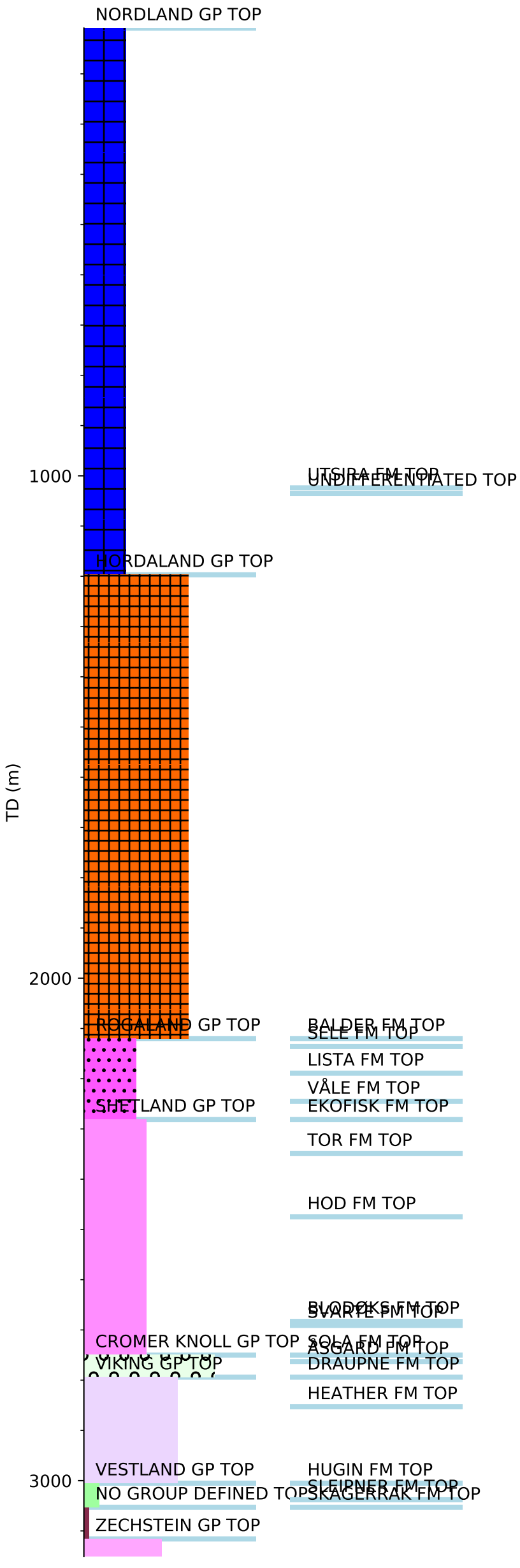
Groups

Formation Tops



Wellbore History

GENERAL

Well 16/10-1 was the first well drilled in block 16/10 operated by Norsk Agip. Among the various structures defined within block 16/10, the one called "Alpha", located in the southwestern area, was selected as the first one to be drill. Main reason for this choice was the presence of a deep basin (Witch Ground Graben) to the south west of the block, where the Viking Group shales was believed to have generated hydrocarbons since Cretaceous time. The tectonic evolution of the structure is probably of pre-Cretaceous age, well before hydrocarbon generation started.

The purpose of the well was to explore all main reservoirs down to Triassic. The primary targets were the Jurassic and Triassic sandstone units, expected at 2850 m and 2980 m, respectively. Prognosed TD was at 3175 m.

OPERATIONS AND RESULTS

Wildcat well 16/10-1 was spudded 25 May 1986 by Dyvi Offshore A/S semi-submersible rig Dyvi Stena and drilled to TD at 3151 m in the Late Permian Zechstein Group. The well was drilled with Seawater and hi-vis pills down to 514 m, with KCl/Polymer mud from 524 m to 2565 m, and with lignosulphonate mud from 2565 m t TD. Drilling proceeded without any significant problems. Electrical logs were run already in the 26" section from 195 m. No shallow gas was encountered.

The Quaternary/Tertiary sequence, 2280.5 m thick, is represented by Nordland, Hordaland and Rogaland groups and is predominantly constituted by marine claystones. A 513.5 m Cretaceous section represented by the limestones of the Chalk Group and by the reddish marl and calcareous shales of the Cromer Knoll Group was penetrated. It was nearly a complete sequence except for two possible hiatus: the first in the Late Santonian and the second between the Cenomanian and the Aptian-Albian. The base Cretaceous Unconformity overlies the Late Jurassic shales of the Viking Group (top at 2794 m), which proved to have a thickness of 211 m. The top of the Jurassic sandstones of the Vestland Group was encountered at 3005 m. The "Oxfordian Sandstone Unit" (Hugin Formation) was 33m thick with very good reservoir properties. Below this was a 15 m thick "coal unit" of the Sleipner Formation, containing a major coal sequence with interbedded carbonaceous claystone/shale. Below the Mid Kimmerian Unconformity, a 58 m thick sequence of arenaceous sediments of the Triassic Skagerrak Formation was drilled. The interval was a monotonous sequence of clastics, with the typical continental red iron colour. At 3116 m the top of the Permian evaporites of the Zechstein Group was touched and penetrated until the depth of 3151 m (TD). Two cores were cut in the Heather Formation, the first from 2855 m to 2873 m, and the second from 2925 m to 2934 m. No fluid samples were taken. The well was permanently abandoned on 14 July 1986 as a dry hole.

TESTING

No drill stem test was performed

LITHOSTRATIGRAPHY & HISTORY FOR WELL: 16/10-1