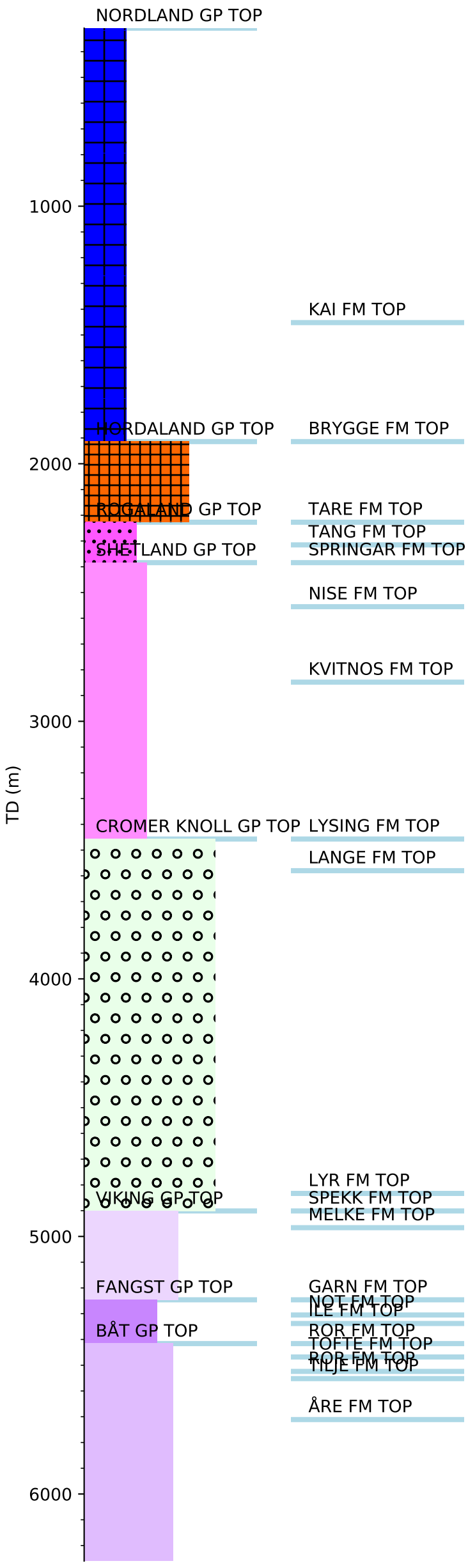
Groups

Formation Tops



Wellbore History

GENERAL

The main objective of well 6506/12-10 A was to appraise the down flanks hydrocarbons in the Garn, Ile, Tilje, and the Åre Formation, on the Smørbukk Field.

OPERATIONS AND RESULTS

The appraisal sidetrack well 6506/12-10 A was kicked off with the semi-submersible installation "Ross Rig" from 2823 m in 6506/12-10 on 25 June 1995 and drilled to 6260 m with a total cost considerably higher than planned budget. The higher costs were mainly due to kick off and orienting problems from the vertical well, lots of trips to change bits, milling cones lost in the 12 1/4" hole and problems cementing the 7" liner. In general the drilling rate was lower than expected. Oil based mud (ANCO VERT) was used trough out the sidetrack. High mud weight (1.80 g/cm3) was used in the beginning to prevent formation damage during drilling. This can have caused lower ROP than expected. Prior to testing, a lot of leakage problems occurred within the test string mainly due to bad quality of the o-rings in the Halliburton test-valves. The string was pulled and reran 5 times before all the problems were sorted out. Total lost times in the test phase was 893 hrs (squeeze cementing of 7" liner, leak in BHA of the test string, BOP problems, WOW, fishing of packer slips).

Eleven cores were cut in the Tilje and Åre Formations. Two FMT samples were taken in the Garn Formation (4397.7 m TVD and 4402.7 m TVD, respectively) and one in the Tilje Formation (4806.8 m TVD). The Garn samples contained water while the Tilje sample contained oil. The 6506/12-10A well proved producible oil in the Garn, Ile, Tilje and upper parts of the Åre Formations in good sand intervals. After testing the well 6506/12-10 A was permanently plugged and abandoned on 11 December 1995 as an oil and gas appraisal well.

TESTING

The test plan included short tests of the Åre and Tilje Formations followed by a long term production period. Thereafter a minifrac from the rig plus a massive stimulation job of the Tilje Formation should be performed. The objectives for this operations was to try to establish the productivity improvements from a massive stimulation, and thereby more accurate be able to evaluate the production potential for the Tilje Formation within the Smørbukk field. Due to problems during cementing of the 7" liners, severe zone isolation problems occurred and the Åre test was abandoned for the more important Tilje test. The production test of well 6506/12-10 A perforated the interval 5686 m to 5706 m (4793 m to 4813 m TVD RKB) in the Tilje Formation. The Tilje test started, but it became more or less obvious during the test that it was the Åre formation that was producing 90 -100 % of the fluid and Tilje only contributed with a very small amount of fluid. Later analysis of test results, PVT analysis, comparison of FMT data from earlier wells and this well, confirm that it was the Åre formation that was produced during the test, and that the cement bound between the Åre and Tilje was broken down during the test. At the end of the test a minifrac was performed in the perforated interval to indicate stress level in the Tilje formation. The test was ended after two shiploads of oil were sent to Mongstad, and within the time budget.

LITHOSTRATIGRAPHY & HISTORY FOR WELL: 6506/12-10 A