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ReSOLVE Service's Universal Shifting Tool Opens 10 Sliding Sleeves in Two Runs

Precise control and real-time confirmation of selective openings in multizone horizontal well, the Middle East

CHALLENGE

Open sliding sleeves in multiple inflow control devices (ICDs) in a multizone horizontal completion.

SOLUTION

Deploy the ReSOLVE* instrumented intervention service's universal shifting tool (UST) conveyed on the MaxTRAC* downhole wireline tractor system to selectively open the ICDs with confirmation and documentation of the shifting of each valve through real-time downhole measurements of the applied force and displacement.

RESULTS

Shifted open 10 ICDs in two runs, with full opening confirmed by force versus displacement signatures, making additional production logging runs not necessary to investigate ICD status.

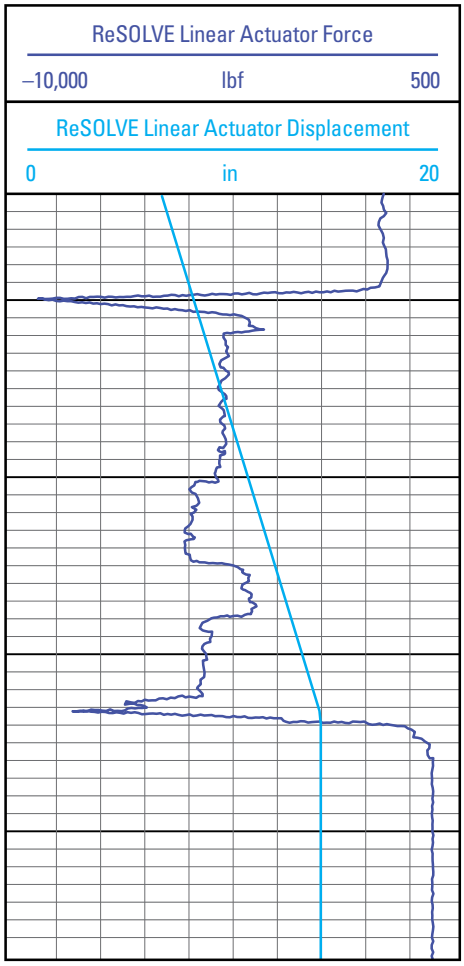
Multiple sleeves to be opened

An operator in the Middle East needed to open the sliding sleeves in multiple ICDs in a new horizontal multizone ResFlow* completion. Designed to allow selective shutoff of reservoir zones, the completion had been installed with all of the sleeves closed, and now they required opening to begin production.

Measured confirmation of shifting

ReSOLVE instrumented wireline intervention service, configured as the universal shifting tool, makes multiple shifts in any direction in a single run, which is ideally suited for multiple components in multizone completions. The UST is run with the ReSOLVE service's anchor and linear actuator, and throughout the operation, the ReSOLVE service measures force and displacement in real time to confirm that the expected force and distance were achieved and verify shifting.

To open or close a well component, the UST radially extends profile keys to engage the component. The keys are extended with a specified preload force but remain compliant to navigate well geometry. The preload force is precisely controlled for the well conditions and conveyance method. Once the UST is latched into the profile of the component, the anchor secures the tool in the well, and the linear actuator extends or retracts to shift the component. The keys are fully retractable into the UST to enable the tool to pass by ledges and other restrictions in the well.



Successful shifting to open each of the 10 ICDs in the horizontal well is shown by the expected displacement and force signature that matches the reference log made at the surface.

Ten ICDs confirmed shifted open in two runs

Before the ReSOLVE service's UST was deployed, a surface test was performed in a mockup of a part of the completion to produce a reference log for positively confirming ICD shifting.

The ReSOLVE service's UST was conveyed in the horizontal well on the MaxTRAC downhole wireline tractor system, and in two runs in the well the UST was used to shift open 10 ICDs. Force versus displacement signatures were captured for each shifting operation and compared with the reference log to confirm that each ICD had been fully opened. Conventional shifting tools would have not provided any assurance that the ICDs were fully open, necessitating additional production logging runs to confirm ICD status.

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