

Chapter 5

Structure

The overall structural grain of rocks within the district is northeast-southwest (Figure 13), and conforms to the dominant fault trend.

Faults and Photolineaments

The central and northern parts of the district are cut by NE- to NNE-trending faults (Figure 13) belonging to the Lai Chi Kok - Tolo Channel Fault Zone (Lai & Langford, in press). The most notable fault is that found in boreholes beneath the Ma On Shan reclamation separating Carboniferous marble from medium-grained granite (see Chapter 3).

A second major NE-trending fault has been identified along the mountain front to the southeast of Ma On Shan separating granite in the north from the Tolo Channel Formation in the south. An exposure of the fault plane has been observed in an excavation behind Ma On Shan water reservoir (see Chapter 4). Slickensides indicate that movement on the fault plane was reversed oblique, but there is no clear evidence as to the age of the last movement. The lack of surface expression, such as displaced recent alluvial fan and mass wasting deposits, suggests that movement has not occurred for some considerable time. A possible splay of the mountain front fault northeastward through "Starfish Bay" (4325 3245) is indicated by brecciation of the granite in borehole cores. At least two NE-trending faults in the vicinity of Cheung Muk Tau (4360 3180) appear to pre-date deposition of the Lai Chi Chong Formation.

In the southeast corner of the district (4465 3050), a major NE-trending fault separates the Clear Water Bay Formation from sandstone of the Devonian Bluff Head Formation. Although this fault is not exposed on the surface, it has been recorded in logs of the Sai O Water Tunnel (Contract 6/WSD/84).

Close to the contact with granite at Nai Chung (4422 3278), the Tolo Channel Formation is cut by a minor NE-trending fault which is marked by a silicified fault breccia containing clasts of laminated metasilstone. Several minor NNW-trending cross faults also disrupt the bedding which has a younging direction to the northwest. In addition to the development of slaty cleavage, small-scale recumbent folding, kink folding, and boudinage are observed, which together indicate that the formation has been sinistrally deformed.

Boreholes beneath the Ma On Shan reclamation have revealed the presence of a subordinate set of younger NNW-trending cross-faults displacing the main NNE-trending fault separating granite and marble. The amount of offset and sense of displacement determined from boreholes suggest these faults are chiefly normal in character. A prominent NNW-trending reverse fault (4328 3050) with 150 m throw to the east separates fine-grained granite and volcanic rocks on the western flanks of Ngau Ngak Shan. On the western side of the fault, sandstone of the Bluff Head Formation is iron-mineralised and thermally metamorphosed whereas in the east, mineralisation and metamorphism are much less intensive.

Joints

There are three main joint orientations found in rocks of the district. The joints are best developed in the medium-grained granite and sandstone of the Bluff Head Formation. The principal joints strike northeast and lie subparallel to the dominant fault trend.

Veins

The contact between fine-grained granite and quartz sandstone of the Bluff Head Formation is marked by a zone of intense quartz veining. Anastomosing thin quartz veins, which are commonly mineralised, penetrate the overlying sandstone. The veins are usually no more than a few millimetres wide and originate within the granite (Plate 10).



Plate 10 - Anastomosing Quartz Veins in Porphyritic Fine-grained Granite Close to the Thermally Metamorphosed Contact with Devonian Sandstone to the West of Ngau Ngak Shan (4290 3075)