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A CRITICAL LOOK AT THE NITROGEN/BRINE INTERFACE MECHANICAL INTEGRITY TEST

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Abstract

The most commonly used Mechanical Integrity Test (MIT) method for solution-mined storage caverns in the Gulf Coast is the nitrogen/brine interface test. Developed in the 1980s, this test is used about 100 times each year to test domal salt storage cavern wells in Texas, Louisiana, Mississippi, and Alabama. The level of analytical sophistication used to interpret data collected during the test has evolved over the years. However, many tests are executed today that do not necessarily rely on the most accurate evaluation technology available. Some well tests are proclaimed to have “passed,” when in fact, the injection of cool or cold nitrogen into the well annulus has inadvertently “hidden” a possible leak.

This paper examines the historical development of the test, the evolution of interpretation methods, and provides some new research on the important heat transfer phenomena that impacts the assumption that the temperature log in the brine tubing accurately represents the annulus nitrogen temperature.

Key words: Mechanical Integrity Test, MIT, nitrogen/brine interface test, heat transfer

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