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Isolated to Coalesced Carbonate Buildups Developed on Passive Salt Diapir Bathymetry, La Popa Basin, NE Mexico

Thick (<600m) coral, sponge, red algal reefs developed a top significant bathymetry created by the passive rise of salt diapirs during the Cretaceous and Lower Tertiary in La Popa foreland basin, Mexico. Carbonate exposures adjacent to 2 salt stocks and a 25 km long salt wall/weld indicate that periodically carbonate reefs developed roughly coeval across the basin in a dominantly fine-grained siliciclastic shelfal environment. Reefs developed during periods of net salt rise rate greatly exceeding siliciclastic sediment accumulation rates. During these periods the salt generated bathymetric relief greatly increased (averaging 200m over <1 km distance from the diapir edge) above the overall muddy bottom-water conditions. Reefal facies developed primarily within transgressive systems tracts of third-order eustatic sea-level cycles when siliciclastic sediment influx was greatly reduced.

Superb continuous exposures (over 10km) of the largest reef complex, the Paleocene La Popa lentil display seismic scale geometries that permit reconstruction of the complex sequence of depositional events. La Popa lentil shows initial accretion of a coral, sponge, red algal reef complex a top the La Popa salt wall. Large, steep (200m relief over .5km) fore-reef clinoforms indicate northward progradation from the salt wall. This system was subsequently truncated, onlapped and overlapped (?) by a southward prograding grainstone bar complex derived from a separate source to the north that is presumed to be another salt-related bathymetric high. The two carbonate complexes coalesced through time generating a continuous carbonate body extending more than 5 km between the two salt bodies within a salt withdrawal/contractional syncline.