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Relationships Between Salt Tectonics and Trap Geometries in Blocks 29 & 11, Bay of Campeche

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Summary

This study presents five different hydrocarbon trap types found in Blocks 29 & 11 that are caused by salt-related deformation. To properly analyze these structures, we combine regional interpretations with established salt tectonic principles to constrain the timing and processes of trap formation. Two perpendicular structural systems can be identified when looking at a regional fault map of the Bay of Campeche, one related to NE-directed Chiapas Fold Belt compression and one related to a NW-directed gravitational toe-thrust system. Both systems occur between the Miocene and Present Day. The orientations of salt structures in Blocks 29 & 11 are significantly influenced by these two structural systems and two structural domains were identified. The eastern domain contains a polygonal pattern suggesting that this area was influenced by shortening from both structural systems whereas the western domain has consistent NE-SW trending structures that were only affected by the gravitational toe-thrust system. Although each minibasin has its own unique evolution and likely experienced early passive diapirism, our study clearly shows that Miocene to Present Day shortening is critical to the formation of traps and allochthonous salt emplacement. We then conclude with a sequential structural restoration to illustrate these processes.