Chapter 6
Structure

Although the structural grain of the north Lantau Island and Ma Wan is controlled to a large extent by the strongly ENE-WSW oriented Lantau dyke swarm, the major faults of the district reflect an underlying regional trend. The Territory can be broadly divided into two structural domains. In the northwest, the region is characterised by regional scale (>10 km) NE-trending faults with a subordinate set of local scale (<10 km) cross-cutting NW-trending faults, whereas to the southeast, it is characterised by both NE- and NW-trending faults of local dimensions. These contrasting structural domains are largely a function of the Territory's position within the Lianhua Shan Fault System, a 30 km wide fault-bounded depression extending from coastal Guangdong Province in the south to Fujian in the north (Lai, 1993). The deep bounding faults of the Lianhua Shan Fault System are the Shenzhen Fault to the north and the Haifeng Fault to the south.

Faults

Regional scale faults intersecting the district include the NNE-trending Yam O Fault, the NW-trending Kap Shui Mun Fault and the NNW-trending Penny's Bay Fault (Figure 8). Smaller scale faults include the N-trending Tai Ho Fault, NE-trending Sham Shui Kok Fault, NW-trending Ngau Kwu Long Fault and NE-trending Pak Mong Fault. The rectilinear character of these local scale faults suggests that most are strike-slip and/or normal with subvertical fault planes.

Quartz Veins

N- to NNW-trending quartz veins, varying from 1 - 5 m thick, are present in three concentrated swarms within the district: Wo Sheung Au to Siu Ho Wan, Discovery Bay to Ta Pang Po, and Pa Tau Kwu to San Po Tsui. Except for a thick (5 m) quartz vein in Penny's Bay, the veins are not directly related to any known faults. However, the strongly oriented character of the quartz veins suggest that they are related to a common regional tectonic stress field.

Photolineaments

A large number of photolineaments within the district has been identified on aerial photographs. In general, these trend ENE-WSW and NNW-SSE with only minor variations in strike. Some photolineaments mark known faults while others appear unrelated. For example, there is a very strong NW-trending photolineament intersecting the coast west of Siu Ho Wan although there is no evidence that this is fault-related.

Joints

Over 3600 joint orientations have been measured within the district, mostly from sea cliffs and wave cut platforms along the coast where wave erosion has taken advantage of the dominant sets.

The data indicate the development of at least three subvertical joint sets and a low to moderate angle set (Figure 9). The most persistent subvertical joint set has a strike (075°) similar to that of the Lantau dyke swarm and joint spacings from 0.06 m to >6 m. The next most persistent joint set (170°) has spacings from 0.02 m to <6 m whilst the third subvertical joint set (110°) has spacings in the range 0.2 to 0.6 m. The low to moderate angle joint set has an orientation subparallel to the dominant subvertical set and is responsible for the development of sheet joints commonly seen along the coast (Plate 13). A break down of the joint data into coastal blocks has revealed a slight but perceptible change in orientation from 070° in the south to 085° in the north (Franks & Woods, 1993). This is consistent with a gentle clockwise rotation in strike of the Lantau dykes from south to north (Figure 5).

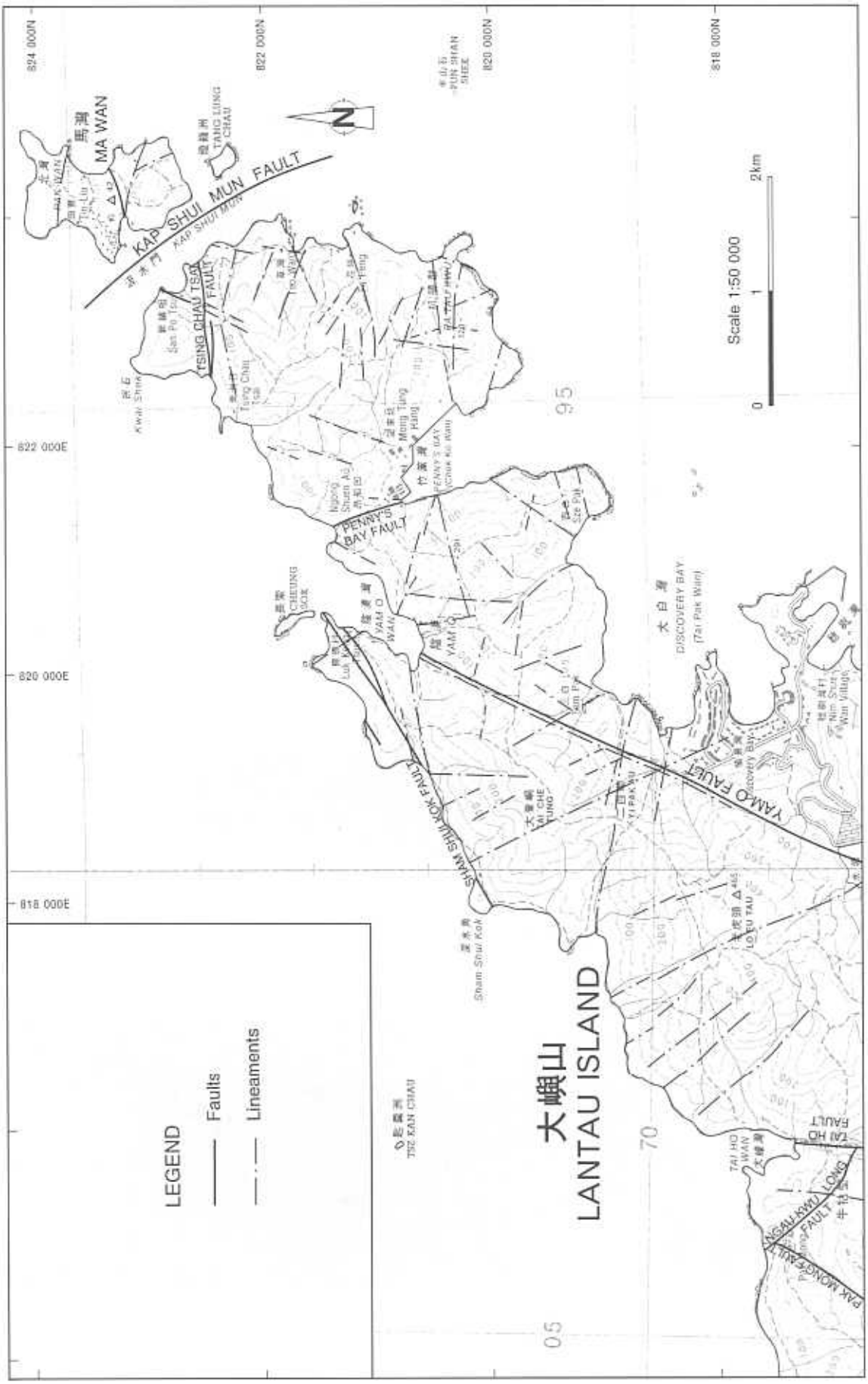

Figure 8 - Principal Structural Features of the District

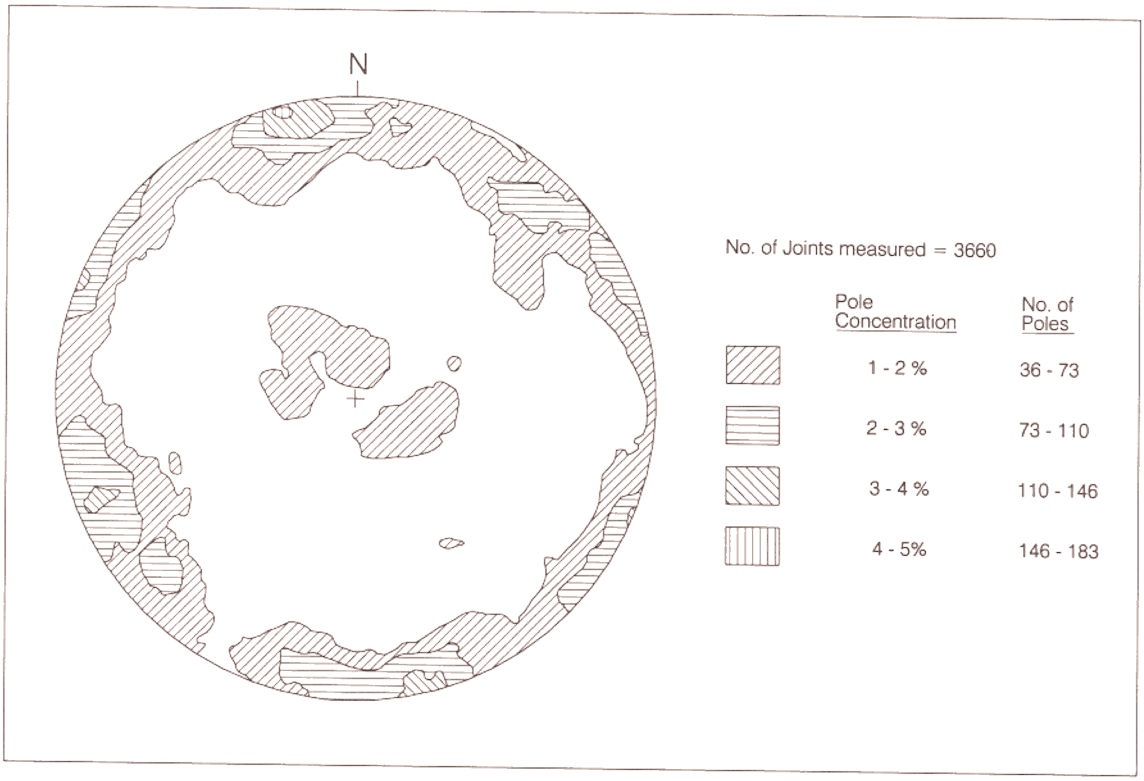

Figure 9 - Contoured Pole Plot of Joints Measured for All Major Rock Types on North Lantau Island and Ma Wan

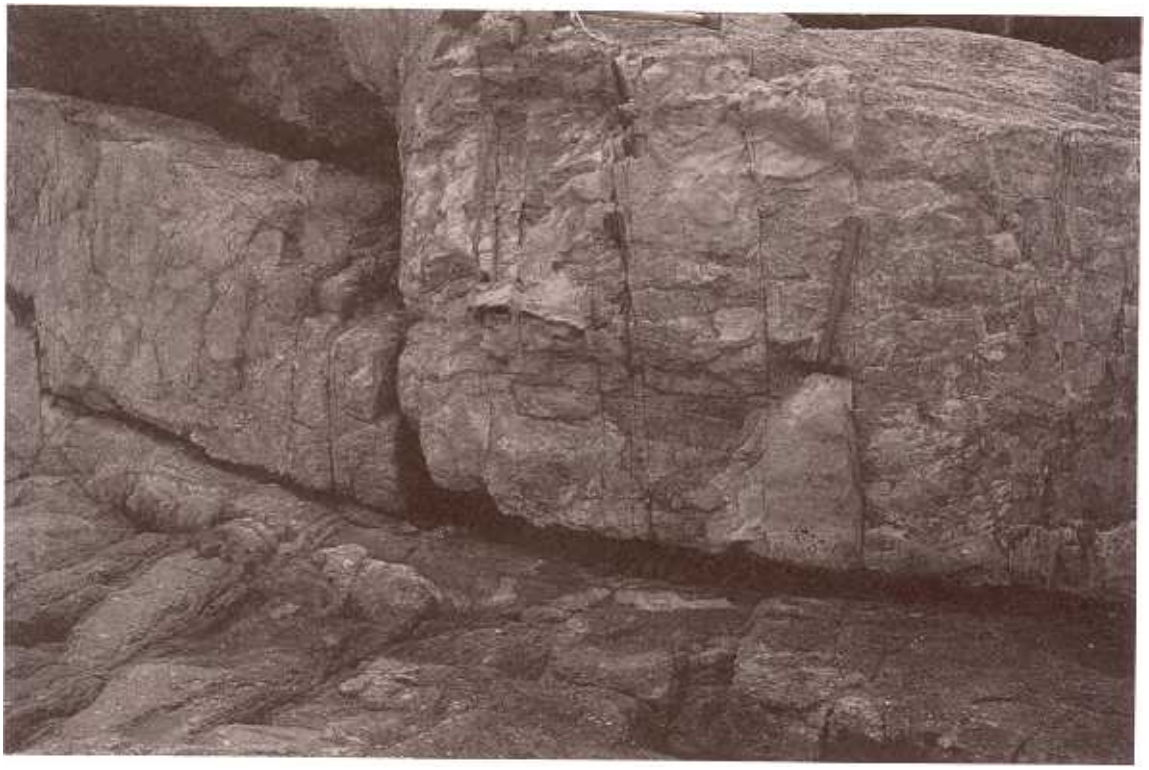

Plate 13 - Subhorizontal Sheet Joint Developed in Coarse-ash Crystal Tuff of the Yim Tin Tsai Formation on the Southeastern Coast of Ma Wan (24670 22925)