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Rigid basement translation in the hanging-wall block of the Jipijapa – La Rinconada fault system inferred from tectono-stratigraphic studies along the southwestern border of the Manabí Basin, Ecuador

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Along the southwestern limit of the Manabí Basin, the Jipijapa - La Rinconada fault system represents a N-S striking reverse structure that juxtaposes two contrasting rock assemblages: a rigid oceanic basement of Cretaceous age against a weak marine planform sequence of Miocene age. The western hanging-wall stratigraphy is composed by the igneous oceanic crust of the Cretaceous Piñón Formation unconformable overlain by a monotonous cyclic turbidite sequence of the Cretaceous Cayo Formation. Eocene clastic and volcanioclastic rocks of the Cerro Formation are overlain by the Eocene-to-Oligocene coarse-grained sandstones interbedded with boulder conglomerate layers of the San Mateo Formation through a gentle angular unconformity. Local structural arrangement suggests two sequential events: a transient extensional event featured by local normal faults that deforms mainly to the Cayo Formation and a pervasive compressional event characterized by folding and thrusting processes. A highly fractured Piñón Formation contrasts with the low-amplitude open folded sequences of the Cayo Formation. Conversely, broad open folds are developed in the thin beds of the Cerro Formation. San Mateo Formation remains in sub-horizontal position capping the underlying folded sequences. The eastern downthrow block of the Jipijapa – La Rinconada fault system was filled by a thick sequence of marine platform deposits which are highly deformed closest to the fault plane, while to the east they show a slightly eastern dipping. The recent activity of the Jipijapa – La Rinconada fault system is constrained by focal mechanisms reported in previous works which mainly present reverse displacements with local strike-slip components. Along the linear trace clearly evidence of contractional fault-propagation folding is reported to deform partially the easternmost edge of the San Mateo Formation with compressive stresses striking in E-W direction. Rigid basement translation in the hanging-wall block of the Jipijapa – La Rinconada fault system may be evidenced by the lack of horizontal shortening along the poorly-deformed San Mateo Formation, which unconformably overlies the previously folded Cayo and Cerro Formations. Thus, the compressional stresses imposed along the adjacent convergent margin are directly transmitted to the eastern boundary of the Manabí Basin.