



Wellbore History

GENERAL

Well 35/12-2 is an exploration well on the Grosbeak prospect. The Grosbeak prospect is located on the Ryggsteinen Ridge on the East flank of the Sogn Graben, with a number of fields and discoveries in the neighbouring blocks (Fram East, Fram West, Gjøa, Troll). The objective was to explore the hydrocarbon potential in sandstones of the Late Jurassic Sognefjord and Fensfjord formations and in the Middle Jurassic Brent Group.

OPERATIONS AND RESULTS

Wildcat well 35/12-2 was spudded with the semi-submersible installation Songa Delta on 30 May 2009 and drilled to TD at 2541 m in the Middle Jurassic Brent Group. The well was drilled without significant operational problems and within pre-drill time schedule. The well was drilled with bentonite mud down to 517 m and with AQUACOL KCl/polymer mud from 517 m to TD.

The Late Jurassic Sognefjord Formation sandstones came in at 1968 m. Clear hydrocarbon shows and increased gas values were seen on penetrating this formation. The sandstones had an average porosity of 11.7 % when using a 10 % cut-off and contained gas to their base. The Heather Formation came in at 2030 m and consisted of very fine sandstones and siltstones with hydrocarbon shows throughout. Approximately 6 m of logs are missing in the top section of the Heather Formation. The Fensfjord Formation came in at 2100 m with oil encountered in a two-metre sandstone at the top of the formation. The Fensfjord Formation then passed into 13 m of shale, then into water-bearing sandstones. The sandstones had an average porosity of 19.4 % when using a 12.5 % cut off. Below the Fensfjord Formation was 291 m of non-hydrocarbon-bearing Heather Formation including 5 m of water-bearing Krossfjord Formation sandstone.

The Middle Jurassic Brent Group, Ness Formation was penetrated at 2450 m. A 35 m gross oil column was encountered in the Ness Formation. Based on pressure measurements and fluid densities two different pressure regimes with two hydrocarbon contacts were identified. The upper contact was placed at 2476.5 m, but it is not known what kind of fluid contact it is. The lower was recognised as an OWC at 2485 m. The reservoir properties in both zones are good. Also the underlying water bearing Etive Formation sands (2509.6 to 2529.1 m) have good reservoir properties.

Three successive cores were cut in the interval 1974.0 to 2106.0 m. Four (4) wire line runs comprised SBT, VSP and two RCI runs. A successful RCI gas sample using straddle packer was collected at 2027 m in the Sognefjord Formation. Further RCI single probe samples were collected in the Fensfjord Formation at 2101.5 m in (oil, gas, water, mud) and 2119 m (water); in the Ness Formation at 2454.4 m, 2459 m, 2459.5 m, 2460 m, 2477 m, 2481 m (all oil, gas, water, and mud) and at 2489 m (water and mud); and in the Etive Formation at 2524 m (water and mud). Low permeabilities in the Sognefjord Formation made the acquisition of accurate formation pressures (RCI) and fluid samples problematic, but otherwise the data collection was without incidents. Pressure measurements were also obtained in the Lista water bearing sands in the 12-1/4" hole section using a LWD formation pressure tool (TesTrak).

The well was permanently abandoned on 15 July 2009 as an oil and gas discovery.

TESTING

No drill stem test was performed.

LITHOSTRATIGRAPHY & HISTORY FOR WELL: 35/12-2