Paper A20

Structural map and multiple deformation episodes of Tanjung Kempit, Endau, Johor

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Detailed fiel mapping and structural analysis of Tanjung Kempit, some 5 km east of Endau, east coast of Johore, revealed at least fiv episodes of deformation affecting the probable Upper Paleozoic Mersing Bed metasediments. The firs episode D_0 was a syn-sedimentary deformation event giving rise to mesoscopic extensional growth faults that has never been reported before in the Eastern Belt. The earliest tectonic deformation episode D_1 seems to be the result of an E-W compression, is represented by N to ENE oriented reclined tight to isoclinal folds associated with nearly bedding-parallel cleavages S1, and boudin. The main deformation episode D_2 is represented by N to ENE oriented mesoscopic folds, which are upright, tight to open, and associated with a non-axial planar cleavage S_2 especially well developed along localized strike-parallel dextral shear zones. Small-scale folds are periclinal and arranged in en-echelon arrangement. These kinematic indicators show that D_2 were the result of dextral transpressive deformation. The structures developed during the fourth deformation episode D_3 include the kink-like curvilinear axial traces of F1/F2 folds, NNW striking thick quartz veins and the disposition of the general layering into NW-SE-trending sub vertical kink bands, and S-shaped asymmetric folds. They developed almost exclusively on those parts of the structure where D_2 folding produced steep bedding and planar fabric suggesting sub vertical direction of principal compression likely due to strike-slip movement. The latest episode of deformation D_4 includes NNW-SSE trending sinistral strike-slip faults with subordinate NNE-SSW striking dextral strike-slip faults. D_4 represented brittle structures developed due to by E-W oriented compression. These may imply that the strata may have undergone an initial syn-sedimentary extension prior to a regional E-W compression followed by a transpressive deformation leading to N-S dextral and then later sinistral shearing followed by later brittle strike-slip deformations. The results of this study suggest a multi-episode of deformation involving syn-sedimentary extension, followed by contraction and transpressive history that is more complex than previously proposed for this part of the Eastern Belt.

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