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Jennifer L. Aschoff[1], K.A. Giles[2] (1) Institute of Tectonic Studies, Las Cruces, NM (2) New Mexico State University, Las Cruces, NM

Sequence Stratigraphic Framework of a Shelfal Siliciclastic Succession in an Upper Cretaceous-Lower Tertiary Salt Diapir Influenced Basin, La Popa Basin, Northeastern Mexico

La Popa Basin, Nuevo Leon, Mexico, is a salt influenced foreland basin with excellent exposures around several salt stalks, a 25 km salt wall and syndiapiric strata. The Delgado Sandstone Tongue, Potrerillos Formation is a shelfal sandstone/siltstone deposited during diapir growth in a complex, wave-dominated, eastward-prograding deltaic depositional system. Typical parasequences comprise offshore shale overlain by lower to upper shoreface sandstone. The Delgado Sandstone contains a lower, progradational parasequence set as part of a highstand system tract that is part of the underlying Middle Siltstone Member of the Potrerillos Formation and an upper retrogradational set that is part of a transgressive system tract that persists into the Upper Mudstone Member. The two system tracts are separated by an erosional sequence boundary that incises up to 10 m of underlying strata and locally preserves a lowstand system tract within incised valleys.

Sequence stratigraphic correlation of 30 measured sections documents that: 1) strata proximal to El Gordo salt stock and La Popa salt wall show depositional thinning within a radius of 1 km, higher-energy and shallower-water lithofacies, and a difference in stratal stacking patterns toward the diapirs; and 2) strata around El Papalote salt stock exhibit thinning within a radius of 0.3 km, no change in lithofacies approaching the diapir, and similar stacking patterns on both flanks. These data suggest that the salt bodies had different bathymetric expressions during deposition of the Delgado Sandstone and may have had different uplift styles and/or rates.