



Wellbore History

GENERAL

Well 16/2-5 was drilled on the Ragnarock III prospect on the Utsira High in the North Sea. The primary objective of the well was to prove the presence of hydrocarbons in the pre-BCU interval and establish the composition and age of the sediments. The secondary target was the chalk in the Ekofisk and Tor Formations of Late Cretaceous age. The presence of hydrocarbons in these formations at the well location was possible, but not expected.

OPERATIONS AND RESULTS

Wildcat well 16/2-5 was spudded with the jack-up installation West Epsilon on 22 February 2009 and drilled to TD at 2373 m in pre-Devonian Basement. After drilling the 36" hole to 288 m a 9 7/8" pilot hole was drilled to 513 m to check for shallow gas. No shallow gas or shallow water flow was observed. The well was drilled with spud mud down to 519 m, with KCl/polymer/glycol mud from 519 m to 1747 m, and with KCl/polymer/glycol low-sulphate mud from 1747 m to TD.

The well penetrated rocks of Quaternary, Tertiary and Cretaceous age, it then penetrated Graben Fill before TD in Basement. Base Cretaceous/top Graben Fill was encountered at 1884 m. A total thickness of 458 m of Graben Fill consisting of coarse, clastic sediments was penetrated and 3 cores were cut from 1894 to 1994 m. Due to lack of fossils no reliable dating was obtained for the Graben Fill. The Graben Fill was gas/condensate filled from top of the reservoir and down to 1902 m. High quality gas condensate samples were acquired by use of wire line sampling tools. A water sample was acquired at 1935 m and oil was scanned at 1916 m MD. An interval with oil was confirmed also by sampling at 1921.5 m, but due to poor pressure measurements in this interval the OWC was only tentatively set at 1917 m based on logs and geochemistry. No oil shows were observed above reservoir level. In the reservoir oil shows were seen down to 1981 m and no shows were seen below this level.

The well was permanently abandoned on 13 May 2009 as a gas discovery.

TESTING

A full scale DST was performed in the interval 1885 - 1902 m. The perforated interval was placed in the gas zone with the lowermost interval close to the interpreted GOC. The gas rate for the main flow was 110 000 Sm³/d with a 40/64" choke size. A maximum gas rate of 120 000 Sm³/day was achieved on a 60/64" choke size. The total test production of associated condensate with the gas was about 6 Sm³ mixed with some oil, no water was produced during testing. At top reservoir the formation pressure was 191.8 bar at 1885 m. The bottom hole temperature recorded in the test was 71 deg C.

LITHOSTRATIGRAPHY & HISTORY FOR WELL: 16/2-5