

Multistage Frac Sleeves Proves Successful in Challenging Offshore Wellbore

SUCCESSFUL RUN THROUGH 17,15 DEG/30M DOGLEG IN SLIM ID OPEN HOLE

NORTH SEA, NORWAY

CHALLENGE

Aker BP required an engineered solution to overcome their wellbore challenge of an unexpected extreme dog leg severity

SOLUTION

Collaboration led to a multistage frac sleeve and openhole packer solution that was deployed and activated successfully

RESULTS

Halliburton's solution not only met Aker BP's needs, but allowed them to manage their risks to an acceptable level while saving time and money associated with alternative solutions

OVERVIEW

The major North Sea operator, Aker BP, was preparing for the last section of well construction. The 6 ½-in. openhole well was to be drilled into one of the flanks of the mature field as a water alternating gas (WAG) injector well. Because of high vibrations and occasional soft intervals in a relatively hard formation, an extremely high dogleg at 17,15 deg/30m was created, over a short distance from 5189m to 5225m of the ~1867m lateral.

Before the lower completion could be deployed, an alliance between Halliburton and Aker BP to analyze the challenging wellbore conditions was formed. Once all variables had been properly evaluated, a collective agreement was met to move forward in running the lower completion.

Through careful execution of the agreed procedure for the wellbore preparation and deployment, the lower completion, consisting of six Swellpacker® systems and 18 RapidShift® sleeves on a VersaFlex® liner hanger system, was successfully deployed to the planned setting depth. Later in the completion operations during the coiled tubing campaign, each RapidShift sleeve was shifted open successfully.

Understanding customer challenges and utilizing open communication enable a customized, cohesive solution

CHALLENGE

Aker BP required specialized equipment at specific pre-planned depths within the offshore wellbore to achieve their objectives. In order to reach the planned setting depth, the lower completion must pass through a challenging wellpath trajectory, and any variation in placement from the planned depth could negatively impact the well objectives.

SOLUTION

Working in alliance, Aker BP and Halliburton gained perspective and insight from local and global experts of both parties to analyze the wellbore challenges and come to a cohesive solution. The analysis included extensive WellPlan® software simulations to determine the torque and drag implications for deploying the specialized lower completion equipment through this challenging wellpath trajectory. Several iterations concluded that with the use of Halliburton's VersaFlex liner hanger system in conjunction with centralizers below each Swellpacker system and RapidShift sleeve, the results would fall within the acceptance criteria. Furthermore, it was agreed that prior to deployment a second bit drift cleanup run would be performed for final pass-through verification through the challenging section of the wellpath trajectory.

RESULTS

Collaborative efforts to fully understand and address the challenges, ensured the best customized solution to mitigate the risks effectively, and provide the highest chance of success to achieve Aker BP's well objectives.

The combined efforts resulted in the successful deployment of the specialized lower completion to the planned setting depth. During the deployment, no additional weight was observed as the Swellpacker systems and RapidShift sleeves each passed through the challenging wellpath section, and the actual weight values were aligned with those expected from the WellPlan software simulations. Lastly, in order to meet the Aker BP's objectives, during the coiled tubing campaign, all RapidShift frac sleeves opened as expected.



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