



Wellbore History

GENERAL

Well 34/10-30 was the fifth well drilled on Gullfaks Sør. The well was the "continuation" of the junked well 34/10-28, which was plugged and abandoned at 528 m. Well 34/10-30 was drilled on the Alpha structure, and designed to test for hydrocarbon accumulations in the North East part of the structure. The main objectives were the Brent and Statfjord sandstones. The Lower Jurassic Cook sandstone, which had been water bearing in the other Gullfaks Sør wells, was considered a secondary objective, as was the penetration of the oil/water contact. Prognosed depth was 3435 m.

OPERATIONS

Appraisal well 34/10-30 was spudded with the semi-submersible installation Dyvi Stena on 16 January 1986 and drilled to TD at 3785 m in the Triassic Lunde Formation. Drilling proceeded without significant problems, but 20" casing was set early due to shallow gas in the interval 332-340 m. The well was drilled with spud mud down to 232 m, with PAC/polymer mud from 232 m to 325 m, with gypsum / PAC mud from 325 m to 1898 m, with gypsum/PAC/"Borewell" mud from 1898 m to 2845 m, and with Lignite/"Borewell" mud from 2845 m to TD.

A four-meter thick Brent sandstone was encountered at 2941 m. The sandstone showed a milky white to pale yellow fluorescence with a slow white streaming cut and a C1/C2 mud gas ratio that indicate a gas bearing formation. The Cook Formation was dry. The top of the Statfjord Formation was at 3120 m, approximately 100 m higher than prognosed. The formation was all filled with oil and gas and had a gas-oil contact at 3251.6 m. The Lunde Formation was reached at 3375 m. The formation was oil bearing with no defined oil-water contact. The oil/water contact was expected at 3395 m. This was not the case and drilling of a 6" section thus commenced past the prognosed depth. The oil water contact was difficult to define, but there is reason to believe it to be at approximately 3712 m. Twenty-two cores were cut in the well, 9 in the Lunde Formation, 12 in the Statfjord Formation, and one in the Dunlin Group. One segregated RFT sample was collected in the Lunde Formation at 3554.0 m. The bottom part of the well was plugged back into the 7" liner without permission from NPD. The well was tested and subsequently plugged and abandoned on 12 may 1986 as an oil and gas appraisal well.

TESTING

Three drill stem tests were performed. DST No 1 (3460 m to 3473 m) in the Lunde Formation flowed 418 Sm3 oil /d with a GOR of 146 Sm3/Sm3 through a 12.7 mm choke, DST No 2 (3296 m to 3317 m) in the oil zone in the Statfjord Formation flowed 1161 Sm3 oil /d with a GOR of 102 Sm3/Sm3 through a 17.5 mm choke, while DST No 3 (3125 m to 3155 m) in the gas zone in the Statfjord Formation flowed 352 Sm3 oil/d and 1151000 Sm3 gas/d (GOR = 3270 Sm3/Sm3) through a 17.5 mm choke.

LITHOSTRATIGRAPHY & HISTORY FOR WELL: 34/10-30