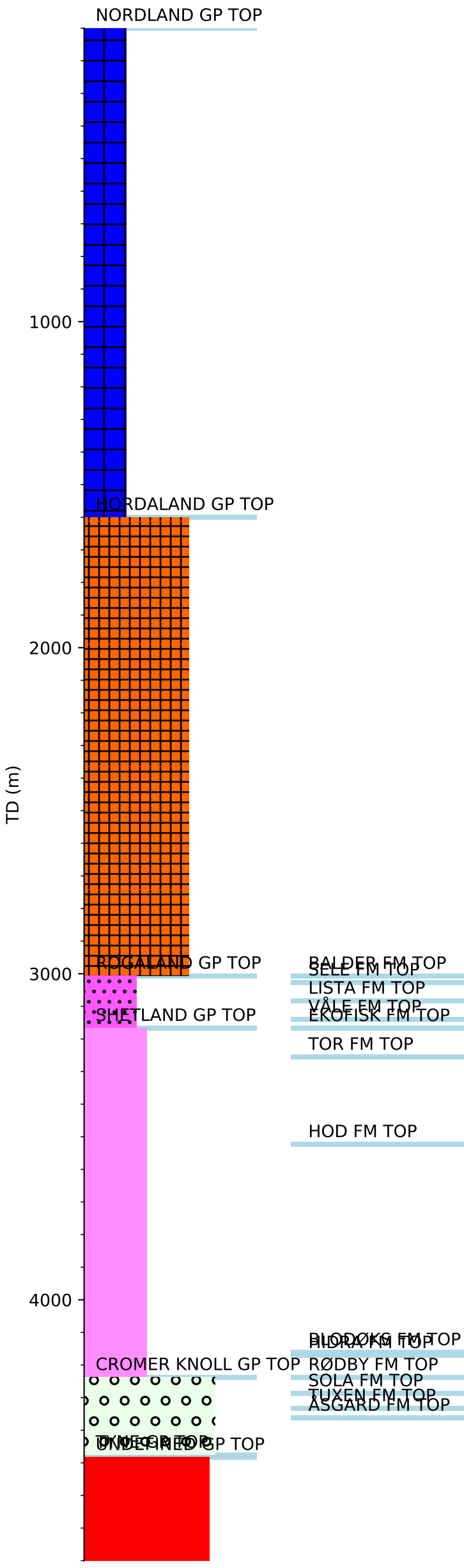

Wellbore History

GENERAL

Well 2/7-27 S was drilled on the Embla structure in the southern North Sea. The objective was to drill to replace the abandoned 2/7-23 S well as a production well in the Embla reservoir. Well 2/7-27 S would thus be drilled as close as possible to the 2/7-23 S well path and to the same bottom hole location. By this it was anticipated that the extensive core data recovered in the 2/7-23 S would be applicable to the production data to be gained from the 2/7-27 S. The 2/7-23 S had earlier confirmed the presence of hydrocarbon bearing sandstones originally discovered in the 2/7-9 (1974), and later tested in the 2/7-20 (1988) and 2/7-21 S (1989) wells, but was abandoned before well testing could be performed.

OPERATIONS AND RESULTS

Appraisal well 2/7-27 S was spudded with the semi-submersible installation West Delta on 9 November 1991 and drilled to TD at 4801 m (4452 m TVD) in pre-Jurassic rocks. It was drilled deviated from a fifteen slot production template located at the site of the planned Embla production facilities. Drilling problems with stuck pipe were encountered in the 12 1/4" hole section at 3470 m, forcing a technical sidetrack from 2972.7 m. Unlike previous Embla wells, the 2/7-27S was drilled using water based mud throughout. It was drilled with seawater and hi-vis pills down to 573 m, with KCl/polymer mud from 573 m to 3791 m, with Baranex-Thermathin mud from 3791 m to 4500 m, and with a Thermadrill/Baranex high temperature mud system from 4500 m to TD.

The 2/7-27 S well encountered top Mandal Formation at 4476 m and top pre-Jurassic reservoir at 4483.3 m (4177.6 m TVD) with the same reservoir stratigraphy as the 2/7-23S. However, although the wells are only 46.5 m apart at the Base Cretaceous Unconformity, this surface was penetrated 28 m TVD deeper in the 2/7-27 S. Log correlation and seismic interpretation suggest the presence of a fault between (in the vicinity of) the two wells, but the evidence is incomplete. The pre-Jurassic reservoir was hydrocarbon bearing as in well 2/7-23 S.

One core was cut in each of the Ekofisk and Tor Formation and two consecutive cores were cut in the pre-Jurassic reservoir section. A segregated RFT sample was taken at 4488.5 m. It contained 100% mud filtrate.

The well was suspended suitable for later re-entry and tie back as a production well. The well was completed on 17 June 1992. On 2 March 1993 it was re-entered and re-classified to development well.

TESTING

A single DST test where performed over the pre-Jurassic reservoir from 4483.6 - 4740.9 m (4177.9 - 4399.5 m TVD). At the end of the main flow the well produced 582 Sm3 oil and 180400 Sm3 gas /day through a 20/64" choke. The GOR was 309 Sm3/Sm3 and the oil gravity was 45 deg API. The H2S content was 25 up to ppm (peak) and the CO2 content was 6%. With a 40/64" choke the GOR was 265 Sm3/Sm3. The maximum bottom hole temperature recorded in the main flow by the HRS Gauge at 4142.2 m (3894.9 m TVD) was 160 deg C.

LITHOSTRATIGRAPHY & HISTORY FOR WELL: 2/7-27 S