

## **Wellbore History**

## **GENERAL**

Well 16/5-4 was drilled on the south-western flank of the Johan Sverdrup Field on the Utsira High in the North Sea. The well was placed about 4.3 kilometres southwest of appraisal well 16/5-2 S and about 3.1 kilometres southeast of well 16/5-3. The objective of the well was to delineate the Johan Sverdrup discovery by examining the thickness, properties and depth of the reservoir, as well as determine the height of the oil column and clarify the oil-water contact in the south-western part.

## **OPERATIONS AND RESULTS**

Appraisal well 16/5-4 was spudded with the semi-submersible installation Bredford Dolphin on 23 August 2013 and drilled to TD at 2100 m in the Triassic Skagerrak Formation. No shallow gas was seen in the top holed including the 9 7/8" pilot hole. No significant problem was encountered in the operations. The well was drilled with seawater and hi-vis sweeps down to 701 m and with Performadril water based mud with glycols from 701 m to TD.

The well went directly from Cretaceous marls into Jurassic reservoir sandstones and no Draupne Formation shale was present in this location, as expected. The well encountered a 6 meters thick Intra-Draupne Formation sandstone section with top at 1930.4 m. This is thinner than predicted. The section consists of unconsolidated sandstones with excellent properties. The pressure measurements confirmed the reservoir to be in the same pressure regime as the Johan Sverdrup discovery. The well showed an oil-down-to situation and consequently no free water level was encountered. The Jurassic section is resting on Triassic sediments consisting of very fine to fine grained sandstones with minor stringers of claystones and siltstones. The only oil shows in the well were seen in the Intra Draupne Formation sandstone. These shows did not extend into the underlying Triassic rocks.

Two cores were cut in the interval 1920 to 1964.5 m with close 100% recovery. The core to log depth shift is -0.5 m for both cores. MDT fluid samples were taken at 1933.01 m (oil), 1943 m (water), and 1948.01 m (water).

The well was plugged abandoned on 28 November as an oil appraisal well.

## TESTING

Two EXPRO's CaTS wireless gauge technology for long term post-abandonment monitoring of the Johan Sverdrup Field were installed at 1947.24 and 1931.7 m. The CATS gauges will measure pressure and temperature over a ca 5 years period. This is part of the planning process for an optimal recovery strategy for the discovery. No drill stem test was performed.