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A GRAVITY SURVEY OF PERLIS, KEDAH AND PENANG

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The results of a gravity survey of northwest Peninsular Malaysia are presented, forming the first stage of a survey of the whole Peninsula. The aim is to obtain as uniform a coverage as possible using 4WD vehicles and boats for transport. At a later stage it is anticipated that areas not otherwise accessible will be reached using a helicopter. The results can be largely explained in terms of the configuration of granitic rocks. A steep gravity gradient follows approximately the boundary of the Main Range granite in a series of *en echelon* north-west and north-east trending sections. The extent and steepness of the gradient along some sections implies steeply dipping contacts between granite and sediments extending to depths of many kilometres. It is steepest along the section coinciding with the Bok Bak fault, for which there is some evidence of a possible extension northwestwards into Perlis: here it could have influenced the deposition of the Tertiary Bukit Arang coal beds, which show a significant gravity response. If there has been major lateral movement along this fault and/or faults parallel to it, a net sinistral displacement of about 30 kilometres is suggested by the gravity results.

The Gunung Jerai granite is shown to be much more extensive underground than at outcrop, and the results show that the Pulau Pinang, Kulim and Main Range granites are all connected at relatively shallow levels. The Sintok granite on the Thai border may also be connected to the Main Range granite at considerable depth. In Langkawi the various granite outcrops are probably all parts of a single body. There is no evidence of any major change in crustal thickness in that area or elsewhere.

This work was done with the cooperation of the Department of National Mapping, who provided a surveyor, maps and height information, and the Universiti Teknologi Malaysia who established the gravity base network used in this survey.