



Wellbore History

GENERAL

Well 16/1-28 S was drilled to appraise the 16/1-12 Rolvsnes Discovery on the Utsira High in the North Sea. The objective was to verify pressure communication within the reservoir and determine possible depletion resulting from production from the Edvard Grieg Field. Further objectives were to prove the drillability of a 2.5 km long horizontal well within granitic basement, and to perform a production test to better understand the reservoir performance.

OPERATIONS AND RESULTS

Appraisal well 16/1-28 S was spudded with the semi-submersible installation COSL Innovator on 3 April and a 36 “x 42” was drilled to 200 m. A 9 7/8” pilot was drilled from 200 to 780 m due to shallow gas warnings. No shallow gas was observed. Hole instability problems were encountered in the 12 ¼” section, from 1742 to 2186 m, and this section was unintentionally side-tracked at 1978 m while reaming. The side-track, 16/1-28 ST2, was drilled to final TD at 4880 m (1919 m TVD) in granite basement rock. The well was drilled vertical down to 957 m, building angle from there to ca 2410 m, from where the well was drilled horizontally. A union strike delayed the DST operations with approximately 11 days. The well was drilled with seawater and hi-vis pills down to 957 m, with Aquadril mud from 957 m to 1734 m, with Delta TEQ oil-based mud from 1734 m to 2180 m, and with Performadril mud from 2180 m to TD.

Basement was encountered at 2335.5 m (1908.8 m TVD) and well TD was reached at 4880 m (1919.0 m TVD). A total horizontal section of 2500 m in basement was drilled with an average penetration rate of 9.9 m/h. 65 pressure measurements were attempted, the successful tests showed a depletion of about 10 bars, which can be the result of production from the Edvard Grieg Field. Good oil shows were recorded throughout the fractured granitic reservoir from 2336.5 to 4880 m, otherwise no shows were described in the well.

Due mainly to wellbore instability issues, no cores or sidewall cores were taken in wellbore 16/1-28 ST2. This restricted the amount of petrographic data acquired to evaluate the degree and type of alteration of the basement rock. Fluid samples were taken during the DST

The well was permanently abandoned on 23 August 2018 as an oil appraisal.

TESTING

The well was formation-tested (DST) for ten days. The well was tested from intervals separated by swell packers over the whole reservoir section below 2417 m and production logging was carried out. The maximum production rate was 1100 Sm3 oil per flow day through a 52/64” nozzle opening. The main flow period of 5 days was held with a rate of 650 Sm3 oil per day through a 52/64” nozzle opening. The oil is undersaturated with a gas/oil ratio of 130 Sm3/Sm3. The DST temperature at Gauge depth 1852.4 m TVD was 77.6°C.

LITHOSTRATIGRAPHY & HISTORY FOR WELL: 16/1-28 S