DATA SHEET

HALLIBURTON

Well Cementing Solutions
Cementing Software

Lost Circulation Wizard™ software

Predict the optimal LCM/fluid package to mitigate losses during and after cement operations

FEATURES

- Predicts TOC (i.e., 2D fluid position) for operations with lost-circulation events
- Forecasts job loss rate and volume per fluid pumped
- Lost-circulation material (LCM) type and concentration optimization analysis
- Evaluates hydraulics and lost-circulation dynamics throughout the operation, including surface pressure, equivalent circulating density (ECD), and pressure at the lost zone, fluid tops, and rate in/out

BENEFITS

- Tailors the optimal LCM/ fluids package to mitigate lost circulation
- Measures the impact of losses on top of cement (TOC)
- Post-job pressure match identifies lessons learned and improvement strategies
- Cost-mitigation assessment of losses based on LCM strategy

Overview

Lost circulation occurs in approximately 20 to 25% of drilled wells and costs the industry USD four billion annually. Currently, engineers use their experience and previous well data to design treatments. However, this approach lacks flexibility for different fluid placement strategies. Factors, such as well geometry, downhole fluid properties, lost circulation material (LCM) features, and the characteristics of the loss zone affect wellbore dynamics during these events. Therefore, a more systematic solution is necessary.

The Lost Circulation Wizard™ software offers an advanced solution through the combination of wellbore hydraulics with loss zone dynamics. This software can predict the optimal combination of LCMs and fluids for use.

Tailored fluid/LCM package to achieve optimum top of cement (TOC)

The Lost Circulation Wizard™ software can tailor various aspects of cement placement that involve LCMs, fluid recipes, and placement conditions to address specific lost-circulation challenges. The software uses a hydraulics engine model that simulates downhole conditions and fluid dynamics to predict slurry behavior under various temperatures and pressure during cement operations.

First, the size of the loss zone is determined through a hydraulic match that compares simulated hydraulic parameters with actual data acquired during the cement operation. After the loss zone size is determined, the model uses that data to predict the loss rate, volume, and pressure during cement operations. The model examines how LCM- laden fluids form a filter cake when lost into a formation and models how the cake builds up to eventually reduce losses to a manageable level. The software's hydraulics engine model, loss zone characterization, and filter-cake dynamics enable Halliburton engineers to design the optimal fluid density, rheology, pump rates, and LCMs to seal fractures or permeable formations and minimize losses.

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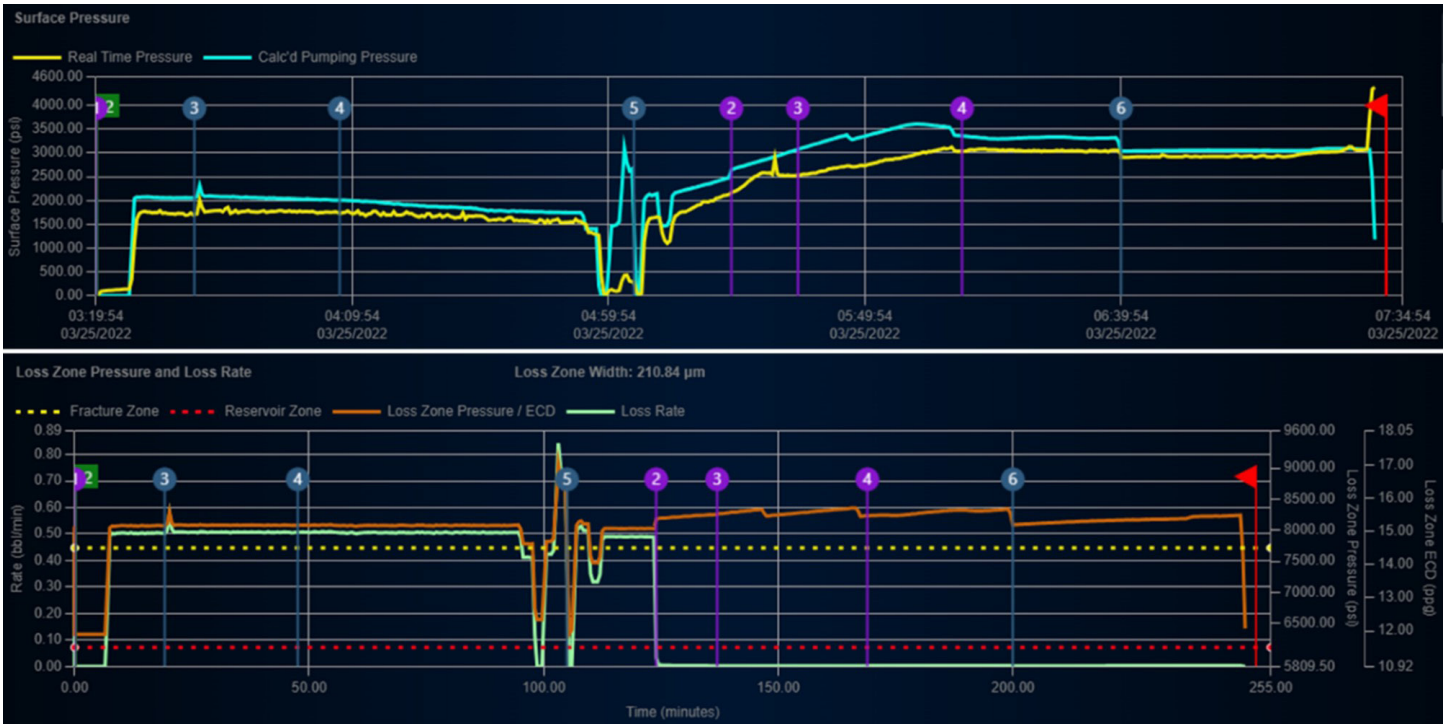
Particle Wizard™ software ensures optimal LCM concentration for safe passage

The Lost Circulation Wizard software, used alongside the Halliburton Particle Wizard™ software, further optimizes the LCM/fluids package placement in the loss zone. The Particle Wizard software evaluates LCM particle selection and concentration for safe passage, transport efficiency, and static suspendability. Halliburton technical professionals can strike a balance between the most effective LCM/fluids package with one that will clear critical dimensions when both software solutions are employed during the job design and tailoring phases.



Lost Circulation Wizard™ software provides the capability to evaluate the accuracy of pressure match results by comparison of the calculated pump pressure with the real-time measured pressure response by the well during execution. Downhole ECD and loss-rate mitigation are also determined during planning, post-job evaluation, and investigation phases.

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

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