"INVDIR": A CONVENIENT AND EFFICIENT SOLUTION MINING MODEL

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I - INTRODUCTION

For the last twenty years, GAZ DE FRANCE has been creating leached salt cavities for the storage of natural gas. A soon as leaching operations started, the need to ensure the longevity and safety of these cavities under all circumstances led to the use of storage sizing rules both for general application and specific to each cavity.

These rules, based on the results of tests and geotechnical computations, are generally defined in collaboration with the mining authorities, and must therefore be strictly complied with. For a cavity, they concern various geometric parameters such as volume or diameter, and they generally set the authorized limit values.

In order to ensure that these requirements were satisfied, means to monitor and predict cavity leaching were needed as soon as the first salt cavity storage project got under way in TERSANNE in 1968.

Very rapidly, additional advantages to the technique of monitoring the leaching process came to light. Geotechnical studies revealed the influence of cavity shape on loss of volume during operation due to a well known phenomenon of rock salt creep. A compact cavity shape, especially in low quality salt such as that found at TERSANNE, avoids an excessive decrease in cavity volume over time.

In addition to considerations of safety and respect for rules, there are also economic advantages to be gained from close control of leaching operations.

To achieve this goal, a numerical model for prediction and continuous monitoring of cavity leaching must be used.