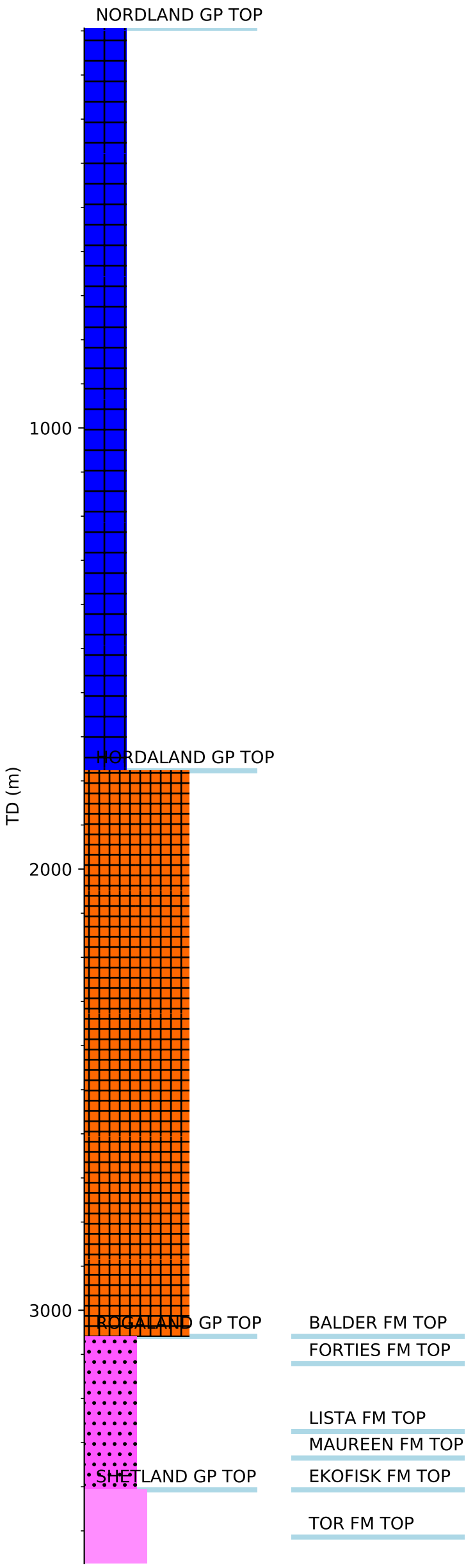
Groups

Formation Tops



Wellbore History

GENERAL

Well 1/2-1 is located in the Central Graben, about 200 m from the UK border in the North Sea. The main objective was Paleocene sands of the Rogaland Group. The secondary target was the chalk formations, although these were possibly not enough fractured to represent a reservoir.

OPERATIONS AND RESULTS

Wildcat well 1/2-1 was spudded with the semi-submersible installation Ross Isle on 20 March 1989 and drilled to TD at 3574 m in the Late Cretaceous Tor Formation. While cutting of core no 7, the elevators accidentally opened and dropped the string. Two attempts were made to recover the string with no success. The hole was sidetracked from 3078.5 m and core no 8 was cut. The well was drilled with seawater down to 645 m, with native mud (water mixed with clays from the borehole itself) from 645 m to1525 m, and with seawater from 1525 m to TD. No shallow gas was detected in the hole.

The Forties Formation came in at 3121 m. The formation was hydrocarbon bearing down to 3142.5 m as confirmed by both electric logs and the RFT pressure gradient. The reservoir sandstones of the Forties Formation showed good to excellent reservoir properties. Average core porosity was 18.5% and test permeability was measured to 49 mD.

Shows on cores were recorded down to core # 8 where they gradually decreased to zero at 3166 m. From the RFT data two water gradients were identified below the oil zone. A shift of 8 psi between them suggested the existence of an impermeable barrier around 3160.2 and 3162 m. Core saturations and fluorescence indicated the potential existence of a thin (4 m) oil zone below this barrier. This zone was not identified from the logs and was not evaluated for a test due to lack of data at that point.

The Ekofisk formation was encountered at 3407 m, and the Tor formation at 3514 m. Both formations were water bearing.

A total of 8 cores were cut in the Forties Formation, seven in the first hole and the eighth in the sidetrack. No wire line fluid samples were taken.

The well was permanently abandoned on 4 June 1989 as an oil/gas discovery.

TESTING

Two intervals were perforated and tested with the intention to first test the oil zone and then open up a deeper zone to produce and sample formation water. The perforated intervals were 3122 - 3137 m in the oil zone and 3145.5 - 3157.7 m in the water zone. The oil test produced up to 859 Sm3 oil and 57200 Sm3 gas/day on a 64/64" choke. The GOR was 67 Sm3/Sm3 and the oil gravity was 42.5 deg API. The maximum temperature recorded during the test was 133.8 deg C. Analysis of the final co-mingled oil + water test confirmed that the lower perforation interval produced only water. This confirmed the contact at 3142.5 m to be an OWC.

LITHOSTRATIGRAPHY & HISTORY FOR WELL: 1/2-1