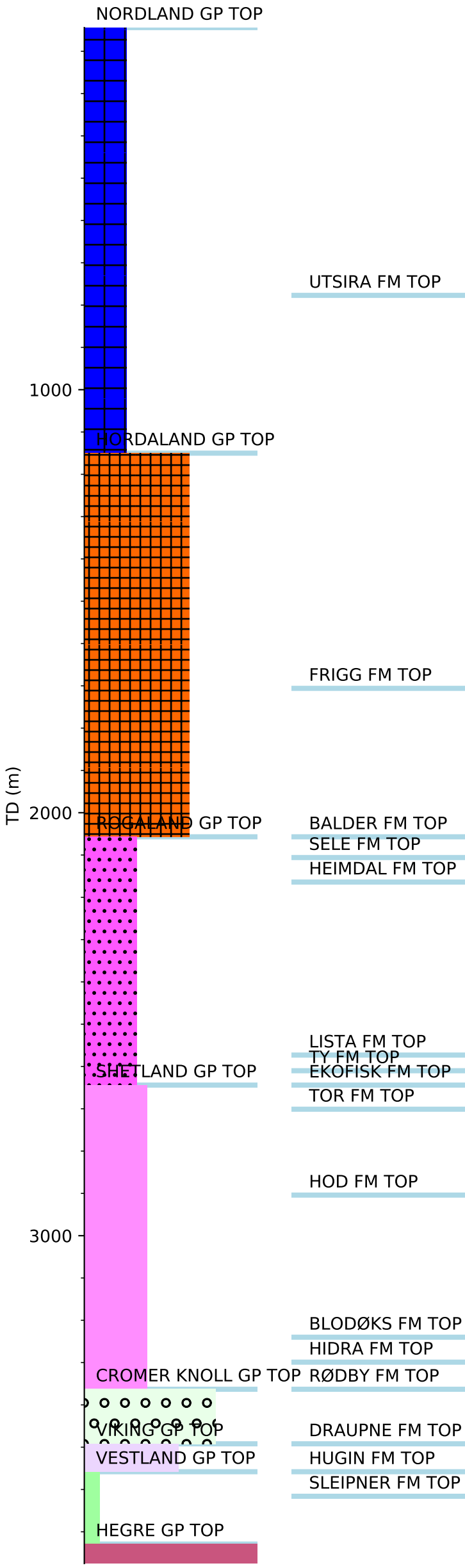
Groups

Formation Tops



Wellbore History

GENERAL

Well 15/5-1 was drilled on the Ve Sub-basin north of the Sleipner Vest Field in the North Sea. The main objective of the well was to test sandstone reservoirs of Middle Jurassic age. In the nearby Sleipner field (in block 15/6 and 15/9) gas had been found previously in reservoirs of the same age. The well was located down flank on the structure at the Kimmerian level. This position was chosen to penetrate reservoirs believed to be wedging both above and below a strong seismic marker ("Red Marker").

OPERATIONS AND RESULTS

Wildcat well 15/5-1 was spudded with the semi-submersible installation Treasure Seeker on 26 November 1977 and drilled to TD at 3775 m in Late Triassic sediments belonging to the Hegre Group. This was the first well drilled by Treasure Seeker, which was outfitted in Stavanger. About 25% of total rig time was counted as lost time, mainly due to wait-on-weather or equipment problems caused by rough weather in wintertime. The well was drilled with seawater and gel down to 1225 m, with seawater/gel/CMC/Spersene from 1225 m to 1910 m, and with a freshwater-based Spersene/gel/chrome-lignosulphonate/Drispac mud from 1910 m to TD.

The 15/5-1 well encountered gas condensate-bearing sandstones of Late and Middle Jurassic age (Callovian and Bathonian) from top at 3558 m down to 3614 m where a Bathonian/Bajocian deltaic series with up to five m thick coal beds appeared. From wireline log evaluation the sandstone section with a gross thickness of 56 m, has been subdivided into four separate pay zones, each zone being separated by thin impermeable layers, resulting in a net sand pay of 42.1 m. Average porosity was calculated to 14% and the average water-saturation to 14%. Sands were water wet below the coal beds at 3650 m. The actual oil-water contact was not seen. The strong seismic “Red Marker was correlated to the top of the deltaic coaly sequence of Middle Jurassic age. Oil shows were recorded on limestone in intervals from 2804 m to 2904 m (Tor Formation), from 3180 m to 3190 m (Hod Formation), and from 3365 m to 3375 m (top of Rødby Formation). Below the hydrocarbon-bearing reservoir, oil shows were recorded on sandstones in the intervals 3650 m to 3657 m and 3725 m to 3740 m.

Three cores were cut from 3561 m to 3601 m and two cores were cut from 3609 m to 3625.5 m. RFT samples were taken at 3560 m and 3611.8 m. They were found not to be representative of the formation fluid.

The well was permanently abandoned on 7 April 1977 as a condensate discovery.

TESTING

Two zones were production tested

DST1 tested the interval 3610 m to 3614 m. The flow did not stabilise. On average, a production of 35720 Sm3 gas and 18.1 Sm3 oil /day through a 12/64” choke is reported. The GOR was ca 1970 Sm3/Sm3, the oil gravity was 43.0 °API and the gas gravity was 0.804 (air = 1). The bottom hole temperature was 125.6 °C.

DST2 tested the interval 3561 m to 3584 m. The test produced 660270 Sm3 gas and 474 Sm3 oil /day through a 48/64” choke. The GOR was 1390 Sm3/Sm3, the oil gravity was 43.4 °API, and the gas gravity was 0.778 (air = 1). The bottom hole temperature was 126.7 °C.

LITHOSTRATIGRAPHY & HISTORY FOR WELL: 15/5-1