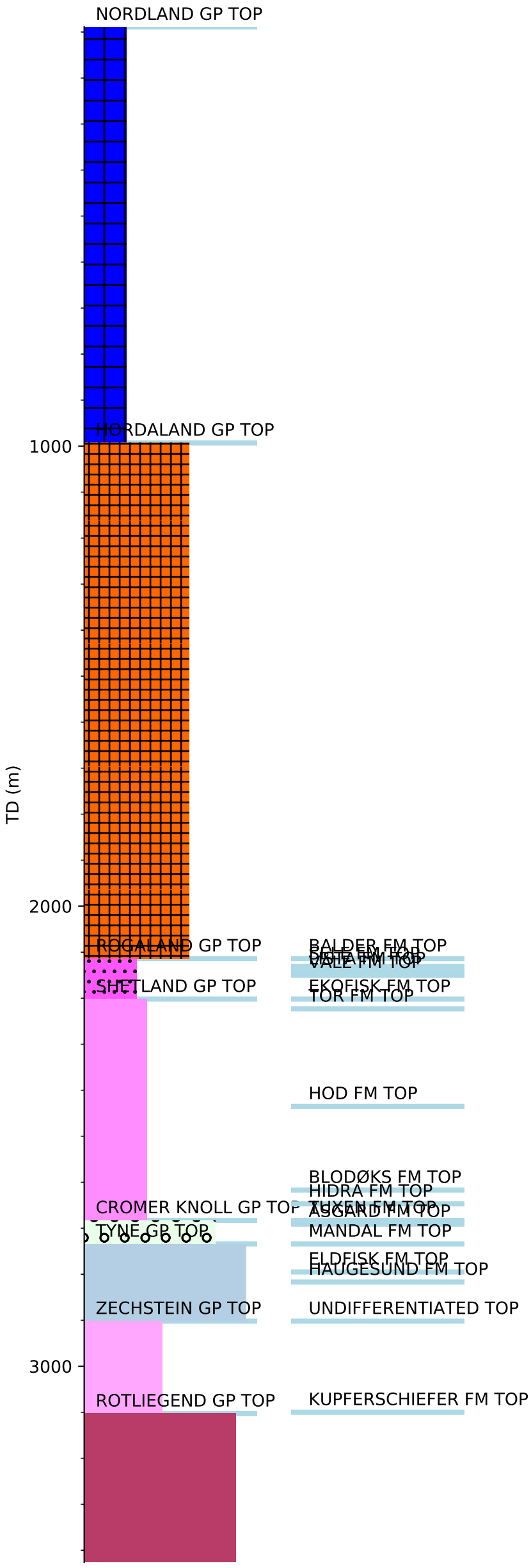
Groups

Formation Tops



Wellbore History

GENERAL

Exploration well 3/5-1 is located near the Coffee Soil Fault Complex on the northeast border of the Søgne Basin. The main objective of the well was to test the hydrocarbon potential of Rotliegendes sands on the crest of a tilted fault block, which was thought to mark the local eastern edge of the Central Graben of the North Sea. A secondary target was the basal Zechstein, where it was hoped that any dolomites present might have developed the secondary porosity exhibited in the Auk and Argyll Fields lying on the Western side of the Central Graben. There was no mappable closure at any post Zechstein horizon.

OPERATIONS AND RESULTS

Wildcat well 3/5-1 was spudded with the semi-submersible installation Odin Drill on 3 May 1978 and drilled to TD at 3426m in basal conglomerates of the Permian Rotliegendes Group. While drilling at 2561 m the string twisted of at the jars, costing some six days lost time. A salt-water flow occurred while drilling at 2918 m, but was controlled by increasing the mud weight from 11.3 to 12.4 lb/gal. During abandonment 2.3 days were spent cutting and retrieveing of the well head. The well was drilled with seawater and hi-vis slurry down to 466.3 m and with lime/Drispac mud from 466.3 m to ca 2228 m from where it was gradually displaced to a Spersene/Resinex mud system. This mud was in turn displaced to a salt saturated mud from ca 3058 m after it became clear that massive salt was being drilled. The salt saturated mud was used to drill the rest of the well to TD.

Schlumberger's CPI log showed almost 23 m of reservoir quality sands in the Late Jurassic (average log porosity 24 %), and almost 259 m in the Rotliegendes (average log porosity 23 %). A thick salt section covered the Zechstein carbonates. It is probable that the salt-water flow at 2918 m came not from this salt but from the overlying Jurassic sandstones. Shows were recorded while drilling the Late Jurassic Kimmeridgian "Hot" Shale (Mandal Fm) from 2734 m to 2752 m. Here small quantities of methane, ethane, propane, and butane were recorded together with a slight, streaming, crush cut oil fluorescence. The Zechstein carbonates also contained trace amounts of oil but post-well geochemical analyses indicated that these hydrocarbons could have originated from the Spersene/Resinex mud system. Log analysis confirmed that all potential reservoir sections were water-saturated. No conventional cores were taken, but 21 sidewall cores were recovered from the Rotliegendes and Jurassic. No fluid samples were taken. The well was permanently abandoned on 28 June 1978 as a dry hole.

TESTING

No drill stem test was performed

LITHOSTRATIGRAPHY & HISTORY FOR WELL: 3/5-1