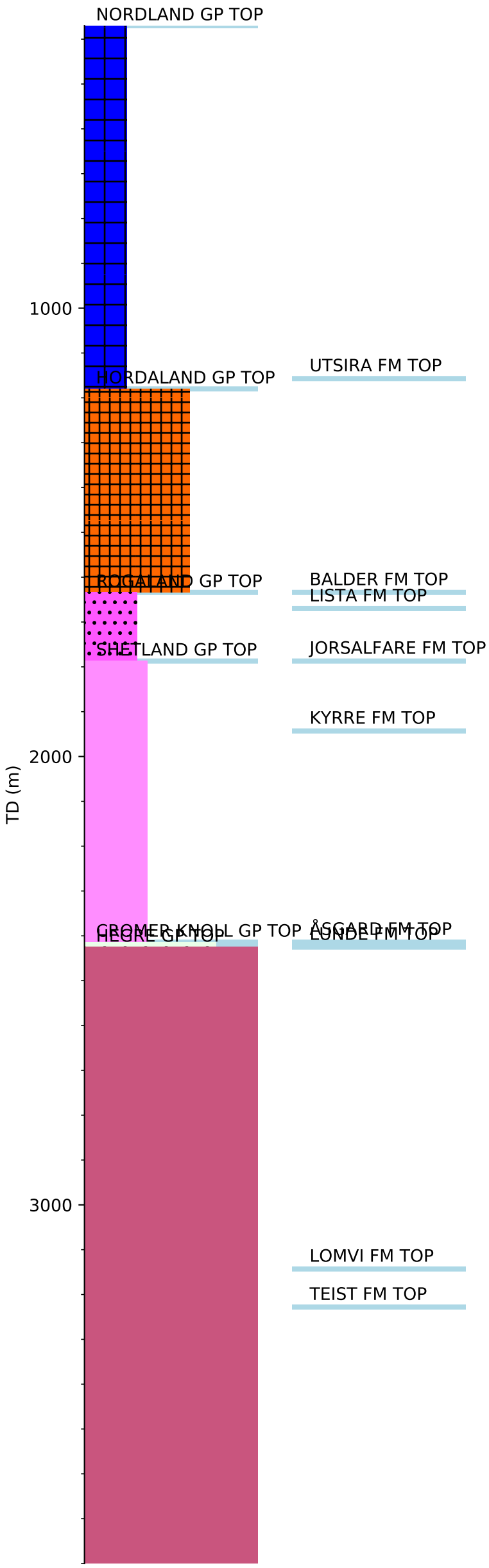
Groups

Formation Tops



Wellbore History

GENERAL

The primary objective of the exploration well 34/4 4 was to drill the untested Triassic sequence in the fault blocks west of well 34/4-1. The well location was chosen to be stratigraphically higher relative to the Triassic sequence in well 34/4-1. The purpose of the well location was also to penetrate and core the maximum oil column above the tentative oil water contact interpreted in well 34/4-1 and to test possible lateral fluid communication with 34/4-1.

OPERATIONS AND RESULTS

Wildcat well 34/4-4 was spudded with the semi-submersible installation Dyvi Alpha on 11 September 1982 and drilled to TD at 3800 in Middle Triassic sediments, Teist Formation. As much as 15 % of total rig time was WOW due to bad weather. While coring, after core number 12 was taken, the mud was replaced with seawater by accident and caused a kick, resulting in a 20 bbls influx. The well was drilled with spud mud down to 493 m, with gel mud from 493 m to 1212 m, with gypsum/polymer mud from 1212 m to 2116 m, with Lignosulphonate mud from 2116 m to 2475 m, and with lignosulphonate/Chem-X mud from 2475 m to TD.

First oil shows were recorded on cuttings from thin sandstone stringers below 2075 m, accompanied by increased gas readings. Sidewall cores from siltstone beds between 2100 and 2414 m also occasionally had oil shows.

The Early Cretaceous Åsgard Formation rested unconformably on the Late Triassic Lunde Formation at 2425 m. The Lunde Formation sandstones were oil bearing down to the oil water contact at 2586 m. The OWC was set mostly on the intersection of the oil and water pressure gradients from RFT data. The oil bearing sand was separated from the water zone by a 22 m thick residual oil zone between 2586 and 2608 m. This interval had an average net sand porosity of 22%. In the water wet sand interval between 2608 and 2794 m, the average net sand porosity was 21%. No shows were recorded below 2612 m.

A total of 180 m core was cut in 15 cores from 2433.7 to 2638.4 m in the Lunde Formation oil reservoir and down across the OWC. The core-log depth shifts were significant with the cored depth for core 1 being + 9.5 m relative to logger's depth. The shifts for the following cores decreased in a relatively regular fashion with increasing core depth to + 4.5 m for core 15. The RFT tool was run and good pressure data was obtained. RFT segregated fluid samples were taken at 2431.5 m (oil and gas), 2489.0 m (mud filtrate), 2573.0 m (oil and mud filtrate), 2605.5 m (mud filtrate), 2643.5 m (mud filtrate), and 2715.0 (water and mud filtrate).

The well was permanently abandoned on 6 February 1985 as an oil appraisal well.

TESTING

Four DST's were performed in the Late Triassic Lund Formation sandstones. The test results were considered to be some of the best so far in the North Sea.

DST 1 tested the water zone from the interval 2618.0 - 2626.0 m. At stable conditions in the final flow the well produced 83.5 m3 water/day through a 32/64" flow. Bottom hole temperature was 95.6 deg C.

DST 2 tested the interval 2572.5 - 2577.5 m. At stable conditions in the main flow the well produced 461 Sm3 oil/day through a 24/64" choke. The separator GOR was 94 Sm3/Sm3. Bottom hole temperature was 96.1 deg C. When opening up to a 52/64" choke the production reached 1606 Sm3 oil/day. No water or sand was produced.

DST 3 tested the interval 2512.8 - 2515.8 m. After perforations the test was suspended for a week due to bad weather. The interval was re-perforated before the test was resumed. The production in this test was limited by possible formation damage caused by the interruption period. An average oil rate of 54 Sm3/day was estimated. The oil density was 0.83 g/cm3. No water or sand was produced. Bottom hole temperature was 94.4 deg C.

DST 4 tested the interval 2429.0 - 2437.0 m. During 8 hours main flow through a 44/64" choke the rated declined slowly from 1844 Sm3 to 1717 Sm3 /day. The separator GOR was 70 Sm3/Sm3. The dead oil density was 0.82 - 0.83 g/cm3. No water or sand was produced. Bottom hole