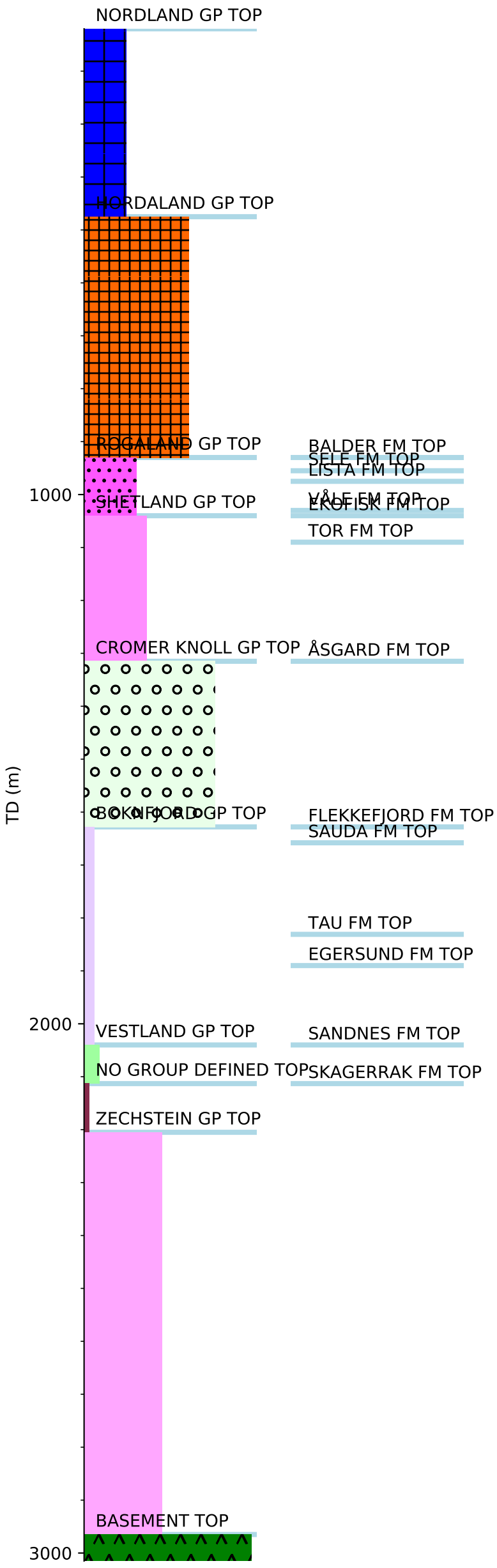
Groups

Formation Tops



Wellbore History

GENERAL

Wildcat well 8/3-1 was the first exploration well to be drilled in Norwegian waters. The chosen location was northwestern part of the Danish Norwegian. The well was proposed to investigate the largely unknown stratigraphic sequence and lithologies in a virgin area on an attractive, representative seismic structure. Although the seismic feature was based on low-density reconnaissance control, the structure qualified for testing in terms of vertical and areal closure and inferred thickness of sediments. The well site location was thought to lie on the east flank of the Tertiary "Viking" basin, but on the west flank of a Mesozoic sub basin. The position and delineation of older basins was uncertain, although Permian? salts of sufficient thickness to flow were recognized as probably present at depth. Interpretation of data from a seismic grid with about 7 Km line spacing indicated a regionally high, west-dipping, normally faulted block to be present. The well location was sited near the crest of the highest step faulted block. A diapiric Zechstein? salt plug was interpreted to be present, to the east on the down side of the principal fault block. The salt could have partially intruded along the fault plane, up through the Kimmerian horizon."

OPERATIONS AND RESULTS

Well 8/3-1 was spudded with the semi-submersible installation Ocean Traveller on 19 July 1966 and drilled to TD at 3015 m in Caledonian schists. While pulling out of the hole to pick up a core barrel at a depth of 296I m the pipe stuck at 1660 m, and was pumped free with seawater. The hole began caving immediately. Extensive caving over the interval 1320 m to 2030 m lead to bridging, stuck pipe, and logging problems. Eighteen rig-days were spent to cure the problems by reaming and raising the mud weight and to log the section in various logging attempts. The hole was eventually cased to 2963 m. No further problems developed. From sea bed to 277 m the initial drilling was with seawater and gel without casing. Below 277 m to approximately 2290 m a sea water slurry with Spersene, XP-2, and 0-12% diesel oil was used. At 2284 m a salt section was reached and the drilling fluid was converted to a salt saturated mud.

The lithology in the upper 1/3 was strongly dominated by shales and clays, followed by chalk and shales in the middle 1/3. The lower 1/3, below top Permian at 2205 m (Zechstein Group) the lithology was dominated by evaporites. The well drilled through the evaporites and 50 m into the basement. A minor part of the column consisted of sands, and sandstones interbedded with shale and clays. Potential reservoir rocks with sufficient porosity to be attractive were present in the Danian chalk section (Ekofisk Formation) and in the Middle Jurassic sands (Sandnes Formation). No oil or gas shows were recorded in the well. Organic geochemical analyses of cuttings showed low TOC throughout the Cretaceous. TOC rose to 2.5 % to 5 % in the Late Jurassic section (around the level of the Tau Formation). Hydrogen indexes in this section were in the range 100 to 250 mg HC/g TOC. Maturity is evaluated as top oil window somewhere between 2500 m and 3000 m (%Ro = 0.5).

Hence, reservoirs, cap rocks and potential source rock were confirmed although no hydrocarbons were found in this first well. Five conventional and 19 sidewall cores were taken in the well. A quarter section cut of the conventional cores is stored at the Directorate. The length of the cores range from 4 to 10 m and the recoveries were from 40 % to 100 %. The sidewall cores were taken in the 2963 - 3004 m interval. These were not deposited with the Directorate. Storing a quarter of all conventional cores at the Norwegian Petroleum Directorate (but no sidewall cores) has since been standard NPD practice.

No wire line tests were conducted and therefore no fluid samples taken, due to the caving problems in the hole.

The well was permanently abandoned on 10 October 1966 as a dry hole.

LITHOSTRATIGRAPHY & HISTORY FOR WELL: 8/3-1

TESTING

No drill stem test was performed.