

# Salt Thickness in the Midland Basin: Regional Screening Criterion for Salt Cavern Development

*by*

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## EXECUTIVE SUMMARY

Regional variation in the thickness of the major bedded salt-bearing interval of West Texas, the Salado Formation, provides a screening criterion for separating areas where the salt is heterogeneous, complex, and potentially less stable from areas where salt is more homogeneous. This information can be used to provide guidance about advantages and risks of siting caverns in various geographic areas and depths. This paper presents preliminary results used to define areas to be examined. A more detailed follow-up is now under way.

Areas of reduced and variable salt thickness and relatively shallow depths to the top of the salt are identified on the eastern shelf of the Midland Basin in Garza, Borden, Howard, Glasscock, and Reagan counties; along the Pecos River in Crockett, Upton, Crane, and Pecos Counties; and along the western edge of the Central Basin Platform in Ward and Winkler Counties. Reconnaissance data suggest that salt may be locally or regionally actively dissolving from these areas.

Salt thinning in areas where the top of salt is relatively deep (>1500 ft) is noted south of the Matador Arch in Cochran, Hockley, and Lubbock counties, and locally along the eastern edge of the Central Basin Platform in Gaines, Andrews, and Ector Counties. The thinning in these areas is tentatively interpreted as dominantly the result of deposition of thin salt or Permian salt dissolution. In all the areas of thinning, sedimentary patterns suggest that facies changes may also change the quality of the salt (salt purity, water content, bed thickness) over short distances.

In other areas within the Midland and Delaware Basins, salt thickness changes are gradual. However, the potential for local areas of salt dissolution not identified in this regional study, for example those that may be beneath saline lakes, to impact the suitability for salt in these areas as host strata for cavern development was not investigated in this regional study.

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