



LITHOSTRATIGRAPHY & HISTORY FOR WELL: 8/10-2

Wellbore History

GENERAL

Well 8/10-2 was drilled on the Sørvestlandet High about 20 km east of the Ula Field. The primary objective of the well was Jurassic sandstones expected to be 122 m thick. Secondary objective was Paleocene sandstones.

OPERATIONS AND RESULTS

Wildcat well 8/10-2 was spudded with the semi-submersible installation Nortrym on 5 February 1980 and drilled to TD at 2997 m in the Late Permian Zechstein Group.

The first samples to the surface were from Miocene - Oligocene. They were badly contaminated with cement from the casing shoe at 461 m. First clean formation samples were collected at 503 m and they consisted of a soft grey brown clay with minor amounts of fine to medium grained sand and occasional fossil frogs. This gave way at 570 m to a totally argillaceous section, and soft grey-brown, slightly calcareous, claystone was found. This became the dominant lithology down to the 13 3/8" casing point at 1198 m. After casing point, cement contamination of samples occurred for about 10 m. The claystone gave way to a grey-green-brown, soft, sticky clay, which had occasional traces of carbonaceous material. Top Hordaland Group is set at 1265 m. At 1471 m a thin hard white limestone occurred with an associated drop in drilling rate from 61 m to 46 m per hour. Background gas also decreased during this interval. After 1494 m the dominant lithology became soft grey-brown clay, some sections of which were slightly calcareous. Occasional fossil fragments and pyrite nodules were also found in this section. There was a slow increase in the claystone content and by 1801 m a light grey claystone had become the dominant lithology. This claystone was moderately hard, slightly calcareous and micro micaceous; traces of dolomite and shelly fragments were also found. By 1951 m the soft clays had disappeared completely and were replaced by light grey and dark brown claystones, both soft to firm, the light grey claystone being non-calcareous and the brown claystone slightly to moderately calcareous in parts.

The appearance of the light grey claystone grading to shale between 2073 m to 2103 m was tentatively marked as the top of the Eocene. The drilling rate increased during this period from 15 m per hour to 30 m per hour. The claystone was found to grade into shale in some sections. Occasional traces of fine sand, glauconite and Dolomitic limestone were also found.

The top of the Palaeocene (Balder Formation) was found at 2158 m to 2166 m based on Electric Log data. The only visible formation change was the occurrence of minor amounts of brown to dark brown claystone, which was soft, non-calcareous and micro micaceous with a trace of disseminated pyrite. This non-calcareous brown claystone became dominant throughout the Palaeocene with minor amounts of light grey non-calcareous shale being found as well as traces of marl, pyrite and tuff.

The first Danian Chalk was encountered at 2333 m and in the Våle Formation, a rapid increase in the drilling rate occurred at this point. Top Ekofisk Formation was set at 2364.8. The Chalk was white to cream generally soft to firm but with occasional hard streaks. Also a trace of light brown to translucent very hard flint or (chert) was found.

The Maastrichtian marks the top of the Cretaceous at 2385 m (Tor Formation) and is dominantly chalk which is white, hard, occasionally very hard and microcrystalline. On reaching the Maastrichtian, the drilling rate dropped from 8 m per hour to 3 m per hour and there was also a slight decrease in background gas. Accessory minerals found during this section include Flint (Chert), pyrite and a trace of lignite, which may have been an isolated piece of driftwood subjected to partial coalification.

The Lower Cretaceous (Rødby Formation) was marked at 2513 m based on both Electric Log and mud logs. The decrease in Chalk content was paralleled by an increase in brown to red clay, which was slightly calcareous and had traces of mica and sub-rounded Quartz grains. Downwards the red claystone graded through into a very calcareous red siltstone and then after 2626 m into a brown-grey Claystone, which was firm to moderately hard and only slightly calcareous.

At 2657 m the shales and claystones of the Jurassic Kimmeridgian (Flekkefjord Formation) were found and an increase in drilling rate from