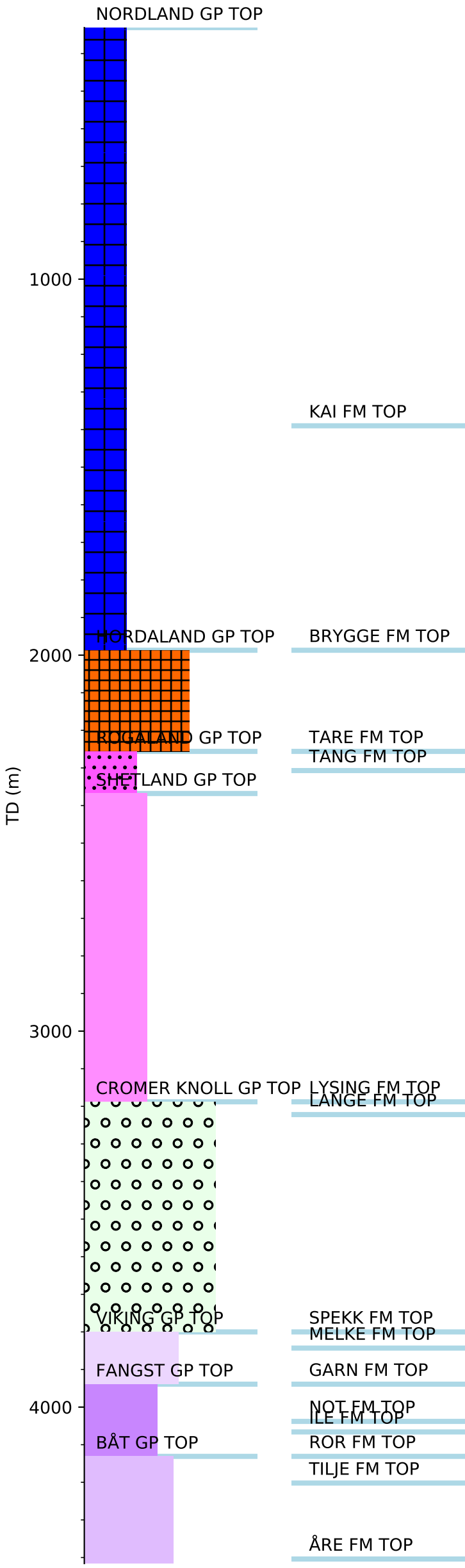
Groups

Formation Tops



Wellbore History

GENERAL

Well 6406/3-3 was drilled to appraise the southern part of the Beta structure, named Smørbukk South. This well was the fourth well on Smørbukk South, and it was a joint well between licenses PL 091 and PL 094. The primary target for the well was sandstones in the Middle-Early Jurassic age Halten Group (present nomenclature: Fangst and Båt Groups). The well location was chosen so that the Tomma I Formation (Garn Formation) was expected to be hydrocarbon bearing with hydrocarbon/water contacts in the Tomma III - Aldra Formations (Ile - Tilje Formations).

OPERATIONS AND RESULTS

Appraisal well 6406/3-3 was spudded with the semi-submersible installation Dyvi Delta on 4 August 1986 and drilled to TD at 4416 m in the Early Jurassic Åre Formation. Operations went without significant incidents and were finished twenty days ahead of schedule. Only 5.2% rig time was registered as down time. The well was drilled with seawater/hi-vis pills/bentonite down to 1070 m, with gypsum/polymer mud from 1070 m to 2320 m, with gypsum/lignosulphonate/lignite mud from 2320 m to 3936 m, and with lignosulphonate/lignite/Anco resin mud from 3936 m to TD.

The top of the reservoir came in at 3933 m, 49 m deeper than prognosed. Cores showed poor - medium visible porosity and good to poor oil shows from the top and down to ca 3955 m (ca 3925 m TVD MSL). The oil/water contact was thus almost 65 m higher than the other holes in the Beta structure. RFT-data indicated that the rest of the Fangst and Båt Groups contained water. Weak shows were however recorded on sidewall cores in the interval 4210 m to 4262 m in the Ti1je Formation, while weak shows were recorded on well site cuttings all through Middle - Early Jurassic down to TD.

A fixed offset VSP with the source 2.6 km north of the location was shot in order to explain the surprising and negative results of the well. The VSP sections indicated a probably sealing, east-west striking fault at reservoir level approximately 1 km north of the well. Results of well 6406/3-3 indicated that the Beta structure was divided into segments bounded by minor fault trends. As a result the reserve estimates on the Beta structure were reduced by ca 33%.

Two cores were cut in the intervals 3938 - 3952.5 and 3956 - 3972.2 m in the Garn Formation. No fluid samples were taken on wire line.

The well was permanently abandoned on 26 October 1986 as a well with shows.

TESTING

Two DSTs were performed in the Garn Formation in this well. DST 1 at 4003 - 4012 m produced 35 m3 water/day on a 64/64" choke. The maximum temperature measured during the test was 136 deg C. DST 2 at 3940 - 3950 m gave no flow from a tight formation. Maximum temperature measured during DST 2 was 124 deg C.

LITHOSTRATIGRAPHY & HISTORY FOR WELL: 6406/3-3