

POTENTIAL FOR DEVELOPMENT OF STORAGE CAVERNS IN DEEP SALT FORMATIONS

by

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1.0 INTRODUCTION

The use of solution caverns for storage in salt formations has been studied for many years. Recently, the importance of this medium has been recognized in relation to the increased need to store energy-related material such as radioactive waste, crude/refined oil, natural gas, and compressed air. The design of salt dome caverns involves the efficient use of storage volume and the analysis of dome stability including integrity of well casings. The viscous nature of salt, boundary effects of loading, temperature, and permeability add to the complexities of the design.

The analysis of surface movement due to underground openings depends greatly on accurate description of the geometric and physical nature of the problem, use of a realistic constitutive model including assessment of property coefficients of complex earth materials, and analytical or numerical procedures capable of solving the mathematical formulations. Serata [1] was among the first to develop design principles for use of a salt cavity as a repository for radioactive nuclear waste.