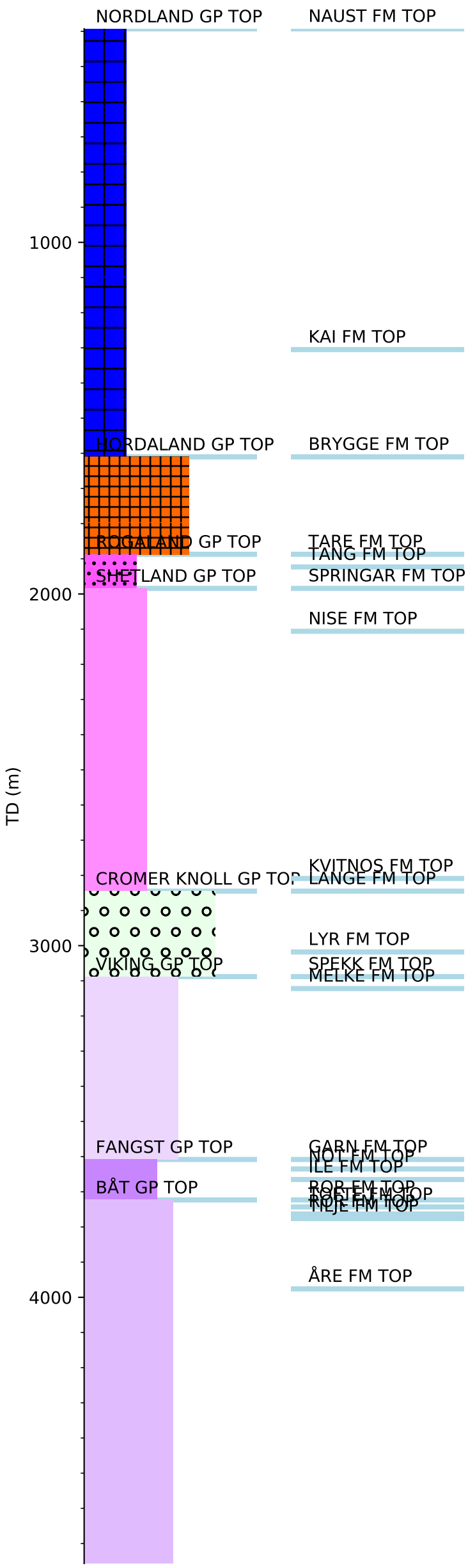

Wellbore History

GENERAL

Well 6507/3-1 is located west-southwest of the Norne Field on the Dønna Terrace offshore Mid Norway. The prospect, called the Alpha structure, was defined as a horst structure oriented in a northeast - southwest direction on the Dønna Terrace, west of the Nordland Ridge in the northern part of the block. The northern part of the structure extended into block 6607/12. The well was expected to penetrate rocks of Cenozoic-, Cretaceous-, and Jurassic age. The primary objective of the well was to test the hydrocarbon potential of the Middle to Early Jurassic Fangst and Båt Groups. Secondary objectives were to test possible reservoirs in the Early Cretaceous (Cromer Knoll Group) and Late Jurassic (Rogn Formation sands). The commitment of the well was to drill into rocks of Triassic age or to 5000 m.

OPERATIONS AND RESULTS

Wildcat well 6507/3-1 was spudded with the semi-submersible installation Ross Rig on 12 May 1990, and drilled to TD at 4757 m in Late Triassic sediments of the Åre Formation. After having set the 9 5/8" casing with shoe at 3167 m, an 8 1/2" hole was drilled to 4080 m. This hole, especially the Melke Formation, became very unstable and caused serious drilling problems. After having worked with stuck pipe and fish, the hole was finally plugged back to the 9 5/8" casing shoe and sidetracked from 3177 m, (a technical bypass) and drilled to TD. Due to the problems encountered the first hole was logged from 3850 m to hole TD at 4080 with MWD only, while the sidetracked hole was not logged below 4506 m. The Directional survey shows a practically vertical well with TVD only one meter short of MD down to this depth. The well was drilled with seawater and CMC hi-vis pills down to 900 m, with gypsum/polymer mud from 900 m to 3183 m, with gel/lignosulphonate mud from 3183 m to 3974 m, and with Kemseal/PAC/Miltemp mud from 3974 m to final TD.

Top of the Garn formation was penetrated at 3608 m. Above this level no sand sections of interest were observed. Top of the Garn formation has very good reservoir properties. At approximately 3624 m mica is introduced into the sandstone and below this level the permeability decreases considerably. All sandstones below the Garn formation were mainly tight. Hydrocarbons were encountered in sandstones of the Fangst- and Båt Groups. An oil/water contact at approximately 3809 in the Tilje Formation could be interpreted from the logs, with residual hydrocarbon below this depth.

Seven cores were cut of which the first six were cut in the Garn, Not, Ror, Tilje, and Åre Formations in the first hole, while core no 7 was cut in the Ile Formation in the sidetracked hole. A total of 3 RFT run were performed in the well. All RFT runs were done before the well was sidetracked. The only sampling obtained was in RFT run 3C in the Garn formation at 3610 m. The 2 3/4 gallon chamber was emptied offshore, containing 2 m3 gas and 1.69 litres of 48 deg API condensate.

The well was permanently abandoned on 26 October 1990 as a gas/condensate discovery.

TESTING

Four DST tests were performed in this well.

No 1A perforated from 3783 to 3798 m in the Tilje formation. The zone proved to be tight.

No 1B perforated from 3743 to 3764 m in the Tofte formation. The zone proved to be tight.

No 2 perforated from 3690 to 3724 m in the Ile formation. The zone proved to be tight, but some oil and gas was trapped between the LPR-N and the APR-M valves

No 3 perforated from 3611 to 3636 m in the Garn formation. At the end of the main flow the test produced 290 Sm3 condensate and 905000 Sm3 gas /day through a 48/64" choke. The GOR was 3121 Sm3/Sm3, the condensate density was 0.802 g/cm3 (45 deg API), the gas gravity was 0.715 (air = 1) with 3.9 ppm H2S and 3.6 % CO2. The bottom hole temperature in this test was 135.9 deg C.

LITHOSTRATIGRAPHY & HISTORY FOR WELL: 6507/3-1