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USING LOCAS SOFTWARE TO BETTER UNDERSTAND THE BEHAVIOR OF SALT CAVERNS

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ABSTRACT

LOCAS is a semi-analytical and finite element code that provides 2D axisymmetric analysis of the short-term and long-term behavior of solution-mined caverns. Simulation of the non-linear and time-dependent mechanical behavior of salt caverns requires advanced constitutive models and accurate numerical computations. In addition, because many other phenomena are involved in the behavior of solution-mined caverns, special procedures are required to analyze thermal, chemical, and hydraulic phenomena. Although modeling a cavern is important in itself, many geotechnical engineering projects also involve modeling the well. One part of LOCAS includes the full modeling of the well and allows finite elements computation of the mechanical behavior of the cementation. LOCAS is equipped with special features that take into account the numerous aspects of the complex geotechnical structures of salt caverns. LOCAS can be helpful, for instance, in the issue of cavern abandonment, as illustrated in this paper.

Keywords: Cavern behavior, cavern abandonment, numerical computation, cementation.