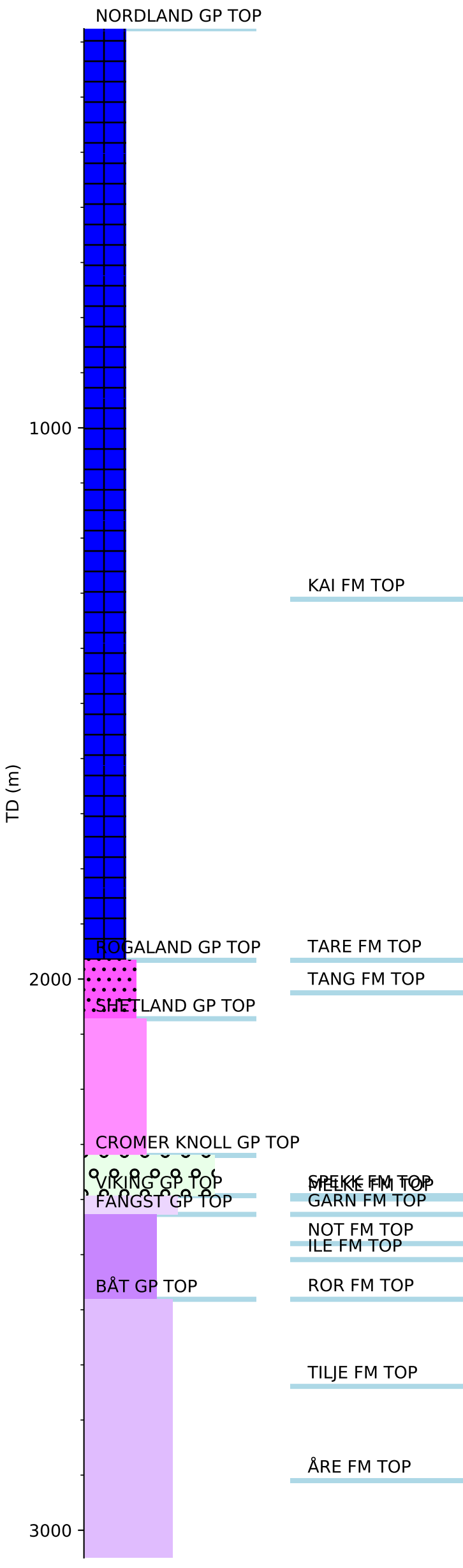

Wellbore History

GENERAL

Well 6407/2-3 was drilled down dip on the Delta structure on the southern fault compartment of the Midgard Field off shore mid Norway. The primary objectives were to test for hydrocarbons in the Middle Jurassic Fangst Group, and establish the hydrocarbon contact. Secondary objectives were testing the thickness and facies development of reservoir units in response to growth faulting. Shallow gas was expected at several levels due to experience from nearby wells. Fangst Group was prognosed to come in at 2417 m, gas/oil contact at 2514 m, and the oil/water contact at 2525 m. TD was expected to be 3050 m.

OPERATIONS AND RESULTS

Well 6407/2-3 was spudded with the semi-submersible installation Treasure Saga on 7 November 1986 and drilled to TD at 3050 m in Early Jurassic sediments of the Åre Formation. Gas peaks above 1% gas value were observed at 532 m, 590 m, 630 m, 755 m, and 802 m, the two latter showing the highest values at approximately 1.8%. The whole section was drilled using relatively high mud weights around 1.15 g/cm, which makes the recorded gas values significant. While tripping out at 2645 m prior to logging, the string got stuck. After nine days of fishing it was decided to sidetrack. The 9/58" casing was set at 2371 m and the sidetrack was kicked of at 2387 m. The well was drilled with spud mud down to 915 m and with gypsum/polymer mud from 915 m to 2645 m where the pipe stuck. No wire line logs were run in the interval 2432 - 2465 in this hole, only MWD. The final 8 1/2" sidetrack from 2371 m to TD was drilled with gel mud.

The Fangst Group came in at 2427 m, ten meters below prognosis. It was gas-filled down to a gas/water contact at 2523 m (2521 m TVD RKB). No oil leg could be seen. No shows were seen in cuttings, but poor shows with good hydrocarbon odour were described on cores down to 2526 m in the Ile Formation. Fluorescence was very weak blue white and cut reaction very slow. Weak dark yellow brown fluorescence was recorded in sandstone in the Tilje core at 2760 - 2764 m. No stain, cut, or odour was associated with his fluorescence.

Eight cores were cut from 2428 - 2573.1 m (recovered 142.8 m, 96.5%) in the Fangst Group and across the GWC contact. Down to the GWC it consisted of two sandstone units (Garn and Ile Formations) separated by one silty shale zone (the Not Formation). These cores were cut in the original hole, before side tracking. Core number 9 was cut in the side track hole from 2741 - 2769 m in the Tilje Formation (recovered 28 m, 100%). The lithology was sandstone interlaminated with shale. Porosity was predominantly poor. Segregated fluid samples were taken at 2428, 2430, and 2510.5 m.

The well was permanently abandoned on 23 January 1987 as a gas/condensate discovery.

TESTING

Two production tests were carried out and both produced a lean gas similar to what is found in the rest of the Midgard Field.

Test No. 1 (2508.7 - 2518.2 m RKB, 2480.7 - 2490.2 TVD m MSL) perforated the Ile Formation and produced gas at a maximum rate of 1.285.000 Sm3 /day through a 38.1 mm choke at a well head pressure of 88 bar. The condensate/gas ratio was 0.000211 Sm3/Sm3 (GOR = 4740 Sm3/Sm3). The down-hole temperature recorded in the test was 91.8 deg C. API gravity of the dead condensate was 49.3 deg.

Test No. 2 (2427.8 - 2435.8 m RKB, 2400.3 - 2408.3 TVD m MSL) perforated the Garn Formation and produced gas at a maximum rate of 1.320.500 Sm3 /day through a 38.1 mm choke at a well head pressure of 88.7 bar. The condensate/gas ratio was 0.000161 Sm3/Sm3 (GOR = 6210 Sm3/Sm3). The down-hole temperature recorded in the test was 89.2 deg C. API gravity of the dead condensate was 49.0 deg.

LITHOSTRATIGRAPHY & HISTORY FOR WELL: 6407/2-3