

## **Sedimentation Patterns in a Salt-Diapir Influenced Foreland Basin: Upper Cretaceous to Lower Tertiary Delgado Tongue, Poterillos Formation, La Popa Basin, Nuevo Leon, Mexico**

### **ABSTRACT**

Unique outcrop exposures of two salt diapirs, a secondary salt weld and associated syndiapiiric strata in northeast Mexico offer an important perspective on salt-influenced petroleum reservoirs by allowing recognition and description of salt-related sandstone depocenters. Spectacular progressive unconformities and halokinetic sequences, coupled with laterally continuous exposures, permit accurate correlation and interpretation of syndiapiiric units. Analysis of the syndiapiiric Upper Cretaceous, Delgado Sandstone Member (Poterillos Formation) delineates regional shoreline sediment dispersal locally impacted by diapiiric relief and, the distribution and internal character of salt diapiirproximal sandstone depocenters. Sequence stratigraphic correlation defines striking relationships between highstand (HST) and transgressive system tracts (TST), stratal thinning trends and salt diapiir relief. Transgressive systems tract and highstand systems tract strata show thinning and lithofacies shoaling trends toward diapiirs; however, the latter is more pronounced in the HST and occurs at a greater distance from salt diapiirs (within 1-2 km). Sandstone depocenters, roughly 0.5-1.0 km wide and 0.5- 0.2 km thick, are present in both TST and HST strata and consist of sandier, shallower-water facies. However, depocenters are better developed in TST strata as thicker stratigraphic sections on up-dip diapiir margins. We propose that sandstone depocenters formed by preferential sediment reworking and shelf ridge development on landward diapiir margins during marine transgression. Elevated diapiir relief and higher subsidence rates adjacent to salt diapiirs likely enhanced this process. Additionally, depocenters adjacent to El Papalote diapiir are smaller and contain deeper-water facies than the age-equivalent depocenters adjacent to El Gordo diapiir suggesting that it had higher, broader sea-floor relief.