 deg C.

DST 6 at 3373.5 - 3398.5 m in the Lysing Formation yielded a maximum flow rate of 129 Sm3/d water, 40 Sm3/d oil, and 6825 Sm3/d gas through a