

Southeast Sumatera, Indonesia

Expandable liner hanger system provides reliable solution in challenging offshore well

VersaFlex® expandable liner hanger delivers unmatched performance to address massive fluid loss

CHALLENGE

- Challenging wellbore environment
- Fluid-loss rate of 1,250 bbl/hr (20.83 bbl/min) during ELH deployment to TD

SOLUTION

VersaFlex® ELH with high-torque running tool

RESULT

- Successfully deployed ELH to TD, expanded ELH system, and retrieved running tool despite challenging conditions
- Since initial deployment, operator has installed additional VersaFlex® ELHs with zero HSE or SQ issues

Overview

Pertamina Hulu Energy (PHE) Offshore South East Sumatera (OSSES) is a state-owned national oil company in Indonesia that operates in the offshore area of southeast Java. This operator drilled its first well in this field in 1987, which is currently considered mature. The field presents challenging conditions, such as severe fluid-loss during drilling and water breakthrough.

Halliburton identified a potential opportunity in this difficult geological formation where a conventional liner hanger (CLH) would be limited. In 2021, Halliburton introduced the VersaFlex® expandable liner hanger (ELH) system to the operator, and these systems are now installed in 14 of their wells to date. Despite the challenging well environment, the VersaFlex ELH has consistently performed without flaw and has never failed to meet job requirements since the first installation.

PHE OSSES required a 7 × 9 5/8-in. VersaFlex ELH to be deployed in a perforated liner, along with hybrid swellable packers. During deployment, the operator encountered a massive loss rate of up to 1,250 bbl/hr (20.83 bbl/min) upon entry of the pay zone.

Despite the severe losses, the VersaFlex ELH was successfully deployed to total depth (TD) without issue and the integral liner hanger packer expanded as expected using a VersaFlex® ball set running tool. Setting success was confirmed in real-time through a positive overpull. The running tool was subsequently retrieved to the surface with zero health, safety, and environmental (HSE) or service quality (SQ) issues.

The successful installation of the VersaFlex ELH in this well set a record for ELH deployment in an environment with massive losses.



The VersaFlex® ELH is a dependable and reliable solution to manage complex fluid-loss environments.



Challenge

While drilling the 8 1/2-in. openhole section, upon entry of the pay zone, a loss rate of up to 1,250 bbl/hr (20.83 bbl/min) was recorded, which led the operator to proceed with blind drilling.

Deployment of a liner hanger system to a setting depth of 6,015 ft MD while managing a loss rate of 1,250 bbl/hr (20.83 bbl/min) requires a thorough risk assessment. Under the assumption the string is filled with fluid and the annulus is empty, differential pressure during the ball drop could increase the risk of lower setting pressure during expansion.



Solution

To maintain the annulus column, PHE OSES also attempted to fill the backside with seawater as much as possible while tripping in, which achieved rates up to 1,300 bbl/hr. These high rates could present the risk of swabbing the rubber element with traditional CLH systems.

The VersaFlex® ELH is a reliable system for this application. Its design, which features bonded elastomers and extrusion rings, effectively mitigates swabbing issues. With no moving parts, slips, or cages, the simple design of the VersaFlex ELH helps eliminate the risk of presetting the liner hanger/packer, particularly in massive loss environments—an issue that could be encountered with a CLH.

Halliburton worked closely with PHE OSES to address all risks associated with the operation beforehand. Competent field personnel executed the job without deviation from the approved wellsite instructions.

Result

Halliburton successfully deployed the VersaFlex ELH system to TD with zero HSE or SQ issues. The system was set using a VersaFlex ball set running tool, and the expansion process was clearly indicated. An anchor test was performed effectively. Subsequently, the running tool was released as designed and successfully retrieved to surface.

In scenarios with massive well loss where CLH systems might fall short, the VersaFlex ELH design offers a robust barrier.

Through collaboration and continuous improvement, Halliburton delivered a reliable, engineered ELH solution to enhance efficiency and minimize CAPEX costs for the operator through optimized inventory assets.

The VersaFlex ELH can accommodate various wellbore conditions, which makes it a versatile choice for diverse drilling scenarios, particularly in environments prone to massive well loss.



TD

successfully
reached and ELH
system expanded



ZERO

HSE or SQ issues
with additional
installations

For more information, contact your local Halliburton representative or visit us on the web at www.halliburton.com

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