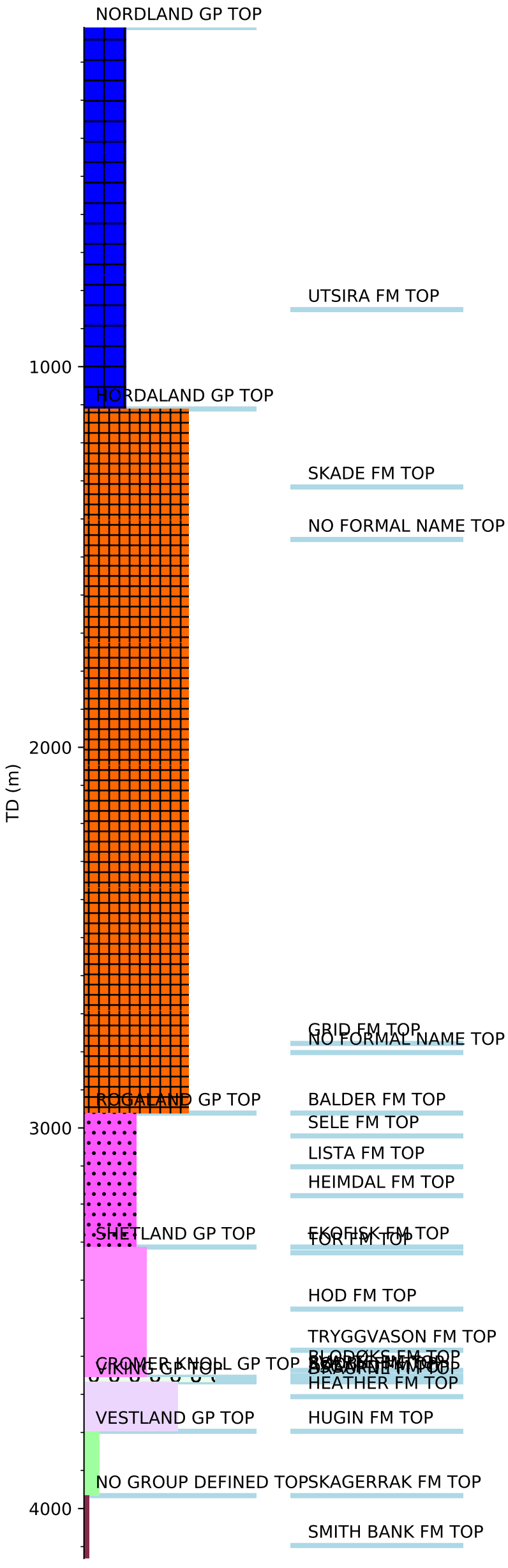
Groups

Formation Tops



Wellbore History

GENERAL

The well 15/9-19 SR on the Theta Vest structure North of the Sleipner East Field proved oil in the Hugin Formation in 1993. The objective for the well 15/9-19 A, a side-track from this well, was to confirm a minimum economic hydrocarbon volume in the Hugin Formation and map the extension of the oil-bearing formation.

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OPERATIONS AND RESULTS

Well 15/9-19 A was kicked off from 2178 m in well bore 15/9-19 SR on 25 July 1997, using the semi-submersible installation Byford Dolphin. The well was drilled through the Skagerrak Formation and terminated approximately 30 m TVD into the Triassic Smith Bank Formation at 4131 m (3318.5 m TVD RKB). The final acquisition programme immediately after reaching the total depth of the well was strongly affected by a labour conflict, which delayed the well operations for 32.5 days. The originally planned open hole electric logging program had to be terminated and the 7" casing run to TD in order to secure the well. The later cased hole logging failed due to tool problems. The well was drilled oil based with the Ultidril mud system (oil base consists of synthetic olefins) from kick-off to TD.

Top of the Hugin Formation was penetrated at 3796.5 m (3015.5 m TVD RKB) approximately 60 m TVD deeper than prognosed. It was 153 m thick (TVD) and oil-bearing. The total oil column in the well was 80 m, but no clear oil-water contact was observed. The base of the reservoir was at 3919 m (-3126.5 m TVD RKB). Seven cores were cut in the interval 3838 m to 4017 m in the Hugin and Skagerrak Formations, with a total recovery of 177.6 m. One attempt was made to run FMT on PCL for pressure points and fluid sampling. The run failed for technical reasons and no further attempts were made due to the labour conflct.

The well was permanently abandoned on 9 November 1997 as an oil appraisal.

TESTING

Three tests were performed in order to evaluate the well, one in the water zone and two in the oil zone.

Test 1 at 3952 - 3958 m (3159.8 - 3165.5 m TVD RKB), was in the water zone to obtain water samples due to MDT failure during wire line logging. Four good samples were obtained, indicating similar formation water as in other wells in the Sleipner area. Maximum recorded temperature in this test was 112.7 deg C.

Test 2A at 3885.5 - 3888.5 m (3100 - 3102.5 m TVD RKB) flowed 300 Sm3 oil and 27000 Sm3 gas /day through a 38/64" choke during the cleanup flow. The corresponding GOR was 90 Sm3/Sm3, the oil density was 0.892 g/cm3, and the gas gravity was 0.738 (air = 1) with 2.5 ppm H2S and 3% CO2. The temperature recorded in this flow period was 112.3 deg C.

Test 2B at 3885.5 - 3888.5 m + 3826 -3865 m (3100 - 3102.5 m + 3046.2 - 3081.3 m TVD RKB flowed 528 Sm3 oil and 38107 Sm3 gas /day through a 34/64" choke during the main flow. The corresponding GOR was 72 Sm3/Sm3, the average oil density was 0.902 g/cm3, and the average gas gravity was 0.730 (air = 1) with 2.8 ppm H2S and 3.5% CO2. The temperature recorded in this flow period was 110.8 deg C.

LITHOSTRATIGRAPHY & HISTORY FOR WELL: 15/9-19 A