

Acquiring a baseline casing thickness log for future corrosion monitoring without pulling the hanging string

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Abstract

The gas and product storage industry requires periodic corrosion evaluation of production casing. Conventionally, this requires moving in a rig and pulling the hanging string(s) so that the production casing is exposed and can be inspected directly. If no damage is observed, the hanging string is reinstalled, and the well is restored to its operating configuration.

This paper describes how the combination of ultrasonic thickness measurement and electromagnetic (EM) thickness measurement can be used to confidently establish a baseline for future comparison.

The ultrasonic measurements are recorded over the production string before installing the hanging string to provide an accurate status of the actual thickness of the production string. Ultrasonic logs must be run in liquid; hence, acquiring this data at the time of construction simplifies the operation and minimizes the acquisition cost.

Conversely, the EM thickness log can be acquired in gas or liquid and reacts to all metal present at any given depth in the wellbore. Performing the EM thickness log inside the hanging string after it is installed yields a true representation of the state of the surrounding pipe strings.

With the baseline thickness log in the hanging string recorded, we can simply run an EM thickness log in the well regardless of the fluid in the hole and compare this with the initial baseline log to verify if any corrosion has occurred. If no corrosion has occurred, operations can continue, and there is no need to pull the hanging string(s).

Because this dual logging approach is an additional investment up front, it is often deferred, but the future cost savings can be substantial. This paper includes a case study in which a salt dome storage operator acquired the baseline logs to enable the storage operator to monitor the 20-inch (508-mm) production string at any moment in the future without pulling the two leaching strings currently in the well.

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