Influence of La Popa Salt Wall on the Depositional Patterns and Stratal Architecture of the Shallow-Marine Siliciclastic Deposits of the Viento Formation, La Popa Basin, Mexico

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Stratigraphic data from exposures of Viento Formation along the La Popa secondary-evaporite-weld in La Popa basin, part of deformed Hidalgoan foreland in northeastern Mexico, record the influence of evaporite diapirism on lithofacies and stratigraphic architecture during Middle-Eocene. Based on detailed lithofacies analyses, we interpret the depositional setting of Viento Formation as a shallow-marginal marine environment characterized by cyclic and voluminous accumulation of sand that likely caused differential loading and at least partially drove diapiric rise of the La Popa evaporite wall. Viento Formation parasequences range 2-60m thick and exhibit upward succession of facies. The base of lenticular, carbonate-rich sandstone-beds contains abundant-large 4-15cm, disarticulated oysters and metaigneous clasts 2-30cm diameter, well rounded, mafic-intermediate composition. These clasts are interpreted to have been cyclically extruded along with diapiric evaporite of the Jurassic-Minas-Viejas Formation from the La Popa evaporite wall. From SW-NE toward the La Popa weld, the former-site of La Popa evaporite wall, four measured sections document growth strata geometries, lateral decrease in thickness from 1040m to zero, and at least one intraformational angular unconformity of less than 30° that becomes conformable within tens of meters away from the La Popa weld. Together, these field observations indicate Viento Formation strata adjacent to La Popa evaporite wall formed as a wedge-type halokinetic sequence, which reflects the influence of evaporite rise rates that only slightly exceeded mean sediment accumulation rates. Punctuated influx of diapirderived metaigneous clasts may reflect short-lived episodes of rapid evaporite extrusion along the diapiric wall, possibly related to Hidalgoan shortening events.