

## ENABLING A LONG-TERM STORAGE INTEGRITY MANAGEMENT BY LINKING STAND-ALONE WELL INTEGRITY CHECKS

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### Abstract

Well integrity became an important topic within the entire cavern industry – not only amongst companies involved in gas storage. Recent events, public attention and the aim for a safe long-term operation paired with update and release of technical standards with respect to cavern design and well integrity affects the cavern industries' daily business.

Applicable technical standards ask for monitoring the cavern well system aiming for a continuous functional integrity throughout its lifecycle. Typically, related integrity checks are performed by investigating wellhead components, the condition of the production casing and the cementation. Furthermore, periodic sonar surveys of the cavern are commonly run. Nevertheless, these stand-alone investigations can be combined in order to allow for a proper judgment of the cavern system's integrity status and even more importantly to pursue a best practice strategy.

This is not only reflected within API RP 1170 where it is stated that each operator shall take a holistic and comprehensive approach to monitor cavern integrity in order to derive a state-of-the-art methodology for design, monitoring and engineering evaluation. Such considerations are also reflected as an integral part of technical standards such as ISO/TS 16530-2. There, an additional focus is the integration of risk aspects into the well integrity context.

The purpose of this paper is to present examples of potential ways to evaluate and combine standalone integrity checks in order to aim for a best practice strategy for single well assessments. Furthermore, the paper will show options to aggregate the performed single well focus assessments into a long-term and value-added storage integrity management approach.

**Key words:** Well Integrity, Cavern Integrity, Cavern Design, Cavern Monitoring, Integrity Evaluation