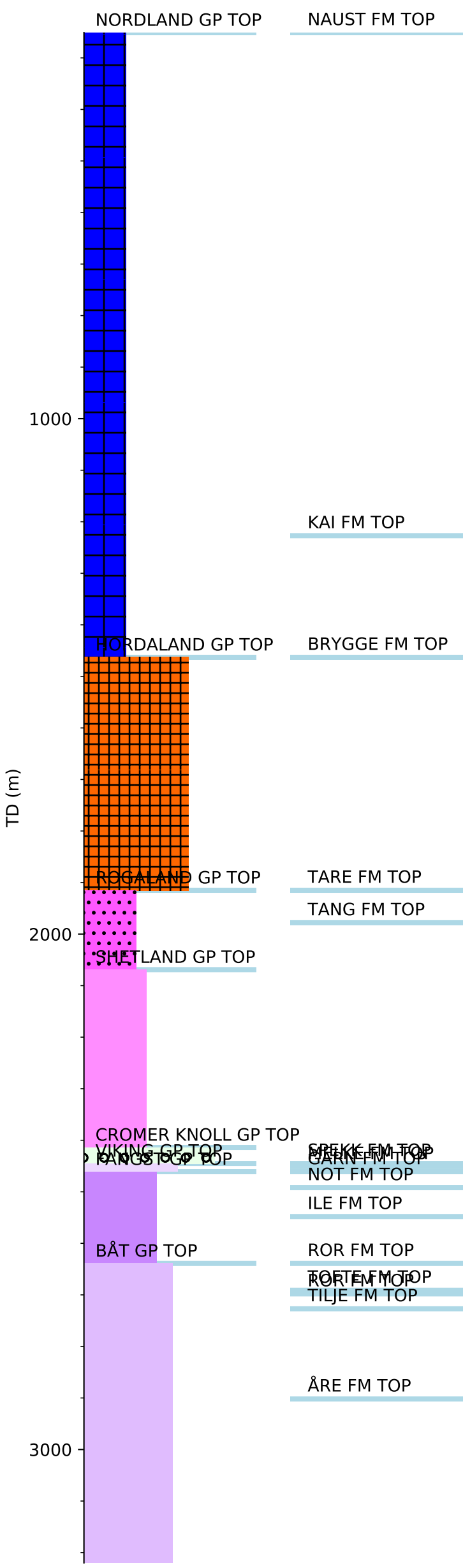

Wellbore History

GENERAL

Well 6407/6-3 was drilled on the eastern side of the Halten Terrace, roughly mid-way between the Draugen and Midgard Discoveries off shore mid-Norway. It was drilled on the same structure as well 6407/6-2, which was junked due to a disastrous shallow gas blow-out. The primary objective was to test for hydrocarbon accumulation in sandstones of Middle Jurassic age (Fangst Group). Secondary objectives were possible hydrocarbon accumulations in Early Jurassic sandstone, and to verify the geophysical and structural interpretation and improve the geological, paleontological and geochemical understanding of the area. Total depth was to be in rocks of Triassic age or 4000 m in order to satisfy the licence commitment.

OPERATIONS AND RESULTS

Wildcat well 6407/6-3 was spudded with the semi-submersible installation Dyvi Delta on 13 December 1986 and drilled to TD at 3220 m in Late Triassic sediments of the Åre Formation. No significant technical problems were encountered in the operations, which were completed within planned time and budget. No shallow gas was encountered in the well. At 512 m, the interval thought to correspond with that which caused the uncontrolled blow out from well 6407/6-2, a small resistivity peak was recorded, although the gamma ray reading remained constant. A negative drilling break was recorded at the same depth but here was no increase in gas. The well was drilled with spud mud down to 459 m, with gypsum/polymer mud from 459 m to 2470 m, and with gel/lignite/lignosulphonate mud from 2470 m to TD.

The Middle Jurassic sandstones were penetrated at 2461 m and were found to be gas/condensate bearing with a thin light oil leg. From FMT pressure gradients, logs and shows on cores an OWC can be set at 2583 m. There were shows and petroleum odour all through the reservoir down to 2583 m. Shows description, RFT pressure measurements, DST results and geochemical analyses indicated a gas/light oil contact at ca 2570 - 2575 m. Below 2583 m there was no fluorescence and only a weak, bluish white streaming cut. Sandstones of the Early Jurassic Tilje and Åre Formations were encountered at 2727 m. These were water wet without shows.

Seven cores were cut in the Fangst Group from 2472 to 2615 m. No wire line fluid samples were taken.

The well was permanently abandoned on 16 February 1987 as a gas/condensate discovery

TESTING

Three drill stem tests were performed in the Fangst Group

DST 1 tested the interval 2570 - 2577 m (later corrected to 2574.2 – 2581.2 m). It produced 338600 Sm3 gas, 151.6 Sm3 condensate and 20 - 45 m3 water /day through a 72/64" choke. GOR was 2233 Sm3/Sm3, the oil density was 0.810 g/cm3, the gas gravity was 0.760 (air = 1). The bottom hole temperature measured in the test was 93 deg C.

DST 2 tested the interval 2546 - 2555 m (later corrected to 2550.2 – 2559.2 m). It produced 1249000 Sm3 gas, 512.7 Sm3 condensate and 1 m3 water /day through a 96/64" choke. GOR was 2437 Sm3/Sm3, the oil density was 0.737 g/cm3, the gas gravity was 0.723 (air = 1). The bottom hole temperature measured in the test was 98 deg C.

DST 3 tested the interval 2479 - 2489 m (later corrected to 2483 – 2493 m). It produced 1298000 Sm3 gas, 517.7 Sm3 condensate /day through a 72/64" choke. No water was produced. GOR was 2507 Sm3/Sm3, the oil density was 0.752 g/cm3, the gas gravity was 0.742 (air = 1). The bottom hole temperature measured in the test was 96 deg C.

LITHOSTRATIGRAPHY & HISTORY FOR WELL: 6407/6-3