



**Wellbore History**

**GENERAL**

Well 6407/7-6 is located within Njord Unit on the western flank of the Njord Field. The northwest flank structure consists of five fault blocks defined by faults trending south-southwest and north-northeast, with throw towards west. The objective for the well 6407/7-6 was to test the hydrocarbon potential of the "B-segment" on the northwest flank of the Njord field. The primary target was to test the hydrocarbon potential of the Tilje formation of the Båt Group, while the hydrocarbon potential of the Ile Formation of the Fangst Group was a secondary target. There existed also a possibility of hydrocarbons in the Upper Jurassic Melke formation of the Viking Group, and in the Lower Cretaceous Lange Formation of the Cromer Knoll Group.

**OPERATIONS AND RESULTS**

Wildcat well 6407/7-6 was spudded with the semi-submersible installation "Scarabeo 6" on 18 October 2000. First spud failed due to boulders and high angle in the hole. After a second spud on October 19 the well was first drilled to TD at 3930 m in the Early Jurassic Åre Formation. The TD was later extended to 3975 m to get space for test equipment. The extended TD was not logged. Shallow gas was not encountered. The well was drilled with water based bentonite mud down 1231 m and with oil based mud (Versavert) from 1231 m to TD. The main result of the well was the discovery of gas-condensate in the Tilje Formation as proven by a DST and by MDT fluid samples. The well penetrated 127 m Late Jurassic, 111 m Ile Formation, and 197 m Tilje Formation. The sands encountered in the Lange Formation, the Viking Group, and the Ile Formation were water bearing, but hydrocarbon shows were observed in the approximate 20 m net Lange sandstone and increasing amounts of background gas was measured while drilling in the upper part of the Ile Formation. The Tilje Formation was saturated with a heavy gas-condensate from 3693 m down to a Gas/Water Contact at 3777 m, determined from the resistivity log. Six cores were cut in the Tilje Formation with a recovery of 98% giving a total of 129m. Horizontal Klinkenberg corrected permeability in the range of 0.02 - 12.2 mD was measured in the cores. The core porosity seldom exceeded 20%. Pressure measurements from both the Ile and the Tilje Formations indicate an approximate overpressure of 160-170 bar on the B-segment compared to the Njord East flank. MDT fluid sampling was attempted in the Tilje, Lange and the Ile formations. No samples could be taken in Lange and Ile formations due to tight formations. In the Tilje Formation five samples were retrieved from 3748 m. The short clean-up time prior to sampling caused the samples to be highly contaminated with base oil from the drilling mud (30 % & 60 % base oil). The well was plugged and abandoned as an oil discovery on 16 December 2000.

**TESTING**

The well was production tested with a perforation interval between 3686-3770 m in the Tilje Formation. With 24 hours production the flow rate was measured to 155 000 Sm<sup>3</sup>/D gas and 220 Sm<sup>3</sup>/D oil. The GOR was 705 Sm<sup>3</sup>/Sm<sup>3</sup>.

**LITHOSTRATIGRAPHY & HISTORY FOR WELL: 6407/7-6**