# Structural overprinting in the northwest and west domains of Peninsular Malaysia

H.D. TJIA

PETRONAS Research and Scientific Services Sdn. Bhd.
Lot 3288 & 3289, Kawasan Institusi Bandar Baru Bangi
43000 Kajang, Selangor

The regional SSE strike of Peninsular Malaysia and the western belt of Sundaland is indicated by the elongations of the peninsula, Straits of Melaka, as well as Sumatra. This trend is overprinted onto a less distinct regional N-S tectonic grain that shows up as the Bentong suture, the Eastern Tectonic Zone of gravity anomalies, and the groupings of small Tertiary basins in the Straits of Melaka. The Central Belt of the Peninsula is now considered to continue



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southward across the strait into Central Sumatra and is therefore oblique to a presumably younger geological strike. In descending order of magnitude the various overprinted structures in the peninsula are known as follows.

*Intersection of zones of bouguer gravity anomalies and structural trends.* An example exist in UKM's Bangi campus, where Upper Palaeozoic metaclastics strike as tight overturned, refolded folds in NNE direction while the bougeur gravity anomaly directions are perpendicular to the geological strikes.

Intersection of regional lineaments, that consist of folds, homoclinal ridges, faults and large fractures define seven domains in the peninsula. The tectonic grain is NNW to almost NW in domains 4 and 7 and are also present in domains 1 and 6. However, domain 1 has two more lineament trends, NNE and ENE. Each of domains 5 and 6 have two lineament directions, and together with domain 3 exhibit NE to ENE lineaments. A quarter century passed after these crossing lineaments were first noticed, but some of their origin are still unknown. The two intersecting lineaments in domain 5 represent N-S overturned fold trends in (?) Upper Palaeozoic metasedimentary rocks verging west, while the other belongs to tuffaceous phyllite and phyllitic schist deformed into refolded folds possibly overthrusted towards SE. It is not clear if SE-ward low-angle thrusting belongs to a separate deformation phase or if it represents back-thrusting during the regional west-verging deformation.

Other types of overprinting found in these two domains are:

- Multi-directional geological transport directions;
- Stacked layers rocks with different structural styles;
- Outcrop interference patterns where rootless folds or faults show up in two dimensions;
- Fold plunges of different trends and steepness;
- Refolded folds, coaxially or with divergent trends;
- Folded cleavage;
- Folded tectonic faults;
- Intersecting quartz veins of different internal structures;
- Intersecting and/or opposed sense of fault motions on the same fault or on parallel fault surfaces;
- Interpreted compression axes of different orientations in the same rock unit.