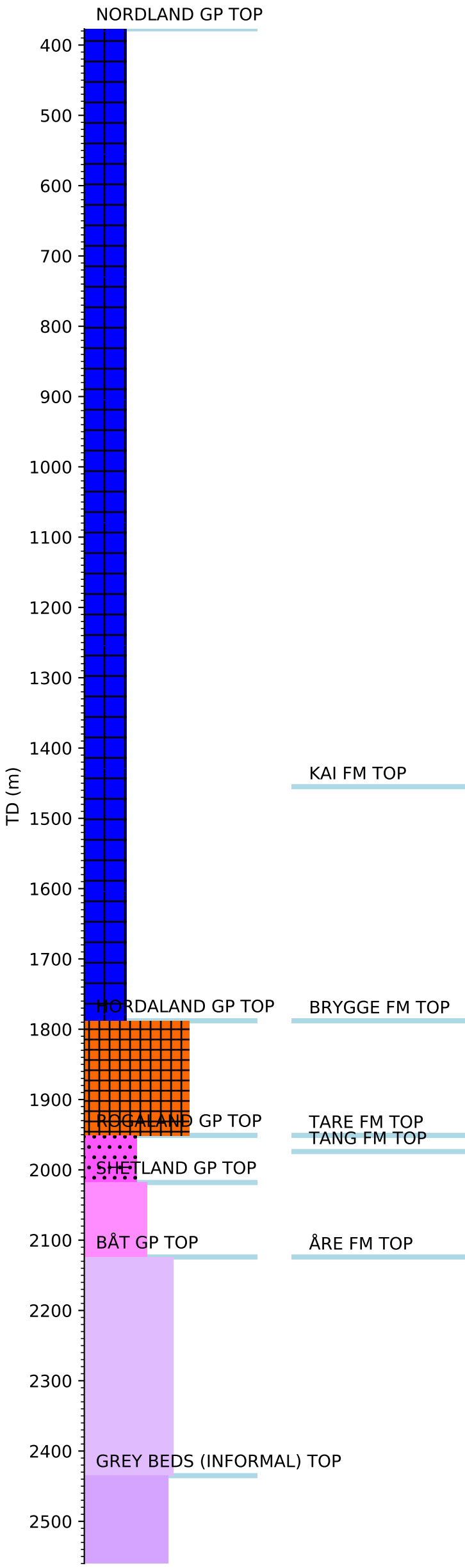
Groups

Formation Tops



Wellbore History

GENERAL

Well 6507/8-4 was designed to drill the Heidrun North Structure, a horst block northeast of the Heidrun Field situated in the transition zone between the Nordland Ridge to the north and the Halten Terrace to the southwest. The primary objective of the well was to test sandstones of Early Jurassic age. The well would also test the geophysical and structural interpretation and improve the paleontological, geological and geochemical understanding of the area.

Shallow gas warning was given at 608 m, 745 m and 686 m, the last one classified as a medium/ high risk anomaly. Problems with gumbo clay and sloughing shale had been experienced in the Eocene / Paleocene sections in the Haltenbanken area.

OPERATIONS AND RESULTS

Wildcat well 6507/8-4 was spudded with the semi-submersible installation Deepsea Bergen on 14 June 1990 and drilled to TD at 2560 m in the Triassic Grey Beds. Apart from some tight hole spots, drilling proceeded without significant problems. The well was drilled with seawater and hi-vis sweeps down to 654 m, with seawater and CMC EHV mud from 654 m to 1555 m, with gypsum/polymer mud from 1555 m to 2100 m, and with gel/ligno mud from 2100 m to TD. Shallow gas was encountered at 596 m and at 686 m.

The only shows reported above the target reservoir were on claystones at 2102 m and at 2104 m. Top reservoir (Åre Formation) was encountered directly underlying Late Cretaceous sediments at 2124 m. The hiatus was from the Early Jurassic, Sinemurian to the Late Cretaceous, Santonian. The well proved gas and oil in the Åre formation. The GOC was set at 2142 m and the OWC at 2251.5 m. Shows continued down to 2290 m.

A total of 170.25 m core was recovered in eleven cores, all from the Åre Formation in the interval 2128 to 2318 m. Twenty-five sidewall cores were attempted and 22 were recovered. An FMT fluid sample was taken at 2158.5 m. It contained only 500 cc mud filtrate due to plugging. Another sample was taken at 2133.7 m and contained oil, mud filtrate and some water.

The well was abandoned on 13 August 1990 as a gas and oil discovery.

TESTING

A number of tests were performed in the Åre Formation.

No 1 tested the interval 2250 to 2254 m. The interval produced only small quantities of water.

No 2 tested two intervals.

Test 2.1 tested the interval 2200 to 2202 m, which produced 1023.8 Sm3 oil and 58700 Sm3 gas /day through a 48/64" choke. The GOR was 59 Sm3/Sm3, the oil gravity was 0.905 g/cm3 (24.9 deg API), and the gas gravity was 0.644 (air = 1). The bottom hole temperature was 76 deg C.

Test 2.2 tested the interval 2204 to 2221 m, which produced 1395.3 Sm3 oil and 60900 Sm3 gas /day through a 52/64" choke. The GOR was 51 Sm3/Sm3, the oil gravity was 0.904 g/cm3 (25 deg API), and the gas gravity was 0.642 (air = 1). The bottom hole temperature was 76 deg C.

No 3 tested two intervals.

Test no 3.1 tested the interval 2150 to 2161.5 m, which produced 1480 Sm3 oil and 70100 Sm3 gas /day through a 56/64" choke. The GOR was 61 Sm3/Sm3, the oil gravity was 0.904 g/cm3 (25 deg API), and the gas gravity was 0.635 (air = 1). The bottom hole temperature was 75 deg C.

Test no 3.2 tested the interval 2163.5 to 2168 m, which produced 986 Sm3 oil and 45300 Sm3 gas /day through a 40/64" choke. The GOR was 56 Sm3/Sm3, the oil gravity was 0.904 g/cm3 (25 deg API), and the gas gravity was 0.635 (air = 1). The bottom hole temperature was 75.5 deg C.

No 4 tested the interval 2126 to 2135 m which produced 16.1 Sm3 condensate and 756777 Sm3 Gas /day through a 40/64" choke. The GOR was 47078 Sm3/Sm3, the condensate gravity was 0.78 g/cm3 (49.9 deg API), and the gas gravity was 0.648 (air = 1). The bottom hole temperature was