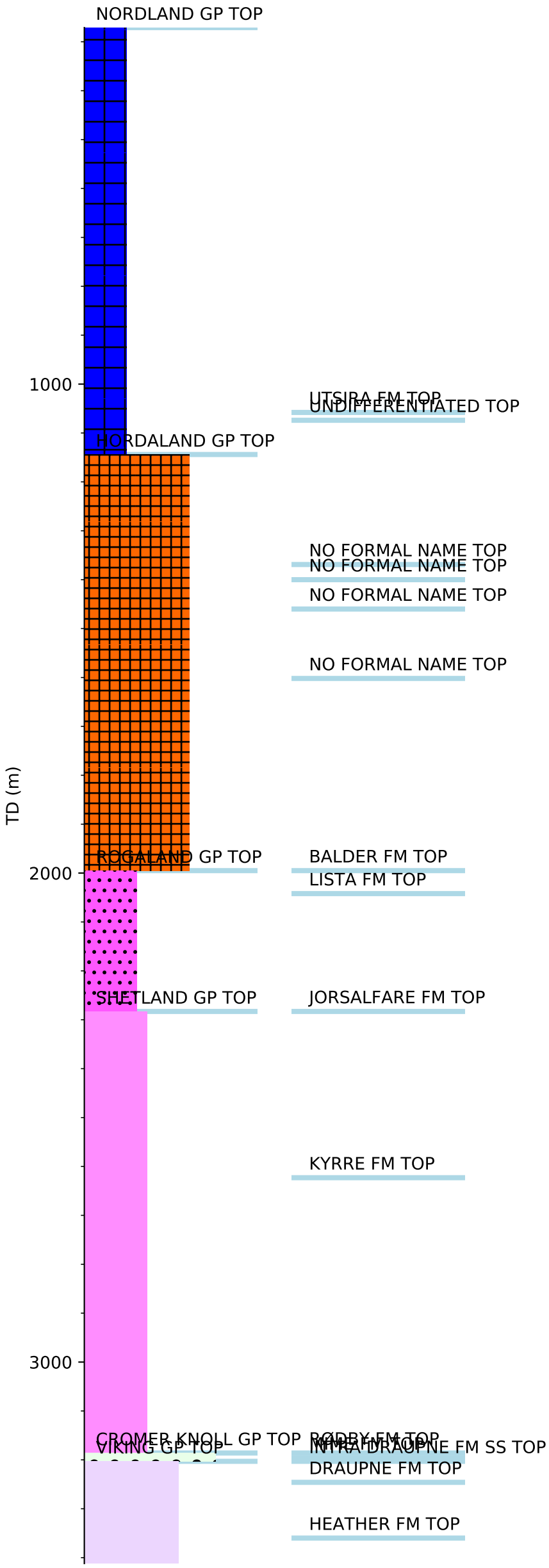
Groups

Formation Tops



Wellbore History

GENERAL

Exploration well 34/7-23 A was drilled in the H-Vest prospect as a sidetrack to well 34/7-23 S, located on the Vigdis Field on Tampen Spur in the Northern North Sea. The main objective was to test for Top Draupne Sandstone reservoir presence within the Top Draupne Sequence of Portlandian and Ryazanian age and to test for an oil water contact. Secondary objective was to test for reservoir presence and hydrocarbons in a seismic wedge in the middle Draupne Sequence. Additional targets were lowermost Late Cretaceous and intra Oxfordian (Intra-Heather Formation) sandstones.

OPERATIONS AND RESULTS

Well 34/7-23 A was kicked off from well 34/7-23 S on April 8, 1994. The kick off point was at 2358 m (1968.5 m TVD) in the upper part of the Shetland Group. The well was drilled westward deviated to TD at 3412 m (2769 m TVD) using the semi-submersible installation Vildkat Explorer. Drilling went without problem. During logging operations the FMT tool got stuck at 3220 m and 60 hrs were spent fishing for it. The well was drilled with KCl mud with a polyalkyleneglycol additive (BP DCP 208) m from kick-off to TD.

In the Shetland Group claystones with limestone beds were penetrated. The condensed Cromer Knoll Group consisted of marls, limestones and minor claystones. The Viking Group was encountered at 3202.9 m (2619 m TVD). The topmost section was oil bearing Intra Draupne Formation sandstone from 3202.9 to 3246 m (2619 - 2649.1 TVD, 30.1 m gross). This sandstone interval, which was the only sandstone interval encountered within the Draupne Formation, proved an ODT at 3246 m (2649.1 m TVD). No OWC was identified on the logs or with the FMT-measurements. The Intra Draupne Formation Sandstone reservoir had an estimated average log porosity of 22.4% and an estimated average water saturation of 11.4%. The net gross ratio was 0.93. Below the reservoir, the Draupne Formation consisted of siltstones and claystones. The Middle to Late Jurassic Heather Formation penetrated by the well consisted of sandy silty claystones with only minor limestone and sandstone beds.

Five cores were cut with a 90 ft core barrel from 3199 to 3291 m in the Intra Draupne Formation Sandstone and into the Draupne Formation. H2S was present when recovering core No 1 and 2 (200 and 300 ppm H2S, respectively). No H2S was measured in the three lowermost cores. Due to the FMT problems no fluid samples were taken.

The well was permanently abandoned on 20 May as an oil appraisal.

TESTING

The interval 3205.0-3225.0 m (2622-2635 m TVD) in the Intra-Draupne Formation sand was perforated and tested. The oil rate at the end of the multi-rate flow was measured to 1085 Sm3/day through a 19.1 mm choke, with a corresponding wellhead pressure of 97.5 bar and a GOR of 106 Sm3/Sm3 at separator conditions of 42.9 bar and 58.9 deg C. The dead oil density was 0.848 g/cm3 and the gas gravity was 0.71 (air = 1). A maximum H2S concentration of 0.8 ppm was measured. Maximum bottom hole temperature measured

LITHOSTRATIGRAPHY & HISTORY FOR WELL: 34/7-23 A