



GENERAL

Well 31/4-2 is a replacement for junk well 31/4-1. The well is located on the Brage Horst between the Oseberg and Troll Fields in the Northern North Sea. The primary objective was Middle Jurassic sandstones of the Brent Formation. A "flat-spot" was seen on the seismic sections and tentatively interpreted to represent a gas fluid contact in these sandstones. A secondary objective was sandstones in the Early Jurassic Statfjord Formation. Sandstone intervals of upper Early Jurassic age (Dunlin Formation) and of Triassic age (Hegre Group), were also expected to be penetrated, but were not considered to be prospective. The well was planned to be drilled to a depth of 2930 m RKB (+/- 90 m), ca 100 m into the Triassic.

OPERATIONS AND RESULTS

Wildcat well 31/4-2 was spudded with the semi-submersible installation Norskald on 26 September 1979 and drilled to TD at 2900 m in the Triassic Lunde Formation. There were some problems with keeping position and anchor movements in rough weather, but otherwise operations went forth without significant problems. The well was drilled with Seawater and pre-hydrated bentonite down to 990 m, with Seawater/Drispac/pre-hydrated bentonite from 990 m to 1712 m, and with seawater/prehydrated bentonite/ligcon/Unical mud from 1712 m to TD.

Good oil shows were recorded on sidewall cores from thin sandstone stringers at 2061 to 2069 m in the upper part of the Shetland Group. The well penetrated top Draupne Formation at 2146 m and top Heather Formation at 2171 m. The Heather Formation contained a 49 m thick very fine to silty water-bearing sandstone interval from 2190 to 2239 m. The well penetrated two hydrocarbon bearing sandstone intervals at 2325 to 2329 m and 2344.5 to 2354 m within a 29 m thick Middle Jurassic Brent Group. Both reservoirs consist of very fine to fine, occasional coarse grained sandstones. The upper reservoir has a net pay of 4m and an average calculated porosity and water saturation of 25.6 % and 39.2 %, respectively. Log interpretations suggest an OWC at 2328 m. The lower interval, which is separated from the interval above by a 15.5m thick claystone sequence, is hydrocarbon bearing down to 2349.5 m. At this level a tight limestone interval occurs, below which (2351.5 m) the sandstone is water-wet. The lower sandstone interval has a net pay of 5 m average calculated porosity and water saturation of 27.8 % and 57.5 %, respectively. Below this a 54 m thick "Intra-Dunlin Sand", Statfjord Group sands and Triassic sands were penetrated. These were all found to be water-bearing.

Three cores were cut: core 1 from 2204.7 to 2222.7 m in the Heather Formation, core 2 from 2490 to 2495.1 m in the "Intra-Dunlin Sand", and core 3 from 2686 to 2693 m in the Statfjord Formation. The RFT was run for pressure recordings in the Cretaceous, Jurassic and Triassic intervals, and for formation fluid sampling in the hydrocarbon bearing Middle Jurassic sandstones. The pressures recorded showed a normal or close to normal pressure development through the whole well. The segregated samples were taken at 2326.5 m (gas-condensate) and at 2346 m (gas and thick oil).

The well was permanently abandoned on 15 November 1979. It is a technical discovery, but it is classified as well with shows.

TESTING

No drill stem test was performed.

LITHOSTRATIGRAPHY & HISTORY FOR WELL: 31/4-2