

**SALT CAVERN INTEGRITY EVALUATION
USING DOWNHOLE PROBES
A TRANSGAS PERSPECTIVE**

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ABSTRACT

The operation of an underground solution-mined storage cavern in bedded salt is NOT like any other surface-based facility or piece of equipment. One cannot readily use our human senses (i.e., taste; smell; hear or touch) in discerning its operating state; so maintaining and troubleshooting is more complex and difficult. This requires dealing with a facility that is remote and at a distance. Hence the tools used are of an interpretive nature.

Probably the most common tool in analyzing the condition or behavior of a cavern is the basic Pressure vs. Time Graph. This may point out abnormalities, however, only after the fact of a major change occurring in the cavern.

The ability to access actual downhole cavern pressure and temperature data has many benefits that are useful for cavern monitoring and integrity evaluation. One of the main purposes TransGas Limited uses this data is for the determination of gas-in-place inventory volumes. Additional uses are in the confirmation of spatial volumes or changes in spatial volumes that may be due to cavern creep (shrinkage/closure) or downhole abnormality such as fluid infill or collapse of the side walls or roof areas.

This paper presents a general overview of TransGas' perspective, experience and future expectations with the use of downhole pressure and temperature probes for cavern integrity evaluation with special emphasis on storage cavern volume determination.

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