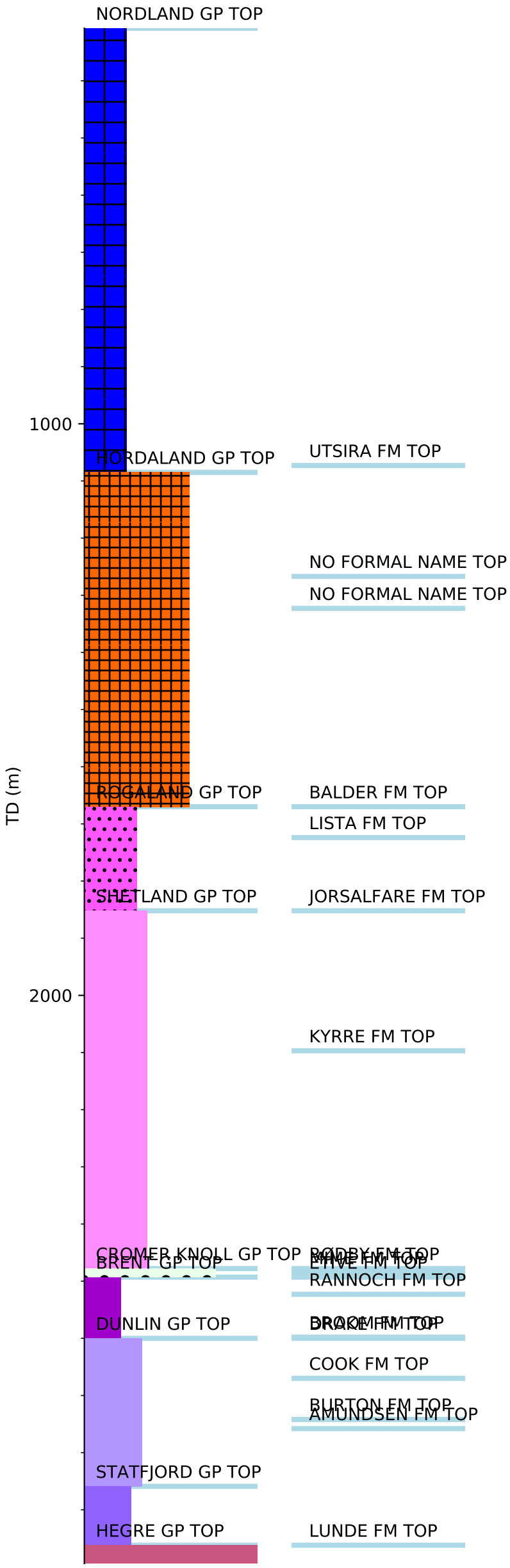
Groups

Formation Tops



Wellbore History

GENERAL

Well 34/7-13 was drilled in the north western part of block 34/7 on the Snorre West prospect. The prospect is divided into two main fault segments by a SW NE trending fault with a throw of 60 m. The well was located in the southern part of the two segments. The primary purposes of the well were to explore the Snorre West prospect and to test a possible extension of the Statfjord East Field in a northward direction. The main target of the well was sandstones of the Middle Jurassic Brent Group. Secondary target was sandstones of the Early Jurassic Statfjord Formation.

OPERATIONS AND RESULTS

Wildcat well 34/7-13 was spudded with the semi-submersible installation Treasure Saga on 19 February 1988 and drilled to TD at 2994 m in the Late Triassic Lunde Formation. Drilling proceeded without significant problems, but up to 21 deg deviation in the deepest section of the well caused 11 m deviation between MD and TVD at TD. Shallow gas was encountered at 459 m, but it did not cause any technical problems. The well was drilled with spud mud down to 434, with Gel mud from 434 m to 973 m, with KCl mud from 973 m to 2682 m, and with gel mud from 2682 m to TD.

Above the Jurassic the well penetrated mainly claystones with the exception of the Utsira Formation and some sandstone intervals between 1265 and 1325 m in the Hordaland Group. The Jurassic comprised the Middle Jurassic Brent Group, and the Early Jurassic Dunlin Group and Statfjord Formation. The Triassic comprised the Late Triassic upper Lunde Formation. The sandstones of the Brent Group, the Etive Formation, were encountered at 2492.5 m (TVD: 2490 m). The Etive Formation proved oil bearing, and the OWC was calculated to be at 2505.5 m (TVD: 2503 m). This was a thinner oil column than prognosed and the resources for the prospect were thus reduced compared to what was expected.

The sandstones of the Statfjord Formation proved water bearing.

First sign of petroleum hydrocarbons (C2 - C3) were reported at 2260 m. From 2285 m weak oil shows were seen in sand stringers. Over the reservoir and down to approximately 2510 m good oil shows were observed. Below 2510 m oil shows got weaker but traces were seen down to 2590 m.

Five cores were cut in the interval 2496 - 2587.8 m. A total of 5 cores were cut throughout this section with 99 % recovery. A sixth core was cut from 2873 to 2890.5 m in the Statfjord Formation. FMT samples were taken at 2493.4 m (oil), 2494.4 m (oil), and 2503.7 m (water contaminated with mud filtrate). Single stage flash of the sample from 2493.4 m gave a GOR of 84.3 Sm3/Sm3, an oil density of 0.8392 g/cm3, and a gas gravity of 0.925 (air = 1).

The well was permanently abandoned on 13 April 1988. It is classified as an oil appraisal on the Vigdis Discovery.

TESTING

One DST was performed in the interval 2498.1 - 2501.1 m in the Etive Formation. At the end of a 6.8 hours flow period, "Formation characteristics flow", the well produced 935 Sm3/day of oil with a GOR of 49 Sm3/Sm3 through an 11.1 mm choke. In the beginning of the main flow period the maximum recorded oil rate was 1350 Sm3/day through a 16 mm choke. The GOR in this flow was 51 Sm3/Sm3 and the oil density was 0.840 g/cm3. At the end of the main flow the well produced with 30-35% water cut. Sand production was also observed. Maximum down-hole temperature in the test (measured during main flow) was 90 deg C.

A second DST was omitted due to problems caused by sand production.

LITHOSTRATIGRAPHY & HISTORY FOR WELL: 34/7-13