

Post-Operative Analysis of Cementing Job–Field Validation

Challenge

Cementing evaluation and remediation is costly. A post-operative analysis is a critical process used to find issues and identify the variables to adjust to achieve the success of cementing. This process requires experience, skills, time, and dedication in understanding the indications from the field data and simulations.

Solution

Implement CEMPRO in post-operative analysis for early indication of success without the need for records. To eliminate the need for remediation, reduce the well construction time and costs, and optimize the costs for cement evaluation.

Results

The results provide a validation of the pressure calculation and fluid displacement simulation by CEMPRO in comparison to the cementing records and logs. The analysis provided useful indications of the cementing job for the well. It guided the design and savings for future cementing in both the operating time and throughout the productive life of the well.

This case study is reproduced courtesy of Lenin Diaz (<https://better-cementing-for-all.org>)

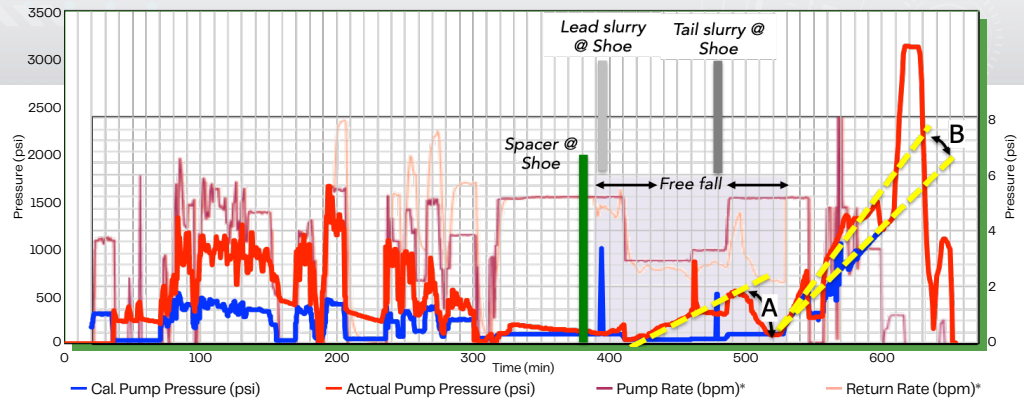


Figure 1: CEMPRO job evaluation comparing simulated and actual pressures; A and B highlight lead and tail slurry channeling

Actual cementing jobs often deviate from plan due to mud contamination, channeling, lost circulation, fluid influx, and hole-size variation. Identifying the true top-of-cement, evaluating mud channels, and assessing bond quality requires combining field data, cementing logs, and simulations.

LINQX's CEMPRO enables full job re-runs using measured pump pressures, flow rates, fluid densities, and volumes. This post-job evaluation highlights deviations in hydraulics, temperature, and displacement efficiency.

For a 2,390m well in Mexico (in partnership with PEMEX and Sniper Oilfield), CEMPRO simulated the top-of-tail (TOT) at 1,300m (50% tail) and 2,000m (100% tail). These matched ultrasonic log measurements, confirming CEMPRO's accuracy and eliminating loss concerns (Figure 1) while quantifying channel severity (Figure 2).

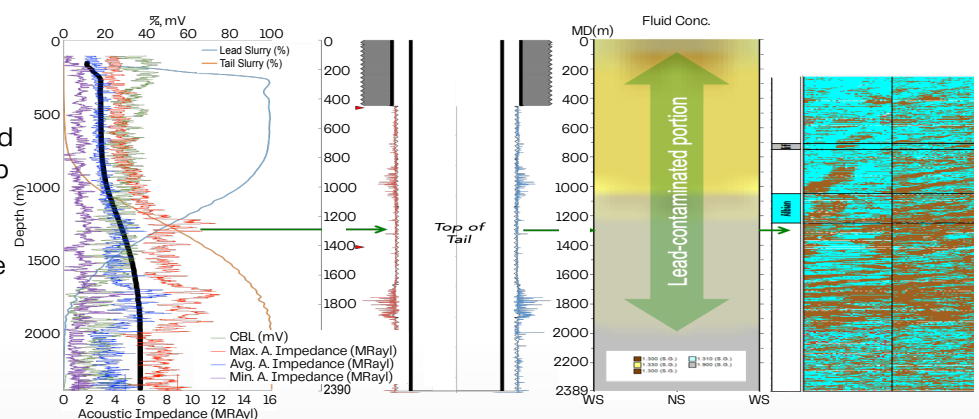


Figure 2: Simulated cement concentrations matched acoustic logs in a post-operative analysis.

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