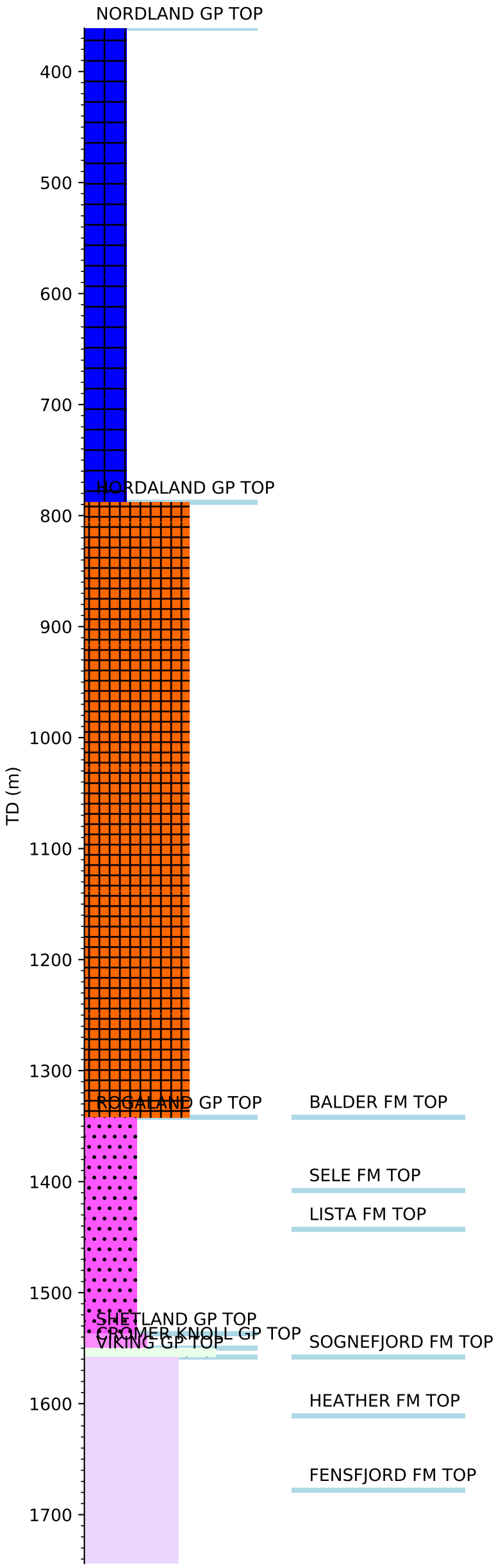
Groups

Formation Tops



Wellbore History

GENERAL

Well 31/2-11 was drilled as an appraisal well in the Troll West oil province in the Northern North Sea. The main objectives were to appraise the reservoir quality and the extension of the 28-m oil column in the southern part of the 31/2-7 accumulation in the Viking Group reservoir sequence. The well would assist in the mapping of the permeability distribution in the oil province, provide an additional data point for the correlation and mapping of the depositional units, and obtain additional oil production test data for input to the field development.

OPERATIONS AND RESULTS

Well 31/2-11 was spudded with the semi-submersible installation Borgny Dolphin on 17 March 1983 and drilled to TD at 1744 m in the Middle Jurassic Fensfjord Formation. No major problems occurred during drilling. The well was drilled with Seawater and gel down to 810 m, with KCl/polymer mud from 810 m to 1535 m, and with CaCl2/CaCO3/polymer mud from 1535 m to TD.

Top Jurassic, Sognefjord Formation, was encountered at 1558 m. The reservoir sands were found to be hydrocarbon bearing with GOC at 1566 m (1541 m sub-sea) and OWC (50% saturation) at 1593 m (1567 m sub-sea), in-line with the regional contacts in this area of the Troll West Oil Province. Below OWC residual oil was interpreted down to some 1640 m.

A total of eight cores were cut. To enable investigation of the shallow sediments, 2 cores were cut in the interval 380 m to 399 m and one from 475 to 476 m. Five cores were cut in the Late Jurassic reservoir sands from 1555 to 1629 m using fibre glass sleeve techniques to achieve better recovery in the poorly consolidated sands. Attempts to obtain RFT fluid samples were unsuccessful due to plugging of the tool with chalk particles from the mud.

The well was permanently abandoned on 25 May 1983 as an oil and gas appraisal.

TESTING

Two DST's were performed, one in the water zone and one in the oil zone. DST 1 tested the interval 1681 to 1685 m in the water zone with the objective of obtaining representative formation water samples. The test produced 20 m3 water before the well died. Representative Formation water samples were obtained. DST 2 in the oil zone was carried out in a clean sand interval between 1571 and 1582 m. It produced at maximum rate on 2x128/64" choke 1248 Sm3 oil with a GOR of 315 Sm3/Sm3. The oil produced had a gravity of 28.6 deg API and the separator gas gravity was 0.66 (air = 1). The gas contained about 2% CO2 and no measurable H2S. No water or gas breakthrough was observed, probably due to tight calcareous streaks above and below the tested interval. The maximum temperature recorded in DST 2 was 68.6 deg C.

LITHOSTRATIGRAPHY & HISTORY FOR WELL: 31/2-11