BaraLube™ W-511 lubricant in packer fluid significantly eases friction to facilitate running of upper completion

Location: Norway

OPERATOR’S CHALLENGE – Whilst running the upper completion on the Varg well 15/12-A-3 B, high tension forces were experienced when trying to move the completion string upwards through the inhibited seawater packer fluid. Simulation runs using friction factors based on actual well tortuosity indicated that at TD, it would not have been possible to lift the string upwards without applying excessive loading to the joint at the top of the tubing string. The Baroid team was challenged to find a solution to reduce friction for running the completion assembly.

HALLIBURTON’S SOLUTION – BaraLube™ W-511 lubricant for completion brines and packer fluids was originally programmed as contingency for this well. Unfortunately, weather conditions were not suitable to allow receipt of BaraLube™ W-511 lubricant on the rig. The upper completion was therefore run in hole until it became evident that the friction factors were too high to allow the job to be successfully completed without risk of the string parting.

When the tubing string reached ~2600 m MD, a 10% concentration per volume pill of BaraLube™ W-511 lubricant was pumped with the seawater, a total equivalent pill volume of 22m³ or 138bbls. This successfully reduced friction in the wellbore, reducing drag and allowing the tubing to be run to TD.

It was concluded that had the BaraLube™ W-511 lubricant not been added, the pick-up weight at TD would have been 186 MT instead of the actual 156 MT. With the well at 4283m/14,051ft TD, and 3187m setting depth, the hookload measured on surface was within ~4 MT of the maximum allowable load on the VAM Top HC coupling face, the tension limit when using shoulder type elevators.

The chart above show the reduction in friction factor by utilizing the BaraLube™ W-511 lubricant, enabling to the well to reach TD.

ECONOMIC VALUE CREATED – Significant improvement was achieved by pumping BaraLube™ W-511 lubricant in this well. Had the lubricant not been pumped, it would have been impossible to move upwards at TD. Instead, BaraLube™ W-511 substantially reduced the friction factor from 0.39 to 0.27 to enable a successful tubing run.