



Wellbore History

GENERAL

The well is positioned on the western flank of the northern segment of the Varg Field, on a horst mapped at Top Sleipner level. Thick Intra Heather sandstones present in the southern and eastern segments of Varg were expected also in the northern segment. Over the horst, Draupne/Heather shales were assumed eroded so that Intra Heather sandstones were present between BCU and Top Sleipner. These two horizons could be mapped seismically, but the extent of sandstones could not be mapped. The well was drilled to determine the extent and thickness of the Intra Heather sandstone reservoir over the northern segment of Varg and, if oil was encountered, to determine fluid characteristics and depth to the OWC.

OPERATIONS AND RESULTS

Appraisal well 15/12-10 S was drilled from the S4 slot on the Varg subsea template using the semi-submersible installation Deepsea Bergen. It was spudded on 2 October 1996 and drilled deviated to TD at 3550 m in the Triassic Skagerrak Formation. The deviation started at 250 m, building angle to 35 deg at 960 m and was then kept between 28 deg and 38 deg down to TD. No significant problems were encountered in the operations. The well was drilled with seawater down to 207 m, with seawater/PAC/CMC from 207 m to 1396 m, and with Ancovert oil based mud from 1396 m to TD. No shallow gas was predicted and no shallow gas was found in the well.

Down to Top Shetland, the well was within prognosis, and penetrated the expected lithology. Below this level, the Shetland limestone was thicker than expected, and Top Cromer Knoll and Base Cretaceous was penetrated considerably deeper than prognosed (55 and 58 metres, respectively). Below BCU, the well encountered Late Jurassic shales and siltstones, and only 13 metres TVD of poor quality Intra Heather Sandstone was penetrated at 3372 - 3388 m (2924 - 2937 m TVD MSL) in the lower part of the Late Jurassic section. This was considerably less than prognosed, and the poor reservoir quality seen in the well also proved a rapid facies variation between 15/12-6 S and -10 S, probably controlled by faulting. The Intra Heather Sandstone was oil bearing, but had poor reservoir characteristics. MDT fluid samples from the top of the unit were contaminated with oil from the oil-based drilling mud, but analyses showed that the oil was of the same type as the oil found in well 15/12-6 S. The Intra Heather Sandstone section was deeper than the anticipated OWC for this part of the field (2920 m TVD MSL), and the base of the interval represented an ODT, indicating that sandstones in this area contain oil down to a deeper level than previously assumed.

Top Sleipner and Top Triassic were penetrated close to prognosis, and a core taken in the Triassic was in parts heavily tectonized. The borehole imager (UBI) indicated faulting at the top of the Intra Heather Sandstone, and in the Sleipner formation.

One conventional core was cut from 3427 - 3448 m in the Triassic Skagerrak Formation. An MDT sampling run collected fluid in two sample chambers at 3372.15 m (2947.04 m TVD RKB).

The well was re-classed to cuttings-injector 15/12-A-4 on 4. November 1996.

TESTING

No drill stem test was performed

LITHOSTRATIGRAPHY & HISTORY FOR WELL: 15/12-10 S