Schlumberger

Techlog Cement and Pipe Integrity

Software for evaluation of cement quality and pipe inspection data

APPLICATIONS

- Cement quality evaluation
- Pipe inspection data analysis

BENEFITS

- Determine optimum intervention timing
- Evaluate hydraulic isolation in the annulus or behind the pipe
- Evaluate pipe conditions for corrosion, restrictions, or scale
- Enhance and manage collaboration between all stakeholders

FEATURES

- Automatically loads and displays cement and pipe integrity data from any vendor
- Integrated with all other borehole data
- Advanced 2D and 3D visualization
- Deterministic, repeatable, and auditable methodology
- One-click summary reporting for audit and regulatory purposes
- Uses Techlog workflow architecture for single and multiple wells
- Works with acoustic amplitude, impedance, and attenuation data
- Waveform viewer and analysis tools
- Waveform peak detection and flexural waveform analysis
- Computes cement coverage and probability of isolation and associated confidence
- Examines internal radius and pipe thickness for pipe integrity
- Detects ovality, penetration, metal loss, scale build-up

Increasingly, audit requirements imposed by regulatory authorities require operators to demonstrate the quality of the cementing operation during the construction of a well. This can be at intermediate casing points in the well, but is especially important across the reservoir interval.

Drilling engineers need to ensure that the appropriate barriers are in place at the end of well construction before they hand the well over to other departments (production, reservoir, etc.), or before the well is abandoned. Production and completion engineers need to know the cement is isolating the appropriate production and injection zones.

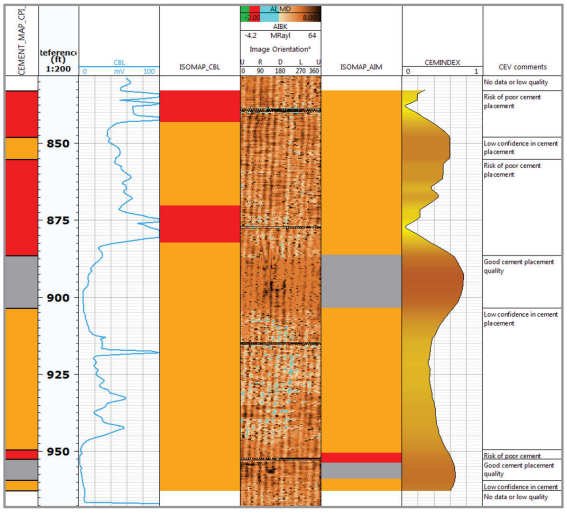
Establishing cement integrity

Evaluating the effectiveness of each cementing operation is an essential task during the construction of the well and for the subsequent producing life of the well. The Techlog* wellbore software platform provides a comprehensive set of tools to establish the probability of isolation through the assessment of cement coverage and quality.

It is imperative to establish full isolation of relevant producing intervals from both a safety and production-management standpoint. A wealth of downhole data can be acquired to assess the coverage, thickness, and sealing probability of the cement once it has been emplaced. The Techlog platform can consume all such data to facilitate the most comprehensive analysis possible.

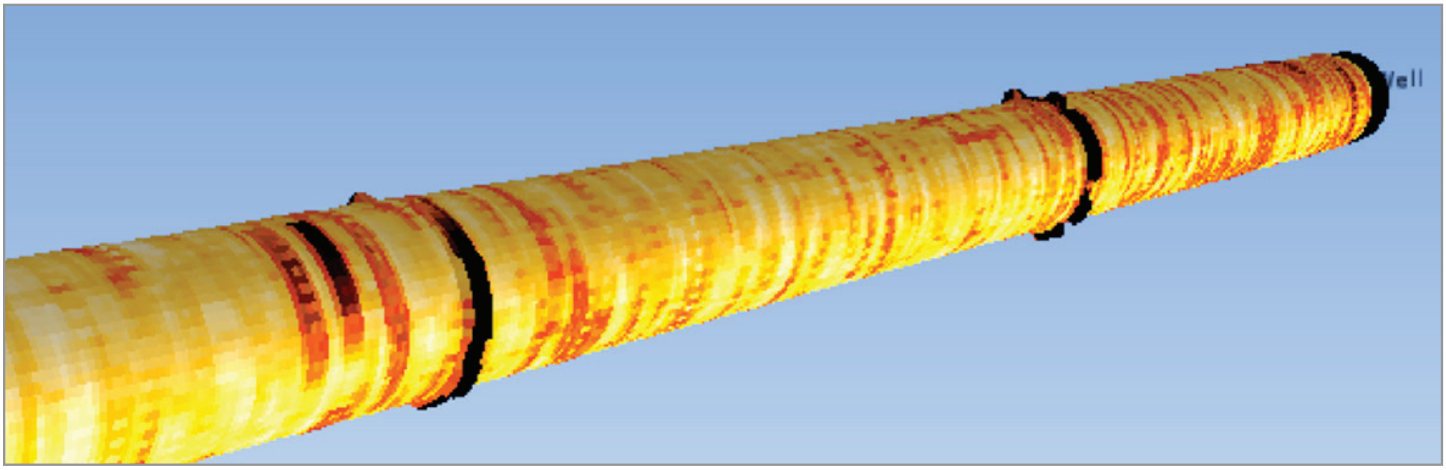
The Cement and Pipe Integrity module automatically recognizes relevant data on load and provides both display and isolation probability assessment. All data and parameters are stored within the Techlog project for audit and replay purposes. Multiple well comparison of cement quality is rapidly achieved, while collaboration with other users of downhole data is enabled to ensure that all stakeholders are always up to date with the status of the cement quality.

One-click reporting is available within the Techlog platform, enabling easy generation of the relevant reports required by regulatory authorities.



Waveform data and cement maps are used to assess probability of isolation.

Techlog Cement and Pipe Integrity



Pipe inspection data displayed as a 3D view.

Pipe integrity evaluation

For pipe integrity inspection, the Techlog platform can automatically identify all relevant data on load and display in advanced plots to enable detailed review. A summary report is available for each connection of the pipe.

The data acquired is used to assess metal loss and penetrations of the pipe to estimate degree of corrosion. This data can also be used to construct a radius histogram for estimating the radius and ovality of the pipe, and detect the build-up of scale.

Within the Techlog platform, repeat inspections are easily saved and reviewed in a time-lapse manner. The information derived from the analysis is a crucial input to the decision on when to perform an intervention workover to replace or repair damaged pipe.

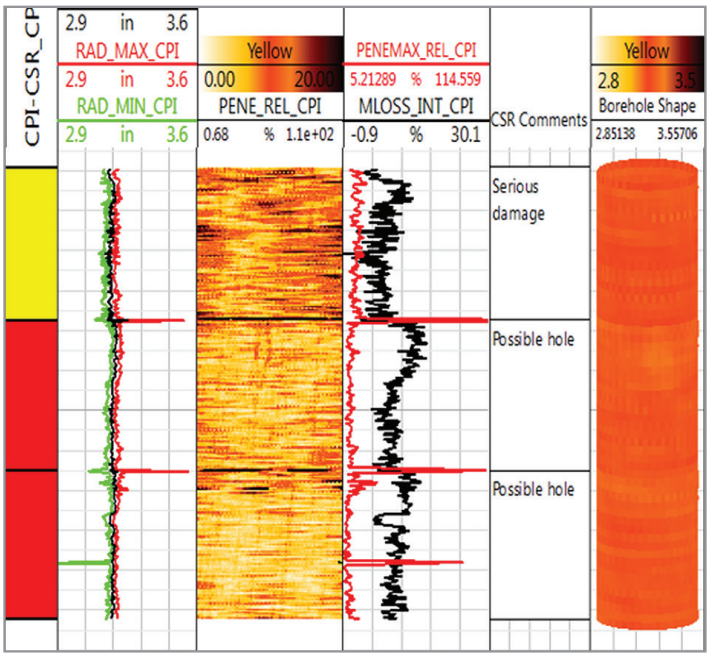
Enhanced collaboration

The Cement and Pipe Integrity module benefits from the comprehensive range of data manipulation and display tools available in the Techlog platform. Waveform handling tools—such as helicoidal unpacking of data and image orientation with relative bearing, together with 2D and 3D plotting tools—provides detailed displays for thorough analysis of all cement and pipe inspection data.

Being within the Techlog platform, the module is fully integrated with all other borehole data. Multiple stakeholders can collaborate, enabling them to keep up to date with the latest analysis results for both cement and pipe quality.

Availability

The Cement and Pipe Integrity module is fully implemented within the Techlog platform and is commercially available under license from Schlumberger with Techlog 2014.



Pipe inspection data displayed as a quality map.

slb.com/techlog

Schlumberger