



Wellbore History

GENERAL

Well 25/4-1 is the discovery well on the Heimdal Field. The primary objective was Paleocene sand development (which was confirmed by the well), while Jurassic sands were regarded as a secondary objective. Planned depth was 3500 m.

The well is Type Well for the Heimdal Formation.

OPERATIONS AND RESULTS

Wildcat well 25/4-1 was spudded with the semi-submersible installation Neptune 7 on 1 July 1972 and drilled to TD at 4060 m in the Triassic Smith Bank Formation. From 2600 m to 3580 m the well built some angle (maximum 5 deg), resulting in a 3 m deviation between measured and true vertical depth at 3580 m. In addition, logger's depth is 6 m deeper than driller's depth from seabed to 3525 m. Below 3525 m driller's depth is equal to logger's depth. This history quotes logger's depth if not otherwise stated. While drilling at 3178 m the well started to flow and a lost circulation situation followed. The situation was adequately dealt with. The well was drilled water based all through.

The well penetrated a 356 m thick Heimdal Formation from 2067 m to 2423 m. The reservoir was composed of more or less unconsolidated sands with interbedded shales and carbonates. The formation was gas filled down to a gas/oil contact at 2173 and contained oil in a thin zone down to a shale at 2177 m. The OWC could not be seen in the well. The upper Cenomanian rested unconformably on a 14 m thick Oxfordian/Callovian Draupne Formation sequence, which in turn rested unconformably on the Middle Jurassic Vestland Group at 3185 m. Several permeable reservoirs were penetrated from 3185 m to 3512.5 m (3179 m to 3506.5 m drillers depth) in the Middle Jurassic to Late Triassic. Four of these were hydrocarbon bearing, with separate fluid contacts. Oil was found from 3185 m to an OWC at 3195 m in the Hugin and Sleipner formations. The Statfjord Formation held gas from 3292.5 m to a GOC at 3297 m with oil from 3297 m to an OWC at 3303.5 m. In addition, a thin gas zone was found further down in the Statfjord Formation, from 3508 m to 3512.5 m. No contact was seen here. Finally the Late Triassic Smith Bank Formation had gas in a thin zone from 3532 m down to a GWC at 3533.5 m.

An extensive coring programme was carried out with 18 cores and a total of 254 m core recovered. Cores were cut in the Balder Formation (core 1), Heimdal Formation (cores 2, 3, and 4), Tryggvason Formation (core 5), and the Sleipner and Statfjord formations (cores 6 to 18).

A total of 10 Formation Interval Test (FIT) fluid samples were taken at different depths as follows (recorded sample depth, formation, fluid type): FIT 1 (2160 m, Heimdal, traces of oil and gas), FIT 2 (2177 m, Heimdal, gas and some oil), FIT 3 (2415 m, Heimdal, mud and water), FIT 4 (2274 m, Heimdal, mud and water), FIT 5 (3505 m, Statfjord Formation, gas and condensate), FIT 6 (3472 m, Statfjord Formation, water and mud filtrate), FIT 7 (3471 m, Statfjord Formation, traces of oil and gas), FIT 8 (3290 m, near top of Statfjord Formation, gas and condensate), FIT 9 (3297 m, near top of Statfjord Formation, gas and oil), and FIT 10 (3210 m, Sleipner Formation, gas and trace oil)

The well was permanently abandoned on 9 December 1972 as an oil and gas discovery.

TESTING

No drill stem test was performed.

choke. DST 1/Statfjord flowed from the interval 3307 m to 3321 m (3301 m to 3315 m drillers depth) in the Statfjord Formation and produced only 50 Sm3 water.

LITHOSTRATIGRAPHY & HISTORY FOR WELL: 25/4-1