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GRAVITY SURVEY OF THE LAYANG-LAYANG TERTIARY BASIN IN JOHORE, PENINSULAR MALAYSIA

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A gravity survey was recently carried out to determine the structure of the Layang-Layang Tertiary Basin which is the southernmost of the known Tertiary basins in Peninsular Malaysia. The survey covered 549 stations over an area of 45 km by 23 km and included the entire area geologically mapped as the Tertiary Layang-Layang Formation and part of the Pre-Tertiary Tebak, Sedili and Linggiu formations to the east. Measurements over the granitic area surrounding the basin provided regional control.

The results show a prominent negative gravity anomaly with a maximum amplitude of 20 mgals covering an area of 165 sq. km which includes the Tebak Formation as well as the Layang-Layang Formation. The anomaly is centred within the Tebak Formation about 2 km from the boundary of the Layang-Layang Formation where the Bouguer Anomaly value reaches - 9 mgals.

It is believed that the basin is a half-graben structure bounded to the north-east by a listric normal fault with a minimum throw of 1 km. The survey shows that the basin is a closed one comprising both the Tertiary and Pre-Tertiary sediments.

The unusually high gravity values over the granites (up to +30 mgals in the south) as compared to the Main Range Granites and Eastern Belt Granites, are probably due to combination of factors including thinning of the granite batholith and the occurrence of a denser and more basic upper crust beneath the granite. The strong gravity gradient along the southern edge represents a major structural discontinuity probably a fault plane, and possibly includes the effect of further thinning of the granite.