



LITHOSTRATIGRAPHY & HISTORY FOR WELL 30/7-7

Wellbore History

GENERAL

The main objective of the well was to test the SE prospect on the 30/7 block. The objective of the well was to test possible sandstone reservoirs of Jurassic age, which were predicted to occur in a large structure (150 km²) at the Kimmerian unconformity located on the eastern flank of the Viking basin. The specific targets were possible turbiditic sandstone deposits within a thick Late Jurassic sequence, Middle Jurassic Brent Formation sandstones, and Early Jurassic Statfjord Formation sandstones. The well was planned to penetrate 50 m into the Statfjord Formation to approximately 5250 m.

The well is Reference Well for the Cook Formation.

OPERATIONS AND RESULTS

The well 30/7-7 was drilled between December 16th 1978 and May 30th 1979 with the rig Treasure Seeker. It reached TD at 5127 m in the Early Jurassic/Late Triassic Statfjord Formation. 34.5% of the total rig time was lost time due to fishing, waiting on weather, waiting for replacement of equipment, and hole problems. The problem that had most serious consequences for the geological program occurred while reaming from 5114 m to 5125 m where the string got stuck. After 9.5 days of fishing for the drill string it was finally backed off at 4804 m. At this point it was decided to abandon the well leaving the fish in the hole. Before this happened the well had been logged down to 5122 m, but the fish made it impossible to test the Statfjord Formation sandstone. The well was drilled with Seawater/gel/hi-vis pills spotting LCM pills as needed down to 763 m and with a Spersene/XP20/Drispac mud with 0 % to 4% oil and LCM pills as needed from 763 m to TD.

Sandstone levels interbedded with shales were encountered below 2187 m in the Tertiary. They were mainly developed between 2216 and 2320 m. Some calcareous levels in the Maastrichtian limestones between 2531 and 2575 m could be considered as reservoirs. Limestone stringers in the Turonian calcareous section from 3520 m to 3720 m showed fluorescence but were water-bearing. A 636 m thick Upper Jurassic sequence was penetrated, consisting of shales and thin interbedded limestones and dolomites. No turbiditic sandstones occurred. The expected well-developed Middle Jurassic deposits were found to be completely missing. No Middle Jurassic sandstones were encountered. Two reservoir intervals were present in the Early Jurassic. The Upper Sandstone from 4735 m to 4801 m (Cook Formation) consisted of interbedded sandstones and shales. The Lower Sandstone (Statfjord Formation) was penetrated at 4884 m and extended as a homogeneous sandstone with only a single coal bed and minor argillaceous intervals down to 4975 m. Below this a sequence of interbedded sandstones, siltstones and claystones/shales occurred down to TD.

Shows were recorded as follows: Major gas shows appeared in the interval 3502 m to 3930 m (Turonian limestones) and from 4723 m to 4886 m (Lower Jurassic, calcareous sands). Oil Shows and Fluorescence were noted from 2315 m to 2320 m on sandstone (traces of light brown stain, golden fluorescence, fast streaming light yellow cut); from 2805 m to 2813 m on siltstone (dark yellowish brown stain, light yellow fluorescence, white slowly streaming cut); from 3709 m to 3730 m in limestone (traces of slow, white, streaming cut hydrocarbon fluorescence masked by mineral fluorescence); and from 3908 m to 3912 m in shale (no fluorescence, uniform, weak dull yellow crush-cut and light yellow residue).

There were no significant hydrocarbon shows observed during drilling the Jurassic sequence. However, log analyses indicated hydrocarbons in both Jurassic sandstone intervals. The Upper Sandstone (Cook Formation) was hydrocarbon bearing from 4735 m to 4776 m while the Lower Sandstone (Statfjord Formation) was hydrocarbon bearing from 4884 m to 4924 m. The lack of oil shows in the Jurassic and the DST results indicated the hydrocarbons could be gas in a tight formation. One conventional core was cut from 4758 m to 4766.4 m (recovery 96%) in the Cook Formation. The core consisted of 7.15 m cemented fine to very fine sandstone with 4.2 m of medium to coarse sandstone. No fluid samples were attempted due to bad hole conditions. The planned TD was not reached because of the drill string left in the hole. The well was permanently abandoned as a well with shows on 1 July 1979.

TESTING

A drill stem test (DST 1) was performed on the upper sandstone (4735 m to 4797 m). An approximate volume of 12 m³ of effluent was recovered in