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The Role of Syn-Depositional Salt Tectonics and the Development of Los Chivos Mesa, Northeast Mexico

The stratigraphic development of carbonate platforms in the Gulf of Mexico region are subject to many controlling factors. While eustasy, regional subsidence, and sediment production are still important elements, the effects of local syn-depositional tectonics, related to diapiric movement of mobile evaporite, is also vital. Uplift and subsidence caused by salt diapirs are the critical factors in the development of the Los Chivos mesa in the La Popa foreland basin of Northeast Mexico.

Los Chivos mesa is a 16 sq. km isolated carbonate platform that formed in the Early Paleocene on a salt-supported anticline. It is one of several carbonate platforms in the basin that formed on salt related topographic highs only found within the Upper Mudstone Member (i.e. maximum flooding conditions) of the Difunta Group. The Difunta Group represents roughly 5,000 meters of fluvial-deltaic clastic sediment

Los Chivos mesa is roughly 100 meters thick and primarily consists of thin-bedded, mixed skeletal grainstones deposited on the eastern (leeward) flanks of the anticline hinge. The sediment was derived from coral and red-algal framestone buildups found on the western (windward) margin of the structure. A well exposed face of the mesa reveals complex seismic-scale internal structures and geometries related to syn-depositional tectonics. Because of its good preservation and three-dimensional architecture, this platform provides an excellent location to study how carbonate deposition is affected by active salt tectonics. This platform may also be used as an onshore analog to salt related carbonate structures found beneath the subsurface in the Gulf of Mexico Region.