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Three Pagoda Fault Zone of the Kanchanaburi region interpreted from airborne geophysical data

Tulyatid, D.¹, and Rangubpit, W.²

¹Division of Geoscience, Mahidol University, Kanchanaburi, Thailand, e-mail: dhiti.tul@mahidol.ac.th

²Bureau of Geotechnology, Department of Mineral Resources, Bangkok, Thailand, e-mail: wanida.geo@gmail.com

Three Pagoda Fault Zone (TPFZ) has been recognized as the major fault zone in the western part of Thailand, including the Kanchanaburi region, with long and complex history. It was possibly underwent peak metamorphism during the Late Triassic and had the last increment of sinistral ductile deformation during the Eocene – Oligocene [1]. The dextral movement along the TPFZ probably occurred during the late Oligocene - early Miocene [2], marking the opening of the Gulf of Thailand and the Central Plain. During Miocene time, E-W extension became dominant before reactivation with right-lateral transpression in late Miocene to Recent times. Recent earthquakes suggested that only the northwestern part of the TPFZ is currently active. However, it is still unclear how deep the fault zones penetrate within the crust or lithosphere and how the brittle deformation in the crust relates to the ductile shear zones. Aeromagnetic anomalies reveal the subsurface NW-SE-oriented fault lines that run through Kanchanaburi town with its extensions to the southeast. The magnetic anomalies possibly imply that the dextral-strike-slip movement of TPFZ may be associated with igneous intrusion of high magnetite content [3]. This study employs the interpretation of airborne gamma-ray radiometric and magnetic data to locate exposed and subsurface parts of TPFZ of the study area. Structural mapping and petrographic study were also carried out in order to improve the knowledge on the development of TPFZ and its implication to tectonic development of the region. The study results provide useful information, i.e., depths, orientation and the distribution of the fault zone, which will help authorities to identify locations of possible future seismic activity, especially those located at or near to populated urban areas of the region.

References:

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