MATURE FIELDS

CASE STUDY

Operator Saves Rig Time And Costs Using Expandable Liner Hangers

VERSAFLEX® EXPANDABLE LINER HANGER REPLACES CONVENTIONAL SYSTEM AND DELIVERS SUPERIOR CEMENTING OPERATION AND WELLBORE ISOLATION

NORTHERN AFRICA

CHALLENGES

- Provide a robust liner system that maximizes the ability to clean the wellbore and minimizes risk of losses during cementing operations

SOLUTIONS

- VersaFlex® expandable liner hanger (ELH) system deployed with a high torque running tool to allow maximum circulation rates and rotation while minimizing ECDs before and during cementing operations

RESULTS

- Installed the VersaFlex ELH system with zero NPT and zero HSE events
- Provided a reliable and proven ELH system suitable for rotation and high circulation rates, minimizing rig time and costs
- Reamed the entire openhole section
- Washed the liner to depth with high circulation pressures
- Cemented the liner without losses and with rotation throughout operations
- Provided superior wellbore isolation compared to previously deployed conventional liner systems

OVERVIEW

An operator's previous wellbore construction operations proved challenging due to the inability to rotate the conventional liner system at depth and during cementing operations, ultimately resulting in fluid losses.

The conventional liner hanger systems created a tortuous path past the set liner hanger slips, increasing the equivalent circulating density (ECD) during planned cementing operations, exceeding the formation breakdown pressure, and inducing losses. Maintaining the ECD below formation breakdown pressure prior to cementing limited the available circulating rate to perform well cleanup. This sub-optimal clean-up operation, resulted in higher drag forces and torque, which prevented the liner from rotating within the torque limits of the system.

CHALLENGE

To achieve positive wellbore isolation, the operator required a liner hanger system with high torque capabilities that could be set without inducing additional pressure loss prior to cementing operations, minimize ECD before and during the cementing process, and maximize the ability to clean the wellbore prior to cementing. In addition, high torque and circulation rates were necessary to help ensure the ability to reach total depth (TD) and rotate throughout cementing operations.

LINER ROTATION DURING CEMENTING OPERATIONS MAXIMIZED RATES AND MINIMIZED FLUID LOSSES — SAVING RIG TIME AND OPERATIONAL COSTS.

SOLUTIONS

Halliburton listened and responded to the operator by recommending its VersaFlex® expandable liner hanger (ELH) system, which could deploy the string to TD, circulate at high rates without hanger pre-setting risk, and rotate with high torque capability.

The VersaFlex ELH design helps ensure no incremental pressure drop occurs within the circulation system before or during cementing operations because the system does not rely on conventional liner hanger slips that are set prior to cementing. In addition, the system minimizes surge on the formation before pumping cement because ball seat shear-out events are unnecessary.

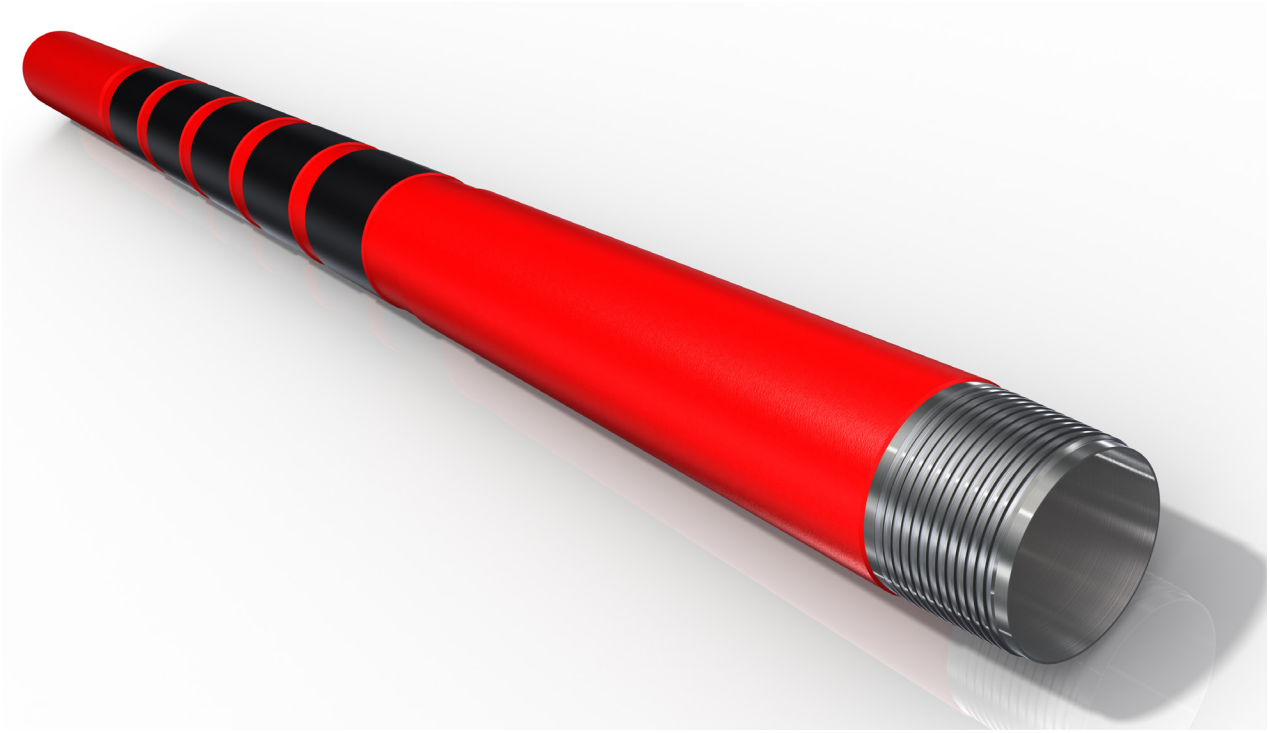
When set, the VersaFlex ELH system provides an independent, robust liner-top seal while minimizing leak paths at the liner top.

RESULTS

Halliburton successfully deployed the VersaFlex ELH system with reaming throughout the openhole section and high circulation rates to aid in hole cleaning. With previous systems, hanger pre-setting risks prevented successful reaming operations and limited circulation rates significantly.

Once at depth, Halliburton circulated the hole clean at high flow rates and completed cementing operations without losses, maintaining rotation throughout operations. Running tools were activated and the liner hanger set successfully — providing an independent liner-top seal. The running tools were released and retrieved as designed.

Halliburton delivered the job with zero non-productive time (NPT) and zero HSE events, minimizing rig time and operational costs and maximizing asset value. A subsequent cement bond log confirmed the ELH system provided superior wellbore isolation compared to previous liner systems.



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