

# Geology of Gulf Coast Salt Domes<sup>1</sup>

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## ABSTRACT

*More than 300 diapiric structures formed by relatively pure salt are known in Alabama, Mississippi, Louisiana, Arkansas, and Texas. They vary in form, being rodlike, domal, anticlinal, and ridgelike; rise vertically or nearly so; and expand or contract with depth. Some reflect growth by a succession of differently positioned, local uplifts, as well as shifts in the locus of principal growth. Many are capped by residual masses of anhydrite, altered in varying degrees to gypsum, sulphur, and calcite.*

*Modern theory postulates growth resulting from density differences between the salt and surrounding sediments through (1) upthrusting (upward movement of salt through sediments in response to gravitational inequilibrium) or (2) downbuilding (maintenance of an essentially static level by the salt while the surrounding sediments subside). Model studies suggest that variations in overburden and faulting are primary motivators of growth.*

*The source of "parent" salt occurs at variable depths from less than 10,000 to approximately 30,000 feet and is judged to be as much as 5,000 feet thick. It may underlie as much as 150,000-200,000 square miles and have a volume of 50,000-100,000 cubic miles. The presence of large amounts of calcium sulphates peripheral to the Gulf of Mexico basin suggests that the salt is a precipitate from brines concentrated in the Gulf basin or in partially restricted marginal basins.*

*Surrounding sediments are arched adjacent to or over the salt masses. They may thin against or over the salt to more than half their normal thickness. Normal faults frequently disrupt them; reverse faults are almost undocumented. Grabens, occasional horsts, multiple offsets in a single or different directions, and radial, tangential or peripheral faults often combine to form complex patterns.*

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<sup>1</sup>Paper not available for publication.