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Geological Field Trip to Ping Fung Shan, February 2014

On the 16th February 2014, a field trip to Ping Fung Shan in Pat Sin Leng Country Park was organized by Mr. Lin Hoi Yung and Mr. Lee Ping Kuen, Felix. It was one of the monthly field trips organized by the Geological Society of Hong Kong (GSHK). The purpose for the trip was to examine the fractured gravels exposed along a major ductile shear zone in the city. There were twenty six members and friends in total attending the field trip.

Ir. Raymond S M Chan

Geological Field Trip to Ping Fung Shan on 16th February, 2014

By Lin Hoi Yung and Lee Ping Kuen

After gathering at Fanling Railway Station at 9:00 A.M, we took Minibus 52B to Hok Tau Reservoir and walked along the Wilson Trail to Ping Fung Shan. The hike was considered to be an easy one during fine weather but it became tough when the weather turned bad with strong wind, drizzles and mists. From the starting point to Ping Fung Shan, we walked for about 2 hours with up and down hills. We stayed at Ping Fung Shan for about one and half hours in order to investigate the fractured gravels exposed on some spots of the slope. We observed that some of the gravels were deformed by strong shear motion and some gravels were sheared and broken into half. Although some gravels have not been cut into slices, they also showed displacement. We saw the throw and heave exhibited by the gravels that indicated the fault slip direction. After that, Chan Sir (Chan Ying Kuen), who was an active member of GSHK, led us to hike along the Nam Chung Country Trail to Tan Chuk Hang (Figure 1). In Tan Chuk Hang, Felix and Yung represented the GSHK to bless all members with good luck in the coming Horse Year and good spirit as dragon and horse do. Afterwards, the group dismissed and some

members took the Minibus 52B back to the Fanling Railway Station. Some went to the bus station in Ma Mei Ha and got on the bus 78K to a Chinese restaurant in Fanling for lunch. We arrived there at 2:00 P.M. It was so nice for our GSHK committee member, Mr. Leung Kar Fai, had already reserved a table before our arrival. We, those hungry and tired team members, swallowed with joys the dim sums with Chinese tea until 3:00 PM. We then started to organize the next field trip to Cheung Tsui during the tea time. Chan Sir led us to visit the Camphor tree in Fan Leng Wai (Figure 2) before we went back to the Fanling Railway Station. According to Chan Sir, the Camphor tree is more than two hundred years old. Chan Sir is much acquainting with the area as he has resided there for nearly twenty years.

According to Lai 2002, , Tiu Tang Lung ductile shear zone was one of the three major ductile shear zones in the northern New Territories of Hong Kong. Parts of the Tin Tang Lung ductile shear zones are exposed at Ping Fung Shan area (Figure 3). The presence of the shearing fractures of the gravels found in Ping Fung Shan (Figure 4) suggests that a ductile shear zone once operated in the area. In addition, such shear zone is similar to the textbook example described by Davis and Reynolds (1996).

Conglomerate, tuffaceous sandstone and siltstone are exposed on Ping Fung Shan. The gravels of the conglomerate unit are generally round (Figure 5) to sub-round (Figure 6). Some fractured gravels were of alluvial origin (Figure 7). Apart from gravels of the conglomerate unit, foliated sandstone and siltstone units were also studied during the trip (Figure 8), which is one

indicator of the ductile shear zone. Most ductile shear zones were formed under metamorphic condition, and therefore, they possess foliation and metamorphic minerals (Davis and Reynolds 1996).

There are two set of fractures present in the gravels. One set trends at $N195^\circ$ and the other one at $N213^\circ$ (Figures 9 and 10) whereas second set is running nearly parallel to the major trend of the Tiu Tang Lung Ductile Shear Zone (around $N210^\circ$) measured by Lai 2002. One gravel was broken into multiple pieces of irregular fragments (Figure 11), which indicates that a brittle deformation event occurred in the area previously. The gravels, exposed along the trail on the midway to Tan Chuk Hang, were intruded by two parallel quartz veins (Figure 12 and Figure 13). This implicates that the fractures of the gravels were subsequently filled up by quartz-rich hydrothermal fluid. The quartz veins strike at $N254^\circ$.

The field trip to Ping Fung Shan provided the GSHK members and friends (Figure 14) an opportunity to examine together the geological features in Hong Kong. Felix and Yung were delighted that the field trip was well-received by the participants and would definitely lead another field trip in the near future.

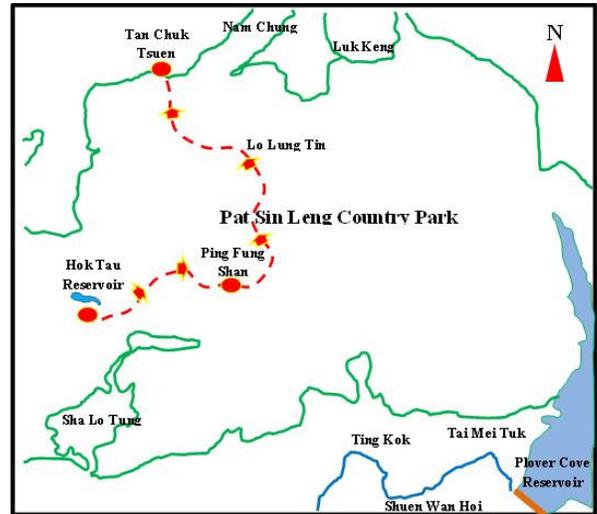


Figure 1: The route to Ping Fung Shan (red dash line with arrow).



Figure 2: Camphor tree in Fan Leng Wai.



Figure 3: General landscape of Ping Fung Shan.



Figure 4: Shear surface of fractured gravels in Ping Fung Shan.



Figure 7: An edge of a fractured gravel (red arrow) is comparatively round than the other side, suggesting the direction of water flow.



Figure 5: Round fractured gravel.



Figure 8: Foliated sandstone and siltstone.



Figure 6: Sub-round fractured gravel (red arrow).



Figure 9: Fracture direction of the gravel is N213°.



Figure 10: The gravel is bisected and dislocated; the fracture is orientated to N195°.



Figure 13: Red round gravel, intruded by two sets of quartz veins.



Figure 11: The gravel is broken into a number of irregular pieces.



Figure 14: Group photo taken during the trip.



Figure 12: The quartz veins are orientated to N254°.

Reference

Davis, G. H. and Reynolds, S. J., 1996, Structural Geology of rocks and regions, second edition, John Wiley & Sons, Inc.

Lai, K. W., 2002, Ductile shear zones of Hong Kong, Guangdong Geology, vol. 17, no.3, p.1-7.

Sewell, R.J., Campbell, S. D. G., Fletcher, C. J. N., Lai, K. W. and Kirk, P. A., 2000, The pre-quaternary geology of Hong Kong, Geotechnical Engineering Office, Civil Engineering Department, The Government of the Hong Kong.