

Through-Tubing Water Shutoff Solution Improves Well Productivity and Isolates Lower Water-Producing Zone

RELAY™ DIGITAL SLICKLINE HELPED INCREASE OIL PRODUCTION AND REDUCE WATER CUT BY 21%

ALGERIA

CHALLENGES

- » Isolate a lower water-producing zone using a robust permanent way to withstand the severe high-salinity well environment
- » Located in a 4½-in. perforated liner, with 4½-in. tubing with a minimum restriction of 3.455 in.

SOLUTION

- » Deployed a fully integrated RELAY™ digital slickline (DSL) package with memory downhole power unit (DPU®) technology to set an Elite Magna Range bridge plug (EMRBP) and then dump bail cement

RESULTS

- » Saved the operator the time and risk associated with an E-line operation by using RELAY DSL and allowed a surface readout correlation to set the plug between the two zones
- » Saved the cost and logistics of explosive running tools used with a conventional E-line operation by employing slickline DPU technology
- » Acquired the required differential pressure between the two zones using the EMRBP. To ensure isolation, cement was dumped using the DPU technology to form a solid cap on top of the EMRBP
- » Increased oil production while reducing water cut from 21.6% to .68%

OVERVIEW

The Halliburton RELAY™ digital slickline (DSL) system is an intelligent conveyance for well intervention operations. This advanced technology combines the versatility and efficiency of traditional slickline with the real-time data streaming capability of electric line. On a recent project in Algeria, the capabilities of the RELAY DSL were ideal for isolating a water-producing zone in a hostile environment, increasing oil production, and reducing water cut by 21%.



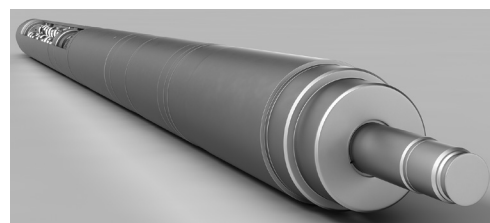
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CHALLENGES

An operator needed a way to isolate a lower water-producing zone using a robust permanent way to withstand the severe high-salinity well environment. The water zone is in a 4½-in. perforated liner, and the tubing is 4½ in. with a minimum restriction of 3.455 in. Between January and March 2019, 38 coiled-tubing interventions were performed.

SOLUTION

Through close collaboration with the client, Halliburton proposed a fully integrated RELAY DSL package with memory downhole power unit (DPU®) technology to set an Elite Magna Range bridge plug (EMRBP) and dump 3 meters of cement on top of the bridge plug to isolate the lower water-producing zone.



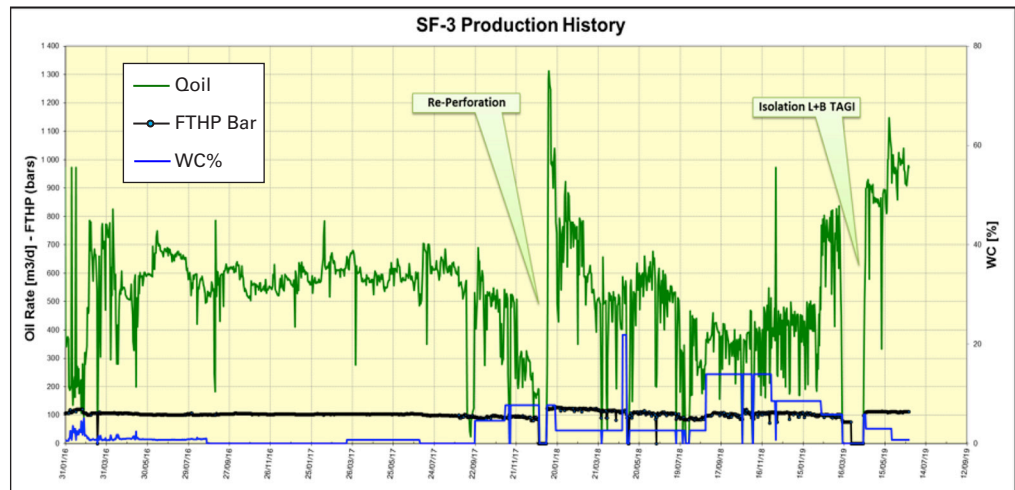
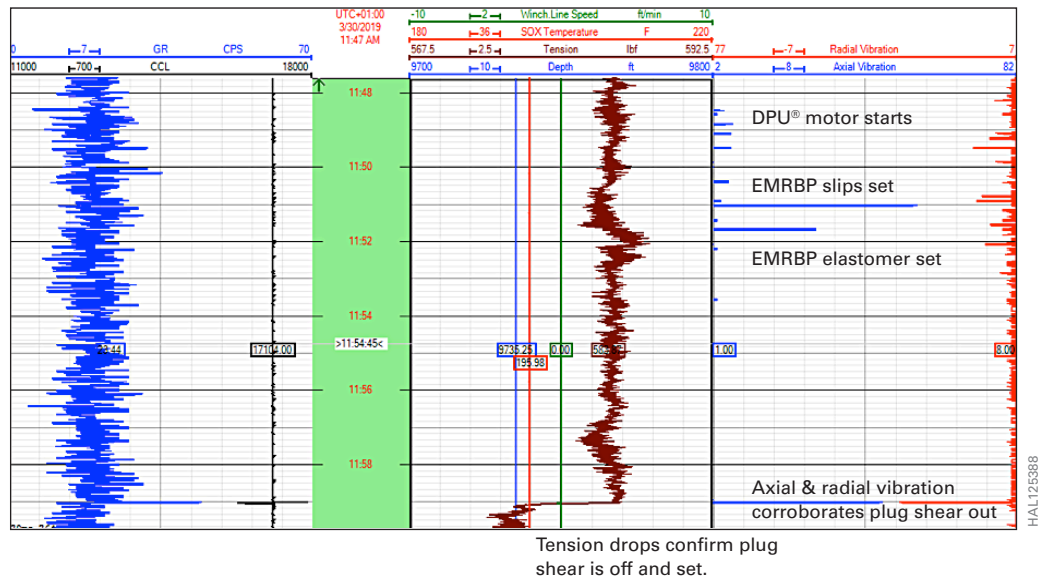
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The slickline version of the Halliburton DPU® technology allowed the operator to avoid the cost and logistics associated with the explosive running tools used in conventional E-line operations.

RESULTS

RELAY DSL saved the operator the time and risk associated with an E-line operation and allowed a surface readout correlation to set the plug between the two zones. Additionally, the slickline DPU technology saved the cost and logistics of explosive running tools used with a conventional E-line operation. An EMRBP, along with a cement kit, gave the required differential pressure between the two zones, and the used cement was tested against the salinity percentage in the well. As a result of deploying the RELAY DSL solution, oil production increased, and water cut was reduced from 21.6% to .68%. Post-isolation, no coiled-tubing interventions have been necessary.

CASE STUDY



Since mid-2018, well production declined due to water cut increase. Additionally, well production was affected by salt deposition issues, resulting in unstable production. Several coiled-tubing jobs to restore production were performed. Between January and March 2019, 38 coiled-tubing interventions were performed. Post-isolation, no coiled-tubing interventions have been necessary.

www.halliburton.com/relay

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