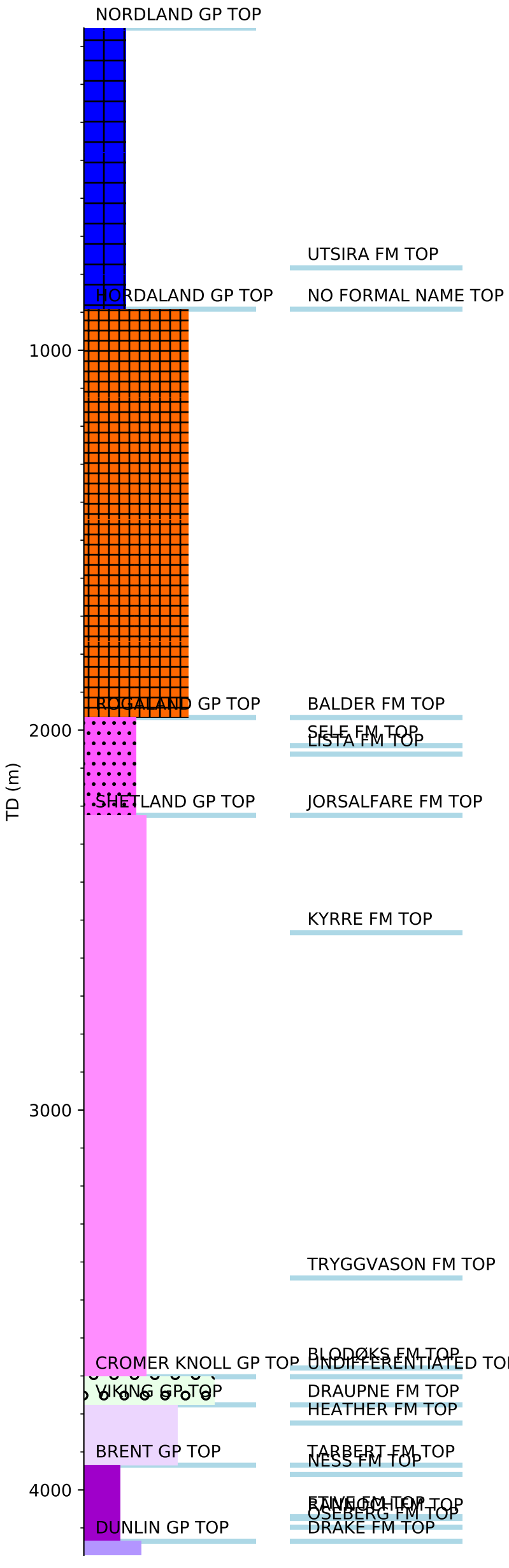
Groups

Formation Tops



Wellbore History

GENERAL

Well 30/2-2 was drilled on the Mokkukalven Fault Complex north of the Oseberg Field in the North Sea. The objective was to test possible hydrocarbon accumulations in the Huldra Field, on a structural high that is separated from Huldra discovery well 30/2-1 with significant faults. Well 30/2-1 encountered a 119 m gas column in the Brent Group with a down-to contact at 3793 m. The actual gas/water or oil/water contact could not be established. The main target for 30/2-2 was the Brent Group, believed to be some 70 m deeper than the gas column in 30/2-1.

OPERATIONS AND RESULTS

Appraisal well 30/2-2 was spudded with the semi-submersible installation Dyvi Delta on 19 December 1984 and drilled to TD at 4172 m in the Early Jurassic Drake Formation. When doing the reservoir logging, a radioactive part of the logging tool was left in the hole. This accident caused a sidetrack from 3894 m KB to TD. The sidetrack ran parallel to the original hole at a distance of approximately 20 m. The intention was to drill 50 m into the Statfjord Formation, but the well was finished in the Drake Formation due to hole conditions. The well was drilled with spud mud down to 214 m, with gel/seawater from 214 m to 1023 m, with gypsum/CMC mud from 1023 m to 3802 m, and with gel/lignosulphonate from 3802 m to TD.

Gas bearing Brent sandstone was encountered at 3935 m, with the gas-water contact somewhere in the interval 3975 - 4080 m. No distinct contact was possible to recognize from logs or shows, but later geochemical analyses of the corers indicated a contact at ca 3984 m. Fluorescence indicating shows was first recorded on claystone/limestone cuttings in the interval 2204 m to 2267 m in the Lista Formation. Intermittent golden cut was observed on cuttings samples in the interval 2489 m to 2585 m in the Shetland Group. Otherwise, oil/condensate shows were recorded on sandstones from the Brent Group through the hydrocarbon-bearing reservoir. Below the contact, weak shows believed to relate to in-situ kerogen in coals and shales were recorded down to TD.

A total of 157 m conventional core was recovered in eighteen cores in the interval from 3908 m in the lower Heather Formation, through all of Brent Group and down to 4139.1 m in the uppermost Drake Formation. All cores were cut in the original hole, before side-tracking. Log runs 1 to 5 were also run in the original hole, while run 6 and 7 were run in the sidetrack. No wire line fluid samples were taken.

The well was permanently abandoned on 4 May 1985 as a gas appraisal well.

TESTING

Three drill stem tests were conducted in the Brent Group.

DST 1B tested the interval 4071 - 4076 m in the Etive Formation. The test flowed water at only five m3/day through a 19.05 mm choke during a 7.07 hours flow period. The maximum temperature reading was 150 °C. DST 1A failed due to technical problems.

DST 2B tested the intervals 4011-4013 m, 4017-4025 m, and 4035 - 4042 m in the Ness Formation. The test flowed water at only eight m3/day through a 19.05 mm choke during a 13.5 hours flow period. The maximum temperature reading was 148 °C. DST 2A failed due to technical problems.

DST 3 tested the intervals 3935 - 3949 m, 3955 – 3959 m, and 3967-3974 m in the Tarbert Formation. It produced 227600 Sm3 gas and 105 Sm3 condensate /day through a 19.05 mm choke. The GOR was 2170 Sm3/Sm3. The maximum temperature reading was 137 °C.

LITHOSTRATIGRAPHY & HISTORY FOR WELL: 30/2-2