

## **ABSTRACT**

This paper presents the results of a generic study to evaluate the feasibility of off-loading natural gas from liquefied natural gas (LNG) tankers directly into salt storage caverns. The study investigates the effects of the temperature of the gas injected into the cavern, the effects of the working gas/base gas ratio, and the effects of gas withdrawal rate on cavern stability. The results indicate that the gas injection temperature has very little impact on cavern stability. However, the high gas turnover required by such a facility results in large temperature changes in the cavern during gas cycling. The large temperature drop that occurs during gas withdrawal can result in tensile fracturing of the cavern periphery due to thermal contraction of the salt. The temperature changes in a cavern can, however, be reduced by decreasing the ratio of working gas to base gas and/or by reducing the rate of withdrawal.

**Keywords:** Cavern Stability, Thermal Effects, Rock Mechanics, LNG