



Wellbore History

GENERAL

Well 2/7-15 was drilled on the Eldfisk East structure in the Feda Graben of the southern North Sea. The well was an appraisal of the productive Danian - Late Cretaceous chalks found in 2/7-8. The well also had an explorative objective, namely to prove the existence of productive Jurassic sandstones on the East Eldfisk structure. Projected total depth was 14500 ft (4420 m).

The well is Reference well for the Ran Sandstone Units.

OPERATIONS AND RESULTS

Well 2/7-15 was spudded with the semi-submersible installation Haakon Magnus (now Borgsten Dolphin) on 29 January 1980 and drilled to TD at 4423 m in the Late Jurassic Haugesund Formation. A 2.3 Sm³ influx was taken while drilling at 3667.7 m (3672.8 m logger's depth) in the Farsund Formation. The well was shut in. After shut-in the circulation was lost, probably because the formation broke down. The circulation was resumed by appropriate mud adjustments, and the return mud then contained 3% oil and was slightly gas-cut. The well was drilled with bentonite, Flosal and lime down to 503 m, with Drispac mud from 503 m to 1387 m, and with Drispac/lignosulphonate mud from 1387 m to TD.

The Danian - Late Cretaceous section tested small quantities of hydrocarbons. Shows were encountered, often in fractures, on cored siltstone and claystone in the Early Cretaceous Ran Sandstone Units and Åsgard Formation, but testing proved the section to be generally tight. The logs indicated a 2 m HC-bearing sandstone stringer at 3672.8 m (where the influx was taken while drilling), but no shows were reported from this depth. Isolated shows, in the form of dull yellow fluorescence, were reported also on cored claystone in the Farsund Formation at 4030 m and 4035 m. The 48 m thick Eldfisk Formation at 4133 m had somewhat lower gamma ray readings than the Farsund Formation above and Haugesund Formation below, but the lithology was mainly shale/claystone with only traces of sandstone.

Seven conventional cores were taken. The six first were cut consecutively in the interval from 3481.5 m in the Ran Sandstone Units and down to 3554.6 m in the Åsgard Formation. Core no 7 was cut at 4027.7 - 4039.6 m in the Farsund Formation. No wire line fluid samples were taken.

The well was permanently abandoned on 2 June 1980 as an oil appraisal.

TESTING

Three zones were drill stem tested between 19 and 27 May 1980. These were both the Early and Late Cretaceous zones, and the Danian. All zones were perforated with two shots per foot. The following results are after acidizing:

DST 1 perforated the intervals 3450.3 - 3454.0 m, 3463.1 - 3466.2 m, 3471.1 - 3473.5 m, 3475.3 - 3478.4 m, and 3482.6 - 3487.5 m in the Ran Sandstone. During the 4 3/4 hour flow period the well failed to clean up. Final bottom hole flowing pressure at 3443.3 m was 4076 psig on 64/64" choke, and the maximum temperature was 247 def F (119.4 deg C). Only traces of oil and gas were observed, and the water was measured at 104 Sm³/day. The well was shut in for 4 1/3 hours before the packer was unseated for a maximum bottom hole pressure of 9632 psig

DST 2 perforated the interval 3031.2 - 3035.8 m in the Late Cretaceous Tor Formation. The well was flowed for 5.07 hours on 36/64" choke. Final bottom hole flowing pressure at 3026.1 m was 4347 psig and the last measured rate was 50.4 Sm³ water and 6.8 Sm³ oil/day. Maximum temperature was 217 deg F (102.8 deg C). The pressure built up to 6645 psig during a 5.8 hours shut in period.

DST 3 perforated the intervals 3013.3 - 3022.4 m (Ekofisk Formation) and 3001.1 - 3015.5 m (Tor Formation) for a combined test. The well was flowed for 13.13 hours on 32/64" choke. Final bottom hole flowing pressure was 3934 psig at 3014.2 m. The final rate was 32.8 Sm³ water and 13.4 Sm³ oil/day. Maximum temperature was 218 deg F (103.3 deg C). After 16 hours build up the bottom hole pressure was 6443 psig.

LITHOSTRATIGRAPHY & HISTORY FOR WELL: 2/7-15