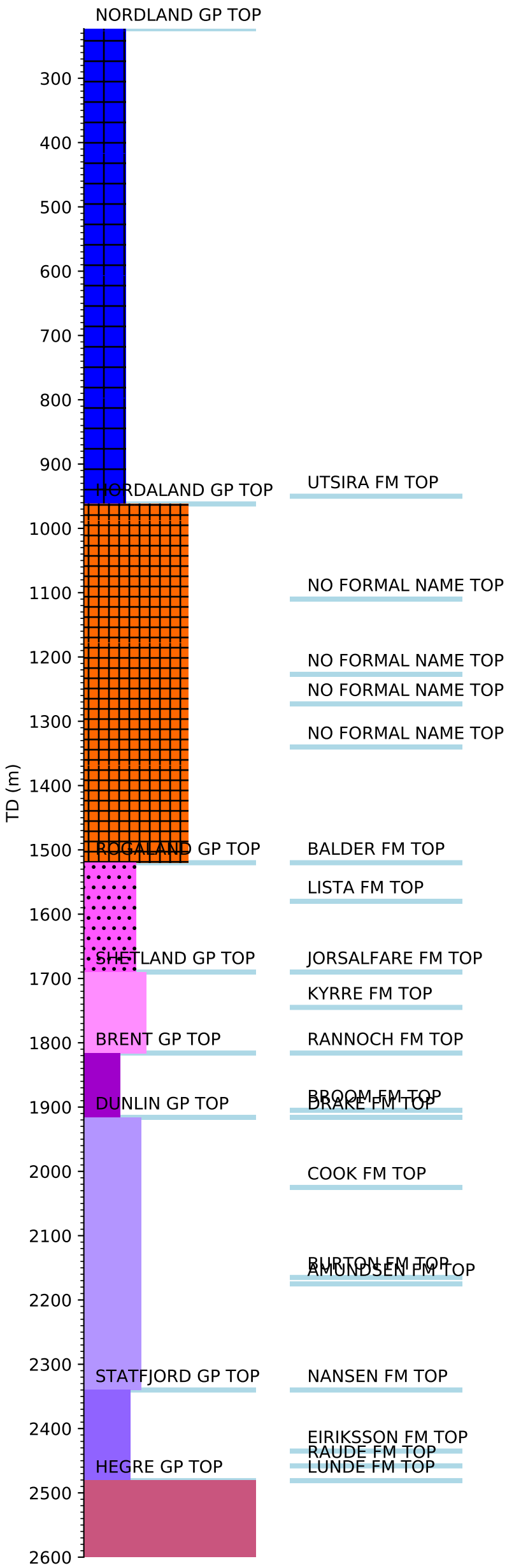
Groups

Formation Tops



Wellbore History

GENERAL

Well 34/10-4 was drilled in the Delta closure in the north-eastern part of block 34/10 in the northern North Sea. The Delta structure consists of several separate fault blocks and 34/10-4 targeted one of these. It was the third well drilled in the Delta closure. Two other separate fault blocks had previously proved oil bearing by well 34/10-1 located to the south, and well 34/10-3 located about 2 km north-west. The primary objective of well 34/10-4 was to test sandstones of Middle Jurassic age. Secondary objectives were sandstones of Early Jurassic age.

OPERATIONS AND RESULTS

Well 34/10-4 was spudded with the semi-submersible installation Ross Rig on 12 August 1979 and drilled to TD at 2600 m in the Late Triassic Lunde Formation. No specific problems were encountered in the operations. The well was drilled with sea water and gel slugs down to 641 m and with sea water, gel, lignite and lignosulphonate in various proportions from 641 m to TD.

A minor hydrocarbon-bearing interval was encountered in the Eocene from 1290 to 1307 m but the type of hydrocarbons could not be determined. The net Eocene "pay" was 8.25 m with average porosity of 34.4% and average water saturation of 38.5%. The main target Brent Group sandstones were encountered at 1816 m and were found oil bearing down to claystone at 1912 m. It contained 81 m of net pay with an average porosity of 33.7% and an average water saturation of 12.5%. The Statfjord Formation (2350 - 2481 m) was water bearing with 61 m of net sand with an average porosity of 23.3%.

The first show was recorded on a well site sample from 1280 m, just above the Eocene pay. It was described with "dead oil, dull fluorescence". Otherwise, oil shows with fluorescence, cut and oil stains were recorded in limestones, claystones, siltstones and marl from 1380 m and more or less continuously down to 1755 m.

Five cores were recovered in the interval from 1826 to 1909 m in the Rannoch and Broom formations of the Brent Group and one core from 2350.5 to 2364.5 m in the Eirikson and Raude members of the Statfjord Formation. An RFT fluid sample was taken at 1827.5 m

The well was permanently abandoned on 15 October 1979 as an oil appraisal well.

TESTING

Two drill stem tests were run in the Rannoch Formation.

DST 1A tested the interval 1880 to 1885 m. The well produced 280 Sm3 oil and 24300 Sm3 gas /day through a 20/64" choke. The GOR was 87 Sm3/Sm3 and the oil gravity was 29deg API. The bottom hole maximum temperature was 72.4 deg C.

DST 2 tested the interval 1824 to 1826 m. The well produced 810 Sm3 oil and 67400 Sm3 gas/day through two parallel chokes (20/64" + 32/64"). The GOR was 83 Sm3/Sm3 and the oil gravity was 29deg API. The bottom hole maximum temperature was 71.5 deg C.

No water was produced in the DST's.

LITHOSTRATIGRAPHY & HISTORY FOR WELL: 34/10-4