D-28: Geometrical analysis of graphite veins in Sri Lanka

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A detailed geometrical analysis of graphite veins from the Kahatagaha-Kolongaha graphite mines was undertaken with a view to understand (i) the 3 dimensional nature of large-scale veins and (ii) the mechanisms (of formation of this type of veins. The veins occurred as swarms cross-cutting highly anisotropic high-grde gneisses. The graphite deposit may itself be only a member of a huge vein swarm that may encompass all other major graphite deposits in Sri Lanka. The strike direction of the major veins varies between ENE-WSW and WNW-ESE with a nearly E-W statistical mean orientation. The major veins generally dip to

S with a statistical mean dip angle of ~60°. The attitudes of the veins may change with depth. A decrease in the angle of dip and an increase in the thickness of veins with depth were observed. An upward-forking of the graphite veins was also seen. It was likely that the graphite veins coalesced and converged at greater depths and were derived from a common source. The graphite veins formed through hydraulic fracturing when the gneissic host rocks fractured by tensile stresses created by high fluid pressure of the graphite-bearing solutions. The graphite vein formation post-dates the formation of the large-scale folds of Sri Lanka. The nearly E-W direction of the graphite veins may have been governed by the least principal stress direction which was N-S during the vein formation.

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