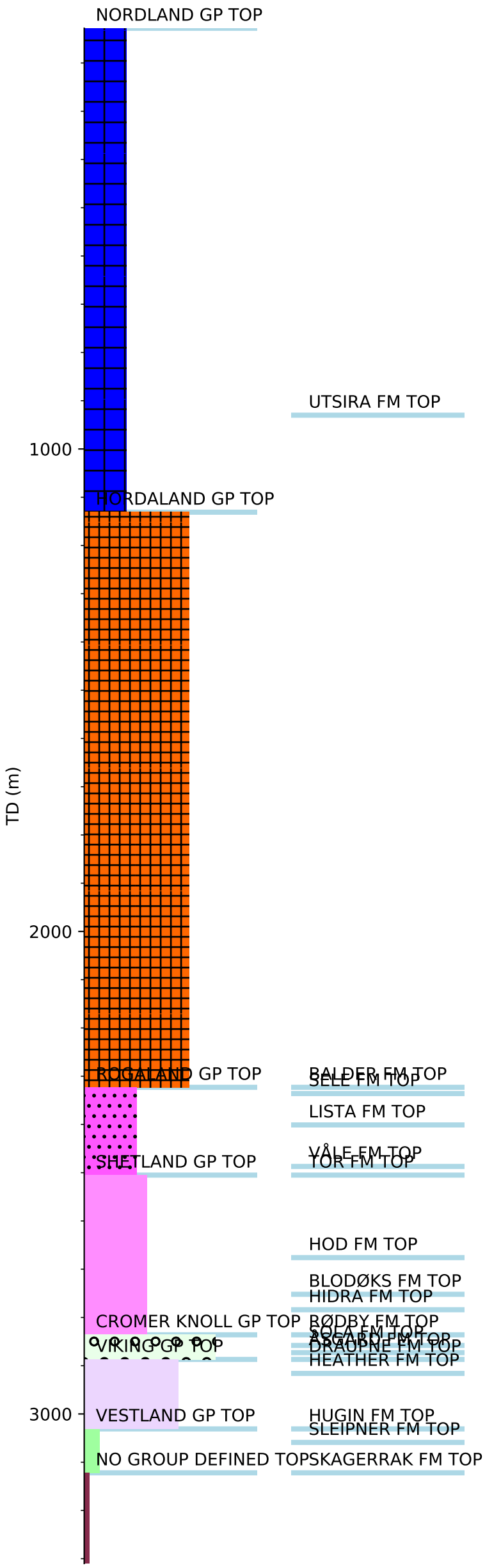
Groups

Formation Tops



Wellbore History

GENERAL

The 15/12-21 Grevling well is located on the south-western margin of the Hidra High, approximately 18 km north of the Varg field in the southernmost part of the Viking Graben. The primary objective was to test the Middle Jurassic Hugin and Sleipner formations in a crestal position on the structure. The Triassic Skagerrak Formation was a secondary objective.

OPERATIONS AND RESULTS

A 12 1/4" pilot hole was drilled to 1195 m to check for shallow gas. No shallow gas was encountered. Well 15/12-21 was spudded with the jack-up installation Mærsk Guardian on 15 March 2009 and drilled to TD at 3310 m in the Late Triassic Skagerrak Formation. The well was drilled with Seawater and sweeps down to 221 m, with a water based KCl mud from 221 m to 1193 m, and with Carbosea oil based mud from 1193 m to TD.

The top of the Hugin reservoir was encountered at 3031 m, 15m deeper than prognosis. The Sleipner Formation reservoir came in 21m shallow, at 3059 m, and top the Triassic 11 m shallow, at 3122 m. The Hugin, Sleipner and upper Skagerrak formations all proved to be oil bearing with a total pay of 67 m. No oil water contacts were encountered within the well. However, two vertical pressure barriers were interpreted; a top Sleipner coal at 3059 m (3017 m TVDSS), which separates the Hugin and Sleipner oil-bearing sandstones, and an intra-Triassic shale at 3164 m (3122 m TVDSS), which separates oil bearing Skagerrak sandstones above from water bearing Skagerrak sandstones below. No oil shows were recorded above reservoir level in the well. In the Triassic oil shows were seen down to 3179 m, 15 m below the oil-down to contact in the Skagerrak Formation.

Two cores of a total of 88.26 m were cut. Core 1 was cut from 3047.50 m to 3081.70 m in the Hugin and Sleipner formations, and core 2 was cut from 3106.50 m to 3160.56 m in the Sleipner and Triassic Skagerrak formations. The Cores need to be depth shifted up 6.5 meters to match log data. RCI wire line fluid samples were taken in the Hugin Formation at 3034.5 m (oil), the Sleipner Formation at 3074.4 m (oil), and in the Skagerrak Formation at 3152 m (oil), 3186.8 m (water), and 3222 m (water).

The well was permanently abandoned on 21 May 2009 as an oil discovery.

TESTING

Two drill stem tests were performed.

In DST 1 the Sleipner/Skagerrak Formations were perforated in the interval 3099.6 to 3158.17 m. DST1 produced 124 Sm3 oil and 3617 Sm3 gas /day through a 20/64" choke in the main flow. The oil density was 0.861 g/cm3 and the GOR was 29 Sm3/Sm3. The gas gravity was 1.121 (air = 1) with 11 ppm H2S and 5.5% CO2. The bottom hole temperature recorded in DST1 was 120 deg C.

In DST 2 the Hugin Formation was perforated in the interval 3030.24 to 3059.04 m. DST2 produced 75 Sm3 oil and 3563 Sm3 gas /day through a 20/64" choke in the main flow. The oil density was 0.861 g/cm3 and the GOR was 47 Sm3/Sm3.The gas gravity was 1.121 (air = 1) with 10 ppm H2S, and 9.0 % CO2. The bottom hole temperature recorded in DST2 was 117 deg C.

No water was produced in the tests.

LITHOSTRATIGRAPHY & HISTORY FOR WELL: 15/12-21