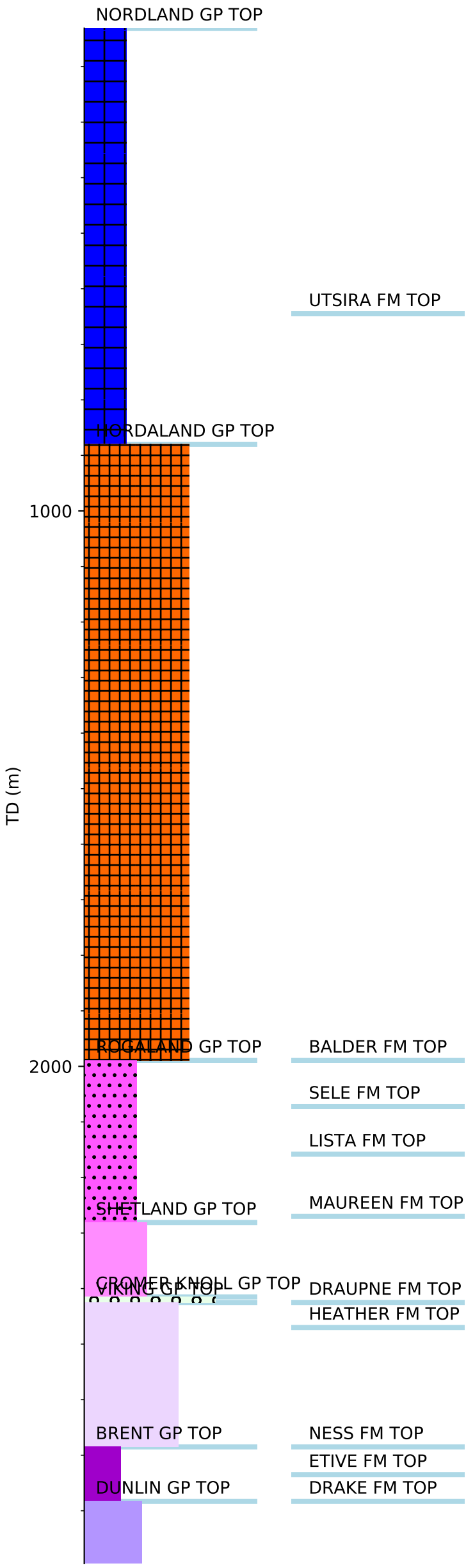
Groups

Formation Tops



Wellbore History

GENERAL

Well 30/9-1 was drilled on the southeast part of the Oseberg fault block (Alpha structure) in the North Sea. The Alpha structure is an eastward tilted fault block that contains proven reserves of oil and gas in the Middle Jurassic Brent Group sandstone reservoir. The primary objective of the well was to establish the oil/water contact in this part of the structure. The well was planned to be drilled to a total depth of 2850 m, approximately 100 m into the Dunlin Group.

OPERATIONS AND RESULTS

Appraisal well 30/9-1 was spudded with the semi-submersible installation Treasure Seeker on 24 October 1982 and drilled to TD at 2895 m in the Early Jurassic Drake Formation. No significant problem was encountered in the operations. The well was drilled with seawater/hi-vis pills and pre-hydrated bentonite down to 969 m, with KCl/Drispac mud from 969 m to 2515 m, and with KCl/polysal mud from 2515 m to TD.

The Brent Group was found hydrocarbon bearing from 2685 m down to 2738 m where the free water level was established. This interval comprises the whole of the Ness Formation and the uppermost 3 m of the Etive Formation. Net pay in the interval was 10.5 m. Poor oil shows were recorded on limestone cuttings in the interval 2281 to 2232 m in the uppermost Shetland Group. Good oil shows were recorded through the oil column of the reservoir. Below the contact at 2738 m, shows became weaker and patchy down to 2778 m. Below this depth only some weak shows on claystone from three sidewall cores in the interval 2872 m to 2895 m were reported.

Seven conventional cores were cut from 2682 m at the top of the Ness formation to 2784.9 m, into the Dunlin Group shales. RFT fluid samples were taken at 2690.5 m (oil, gas, water, and filtrate), 2732.2 m (water and filtrate with small amounts of oil and gas), 2737.5 m (water and filtrate with trace oil and gas), and at 3782.2 m (water and filtrate with small amounts of oil and gas).

The well was permanently abandoned on 29 January 1983 as an oil appraisal well.

TESTING

Three drill stem tests were performed in the Brent Group.

DST l (2743-2761 m) in the upper part of the Etive Formation is a combined water production/injection test. It produced 200 m3/day of water through a 44/64" choke. The first injection rate was 134 m3/day of water and the second injection rate amounted to 1170.4 m3/day) of water. Maximum temperature measured at 2740.5 m was 105.1 °C.

DST 2 (2727 -2733 m) at the very base of the Ness Formation flowed 325 Sm3/day oil with 36507 Sm3/day of associated gas with a gravity of 0.780 (air = 1). Choke size was 28/64". The GOR was 112 Sm3/Sm3, the oil gravity was 32.2° API, and the gas gravity was 0.780 (air = 1). Maximum temperature measured at 2714.3 m was 106.6 °C.

DST 3 (2689 – 2692 m) in the uppermost part of the Ness Formation tested 375 Sm3/day of oil and 39620 Sm3/day of gas through a 28/64" choke. The GOR was 106 Sm3/Sm3, the oil gravity was 34.9°API and the gas gravity 0.724 (air = 1). Maximum temperature measured at 2678.9 m was 105.7 °C.

LITHOSTRATIGRAPHY & HISTORY FOR WELL: 30/9-1