



## Wellbore History

### GENERAL

Well 16/1-8 was drilled on the Luno Prospect on the eastern margin of the South Viking Graben on the south-western part of the Utsira High in the North Sea. The Luno prospect is situated between well 16/1-5 with oil shows in Late Jurassic and 16/1-4 with gas/condensate discovery in fractured basement rocks and up dip from the 16/1-7 Jurassic discovery. The primary objective of well 16/1-8 was to test the hydrocarbon potential in Late Jurassic sandstones of the Viking Group. Secondary objectives were to assess the quality of the Eocene Grid Formation and Permo-Triassic sandstones. Total depth was planned in basement at 2173 +/- 50 m.

### OPERATIONS AND RESULTS

Well 16/1-8 was spudded with the semi-submersible installation Bredford Dolphin on 8 September 2007 and drilled to TD at 2200 m in undefined Triassic formations consisting of conglomerates, sandstones and claystone. A shallow gas zone was warned and encountered in a thin sand from 634 - 638 m. Downtime (NPT) for the operations was as much as 33% of total rig time. Forty-four per cent of the total NPT was due to WOW before anchor handling. Another 14 % of NPT was caused by problems with cementing the 13 3/8" casing. In addition formation characteristics in the reservoir made operations challenging, and combined with increased formation evaluation scope; time spent on coring, logging and drilling to TD drastically increased compared to plan. The well was drilled with seawater and hi-vis pills down to 400 m, with KCl/glycol enhanced mud (GEM) from 400 to 1196 m, and with Performadril mud from 1196 m to TD. Performadril may contain up to 5% polyakylene glycols.

The Eocene sandstones of the Grid Formation at 1556 m were found water bearing with normal pressure gradient. Top Jurassic was encountered at 1925 m and contained sandstones and conglomerates with hydrocarbon shows. A 2 m thick and questionable Late Jurassic sequence was seen on top. Palynoflora at 1930.7 m suggested a Middle to Early Jurassic age. Hydrocarbons were encountered from 1925 m down to an OWC based on MDT pressure data at ca 1965 m, which gives an oil column of ca 40 m. Shows on cores continued down to 1966.3 m. No shows were recorded below this depth or above 1925 m. The reservoir was not easily characterized by log data as these were affected by feldspar rich conglomerates and other electrically conductive materials.

Three conventional cores were cut. The first two were taken in the hydrocarbon bearing interval and the third in the water bearing interval. MDT pressure and fluid sampling was carried out and the fluid gradients were determined (oil and water). The fluid samples were taken at 1933.6 m, 1939.4 m, 1952.8 m, and 1956.4 m (oil), and at 1982 m (water).

The plan was to permanently abandon the well, but due to the characteristics of the discovery, a decision was made to temporary abandon the well with the purpose of re-entering to perform a DST at a later stage.

The well was suspended on 13 November 2007 as an oil discovery.

### TESTING

No drill stem test was performed.

## LITHOSTRATIGRAPHY & HISTORY FOR WELL: 16/1-8