



Wellbore History

GENERAL

Well 2/1-9 was drilled on the Gyda South structure, a fault/dip closure in the Late Jurassic fairway on the eastern flank of the Central Graben, 6 km south of the Gyda Field. The main objective of the well was to test the Late Jurassic "Gyda sandstone" (Ula Formation) target and prove a volume of oil that was commercial as a tie back development to the Gyda platform. Secondary reservoir potential existed in both the Middle Jurassic and in the uppermost part of the Triassic. Estimated TD was 4275 m TVD RKB.

OPERATIONS AND RESULTS

Appraisal well 2/1-9 was spudded with the semi submersible rig Ross Isle 15 March 1991 and drilled to TD at 4298 m in the late Permian Zechstein Group. No significant problems were encountered in the operations. No shallow gas was detected. The well was drilled with seawater and high viscosity slugs down to 900 m, and with Aquamul ether-based invert emulsion mud system from 900 m to TD.

A 59 m Forties Formation sandstone sequence was encountered at 2923 m in the Late Paleocene and another ca 30 m thick sandstone sequence at 3025 m within the Lista Formation. Top Mandal Formation was encountered at 4013.5 m, 10.5m deeper than predicted. Top Ula Formation was encountered hydrocarbon bearing from 4048 to 4209 m, which was 111 m thicker than expected. The OWC was interpreted from logs to be at 4137.0 m, while the cores taken had good oil shows all through the cored section, i.e. down to 4153 m. No reservoir sections were encountered in the Middle Jurassic. No Triassic sediments were penetrated by the well.

Five cores were cut continuously from 4019 m to 4153 m with 100% recovery. Core 1 covered the lower part of the Mandal, Farsund, and the upper part of the Ula Formation. Cores 2, 3, 4 and 5 were cut in the Ula Formation. Good oil shows was observed throughout the cored section of the Ula sandstone. RFT fluid samples were taken at 4088.7 m (oil), 4137.0 m (oil), 4151 (water), and 4177 m (water).

Well 2/1-9 was considered a potential water injector for the Gyda South discovery, and to be sidetracked up-dip as a producer. A full evaluation of the DST and PVT data would be performed together with a geological remapping and evaluation of the discovery. The well was thus suspended on 6 July 1991, as an oil discovery. It would be re-entered later, after the above evaluations had been completed.

TESTING

One DST was run in the interval 4078 - 4108 m and resulted in an oil rate of 166 Sm³/day through a 32/64" choke. The gas rate was 91180 Sm³/day and the water rate was 120 Sm³/day. The GOR was 548 Sm³/Sm³ and the oil gravity was 43 deg API. Due to the presence of H₂S the lower part of the Ula Formation was not tested.

LITHOSTRATIGRAPHY & HISTORY FOR WELL: 2/1-9