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**PRESSURE OBSERVATION TESTING  
SOLUTION MINED UNDERGROUND STORAGE CAVERNS IN KANSAS**

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**ABSTRACT**

The KDHE (Kansas Department of Health & Environment) regulates approximately 500 underground storage cavern wells in the state (the vast majority of which are used for LPG storage). The KDHE has recently promulgated new cavern regulations with sweeping changes -- one of the most dramatic of which is the requirement for operators to periodically prove the integrity of their storage caverns through formal MITs (mechanical integrity tests).

In other jurisdictions, the industry standard (LPG) storage cavern MIT method has been the nitrogen interface observation test. However, this method is not always feasible (or even possible) in caverns solution-mined from bedded salt formations (such as exist in Kansas).

T&C Consulting acquired the specialized equipment and instrumentation for conducting MITs using an alternative method. This alternative MIT (termed the "pressure observation test" -- or POT) relies primarily on precision pressure observation for determination of integrity.

In some respects, the POT is more conclusive than the standard interface test, in that it tests the entire cavity (instead of just the upper portion). POTs have been conducted by at least one operator on bedded salt caverns in Texas for several years. However, to our knowledge, formal POTs have not previously been conducted in Kansas (where caverns tend to be shallower and smaller than in Texas).

T&C began providing cavern MIT services (using the POT method) in Kansas in 2003. As of late, 2003, T&C has successfully proved the integrity of four Kansas caverns via the POT method.

This paper reviews the major components of the POT method and the specialized equipment for conducting the test. It presents some case histories of recent Kansas tests, and discusses the primary advantages and disadvantages of the POT.