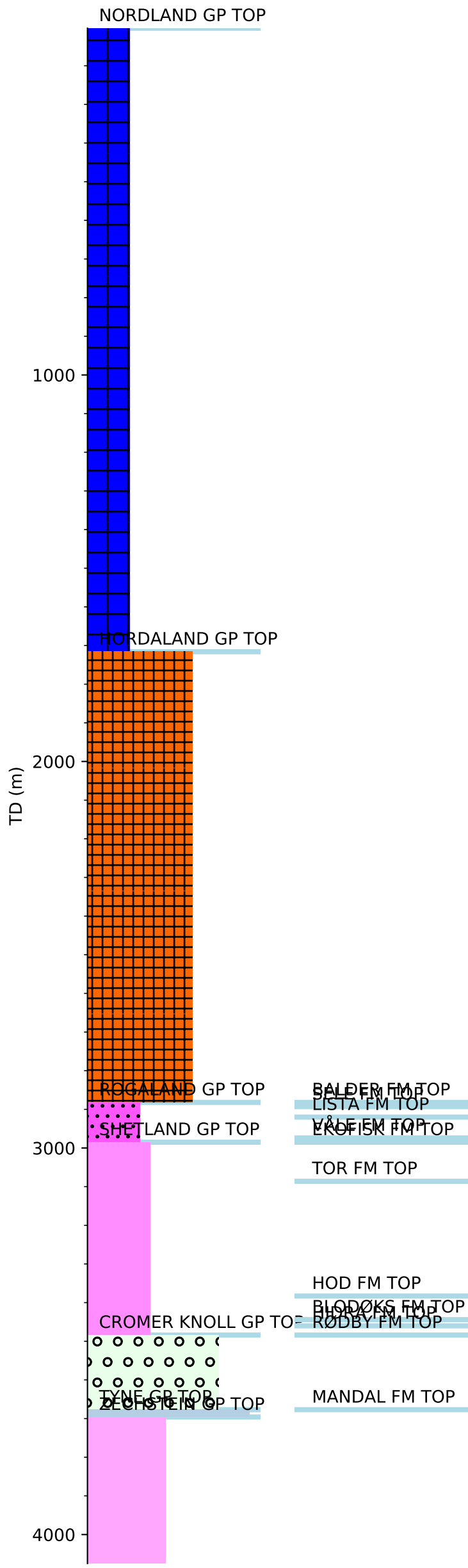
Groups

Formation Tops



Wellbore History

GENERAL

Well 2/4-8 was drilled on the crest of the Tor Discovery structure in the southern Norwegian North Sea. The principal objective was to confirm the thick Danian-Cretaceous productive section present in the Amoco 2/5-1 well and to provide a means of evaluating the maximum anticipated productive section in the Tor Discovery. Jurassic sandstone was also defined as principal objective, while secondary prospects could exist in Paleocene sands. Prognosed top Jurassic was at 3691 m (12110 ft) with planned TD at 4572 m (15000 ft).

OPERATIONS AND RESULTS

Appraisal well 2/4-8 was spudded with the jack-up installation Zapata Explorer on 25 November 1971. The original spud location was 56 deg 38' 15.6'' N, 03 deg 18' 48'' E. This hole was drilled to 570 m at which point the well kicked and bridged off. The drill pipe became stuck at 486 m and the hole was abandoned with the top of fish at 323 m. The rig was moved 120 meters east where the well was re-spudded and drilled to final TD at 4078 m in the Permian Zechstein Group. The well was drilled with seawater and hi-vis mud down to 488 m, with drill aid / DAP (di-ammonium phosphate) mud from 488 m to 1623 m, with drill aid / gypsum mud from 1623 m to 2211 m, with drill aid from 2211 m to 2984 m, with a lignosulphonate mud from 2984 m to 3810 m, and with Drispac / salt saturated mud from 3810 m to TD. Below 488 m 2 -6 % diesel was added to the mud.

At 2946 m the well penetrated a 3 m fine grained Paleocene sand with a calcite matrix. This sandstone exhibited a dull yellow fluorescence and a slow cut. Danian chalk was encountered at 2985 m and Late Cretaceous chalk was encountered at 3086 m. Gas and oil was tested from the Danian - Late Cretaceous chalk. Continuous zones of oil shows were observed on all cores down to 3203 m, below this depth shows were scattered.

Twenty cores with a total recovery of 176 m core were cut in the interval 2985 to 3242 m in Danian and Late Cretaceous chalk. No wire line fluid samples were taken.

The well was permanently abandoned on 29 March 1972 as an oil appraisal.

TESTING

Seven drill stem tests were carried out through perforations in the 7" liner. Two of these were carried out in the Danian chalk (DST 6 and DST 7), the rest in the Late Cretaceous chalk. DST 1 and DST 2 were conducted without acidization and flowed only minor quantities of water. The other DST's flowed oil after acidization. The best flow was obtained in DST 5 from the interval 3091 - 3158 m in the uppermost Late Cretaceous with 655 Sm3 oil /day. The oil gravity was 40.4 deg API and the GOR was 359 Sm3/Sm3.

LITHOSTRATIGRAPHY & HISTORY FOR WELL: 2/4-8