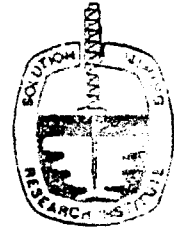


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PAPER



Stability Analysis of Underground Structures in Rock Salt  
Utilizing Laboratory and In-Situ Testing and Numerical  
Calculations

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## Abstract

An engineering concept for the evaluation of structural stability is presented. The concept is based on the idea that the evaluation of the stability of underground structures must include numerical calculations, in-situ measurements, short- and long-term laboratory tests and engineering experience. As far as the numerical calculations are concerned, the geomechanical modelling is described by presenting the input data such as material properties, loading and boundary conditions and by explaining the constitutive laws for modelling rock salt. Laboratory techniques for obtaining the input data and the constitutive material laws are described in this paper, as well as the in-situ measurements such as extensometer and convergency measurement. The measurements are integrated into the engineering concept by using numerical calculations for better interpretation. The stability investigations are demonstrated with three practical cases of underground structures namely the convergence of a drift, the influence of a heated up borehole on the deformation of a rock salt pillar.