

STORAGE CAVERN PROBLEMS IN THIN SALTS

**Thomas R. Magorian
consulting geologist-geophysicist
133 South Dr. Amherst NY 12226
716 834 0006**

ABSTRACT Horizontal caverns have been recently proposed for storage in thin salt beds. They have the potential, properly solution-mined, of greatly extending the geographical area in which safe and efficient cavern storage could be available, for gas and compressed-air energy as well as liquids.

The most significant hazards to horizontal cavern development occur along the top of the salt bed, which may be too close to the roof of the cavern if the configuration of the upper salt surface is not known exactly.

The salt can end abruptly at a sinkhole. These are surprisingly common in the thinner salt beds, with dramatic examples from the Permian and Michigan basins. Since all salt beds show creep or flow phenomena (at least partially dependent on the bed thickness, including turbulence, but the largest sudden, dramatic changes occur at thrust faults, commonly found in even the most stable salt basins. These and other irregularities may bring a long, horizontal cavern in contact with interbeds of potash, anhydrite, shale and shaly dolomite.

Several novel methods can aid in resolving these problems: particularly, gravity and high-resolution seismic for planning, and MWD during the horizontal development drilling.

©2023 – Solution Mining Institute

Full Paper is Available in the SMRI Library(www.solutionmining.org)