



Wellbore History

GENERAL

Well 34/3-3 S was drilled on the Jordbær Vest west of the Knarr field (formerly called Jordbær) in the northern part of the North Sea. The objective was to prove hydrocarbons in the Early Jurassic Cook formation.

OPERATIONS AND RESULTS

Wildcat well 34/3-3 S was spudded with the semi-submersible installation West Alpha on 10 September 2011 and drilled to TD at 4063 m (4012 m TVD) in the Early Jurassic Burton Formation. A 9 7/8" pilot hole was drilled to 983 m to check for shallow gas. No shallow gas was encountered. The well was drilled vertical down to 2220 m and deviated with up to 15 dg inclination from there to TD. No significant problem was reported. The well was drilled with sea water and hi-vis sweeps down to 984 m, with Glydril/KCl mud from 984 m to 2240 m, with Versatec oil based mud from 2240 m to 3780 m, and with Versatherm oil based mud from 3780 m to TD.

Cook Formation sandstones were penetrated at 3907.5 m (3859.8 m TVD), which was 42.8 m deeper than prognosed. Light oil was encountered in the upper Cook Formation down to 3932 m (3884 m TVD). A definite OWC was not resolved from the data. Convincing oil shows were recorded on cores from the reservoir down to 3938 m, otherwise no oil shows above the oil based mud were reported from the well.

A total of 80.42 m core was cut in the Cook Formation from 3910.85 m to 3992 m. The upper 9 m of core 1 was fragmented due to problems with the inner core liner. Core depth shifts were from 0.14 to 0.94 m relative to logger's depth. MDT fluid samples were taken at 3915.9 m (oil) and 3946.7 m (water). The temperature at sea bed was measured by ROV and at survey stations in the Jordbær area wells at different times during the year. These measurements gave an average of 6.5 deg C at sea bed.

The well was plugged back for sidetracking on 19 November 2011. It is classified as an oil discovery.

TESTING

A successful DST was performed over the interval in 3912.5 to 3928.5 m in the Upper Cook Formation. The reservoir produced at a rate of 1220 Sm³ oil and 75700 Sm³ gas/day through a 32/64" fixed choke during the main flow. The first stage separator GOR was 62 Sm³/Sm³, oil density was 0.778 - 0.805 g/cm³, H₂S = 5 - 10 ppm, CO₂ = 4 - 9%, and gas gravity was 0.832 - 0.864 (air = 1). The maximum bottom hole temperature measured during the main flow was 137.8 deg C.

LITHOSTRATIGRAPHY & HISTORY FOR WELL: 34/3-3 S