

# Chapter 5

## Structure

The geological structure is dominated by the northnortheast-trending Chek Lap Kok Fault (Figure 6), extending from Fu Tei Wan to Sham Wan. Postulated continuations of faults in the offshore areas are also shown. The form of the island is also reflected in a pervasive set of eastnortheast-trending photolineaments and joints. The disposition of the island is also controlled by the North Lantau Fault and the Tai O-Siu Lam Fault in the offshore area, and by the northward extension offshore of the Tung Chung Fault. The general northnortheast trend of the island is in line with the Tsing Shan (Castle Peak) range of hills.

### Faults and Photolineaments

The main faults and photolineaments are shown in Figure 6. Histograms of fault and photolineament trends are given as Figure 7. The northnortheast trend of the Chek Lap Kok Fault is the strongest fault trend, although eastnortheast and northwest trends are also evident. The dominant trend of the photolineaments is around 70° (eastnortheast), probably reflecting the large number of dykes following this trend.

### Details

**North-trending Faults.** The major fault of northnortheast trend is the Chek Lap Kok Fault (Figure 6, Plate 17). This is probably related to the general north-trending faults exposed in Tsing Shan and Tai Lam (Langford *et al*, 1989). The fault is not exposed in the island, but is inferred from the apparent offset or cutting of a number of dykes.

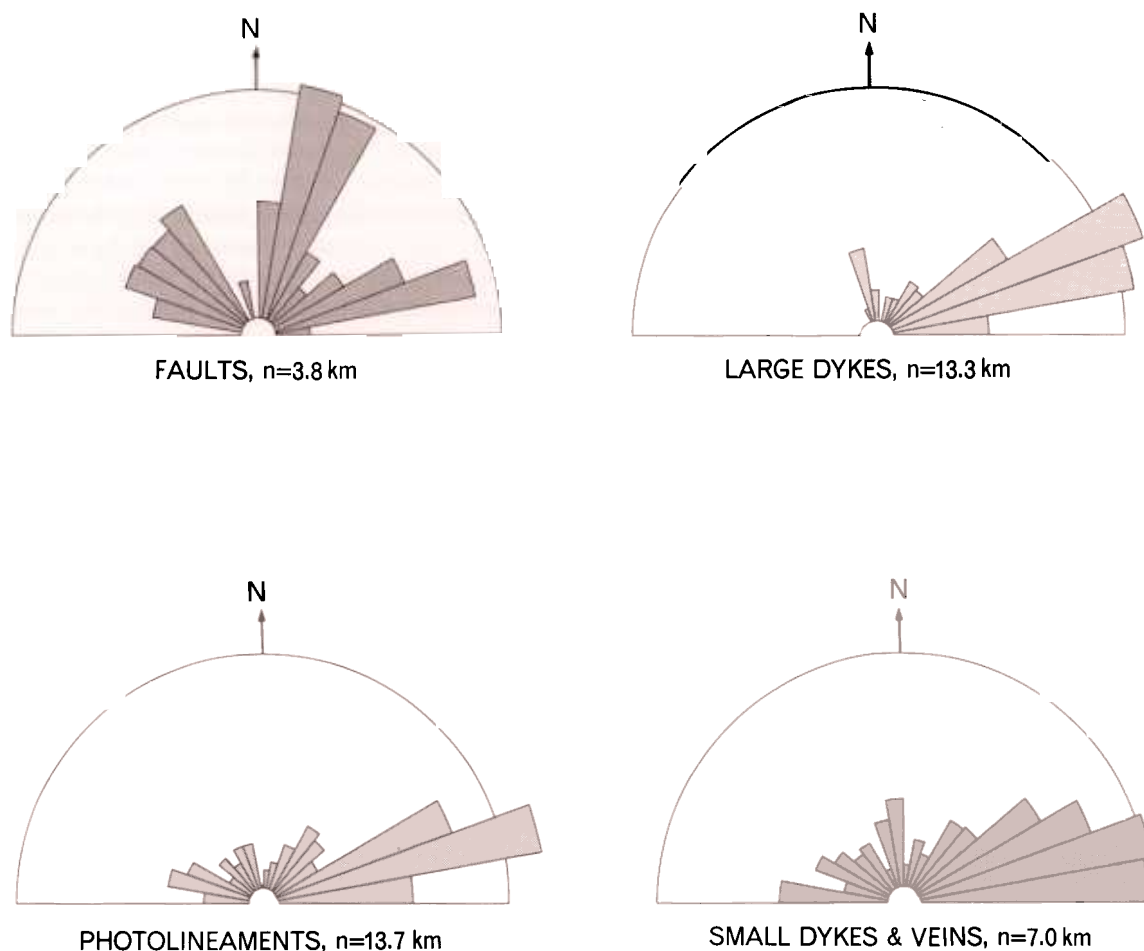


Figure 7 - Circular Histograms of Fault, Photolineament, Dyke and Vein Trends in the Island



*Plate 17 - View Northnortheast towards Sham Wan along the Line of the Chek Lap Kok Fault*

A small northerly trending zone of quartz vein and silicified granite south of the test embankment (1072 1835) (Plate 11) is probably of a similar style to the Chek Lap Kok Fault. North of the test embankment (1046 1923) is a northerly trending greenish coloured zone of brecciated fine-grained granite. Closely spaced jointing and shattering in the granite can be found a little further to the north (1046 1931) trending northnortheast, parallel to the Chek Lap Kok Fault.

**Northwest-trending Faults.** The northwest trend is a well developed cross-cutting structure to the north of the island, in Tsing Shan and Tai Lam (Langford *et al*, 1989), but is virtually unseen within the island. A small northnorthwest-trending fault sinistrally displaces a basalt dyke by 0.3 m in a coastal exposure south of the test embankment (1083 1814) (Plate 14). A westnorthwest-trending fault with quartz vein sinistrally displaces a quartzphyric rhyolite dyke by about 5 m in a coastal exposure on the east side of the island (1178 1891).

**Eastnortheast-trending Photolineaments.** Eastnortheasterly trending structures are mostly photolineaments and dykes. They give an eastnortheasterly trending grain to the country. Coastal exposures are consistently marked with this grain, giving rise to geos and rock walls clearly visible on aerial photographs.

The photolineaments are therefore probably a reflection of the trend of dyke emplacement. Quartz veins also dominantly fall on this trend. The only fault-like structure seen on this trend is a chloritized shear zone north of Fui Yiu Wan (1217 1975). The pronounced eastnortheast-trending linear feature at Fui Yiu Wan can be seen in Plate 18.

### **Joints and Foliation**

An equal-area pole plot for joints is given as Figure 8. The pole plot shows two dominant trends, the stronger of the two being strike  $085^{\circ}/85^{\circ}\text{E}$  dip, and the weaker striking between  $160^{\circ}$  and  $200^{\circ}$ . However, as can be seen in the pole plot, there are also many joints in other directions, including low-angle sheeting joints. The pattern of photolineaments is therefore taken as a better representation of the master joint set, rather than the relatively sparse cover of joint measurements.

Foliation is seen in the granite in only one locality, north of Cheung Sha Lan (1128 2013). Here, thin bands of mylonitized granite trend eastnortheast. Such bands are very commonly found in the Tsing Shan area to the north (Langford *et al*, 1989).



*Plate 18 - Eastnortheast-trending Linear Feature on the North Side of Fui Yiu Wan (120 196)*

### **Dykes and Veins**

There is a pronounced eastnortheast orientation to the dykes and veins (Figure 7). The photolineaments give a dominant eastnortheast grain to the terrain, and are probably an expression of the dominant dyke trend. The quartzphyric and feldsparphyric rhyolite dykes almost exclusively trend northeast to eastnortheast. The less common basalt and lamprophyre dykes trend either southeast or east to northeast. The few aplite dykes recorded have no dominant trend. A large number of quartz vein orientations were noted on coastal exposures and inland. These dominantly trend eastnortheast to east.

*Figure 8 - Equal-area Pole Plot of Joints in the Island; Concentration (Solid Lines) and Dispersion (Broken Lines) at 5% and 1% Significance (after Langford & Adlam, 1985)*

