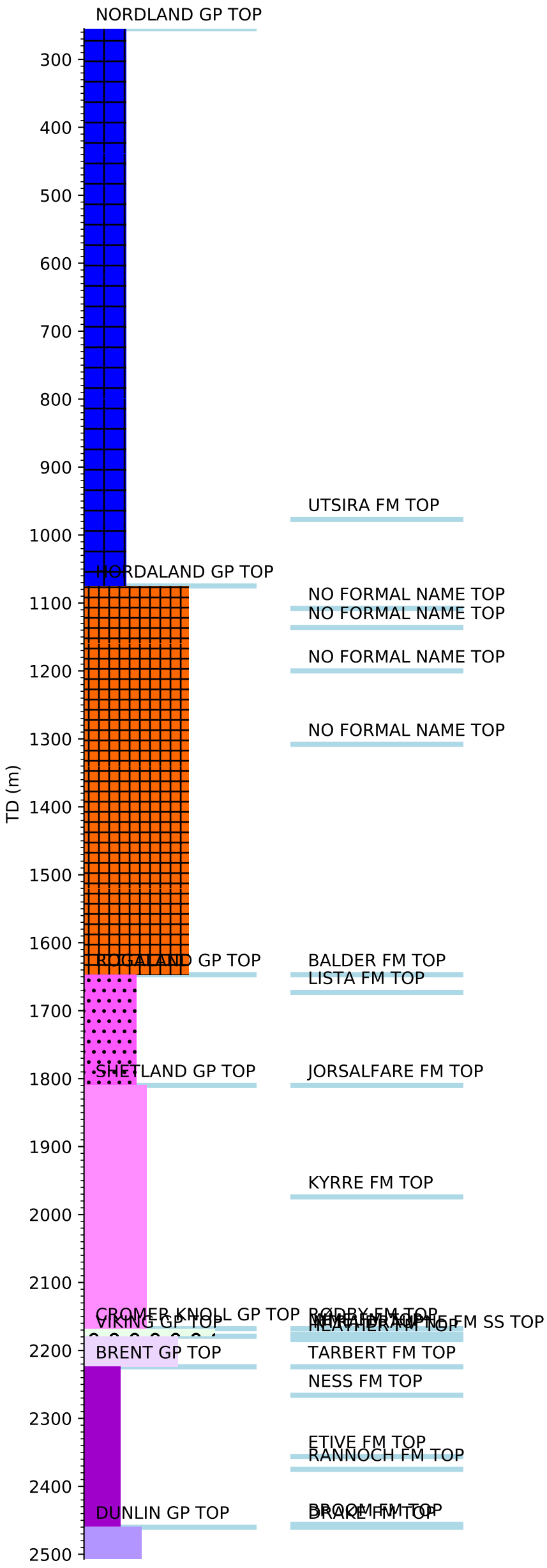
Groups

Formation Tops



Wellbore History

GENERAL

Well 34/7-22 is located between the Gullfaks and Snorre fields on Tampen Spur in the Northern North Sea. The main objective was to prove hydrocarbons and reservoir quality of a Brent Group prospect named the STWB prospect, defined by structural closure towards east and north, dip closure towards south, combined with fault seal against the Main Tordis Fault (MTF) towards west. Sands within Paleocene, Cretaceous, and Late Jurassic were secondary objectives.

OPERATIONS AND RESULTS

Wildcat well 34/7-22 was spudded with the semi-submersible installation West Delta on 15 August 1993 and drilled to TD at 2507 m in the Early Jurassic Drake Formation. Since possible shallow gas levels had been predicted, a 9 7/8" pilot hole was drilled. The Nordland Group consisted mainly of claystone except for the sandy Utsira Formation, which came in at 907 m. On the seismic, top Hordaland was interpreted to coincide with a structural high which was considered to be a clay diapir. The "clay diapir" consisted, however, almost entirely of sandstone which partly belongs to the Utsira Formation and the upper part of the Hordaland Group. The unexpected large amounts of sand caused operational problems due to instability and the drill string got stuck at 1086 m, on 17 August. The string was backed off and the well was re-spudded on 18 August. The casing program was re-designed to penetrate and stabilize the sandy Utsira Formation and Hordaland Group with a weighted mud system. After re-spud, drilling commenced as planned. The well was drilled with spud mud down to 1329 m, and with KCl mud with glycol from 1329 m to TD.

No sand or hydrocarbons were found within the Paleocene and Cretaceous (Campanian) intervals, but at 2178.5 m, a water wet Intra-Draupne Formation sand was penetrated. At 2184 m the Heather Formation was encountered with a thickness of 40 m, 31m thicker than prognosed. Top reservoir, corresponding to Top Tarbert Formation, Brent Group, was encountered at 2224 m and was proven oil bearing down to 2249.5 m, with good to excellent reservoir quality as proven by cores, electrical logs and the test. FMT pressure points showed that the Tarbert Formation reservoir was in a separate pressure regime from the underlying Ness-Etive-Rannoch Formations, and also from the above Intra Draupne Sandstone.

Apart from the live oil in the Tarbert Formation reservoir there were weak shows in claystones in the interval 2080 - 2176 in the Shetland Group. Similar shows were observed in the Late Jurassic Intra Draupne Formation sand and in the Heather Formation. Below the OWC in the Tarbert reservoir shows continued down to 2256 m. There were no shows below 2256 m.

A total of 7 cores were cut in the interval 2226 - 2331.5 m in Tarbert and Ness Formations. Segregated samples of oil and gas were obtained at 2228.5 m and 2246.3 m in the Tarbert Formation.

The well was permanently abandoned on 1 October 1993 as an oil discovery.

TESTING

One well test was performed in the Tarbert Formation in the interval 2236 - 2242 m. In the final stage of the main flow period the well flowed 1154 Sm3 oil/day through a 14.3 mm choke. The oil had a GOR of 47 Sm3/Sm3, a dead oil density of 0.85 g/cm3 and the gas gravity was 0.695 (air = 1). The maximum recorded temperature in the test was 84.5 deg C.

LITHOSTRATIGRAPHY & HISTORY FOR WELL: 34/7-22