



Wellbore History

GENERAL

Well 6407/7-7 S was drilled on the North West Flank of the Njord Field in the Norwegian Sea. The Njord North West Flank consists of two main fault blocks, A and B-main. Well 6407/7-6 was drilled on the B-main structure in 2000 and confirmed the presence of rich gas condensate in the Tilje Formation, with a GWC at 3749 m TVD MSL. Well 6407/7-7 S is the first exploration well to be drilled into the A structure. The primary objective of well 6407/7-7 S was to prove commercial hydrocarbon resources within the Early Jurassic Tilje Formation and the Middle Jurassic Ile Formation.

OPERATIONS AND RESULTS

Well 6407/7-7 S was spudded on 3 August 2007 as a producer 6407/7-B1 Y1H and drilled down to TD of the 17 1/2" section at 2270 m where a 14" casing was set. The exploration well 6407/7-7 S started when drilling out of the 14" casing and into the A-segment of the Njord North West Flank. The hole was vertical down to ca 1290 m. Hole deviation was ca 11 deg at 2270, increasing to 54 deg at 2770 m and falling back again to 6 deg at TD. The well was drilled with the semi-submersible installation Transocean Winner to final TD at 3886 m (3678 m TVD) in Early Jurassic sediments of the Åre Formation. The well was drilled with seawater down to 2270 m and with VERSATEC oil based mud from 2270m to TD.

Top Ile Formation was encountered at 3376 m. Hydrocarbons were discovered in the Ile, Tilje and Åre Formations. MDT pressure points show that the Åre-Tilje reservoir is about 26 bar overpressured compared to the Ile compartment. There were also indications of hydrocarbons in the Lower Cretaceous Lange Formation intra-sands, but too low permeability made it impossible to record pressure points and get fluid samples.

Five cores were cut in the well. Core 1 was cut at 3378 - 3405 m in the Ile Formation. Cores 2 to 5 were cut from 3589 m to 3720.5 m in the Tilje Formation and ca 8 m into the top of the Åre Formation. Condensate and oil samples were taken on MDT wire line at several levels in the Early - Middle Jurassic. Typical fluid characteristics from single stage separation in the PVT laboratory were: condensate from 3397 m in the Ile Formation had GOR = 1250 Sm³/Sm³, oil density = 0.803 g/cm³, and gas gravity of 0.790 (air = 1); condensate from 3623.35 m in the Tilje Formation had GOR = 1340 Sm³/Sm³, oil density = 0.810 g/cm³, and gas gravity of 0.763 (air = 1); condensate from 3718.5 m in the Åre Formation had GOR = 770 Sm³/Sm³, oil density = 0.813 g/cm³, and gas gravity of 0.787 (air = 1); condensate from 3733 m in the Åre Formation had GOR = 540 Sm³/Sm³, oil density = 0.813 g/cm³, and gas gravity of 0.822 (air = 1); while the oil from 3829 m in the Åre Formation had GOR = 440 Sm³/Sm³, oil density = 0.821 g/cm³, and gas gravity of 0.885 (air = 1).

The well was plugged back to the 14" casing from where drilling of the producer 6407/7-B1 Y1H was resumed by performing a side track inside casing. The 6407/7-7 S well bore was permanently abandoned on 20 September 2007 as a condensate/gas discovery.

TESTING

No drill stem test was performed.

LITHOSTRATIGRAPHY & HISTORY FOR WELL: 6407/7-7 S