



Wellbore History

GENERAL

Well 25/10-2 was drilled to test a structural closure on the down faulted west flank of the basement high on which Esso wells 25/11-1 (Balder Discovery well), 25/8-1 and 25/10-1 had been drilled. The original primary objective, as stated in the Operator's Final Well Report from 1972, was Early Paleocene to Late Eocene sands, which had a thin oil leg in the three wells drilled previously. It was anticipated that appreciably thicker Early Eocene sands would be encountered in the oil leg of 25/10-2. Additional prospects were in Middle - Late Eocene sands, Danian carbonates, and sands of Early Cretaceous, Jurassic or Triassic age.

The results of the well given below is reported with today's knowledge of the area (anno 2003) and cannot be compared directly with the original objectives.

OPERATIONS AND RESULTS

Wildcat well 25/10-2 was spudded with the drilling vessel "Glomar Grand Isle" on 5 August 1970 and drilled to TD at 2191 m (7187 feet) in the Paleocene Lista Formation. Drilling operations went without mechanical problems and there was no lost time waiting on weather. Well 25/10-2 was suspended 25 August 1970 as a well with oil shows. The well was re-entered (25/10-2 R) using "Glomar Grand Isle" on 2 May 1972 and drilled to a total depth of 3180.6 m (10435 feet) in basement rock.

After drilling out the plug in the bottom of the casing in the re-entry some difficulty was experienced in staying in the old hole. The well was drilled to a depth of 2369 m where lost circulation was encountered. Later the pipe became stuck, with the bottom of the fish at 2213 m, and it became necessary to sidetrack the hole. Six cones were lost in the hole while drilling at 2497 m in the sidetrack hole; otherwise no problems were experienced. Initial drilling from the sea floor to 396 m was with seawater and gel. From 396 m to 1036 m the hole was drilled with seawater / Spersene / XP 20 / Salinex system. From 1036 m to TD in the primary well entry fresh water / Spersene / XP 20 system was used. The re-entry hole was drilled with fresh water - Spersene - XP-20 system.

Top Rogaland Group is interpreted at 1935 m. The Balder, Sele and Lista Formations contained only thin, scattered sandstone layers, while water bearing sands were encountered in the Heimdal Formation (2085 m to 2146 m) and in the Ty Formation (2270 m - 2375 m). Two hundred and thirty eight m of Late Cretaceous chalk and limestones are developed beneath the Tertiary. Upper Jurassic Draupne shale is missing in the well, instead the Shetland Group is underlain by a heterogeneous sequence which has been dated to be of Late Jurassic (Volgian) age. Mainly greyish red shales and siltstones are found together with white limestones and loose sands and do not fit into the existing nomenclature system. The serrated log patterns indicate that these lithologies are finely interbedded. In the Triassic Hegre Group loose, poorly sorted quartz sands were encountered in the interval 2710 m to 2820 m while the interval from 2850 m to 2885 m consists of a well consolidated, poorly sorted, fine grained sandstone. This sandy section does not contain recognizable palynomorphs, but is believed to be of Triassic age due to its stratigraphic position and the continental character of the sediments. An unpredicted Permian conglomerate (Rotliegend), 135 m thick, consisting of pebbles of quartz, feldspar, gneiss and amphibolite in a well cemented or sandy matrix, was encountered beneath the Kupferschiefer highly radioactive shale and Zechstein evaporites and shales. The Basement rock (3152 m - 3181 m) is probably plutonic. It is composed mainly of alkali feldspar, and thus best classified as a syenite. It is medium grained and highly crushed. Its dark greyish red colour is partly due to heavy staining by hematite. Oil fluorescence and oil cut was obtained from Balder Formation cuttings between 1937 m and 1973 m. Oil shows were encountered in a one-foot Sele Formation sand core between 1973 m and 1977 m. Very weak oil fluorescence was recorded from the Sele Formation cores and cuttings between 1983 m and 2027 m. The triassic Group sands between 2682 m to 2688 m and 2689 m to 2707 m had very weak oil shows. The cuttings contained a black tar material in the intergranular porosity, which looked like dead oil. Sidewall cores indicated that the sand was fine grained, with streaks of black hydrocarbon specks, with yellow fluorescence and good yellow cut. The Permian dolomites (Zechstein), shales (Copper shale) and Conglomerate (Rotliegend), had a good fluorescence and cut and some live oil,

LITHOSTRATIGRAPHY & HISTORY FOR WELL: 25/10-2