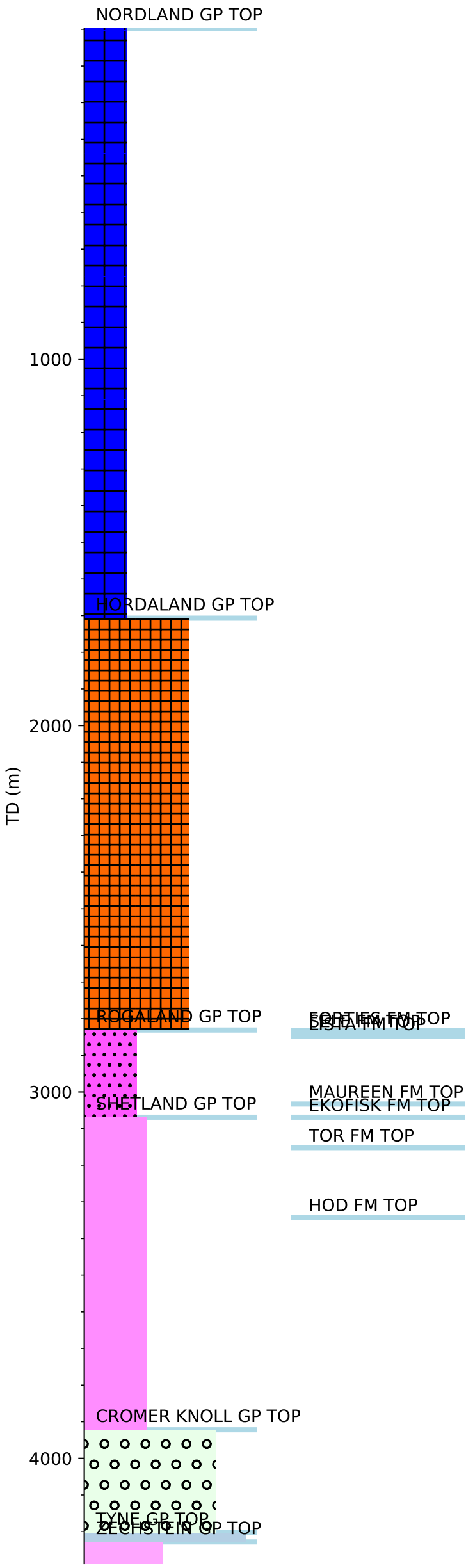
Groups

Formation Tops



Wellbore History

GENERAL

The Flyndre well (1/5-2) was drilled on a structural high situated in the Feda Graben of the North Sea close to the UK border. The principle objective horizons were the Paleocene and Jurassic sand sections which had produced oil in the UK 30/13-2 well and the NO 2/7-3 wells. It was estimated that at Paleocene depth the structure was an irregular dome about 4 miles in diameter, with 12 square miles of closure and 290 ft (88.4 m) of vertical relief while at Jurassic depth the structure was a NW-SE trending anticline 4.5 miles by 3.5 miles with 12 square miles of closure at 190 ft (57.9 m) of vertical relief. Planned TD was 15000 ft (4572 m), Triassic sands, or the Zechstein Group, whichever came first.

OPERATIONS AND RESULTS

Well 1/5-2 was spudded on 19 October 1973, 15 m away from the original Flyndre well 1/5-1, which was junked at 491 m for technical reasons. Well 1/5-2 was drilled with the semi-submersible installation Ocean Viking. Total depth was set at 4287 m in Late Permian Zechstein salt. The well was drilled with seawater and hi-vis pills down to 494 m. The rest of the well was drilled with lignosulphonate mud.

The well had shows throughout the Paleocene and Late Cretaceous sections and four drill-stem tests were carried out.

The top sand in Paleocene at 2832 m (Forties Formation sand) produced oil upon testing. Mud log shows were present in the Danian, but testing proved the section to be tight and unproductive. A thick Late Cretaceous section was encountered with oil shows at the top of the Maastrichtian (Tor Formation) and in the Campanian (Lower Tor and Hod Formation) sections. Drill-stem tests were carried out in these zones and the Maastrichtian zone produced oil from fractured limestone at 3151.6 - 3174.2 m while the lower zone from 3337.6 - 3363.2 m was tight with only minor amounts of oil being recovered. The Early Cretaceous section, 281 m thick, consisted of sediments of Albian/Aptian and Barremian age. There were no shows in this section. The Jurassic, section was encountered at 4203 m but contained only 24 m of Kimmeridgian shale. The Kimmeridgian rested directly upon the Zechstein Group at 4228 m.

No cores were cut and no wire line fluid samples were taken.

The well was permanently abandoned on 15 April October 1974 as an oil discovery.

TESTING

Four intervals were perforated and tested.

DST I tested the interval 3337.6 - 3363.2 m in the lower Hod and upper Tor Formations produced a total of 5.6 Sm3 oil and 17.5 m3 of water. The oil gravity was 35 deg API.

DST II tested the interval 3151.6 - 3174.2 m in the Tor Formation produced 501 Sm3 oil, 180661 Sm3 gas, and 49 m3 water /day through a 54/64" choke. The GOR was 361 Sm3/Sm3 and the oil gravity was 42 deg API.

DST III tested the interval 3076.7 - 3102.9 m in the Ekofisk Formation produced total 30- 40 m3 water with 6 - 20% oil.

DST IV tested the interval 2831.6 - 2841.3 min the Forties Formation. It produced 37 sm3 oil, 16707 Sm3 gas, and 24 m3 water /day. The GOR was 456 Sm3/Sm3 and the oil gravity was 42.6 deg API.

LITHOSTRATIGRAPHY & HISTORY FOR WELL: 1/5-2