



Wellbore History

GENERAL

Well 31/2-16 S was drilled as an appraisal in the Troll-West Oil province in the Northern North Sea. It was located on the crestal part of the Oil Province close to well 31/2-5. The primary objective was to drill hole and prepare for a long term production from a horizontal well drilled 5 m above the oil/water contact in the 23.5 m thick oil column. The length of the horizontal section should preferably be 500 m.

OPERATIONS AND RESULTS

Appraisal well 31/2-16 S was spudded with the semi-submersible installation Deepsea Bergen on 27 September 1989 and drilled to TD at 2390 m (1587 m TVD RKB) in the Late Jurassic Sognefjord Formation. The well was drilled vertical down to 1118 m in the 17 1/2" section and kicked off from there, building angle up to a horizontal well path from ca 1950 m. Problems with tight hole, lost circulation and hard formation (stringers) were encountered repeatedly in the 17 1/2 and 12 1/4" sections from 1015 to 1891 m. The well was drilled with sea water and hi-vis pills down to 1015 m and with Versaport oil based mud from 1015 m to 1891 m, and with a super-saturated NaCl / polymer mud from 1891 m to TD. During well completion and preparation for production testing the screen-packer stuck at 570 m. Close to eight days were lost in milling and retrieving the fish before normal operations could be resumed.

The Sognefjord Formation was encountered at 1659 m (1533 m TVD RKB). The established gas/oil contact in the Troll Field is at 1547 m MSL TVD, which is 1.5 m deeper than observed in this well. This 1.5 m is within the uncertainty of the TVD calculations, and a common gas/oil contact is assumed.

No conventional or side wall cores were cut. No wire line pressure tests or fluid samples were taken. Apart from runs 1A, wire line logging was performed by the use of pipe conveyed Logging Systems. MWD was the only deep resistivity measuring device through the whole well.

After drilling to TD the well was completed with 502 m 6 5/8" prepacked screens in the Sognefjord Formation reservoir, from 2390 to 1888 m (1587 - 1586 m RKB TVD). The well was completed on 27 December 1989 as an oil and gas appraisal. It was subsequently reclassified to test production well 31/2-T-16 S. After the test production it was again re-classified to development well 31/2-F-5 H.

TESTING

A clean-up flow was conducted as part of the 31/2-16 S well completion. During this flow one bottom hole fluid sample and three separator PVT-sets (1 x oil/2 x gas) samples were taken.

LITHOSTRATIGRAPHY & HISTORY FOR WELL: 31/2-16 S