



Wellbore History

GENERAL

Well 16/1-13 was drilled to appraise the Luno Discovery on the southern part of the Utsira High in the North Sea. The Luno discovery was made after drilling the 16/1-8 well in 2007 and confirmed by the appraisal well, 16/1-10. The objectives of well 16/1-13 were to confirm the resource estimates for the Luno Discovery, prove the presence of Jurassic sediments with good reservoir properties, and to improve understanding of the reservoir facies distribution.

OPERATIONS AND RESULTS

Appraisal well 16/1-13 was spudded with the semi-submersible installation Transocean Winner on 30 November 2009 and drilled to TD at 2303 m in the Late Triassic Hegre Group. A precautionary 9 7/8" pilot hole was drilled from seabed to a depth of 606 m MD RKB. MWD logs in the pilot hole confirmed that all permeable formations were water bearing and shallow gas was not present. Minor gas sands were observed in the main bore at 631 and 726 m, but no gas flow occurred. The well was drilled with Seawater and hi-vis pills down to 606 m and with Glydril mud with 4 - 6 % glycol from 606 m to TD.

Well 16/1-13 proved a 50 m oil column in Jurassic / Triassic sandstones with excellent reservoir characteristics. The pressure at the top of the reservoir was measured at 193.2 bar (equivalent to a gradient of 1.028 g/cc). Pressure measurements and samples established an oil gradient of 0.069 bar/m with an oil-water contact at 1966.5 m (1939 m TVD MSL). A water gradient of 0.101 bar/m was established below the OWC. The water zone lithology consisted of sandstones and conglomerates, the latter of relatively poor reservoir quality. The first oil shows in well 16/1-13 were observed in the shale at the top of core number 2 at 1918 m. From 1967.4 m (1965.4 m TVD) in core number 4 the sandstones became thickly interbedded with tightly cemented conglomerates. The latter did not contain any visible hydrocarbon shows; however shows were present within the sandstone layers down to 1972.7 m (1970.7 m TVD). Below this depth and above reservoir level no oil shows were seen.

An extensive data acquisition program was undertaken. In total five cores were cut from 1917.0 to 2001.1 m with 97 % total recovery. Four cores covered the complete oil column and one core was taken in the water zone. MDT fluid samples were taken at 1924.5 m (oil), 1965 m (oil), 1967.2 m (water and trace oil), and 1973 m (water and trace oil).

The well was permanently abandoned on 21 January 2010 as an oil appraisal.

TESTING

No drill stem test was performed.

LITHOSTRATIGRAPHY & HISTORY FOR WELL: 16/1-13