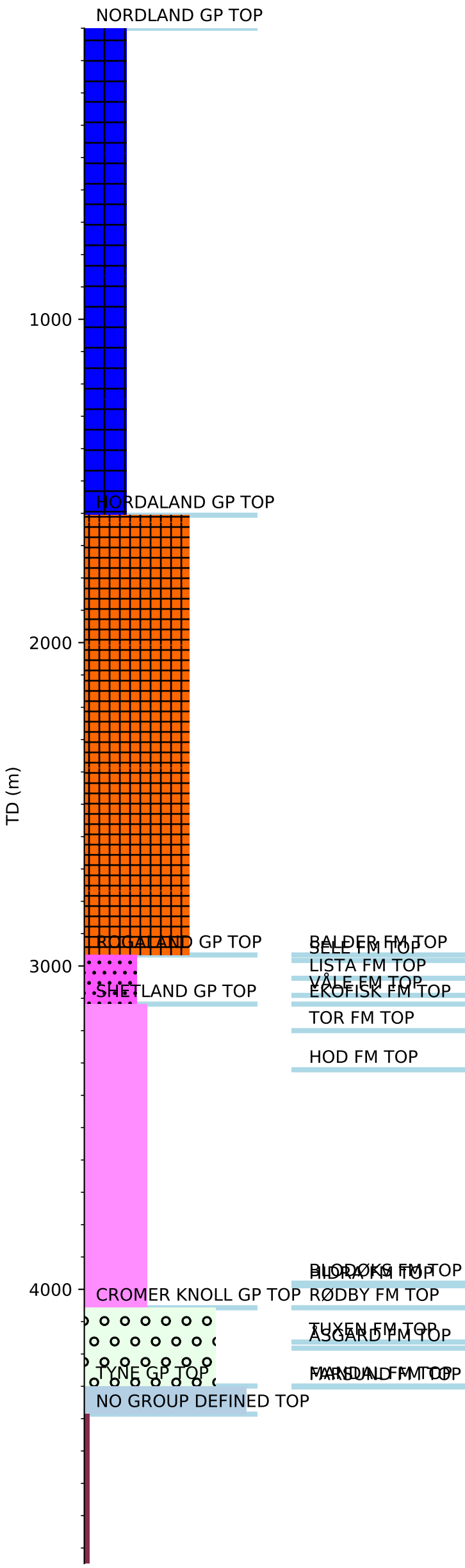

Wellbore History

GENERAL

Well 2/7 26 S is located on the Embla Field in the Central Graben of the North Sea. It was designed to test the pre-Jurassic sandstones, which had shown commercial quantities of hydrocarbons in the 2/7-20, 2/7-21 S, and 2/7-23 S wells. The objective of the well was to confirm the presence of hydrocarbon bearing sandstones in the western fault block of the structure and to establish the productivity of this reservoir section through a program of well testing and coring. Well location and TD was chosen so that both the upper and lower sandstone members of the pre-Jurassic sequence would be penetrated. The target location was 300 m to the south of the 2/7-9 well at Base Cretaceous level. The reservoir section was expected to be highly fractured and over-pressured. Shallow gas was expected since gas had been encountered in all wells drilled from the template location over the 2/7-20 well.

OPERATIONS AND RESULTS

Appraisal well 2/7 26 S was spudded with the semi-submersible installation West Delta on 20 March 1991 and drilled to TD at 4848 in Devonian rocks. The well was drilled deviated from a template located over the 2/7-20 well to penetrate the target reservoir section in the western fault block of the Embla structure. Minor shallow gas was detected in sandy zones with an increase in background gas from 4 to 64 units. Apart from some failures when logging and some stuck pipe experiences, drilling proceeded without significant problems. The well was drilled with seawater and hi-vis sweeps down to 575 m, with KCl/PAC mud from 575 m to 4125.5 m, and with Enviromul oil based mud from 4125.5 m to TD.

The 9 5/8" casing was set in claystones of the Lower Cretaceous, Rødby Formation. The remaining Lower Cretaceous section including Sola, Tuxen and Åsgård Formations was penetrated, followed by a Late Jurassic sequence consisting of 3 m Mandal Formation and 82 m Farsund Formation. The top of the reservoir sands were encountered at 4386 m (4226 m TVD), 58 m higher than prognosed. As in the other Embla wells the reservoir was undefined, Pre-Jurassic stratigraphy. Both the upper and the lower sandstone units were present in the well as predicted. The reservoir was oil bearing. No definite OWC was defined, however RFT pressure data, logs and DST results indicated oil-filled porous sandstones from top reservoir and down to at least 4606 m (4465 m TVD).

The cuttings in the intervals between 1520 - 1680 m and 1730 - 1830 m (Base Nordland Group / upper Hordaland Group) showed 30-100% pale to bright yellow fluorescence accompanied by oil in the mud. The cut was blooming to streaming yellow, and the odour was good to strong. Good to excellent oil shows were seen in the interval 3111.4 m to 3973 m with 35% fluorescence in marls/limestones from 3111.4 m and rapidly increasing to 70% by 3018.1 m. Shows up to 80%, with bright yellow fluorescence and yellow fast streaming cut, were seen from 3124.2 to 3230.9 m. Shows were also seen at 3550.9 m, 5% -10% with dull yellow fluorescence and hazy crushed cut. From 3627.1 to 3834.4 m shows of 20% to 80% with a dull fluorescence were seen. The cut was pale blue yellow and slightly streaming. Shows further down in the well, including the pre-Jurassic reservoir section were weak and most likely caused by the oil-based mud.

A total of 18 cores were cut in the well. The first was cut at 3200.4 - 3214.3 m in the Tor Formation. The second core was cut through the Mandal Formation and into the upper part of the Farsund Formation. A total of 16 cores were cut in the reservoir interval including a core in the rhyolittic rocks at TD. A total of 90 sidewall cores were attempted and 28 sidewall cores were recovered. No wire line fluid samples were taken.

The well was suspended on 13 September 1991 as an oil appraisal well and reclassified to development well 2/7-D-26

TESTING

Two DST tests were performed in this well.

DST 1 was conducted over the interval 4605.5 - 4696.9 m (4465.0 - 4552.2 m TVD). It flowed in the range of 48 Sm3 (300 STB) /day, with signs of unstable flow, at pressures less than 1000 psi.

DST 2 was conducted over a gross interval from 4309.8 - 4538.4 (4184 - 4401 m TVD).The well was tested on a 16/64" choke with flowing rates of

LITHOSTRATIGRAPHY & HISTORY FOR WELL: 2/7-26 S