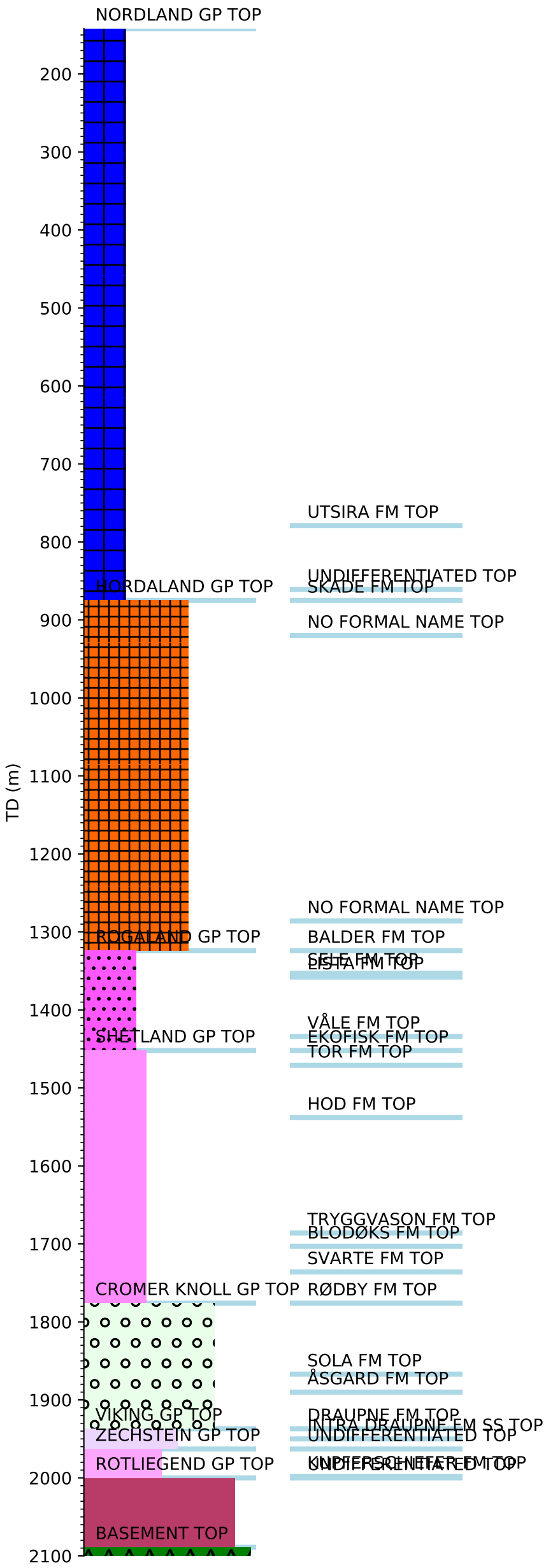
Groups

Formation Tops



Wellbore History

GENERAL

Well 16/3-7 was drilled to appraise the southeast flank of the Joan Sverdrup Field on the Utsira High in the North Sea. It is located approximately 2.8 km southeast of the appraisal well 16/3-5 and approximately 4.2 km south-west of the exploration well 16/3-2. The objectives were to determine the presence and thickness of the Upper Jurassic Draupne shale and Draupne sandstone, to calibrate the seismic interpretation and depth conversion, and find the free-water level. The well should also investigate the reservoir properties in the Permian.

OPERATIONS AND RESULTS

Appraisal well 16/3-7 was spudded with the semi-submersible installation Bredford Dolphin on 30 September 2013 and drilled to TD at 2100 m, 12 m into granitic basement rock. A 9 7/8" Pilot Hole section was drilled from Seabed to 711 m. No shallow gas was observed while drilling the pilot hole or while opening it up to 36". No significant problem was encountered in the operations. The well was drilled with seawater and hi-vis sweeps down to 711 m and with Aquadril glycol mud from 711 m to TD.

The Draupne Formation shale section was encountered at 1937 m and was 13 m thick. The Intra Draupne Formation Sandstone was encountered at 1949 m, which was 12 m deep to prognosis. It was 14 m thick and of excellent quality. Live oil was proved in the uppermost part, but the reservoir was encountered almost completely in the water zone. Sampling indicated that the oil-water contact is at or near 1950 m. Permian carbonates, belonging to the Zechstein Group, were encountered at 1963 m, directly under the Jurassic section. The 36 m thick dolomitic carbonate reservoir has moderate to good reservoir properties. The pressure measurements confirmed the reservoir to be in the same pressure regime as the Johan Sverdrup discovery and the well showed a common water gradient in both the sandstone and Permian carbonates, demonstrating good communication between the two reservoirs. The carbonate reservoir is resting on a two meter thick Kupferschiefer, which in turn rests on 89 m of sandstone and conglomerate belonging to the Rotliegendes Group. Oil shows continued below the thin live oil, throughout the Intra Draupne Formation sandstones, the Zechstein carbonates and a few meters into the Rotliegendes Group.

A total of 35.7 m core was recovered in two cores from the interval 1935.5 to 1977.5 m (85% overall recovery).The cores captured most of the Draupne Formation shale, parts of the Intra Draupne Formation sandstone reservoir, and 15 m of the Zechstein Group carbonate. The core to log depth shift was +0.3 m for core 1 and -0.32 m for core 2. RCX fluid samples were taken at 1949.9 m (water and oil), 1950 m (water and trace oil), 1952 m (water), 1952.1 m (water), and 1967 m (water).

The well was permanently abandoned on 8 November 2013 as an oil appraisal well.

TESTING

No drill stem test was performed.

LITHOSTRATIGRAPHY & HISTORY FOR WELL: 16/3-7