

Surface Features and Structure Relationships of Active Salt Diapirs, Dead Sea Area

Israel Zak
Department of Geology
The Hebrew University of Jerusalem
Jerusalem, Israel

ABSTRACT

Surface expressions and relief of the deep rooted Sedom and Lisan salt diapirs in the Dead Sea basin, give clues to their genesis, and to their major and detailed structure.

Mount Sedom is a north-south trending, elongated ridge about 11 km in length, located on the southwestern shore of the Dead Sea. It is underlain by a diapiric salt wall, dissolved at the top and covered by residual caprock and some sub-recent sediments. An etched relief, formed through subrosion, is found at the top of the salt mass. The Lisan Peninsula on the eastern shore of the Dead Sea, is underlain by a buried, oval shaped salt dome, some 10 km in diameter.

These structures are young and their relief is rugged and wild. Their surface features include steps, scarps and fissures caused by differential gliding of the salt layers; solution furrows; collapse structures (longitudinal collapse synclines and gra-

bens with corresponding residual anticlines and horsts); a system of karst caves, chimneys and funnels; and a dense structurally controlled, drainage system with blind and hanging valleys.

Detailed geological, petrographical and geochemical study has been made of the diapiric salt, its caprock and the etched surface between the two. A three-dimensional picture could be built up, utilizing karstic caves and chimneys. There is a close genetic relationship between the surface features and the internal composition and structure and growth mechanism. The surface relief of the residual caprock and of the younger sedimentary cover reflects the etched relief which developed at the top of the hidden salt bodies as a result of solution and gliding of the salt layers.

The above approach was applied to an analysis of the unexposed Lisan diapir as evidenced by its surface features. The conclusions obtained are supported by later drilling data.