

STRUCTURAL RELATIONSHIP BETWEEN MINE OPENINGS AND SOLUTION CAVERNS

by
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1.0 SUMMARY

Rock mechanics studies conducted in two significantly different salt structures -- solution caverns and mine openings -- disclosed a direct structural relationship between the two, which has been identified by using a rheological finite element computer program, REM. This relationship can be utilized for analysis and design of both mine openings and solution caverns, and is especially useful for solution caverns, in which direct rock mechanics measurements are difficult if not impossible. This paper discusses the following three aspects of this relationship:

1. Laboratory and field instrumentation work leading to the establishment of the REM computer simulation models in mine openings;
2. Analysis of solution cavern behaviors using the REM computer models;
3. Relationship between solution caverns and mine openings in their long-term behaviors.