DEEP WATER

UNCONVENTIONALS

CASE STUDY

Successful Dual Drilling Operations Saves Aker BP USD 1.2 Million with Zero HSE Issues

THREE SIMULTANEOUS DUAL DRILLING OPERATIONS REDUCE WELL TIME AND ATTAIN WORLD-FIRST RECORD

NORTH SEA, NORWAY

CHALLENGES

- Drill two wellbores at three different neighboring locations in the North Sea
- Mitigate the risks in performing simultaneous operations (SIMOPS) of this magnitude that are in close proximity to other wellbores

SOLUTION

Collaborated with Aker BP to conduct:

- HSE review to understand SIMOPS hazards, determine feasibility, and reduce risks to acceptable levels
- Directional surveying and LWD evaluation of wellbores
- Offshore infrastructure and equipment alignment
- Data capture and transmission

RESULTS

- Completed all three dual drilling operations with zero HSE issues
- Saved an average of 1.5 days (or USD 1.2M) over conventional operations per dual drilling operation

OVERVIEW

In collaboration with Aker BP, Halliburton Sperry Drilling planned and drilled two wellbores at three different proximal locations in the North Sea, offshore Norway near Stavanger. A prerequisite for each location was to first drill a pilot hole to evaluate the presence of shallow gas. Typically, the conductor hole is drilled before a pilot hole, followed by the opening of the pilot hole for running the outer-diameter (OD) casing.

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The deepwater rig had a dual derrick design, with full drilling capacity in both derricks. Since the derricks' well centers were approximately 33 feet (10 meters) apart, it was decided in the planning phase of pre-operations to drill two wells simultaneously: the "pilot-hole shallow-gas" wellbore and the "main" wellbore. While this initiative was thought to be efficient and time saving, it could also potentially introduce risk factors.

COLLABORATION LEADS TO SAFE AND FLAWLESS EXECUTION

A thorough health, safety, and environmental (HSE) review was conducted to ensure a risk-mitigated environment, reduced to an acceptable level, such that performing simultaneous operations (SIMOPS) of this magnitude (and in close proximity to a neighboring wellbore) was feasible.

Teamwork and collaboration between Aker BP and Halliburton were key to the success of this project. The following tasks were accomplished:

- Provide a sequence of events to facilitate SIMOPS (with timings accounting for the operations in each derrick)
- Agree on HSE processes, should an event occur in either of the wellbores at the time of drilling.
- Align infrastructure offshore to facilitate the simultaneous drilling of two wellbores, Red Zone management, dual derrick communications, etc.
- Provide infrastructure to allow for the capturing of data from two wellbores simultaneously, and transmitting same onshore
- Perform directional surveying and logging-while-drilling (LWD) evaluation of the wellbores, while maintaining directional control in each

OPTIMIZED PROJECT MANAGEMENT AND EFFICIENT EQUIPMENT UTILIZATION HELP TO REDUCE WELL TIME AND BREAK SIMOPS RECORD

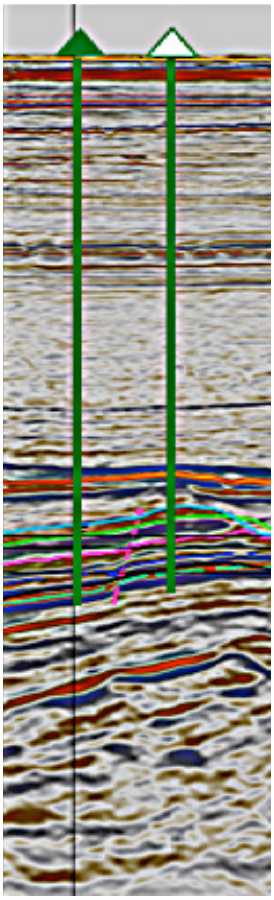
Drilling two wellbores at multiple locations requires a significant amount of resources – not only in execution, but also in planning. Aker BP and Halliburton held planning discussions on how best to utilize their respective resources, which resulted in an executable timeline. Logistics were also carefully coordinated, so that equipment was loaded onto the rig for the next location, while it was completing plug-and-abandon (P&A) operations at another location. This equipment included customized bottomhole assemblies (BHAs) and all the "standard" services, such as fluids and casing. It was also necessary to augment the number of personnel in certain departments to enable testing, handling, and building equipment prior to arriving at the first location to execute dual drilling operations.

Due to the increased volume of equipment that was present on the rig, and the forward plan of batch drilling top holes and pilot holes on other locations, an equipment utilization plan was designed and implemented. This plan allowed the three dual drilling operations to be carried out with the minimum amount of equipment.

The three simultaneous dual drilling operations attained a world-first record. Thanks to this coordinated effort, thorough planning, and fllawless execution, the following wellbore sizes and sections were successfully drilled at their respective locations:

- Well #1, 8½-inch pilot hole/top hole and 17½-inch section
- Well #2, 8½-inch pilot hole/top hole and 26-inch section
- Well #3, 8½-inch pilot hole/top hole and 17½-inch section

This major achievement was also distinguished by zero HSE issues, and an average savings of 1.5 days over conventional operations per dual drilling operation, equating to USD 1.2 million saved, helping Aker BP maximize the value of its assets.



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Graphic depiction of dual drilling operations

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