



Wellbore History

GENERAL

Well 9/10-1 is located in the Åsta Graben of the Danish Norwegian Basin in the North Sea. The location was selected to explore the northeast regional limit of Oligocene sands at a non-structural site and to reach the Danian very low on the South flank of the seismic "L" structure. The main objectives were the first and second Oligocene sands, which were gas bearing in the 2/3-1 well. The location, in addition, tested for presence of the Danian section, which had proved to be oil bearing in the Phillips Ekofisk area approximately 40 miles to the Southwest. There was also a possibility of the development of gas bearing zones within the Miocene section.

OPERATIONS AND RESULTS

Wildcat well 9/10-1 was spudded with the jack-up installation Gulftide on 30 August 1970 and drilled to TD at 2205 m in the Late Cretaceous Tor Formation. A 38" hole was drilled to 143 m with seawater. After spotting a gel slurry, 36" drive pipe was set at 123 m. Drilling was continued with a 26" bit to 221 m using seawater where lost circulation became excessive. Attempts with a 50-barrel LCM slurry and a 300-sack cement plug were unsuccessful in sealing off the thief zone. The drilling was continued "blind" to 251 m where a 450-sack gel slurry was spotted and 20" casing run to 248 m and cemented. After installing 20" BOP, 17 1/2" hole was drilled to 953 m using a 10.7 lb gel mud. Three attempts were made to log this surface section but hole bridging conditions occurring at 279 m and 457 m would not permit deeper penetration. Went into the hole with the bit, tagged bottom, and then drilled 5 m with no obstruction. The hole was conditioned and logged from 457 m to 88 m. Rigged up BHA and went to bottom with the bit, cleaned out to 957 m, and drilled an additional 6 m. The 13 3/8" casing was then run and set with no problems to a depth of 960 m. Drilling continued with a 12 1/4" bit from under the 13 3/8" casing to core point at 2145 m. After coring drilling continued to 2205 m where the pipe became stuck at the collars while making a connection. The free point was determined at 2192 m. It was freed after spotting 50 bbl. of diesel oil mixed with Pipe Lax. No problems were encountered while logging at total depth after conditioning the hole. The well was drilled with seawater and gel down to 498 m, with seawater/Spersene from 498 m to 953 m, and with seawater/Spersene/XP-20 mud from 953 m to TD.

Sidewall cores and logs showed no sand development in the Miocene and Oligocene. A thin Danian chalk (Ekofisk Formation) was encountered on top of Late Cretaceous chalk (Tor Formation). Fair gas shows were recorded in the Miocene from 1006 m 1097 m, believed to be associated with shales and thin limestone stringers. The Oligocene section and the Danian - Late Cretaceous chawks were water bearing.

A 30 ft core was cut from 2144.6 m to 2153.7 m in chalk of the Tor Formation. Measured porosity in the core was 18 % to 22 %. Sidewall cores were taken at 30 selected intervals with a recovery of 21 cores. No fluid sample was taken.

The well was permanently abandoned on 18 September 1970 as a dry hole.

TESTING

No drill stem test was performed.

LITHOSTRATIGRAPHY & HISTORY FOR WELL: 9/10-1