Kuwaiti Operator Efficiently Performs Complex Horizontal Well Intervention in a Single Run

SPECTRUM™ INTERVENTION AND DIAGNOSTIC SERVICES HELP MINIMIZE DOWNTIME AND LOWER OPERATION COSTS BY USD 300K

KUWAIT

OVERVIEW

Reservoir management is key to optimal field production. In this case, an operator in Kuwait was planning to shut down production from the lowermost section of two horizontal wells completed with Inflow Control Devices (ICDs) in order to properly measure additional production from an upper section.

A well intervention was required to close the lowermost sleeve of the last two producing ICDs, ensuring accurate depth control and optimizing the use of resources to minimize production downtime. SPECTRUM™ Intervention and Diagnostic Services provided a cost-effective solution to identify, clean, evaluate a fluid injection test and close the sleeve—all in a single run.

The intervention was executed flawlessly, saving the operator valuable deferred production time and keeping the costs under their intervention budget.

CHALLENGE

Due to uncertainty of previous tally measurements regarding the location of the lowermost sleeve of the last two producing ICDs, conventional coiled tubing equipment could not efficiently accomplish this operation. An accurate, real-time depth control system was needed to confirm the actual location of the sleeve in the lower completion section of these wells. Additionally, a reliable method to confirm the sleeve position was critical to avoid delays in putting the wells back in production.

SOLUTION

Halliburton proposed Spectrum Intervention and Diagnostic Services with DTS capabilities for properly identifying the sleeve position, by analyzing the thermal changes of the fluid injected into the open zones before manipulating the sleeve. A sensor BHA enabled with real-time telemetry delivered accurate depth measurements via a casing collar locator sensor, facilitating the operation of the shifting tool to close the sleeve. DTS profiles were used one more time to confirm the desired sleeve was successfully closed by evaluating the cool-down and warm-back events from an injection test.

RESULT

The operator was able to precisely identify the sleeve position and actuate a shifting tool with confidence due to real-time distributed profiles and more accurate depth measurements. The multi-step well intervention process was successfully accomplished in just one trip downhole.
SPECTRUM Services’ customized well intervention program allowed the operator to isolate the lowermost producing zones, resulting in considerable savings of the intervention budget. This optimized process also helped to reduce the amount of time that wells were shut down compared to operations performed with conventional coiled tubing equipment.

DID YOU KNOW

SPECTRUM Diagnostic Services delivers coiled-tubing-conveyed, fiber-optic distributed sensing to assess reservoir performance and completions effectiveness by monitoring fluid movement across the entire wellbore and visualizing treatment efficiency in real time. This service leverages fiber-optic DTS and DAS measurements to monitor fluid injection and to profile production along the entire length of the wellbore.

The SPECTRUM Intervention Service allows all regular coiled tubing operational parameters to be maintained, including flow-through capability, high pump rates, tolerance to corrosive fluids and ball-drop capability. Real-time measurements are collected from the location of the treatment and surrounding downhole environment. Information can be shared remotely via satellite communications to global experts or the customer’s office, creating the ability to customize well intervention operations in real time, saving time and reducing total costs.