



Wellbore History

GENERAL

Well 6603/12-1 was drilled as an exploration wildcat well in the Norwegian Atlantic Margin (Vøring Basin). The main objectives of the well were to prove the presence and quality of reservoir and hydrocarbons in the Late Cretaceous (K98 - Maastrichtian) Springar Formation Sandstone.

OPERATIONS AND RESULTS

A 12 1/4" pilot hole (6603/12-U-1) was spudded 63 m to the southwest of the main hole in order to evaluate pore pressures, assess the risk of shallow water flow and to gain insight into the wellbore stability in the interval down to the 20" casing depth in the main hole. The pilot was drilled to 2195 m into the Brygge Formation and below the Opal A to CT transition, without encountering shallow geohazards. The water temperature at seafloor, measured by means of a ROV, was -1 deg C.

Wildcat well 6603/12-1 was spudded with the semi-submersible installation Leiv Eriksson on 26 March 2009 and drilled to TD at 3830 m in the Late Cretaceous Springar Formation. No shallow gas was encountered. The well was drilled with Seawater and hi-vis sweeps down to 2359 m, with Glydril mud from 2359 m to 3509 m, and with Paratherm oil based mud from 3509 m to TD.

The well penetrated rocks of Quaternary, Tertiary and Cretaceous age. Top Maastrichtian Springar Formation came in at 3505 m with the target Springar Formation sandstone member at 3704 m, 40 m shallower than prognosed. The Springar Formation sandstone member was gas-bearing with a 15 m gas column from the top down to 3720 m. Poor pressure data did not allow estimation of the true OWC.

One 18m core was taken from the reservoir interval (3712.7 - 3730.7 m) with 100% recovery. An extensive wire line program was carried out successfully after reaching TD. Due to concerns about stability of the planned water based mud a thorough temperature logging was conducted, using the Schlumberger Environmental Measurement Sonde (EMS) tool. Repeated measurements near TD with up to 128 hrs waiting time after last circulation gave a Horner corrected temperature of 139 deg C at 3736.5 m (2335.5 m TVD below sea floor). This gives a linear temperature gradient from sea bed of 60 deg C/km, a record in Norwegian Exploration wells. MDT fluid samples were successfully taken in the Springar Formation sandstone member at 3705.7 m (gas), at 3720.0 m (gas), and at 3730.24 m (water).

The well was permanently abandoned on 20 June 2009 as a gas discovery.

TESTING

No drill stem test was performed.

LITHOSTRATIGRAPHY & HISTORY FOR WELL: 6603/12-1