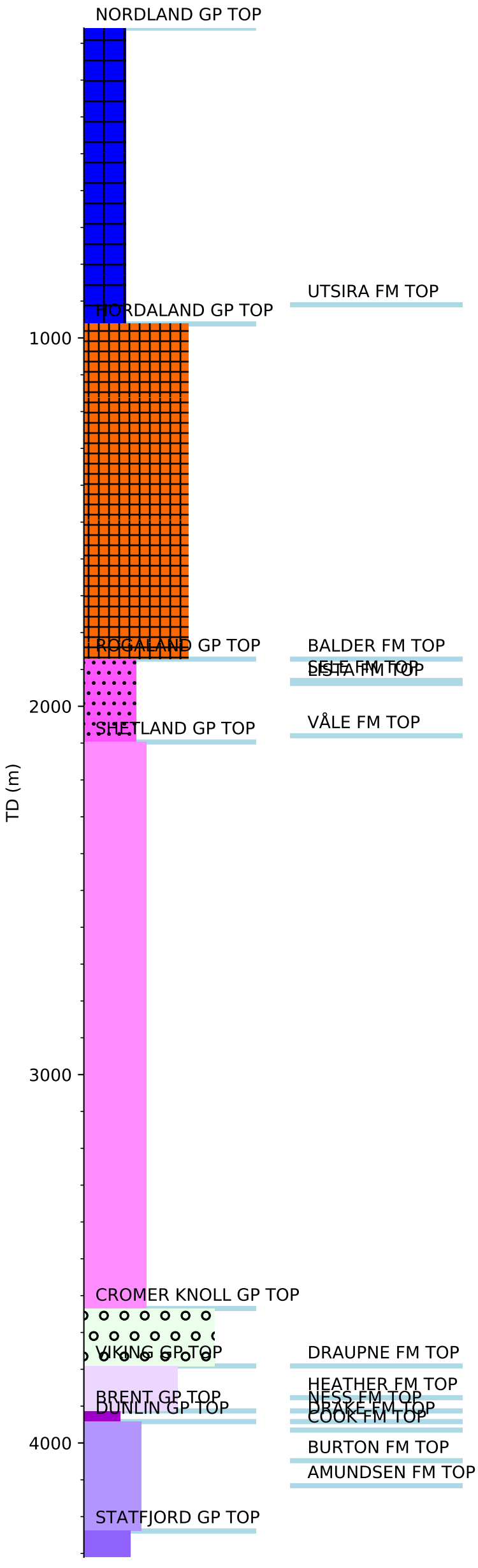
Groups

Formation Tops



Wellbore History

GENERAL

Well 34/10-35 was drilled on the Tjalve Terrace south-east of the Gullfaks South field in the Northern North Sea. The objective was to test the hydrocarbon potential in the Brent Group between the Gullfaks South field and the 34/10-23 Valemon Discovery.

OPERATIONS AND RESULTS

Well 34/10-23 was spudded with the semi-submersible installation Ross Rig on 5 February 1992 and drilled to TD at 4310 m in the Early Jurassic Statfjord Formation. No significant problems were encountered in the operations. The well was drilled water based with sea water and hi-vis pills down to 1083 m, gypsum/polymer mud from 1091 mud from 1091 m to 3783 m, and with Thermopol mud from 3783 m to TD.

The well penetrated Tertiary, Cretaceous and Jurassic rocks. The Middle Jurassic Brent Group was encountered at 3912.5 m, unconformable below the Heather Formation. The Brent Group consisted of Ness Formation only. The underlying Dunlin Group came in with the Drake Formation at 3941.5 m, and the Cook Formation at 3964.5 m. Gas and condensate was proven in the Ness Formation and in the Cook formation down to top Burton Formation at 4048 m. Pressure data clearly indicated no pressure communication between the Ness and Cook Formation reservoirs. No gas-water contacts were established in the well. Oil shows in traces of sandstones (direct and cut fluorescence) were recorded over the interval 2030 m to 2100 m in the Lista and Våle formations and in the interval 2241 m to 2261 m in the Shetland Group. Cut fluorescence was recorded also in shales from the Draupne and Heather formation.

A total of 133.5 m core was cored in 13 cores. Cores 1 to 11 were cut from 3939 m to 4078 m with variable recovery from 33 to 100%. Cores 12 and 13 were cut from 4250 to 4287 m with overall recovery of 98.9%. Visual correlation of cores and well logs indicated a core shift relative to logs of - 8 to - 9.5 m for most cores. Segregated wire line fluid samples were taken at 3921 m (mud filtrate and gas) and at 3987 m (mud filtrate, gas and condensate).

The well was permanently abandoned on 1 July 1992 as a gas/condensate appraisal well.

TESTING

Three drill stem tests were conducted in the well.

DST 1 tested the interval 4015 to 4025 m in the lower part of the Cook Formation. It was concluded that the fluid produced came from the same formation interval as during DST 2.

DST 2 tested the interval 3984 to 3995 m, the interval with the best reservoir quality in the Cook Formation. It produced 990000 Sm3 gas/day through a 36/64" choke. The gas/oil ratio was 4500 Sm3/Sm3, the oil gravity was 0.795 g/cm3 and the gas gravity was 0.667 (air = 1). The down hole temperature recorded in the test was 150 deg C.

DST3 tested the interval 3920 to 3929 m in the Ness Formation. It produced 340000 Sm3 gas/day through a 40/64" choke. The gas/oil ratio was 3000 Sm3/Sm3, the oil gravity was 0.794 g/cm3, and the gas gravity was 0.684 (air = 1). The down hole temperature recorded in the test was 142 deg C.

LITHOSTRATIGRAPHY & HISTORY FOR WELL: 34/10-35