INTERPRETATION OF THE MAGNETIC ANOMALIES IN PARIT SULONG-BATU PAHAT AREA

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The aeromagnetic map by Agoc (1958) over the Parit Sulong - Batu Pahat area shows a number of distinct local magnetic anomalies in a long wavelength regional anomaly. The regional anomaly generally decreases northwards. Ground magnetic survey conducted over these anomalies indicates the presence of shorter wavelength anomalies within the local anomaly. These superposition of anomalies having different wavelengths are common in the magnetic anomalies as observed in the study area. The main objective of this work is to determine the cause of these different wavelength magnetic anomalies and their relation to the geological and structural setting of the area.

The geology of the area comprises two main rock types that is sedimentary and igneous rocks. Rock outcrops are sparse with the outcrops only found at prominent topographic highs within a relatively flat region. The granites outcrop in the hills south and east of the Batu Pahat town while the sedimentary rocks mainly outcrop at the hills and ridges east of Parit Sulong. The flat areas (less than 5 m above datum) comprises alluvium with abundant recent fossils.

The sedimentary rocks are essentially the Cretaceous to Jurassic clastic sediments of the Paloh Formation; mainly the conglomeratic sandstone unit. An older shally sandstone layer probably of Triassic age is also present along one of the conglomeratic ridges. The igneous rocks are made up of mainly the Lower Jurassic to Upper Triassic Batu Pahat granite, some weathered basic rocks probably of Lower Triassic and the volcanic rocks mainly within the Paloh Formation. The granite is probably a composite body essentially having the same mineralogy but may be divided into two based on the susceptibility. To the east of Batu Pahat the granite has high susceptibility, while to the south of Batu Pahat the susceptibility is low.

The sedimentary structures observed include bedding, graded bedding, cross bedding and laminations. No obvious large scale geologic structure can be observed in the field. The sedimentary structures, topographic expression, and lineament study from aerial photography, however, indicate that the structural setting is quite complicated. They show the presence of a number of folds and faulting. A notable feature is the continuous ridge of Bukit Bindu - Central Ridge where the bedding is easterly dipping in the north (Central ridge) but westerly dipping in the southern part (Bukit Bindu ridge). A fault is inferred to cut across the ridge though not observed in the field.

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Three prominent local magnetic anomalies can be observed from the Argoc aeromagnetic map for the region. Comparison of the aeromagnetic map to the geologic map indicates that these three prominent magnetic anomalies are located over different geologic settings. The almost circular anomaly near Batu Pahat town having distinct highs and lows, may be modelled as due to the granite body with high susceptibility. To the east of Parit Sulong the anomalies have two distinctly different patterns; an elongated anomaly to the south and an almost circular anomaly to the north. Part of the anomalies lie over the weathered basic rock and is probably its source. To the south of this area, another elongated anomaly occurs over the sedimentary (Paloh Formation) ridge. Its probable source is the volcanics within the Paloh Formation. These two elongated anomalies, though separated, may also be due to the same type of source. The structural implication from the magnetic anomalies appear to support some of the geological evidences such as the presence of a fault separating the Bukit Bindu-Central ridge. Other structures occur over areas without rock outcrops.