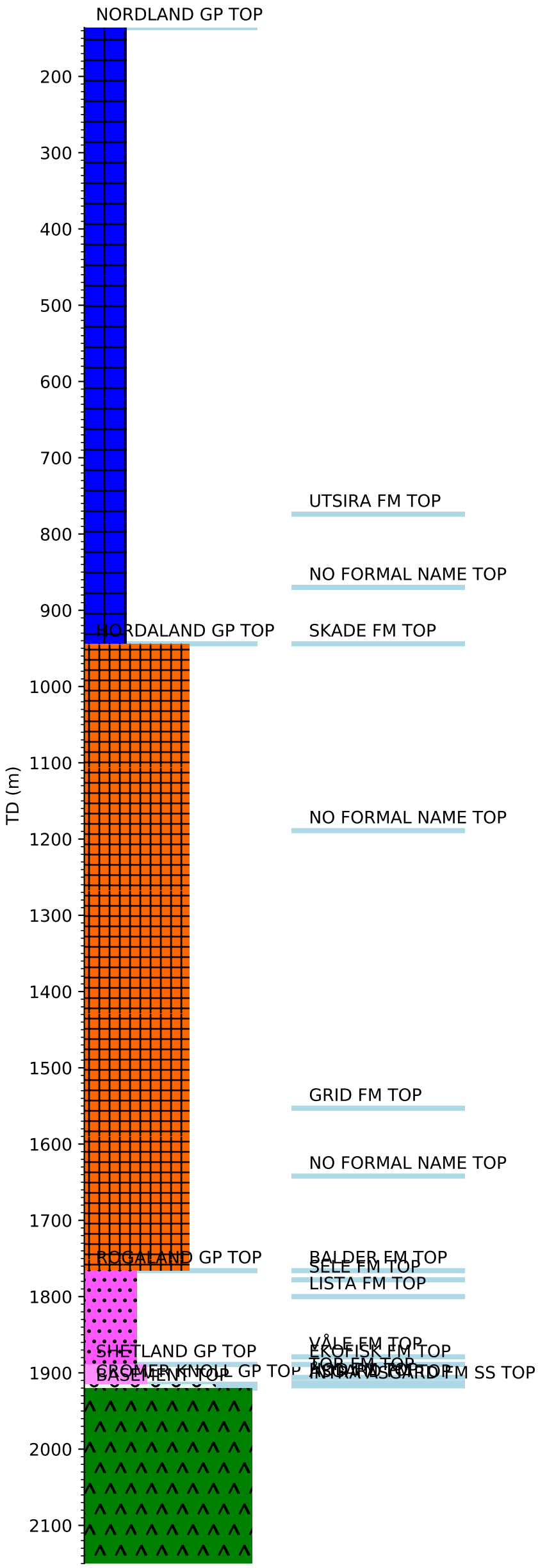
Groups

Formation Tops



Wellbore History

GENERAL

Well 16/1-15 was drilled on the western side of the Utsira High in the North Sea. The objective was to test Jurassic/Triassic sandstones prognosed at 1925 in the Tellus prospect north of the Luno Discovery. The Luno Discovery has later been officially named the Edvard Grieg Field. The Tellus prospect was separated from Luno by a fault zone trending NW SE.

OPERATIONS AND RESULTS

Wildcat well 16/1-15 was spudded with the semi-submersible installation Bredford Dolphin on 22 January 2011 and drilled to TD at 2150 m, 230 m into pre-Devonian basement rock. Due to possible shallow gas sands a precautionary 9 7/8" pilot hole was drilled down to 585 m. Only water filled sands were seen. Several incidents interrupted the progress where the most serious was a failed 20" casing cement job. The other incidents were related to the BOP and a stuck wire line string. The well was drilled with seawater and sweeps down to 585 m, and with Performadril mud from 585 m to TD.

The well proved an oil column of 48 metres in a thin, Intra Åsgard Formation Sandstone directly overlying weathered and porous / fractured basement. Top of fractured basement was at 1920 m. No Triassic or Jurassic sediments were identified in the well. The Intra Åsgard Formation Sandstone is a chalk arenite, 2.7m thick, with excellent reservoir properties. An oil/water contact was established at approximately 1965 m (1940 m TVD MSL). The acquired pressure, geochemistry and PVT data supports communication between the Luno and Tellus Discoveries, making the Tellus area a northern extension of the Luno Discovery.

Intermittent oil shows were described on core 1 immediately above the reservoir in a thin Hod Formation limestone. Below OWC shows were described on cores down to 1976 m. Further weak shows were described on cuttings down to 1997 m.

A total of 61 meter core was recovered in four cores from 1915 to 1976 m (all core depths 2.15 m deeper than logger's depth) in the Hod Formation, Intra Åsgard Formation Sandstones and Basement. The overall recovery rate was 85.2%. Fluid sampling, water and oil, was performed using an extra-large diameter MDT-probe and dual packer. Samples were taken in the oil bearing zone at 1918.99 m, 1921.47 m, 1923.81 m, 1932.96 m,1937.23 m, 1952.43 m, 1959.62 m, and 1967.04 m. A water sample was taken at 2030.52 m. The oil samples show an under saturated light oil similar to the oil found in the Luno Field. The typical GOR from the MDT samples was 125 Sm3/Sm3, the oil density was 0.72 g/cm3 and the gas gravity was 0.95 (air=1).

The well was plugged back to the 20" casing shoe on 5 April 2011 and a sidetrack 16/1-15 A was prepared. Well 16/1-15 is classified as an oil appraisal.

TESTING

Two drill stem tests were performed.

DST 1 tested the interval 1926 to 1960 m in the basement. After a slow initial production, the perforations were cleaned up and the well produced with a continuous flow to surface with an oil-rate of 105 sm3/d on a 40/64" choke and a bottom-hole pressure of 56.6 bar. No water was produced. This was the first successful full-scale production test of a reservoir consisting of cracked and porous bedrock on the Norwegian Continental Shelf.

DST 2 tested the interval 1917 to 1920 m in the Intra Åsgard Formation Sandstone. The main flow produced 470 sm3/d on a 36/64" choke with a bottom-hole pressure of 179.7 bar. No water was produced. The average GOR was 90 Sm3/Sm3. The maximum temperature at reference depth 1916.9 m was 84.5 deg C.

LITHOSTRATIGRAPHY & HISTORY FOR WELL: 16/1-15