



## Wellbore History

### GENERAL

The Onyx South West Appraisal Well 6406/9-2 was drilled to appraise the Onyx South West gas discovery made in 2005. Onyx is situated west of the Draugen and north-west of the Njord Fields in the southern Haltenbanken area. The well was drilled about 3.5 km NNW of the Onyx SW Exploration Well 6406/9-1, which discovered gas in a Lower to Middle Jurassic fault block. The main objective of this well was to decrease the volumetric uncertainty of the Onyx SW gas discovery by penetrating the expected FWL of the Ile Formation and deeper reservoirs at structural spill point.

### OPERATIONS AND RESULTS

Well 6406/9-2 was spudded with the semi-submersible installation West Alpha on 5 February 2007 and drilled to TD at 5348 m in Early Jurassic sediments of the Åre Formation. Prior to logging in the 12 1/4" hole there was an incident onboard the rig with fire in the engine room. The well was shut in on the Shear rams and wedge locked. After a full muster was achieved, the fire was put out with Inergen and the situation brought under control. Apart from this there were no serious technical problems in the operations. The well was drilled with spud mud down to 1450 m, with Ultradril KCl/glycol mud from 1450 m to 2410 m, and with oil based Paratherm mud from 2410 m to TD.

Wire line logs were successfully acquired in the 17 1/2" section over the Kai, Brygge and Tare formations, with some noteworthy results. The neutron density indicated exceptionally high porosity in the base of the Kai -approaching 50 %. This is higher than should be normally possible, and implies the rock is not grain supported. The relationship between compressional and shear sonic changes dramatically in the Brygge relative to the Kai and Tare formations.

Top Viking Group was encountered at 4325 m with 70 m Spekk Formation and 242 m of Melke Formation. The Fangst Group was encountered at 4637 m. The Garn formation is not a reservoir in the area. Low reservoir quality heterogeneous sands characterised by cemented streaks and clay layers, were observed in the upper Ile and upper and middle Tilje Formations. The lower part of the middle Tilje appeared to exhibit some higher reservoir quality. Very high reservoir quality was observed in both the Lower Ile and Lower Tilje, which were both cored. The Ile Formation was fully hydrocarbon bearing, with two gas-down to contacts; at 4814 m in the upper Ile and at 4850 m in the lower Ile Formation. There were indications that the Ile contains an intra-formational seal, thereby explaining the two contacts encountered. The upper Tilje and upper part of the middle Tilje Formations were also gas bearing. A gas-down-to contact was observed in the Middle Tilje at 5126 m, with water present in the lower part of the Middle Tilje. The Lower Tilje was water bearing. The Tofte Formation contained both tight (possibly gas bearing) and high quality water bearing sands layers.

Four cores were cut. Core 1 was cut at 4828 - 4857.1 m in lower Ile Formation, core 2 was cut at 5096- 5100.3 m in upper Tilje Formation, core 3 was cut at 5103 - 5134.5 m in middle Tilje Formation, and core 4 was cut at 5209.7 - 5236.9 m in lower Tilje Formation. MDT fluid samples were taken at 4827 m in lower Ile Formation (gas) and 5206 m in lower Tilje Formation (water).

The well was permanently abandoned on 1 July 2007 as a gas appraisal well.

### TESTING

No drill stem test was performed.

## LITHOSTRATIGRAPHY & HISTORY FOR WELL: 6406/9-2