



**LITHOSTRATIGRAPHY & HISTORY FOR WELL 6507/7-1**

**Wellbore History**

**GENERAL**

License 095 was awarded to the Conoco/Statoil/Arco/Tenneco group in 1984 with Conoco as operator. The area, known as Haltenbanken, is a promising oil and gas province. It straddles two major Mesozoic structural features, the Trøndelag Platform and the Vøring Basin and lies along the western flank of the series of NNE-SSW faults, which separate them. The well was drilled on the A-prospect and was designed to test a major fault block. It was hoped to test oil bearing Middle Jurassic Sandstone at approximately 3898 m with a secondary objective at the Early Jurassic level.

The well is Type Well for the Lysing Formation.

**OPERATIONS AND RESULTS**

Wildcat well 6507/7-1 was spudded with the semi-submersible drilling rig Nortrym on 10 August 1984 and drilled to TD at a depth of 4825 in the Early Jurassic Tilje Formation. The well was drilled with seawater and hi-vis pills down to 906 m, with gypsum/polymer mud from 906 m to 3803 m, and with gypsum/lignite mud from 3803 m to TD. Few problems were experienced whilst drilling the well. Some time was lost due to gumbo-associated problems. Mud was lost to formation while cementing the 13 3/8" casing, resulting in the top of cement being lower than planned. However this did not affect the strength at the shoe, as it was possible to make a good leak off test after drilling out. Tight hole problems were experienced on a bit trip from 3716 meters, with over pull recorded on the majority of subsequent trips. In addition a gain of 45 bbls of mud at 4360 meters indicated apparent under balanced conditions. Mud weight was progressively raised from 11.2 ppg at 4081 meters to 12.6 ppg by 4360 meters in response to this problem. A further increase to 13.1 ppg was made at TD due to logging difficulties associated with tight hole. The overall operation took 115 days from spud. Total depth was reached in 87 days, while an additional 28 days were used to log, test and abandon the well.

Sharp increases in total gas and penetration rates marked the top of the Middle Jurassic Sandstone at 4338 m, (Ile Formation). The interval 4340 m to 4370 meters was cored. High total gas levels were present in the upper section of this sandstone, however no hydrocarbons heavier than propane were recorded. Gas was observed to bleed from the core and fluorescence was bright though cut was slow. Log analysis indicated some of the sands were possibly gas saturated and it was therefore decided the interval 4338 - 4374 meters, at the top of the sandstone, should be tested. Core and log derived porosities were largely similar. The log derived porosity averaged 6% over the majority of the interval with up to 15% indicated in a thin zone at the top and 10% in a 7 meter section at the bottom of the sandstone. The core derived permeability data shows an average liquid permeability of 0.77 md and an average overall permeability (excluding fractures) of 0.3 md. Higher permeabilities in the range 360 md to 673 md were reported from a 0.65-meter interval around 4131 meters.

A comprehensive suite of logs was run, including nine RFT runs. A total of seven cores were obtained. One was cut in the Early Cretaceous, three in the Ile Formation, one in the Ror Formation, and one in the Tilje Formation. The RFT data indicated the tested zones had very low permeability. Water and gas was sampled during DST.

The well was permanently abandoned on 1 December 1984 as a dry well with gas shows.

**TESTING**

A drill stem test was performed in the upper part of the Ile Formation. Prior to the DST a 7" liner was run and successfully pressure tested to 3500 psi. CBL/VDL and CET logs were used to establish that cement bonding across the test zone was good. After perforation of the interval 4338 m to 4374 m the DST flowed 1152 bbls (183 Sm3) of water and less than 1 m3 of gas over a 24 hr period. The measured gas gravity was 0.65 at 60deg F (15.6deg C, air = 1) with a maximum of 4% CO2 while the test was flowing, 19% while sampling, and no H2S.