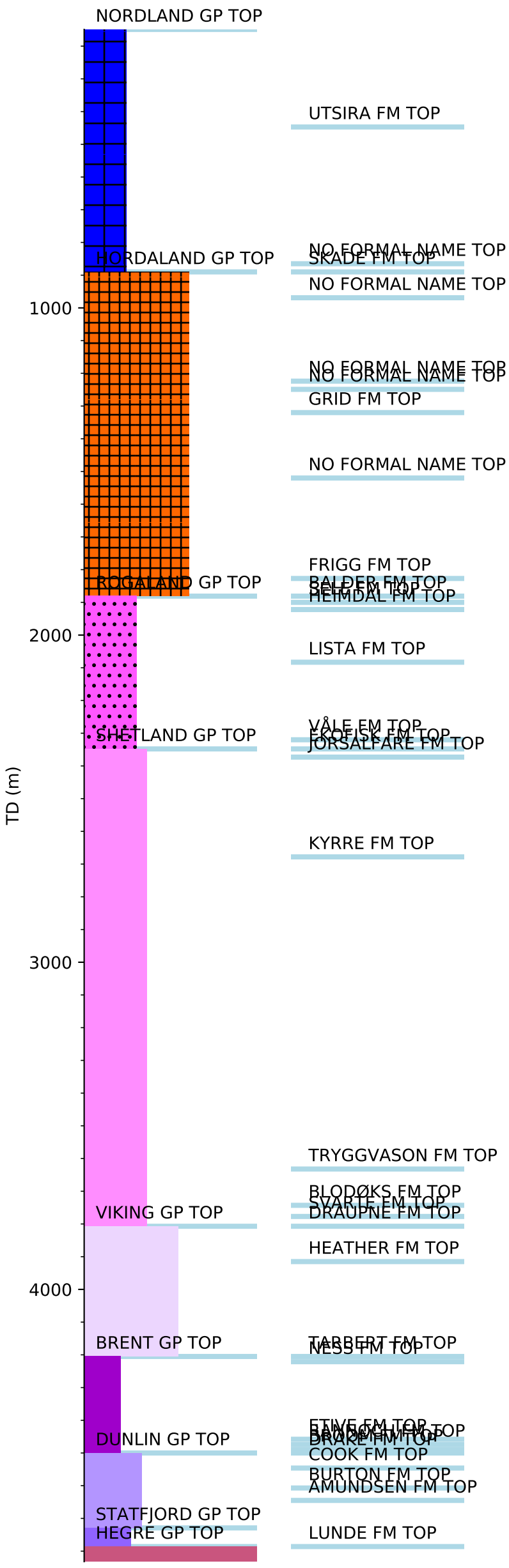

Wellbore History

GENERAL

Well 29/6-1 was drilled ca 2 km west of the UK border on the eastern margin of the East Shetland Basin. The primary objective was the Brent Group in a fault block separate from the Hild structure some few km to the southwest. The secondary objective was the Statfjord formation.

OPERATIONS AND RESULTS

Wildcat well 29/6-1 was spudded with the semi-submersible installation SEDCO 707 on and drilled to TD at 4832 m.

The well was spudded by "Sedco 707" on 12.10.81. When drilling the 17 1/2" pilot hole (with 1.1 sg mud) in the 24" section, mud losses occurred at 870 m. The hole was displaced to seawater and operations continued down to 1205 m where the 24" casing was set. Further drilling went with increasing mud weights due to tight hole problems, to a point where the overbalance considerably reduced penetration rate. Due to high deviation the pipe became differentially stuck at 4664 m. The well was planned to be vertical, but ended up severely deviated. From 3973 m to 4097 m hole inclination increased from 5 degrees to 10.5 degrees, increasing to 15.5 degrees by 4155 m, as a result of the increased dip of the bedding planes. At 4155 m a pendulum drill assembly was used but the hole inclination continued to increase to 19.5 degrees. By 4211 m the angle had reduced to 17 degrees but again increased to a maximum of 21 degrees by 4457 m, and then decreased to 20.25 degrees by 4570 m. Below this depth, surveys were not possible due to the hole conditions with overpull and stuck pipe on the connections and tight hole on trips. Keyseating, washout in the sandstones and the swelling nature of the clays in the Dunlin formation added to the problem caused by hole angle. At TD Schlumberger HDT log was run and the hole angle had built up to 25.25 degrees, and it was estimated that TVD was 47 m less than MD. The well was drilled with gel/seawater/Drispac down to 294 m, with gel/seawater/Lost circulation material from 294 m to 1205 m, with gypsum/Lignosulphonate/CMC from 1205 m to 2552 m, with Lignosulphonate/CMC from 2552 m to 3783 m, and with Lignosulphonate from 3783 m to TD.

The Base Cretaceous Unconformity was penetrated at 3807 m where a thick section of Late Jurassic mudstones including 110 m Draupne Formation was encountered. The Brent Group clastic sediments were reached at 4204.5 m and found to be gas/condensate bearing. The sandstones were highly overpressured and 15 m of net pay was proved. The GWC was estimated at 4230 m (4195.1 m TVD MSL) using RFT data. The Statfjord Formation was water bearing.

Methane gas with a weak oil show was observed on sandstone at 1830 m in Paleocene. There were further weak shows (yellow natural fluorescence with colourless cut) in the Shetland Group from 3610 to 3805 m, and there were similar weak shows throughout the Brent Group ("Dull yellow fluorescence becoming very dull orange yellow downhole, fast yellow to milky white cut fluorescence becoming very slow downhole, no natural cut colour"). Similar weak shows were seen also in the Amundsen Formation sands at 4664 to 4729 m and a further 10 m into the underlying Statfjord Formation.

Seven cores were taken in the interval 4219 to 4340 m in the 8 3/8" section in the Tarbert and Ness Formations. RFT water samples were taken at 4235.5 m and at 4289.7 m (mud filtrate only).

The well was permanently abandoned on 9 May 1982 as a gas/condensate discovery.

TESTING

Three drill stem tests were performed in the Tarbert Formation of the Bren Group. The upper DST produced gas and condensate; the two deeper produced only water.

DST 1 perforated the interval 4082 to 4301 m. It consisted of a 5 minutes initial flow period and a 34 minutes initial shut in. The well then flowed formation water with small quantities of gas containing 11% CO2 for 642 minutes before being shut in for 796 minutes. The final flow rate was 192 m3 water/day through a 4/64" choke. Samples were taken both at the wellhead and at the separator throughout the test. Water salinity was 71000 ppm NaCl. The maximum temperature recording taken at gauge depth 4285.66 m was 151.2 deg C.