



## Wellbore History

### GENERAL

Exploration well 34/4-3 is located in the Marulk Basin north-northwest of the Snorre Field. It was drilled as the third well on the Gamma Structure and had a wedge structure between the Base Cretaceous Unconformity and the Late Jurassic Unconformity as primary target. Secondary objectives were to penetrate the Brent Equivalent and the Statfjord formation. The well is located on the downthrown side of a NE-SW trending major fault, and the sealing nature of this fault was critical for a closure of the reservoir.

### OPERATIONS AND RESULTS

Wildcat well 34/4-3 was spudded with the semi-submersible installation Dyvi Alpha on 16 October 1981 after waiting on location for two weeks due to bad weather. The 26" section was drilled with a 21 1/4" BOP installed but after pulling the riser and the BOP a 26" bit was run in the hole since the underreamer did not perform. Drilling of the 17 1/2" section was delayed by nearly two weeks due to the 18 3/4" BOP not meeting requirements. During drilling of the 12 1/4" section electrical problems on the draw works as well as mud pump breakdowns and high pressures was experienced. Drilling the 8 1/2" section included 4 core runs, killing a water/methane kick at 3555 m, changing leaking seals on riser and two intermediate log runs. TD was reached at 4460 m in Late Triassic sediments. The well was drilled with seawater/bentonite/gel down to 516 m, with gel/gypsum from 512 m to 1019 m, with gypsum/polymer from 1019 m to 2209 m, and with lignosulfonate mud from 2209 m to TD.

A methane gas/water kick occurred at 3550 m when the first Late Jurassic sandstone stringer was entered, giving 21 % total gas. A more continuous Late Jurassic sand was drilled into at 3565 m. Two cores (18 m) were cut in this 27 m thick sandstone sequence. The cores consist of shallow marine laminated shale/silt/sandstone. The sandstone is grey, very fine to fine grained with average porosity 10%, permeability maximum 40 mD and water bearing.

A second Late Jurassic sandstone was drilled through between 3704 -3788 m. The sandstone is white, fine to coarse grained, poor sorted and poor porosity, no shows. Minor shows are reported from the Late Jurassic and the basal part of the Cretaceous, occurring from 3524 to 3716 m. Sandstones of core 1 and the limestone in Cromer Knoll Group generally have no stain, but a very weak to weak, whitish yellow to yellowish white fluorescence, yielding no cut to a whitish - milky, very slow streaming cut; and no to slight odour.

The Brent Formation sand was encountered at 3987 m. Two sand sequences, 53 m and 68 m thick separated with 20 m shale, were drilled through. Core No. 3 was cut from the upper part. The sandstone was grey to white, very fine to fine grained, well sorted with calcite and illite cement. Average porosity was 15.6%, with permeability up to 5.8 mD. The Statfjord Formation was penetrated from 4353 m. One core (core No. 4) was cut. The sandstone was light grey to medium grey, very fine to very coarse grained, poor sorted, kaolinitic and with calcite cement. Average porosity was 9.7%, permeability up to 9.6 mD. The sandstone was water bearing. No fluid samples were taken on wire line. The well was permanently abandoned as a dry well on 30 March 1982.

### TESTING

No drill stem test was performed

## LITHOSTRATIGRAPHY & HISTORY FOR WELL: 34/4-3