

# CleanWell® Solutions Enable Operator to Avoid Losses in the Upper Lateral Section

## COST-EFFECTIVE CLEANUP PROGRAM HELPS ELIMINATE NON-PRODUCTIVE TIME

MIDDLE EAST

### CHALLENGES

Provide a comprehensive cleanup solution for a well experiencing static losses in openhole lateral section, and prepare well for completion phase

### SOLUTION

CleanWell® Solutions, which include single-trip tools, chemicals, and a dedicated filtration system.

- » CFG™ software modeling
- » Single-trip Mag Tech® magnets and Vali Tech® filters to recover unwanted debris
- » Tailored chemical pills for casing cleaning
- » Twin vessel cartridge units to filter 2µABS

### RESULTS

- » Recovered 47.3 pounds of debris
- » Filtered approximately 8,000 bbl of brine at an average of 10 bpm
- » Achieved less than 0.1 percent total suspended solids and 35 NTU
- » Avoided fluid losses, NPT, spills, and environmental damage
- » No additional authorization for expenditures (AFE)

### OVERVIEW

A major operator in the Middle East needed an all-encompassing wellbore cleanup solution for a trial well experiencing static losses in the well's openhole lateral section. Wellbore cleaning tools, chemicals, and filtration services would be needed to prepare the well for completion, so finding the right combination was critical.

With CleanWell® Solutions, Halliburton was able to successfully execute the job, enabling the operator to avoid losses in the upper lateral. This was accomplished with zero non-productive time (NPT) and with no additional costs to the operator's authorization for expenditures (AFE).

### CHALLENGES

The operator required a customized wellbore cleanup program to ensure that the well would be ready for the completion phase. This required a dedicated bottomhole assembly (BHA) solution to avoid inducing fluid loss, along with field-proven cleanup chemicals and a dedicated filtration system.

A major complication was the fact that the openhole lateral had previously been experiencing fluid losses at a rate of 7 barrels per minute (bpm) into the formation. Therefore, it was important that flow rates and equivalent circulating densities (ECDs) were monitored and controlled to prevent any losses.

### SOLUTION

Halliburton subject matter experts developed an integrated solution to maximize efficiencies and protect the operator's production targets.

CleanWell® mechanical wellbore tools were recommended to recover debris and enhance well hydraulics during the displacement by using a ball-activated circulating sub. A wellbore cleanup pill train was designed and optimized using Completion Fluid Graphics (CFG™) modeling, which delivers full predictions of pump rates, velocities, and ECDs. A dedicated filtration system was specified based on well fluid properties, volumes and costs.

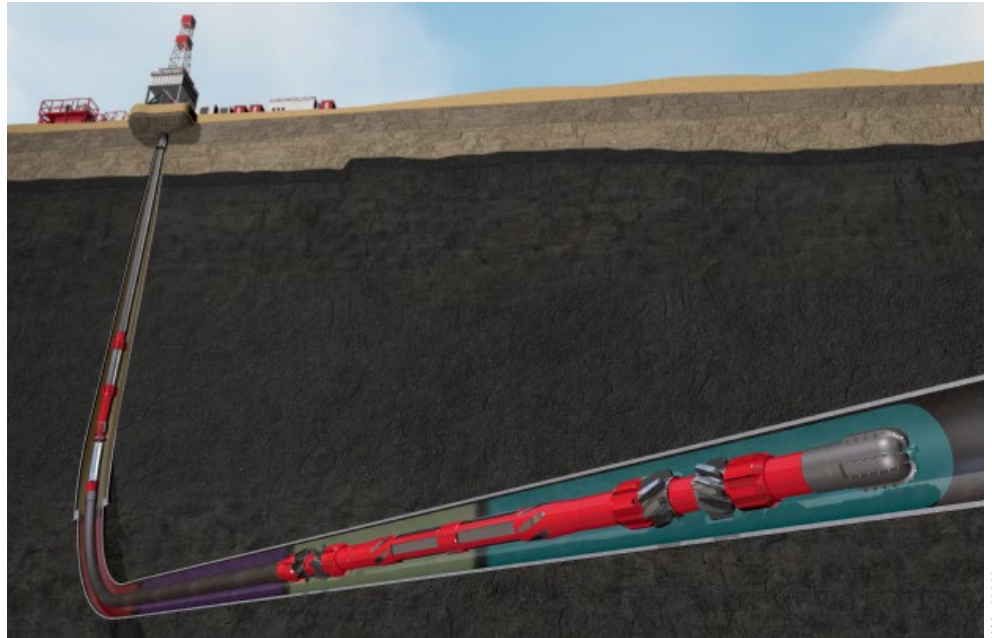


## RESULTS

Halliburton Mag Tech® magnets and Vali Tech® filters recovered a total of 47.3 pounds (21.45 kilograms) of debris. Debris material ranged from metallic fines and shavings to larger coarse-metal debris and perforation debris.

The wellbore cleanliness specifications set by the operator were achieved in a cost-effective manner. All completion brine (approximately 8,000 bbl of brine) was filtered down to a 2-micron absolute standard through dedicated cartridge units at an average rate of 10 bpm. Final fluid returns showed less than 0.1 percent total suspended solids and 35 NTU.

The operator was impressed with the planning and execution of the integrated solution, and with how smoothly and professionally the solution was executed. The operator's team agreed that, had these recoveries not been made, NPT would have occurred during the completion phase, adding costs to the operator's AFE.



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