



## Wellbore History

### GENERAL

Well 6406/2-5 A is a sidetrack well to 6406/2-5, drilled on the Kristin structure in the north-western part of block 6406/2, south-west of the Smørbukk Field and north-west of the Lavrans Field on Haltenbanken. The Kristin structure is a fault bounded horst block, somewhat eroded in the western part. The discovery well 6406/2-3 was drilled high on the structure and tested gas and condensate in a down-to situation in both the Garn and the Ile Formations, while the down flank well 6406/2-5 was water filled. The sidetrack well penetrated the Fangst Group reservoirs in an intermediate position between wells 6406/2-3 and 6406/2-5. The main objective of the sidetrack well was to identify the hydrocarbon water contacts in the Kristin structure and to test the hydrocarbon potential of the Garn and Ile Formations down flank of well 6406/2-3.

### OPERATIONS AND RESULTS

Appraisal well 6406/2-5 A was drilled as a deviated well with the semi-submersible drilling installation "Deepsea Bergen". The well was spudded on 29 September 1997 and permanently abandoned on 23 February 1998 after one drill stem test. The sidetrack was kicked off under the 18 5/8" shoe at 1404 m. Two attempts were made to reach the reservoir. The first, 6406/2-5 A, reached 2643 m, but had to be abandoned due to hole instability problems. The second sidetrack, 6406/2-5 A T2, reached the planned TD at 5600 m (4956 m TVD), 27 m TVD into the Upper Ror Formation and approximately 2 km NNW from well 6406/2-5. The well was drilled water based with KCl and glycol (ANCO 208 and Glydrill) from kick-off to 2825 m, and with oil based mud from 2825 m to TD. A total of 146,9 days were used for drilling, coring, logging, performing one DST, and permanently abandon the well. Of this, 30.3 % (or 44,5 days) was non-productive time (NPT). Waiting on weather caused a major part of this (11 days). Well 6406/2-5 A T2 found hydrocarbons, and hydrocarbon-water contacts were successfully penetrated in both the Garn and the Ile Formations. The 6406/2-5 A T2 Garn Formation reservoir parameters were intermediate compared to the good parameters of well 6406/2-3 and the marginal parameters of well 6406/2-5. In particular the permeability values of the three wells show a large range, with the 6406/2-5 AT2 values being intermediate. The Ile Formation reservoir parameters did not differ very much from what was measured in the recent wells, but showed large vertical variation in lithology and reservoir quality. Parts of the Ile Formation show excellent reservoir qualities. Pore pressures of the Jurassic units were very high, reaching a gradient of 1.95 g/cc BMW in upper part of the Garn Formation. A total of 172 meters (7 cores) were cored in the well, of which 98.6 % were recovered. No wire line fluid samples were obtained from this well. The well was plugged and abandoned as a gas/condansate appraisal well.

### TESTING

The Garn Formation was production tested in the interval 5304.4 - 5334 m (4691.3 - 4717.2 m TVD) with a gas rate of 221 500 Sm<sup>3</sup>/D and a condensate rate of 274 Sm<sup>3</sup>/D, giving a GOR of 821 Sm<sup>3</sup>/Sm<sup>3</sup>.

## LITHOSTRATIGRAPHY & HISTORY FOR WELL: 6406/2-5 A