CRITICAL ASSESSMENT OF VEIN-TYPE GRAPHITE MINING METHODS IN SRI LANKA

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This paper includes the study of the mining methods adopted at Bogala, Kahatagaha and Ragedara Graphite Mines, which are operated by Bogala Graphite Lanka PLC (BGLP), Kahatagaha Graphite Lanka Ltd and Sakura Graphite PVT Ltd respectively and these, are the only graphite mines operating in Sri Lanka at this moment. Rangala mine is currently under its exploration stage for re-opening almost after fifteen years, and is operated by BGLP.

In Sri Lanka graphite occurs as rich thin steep dipping veins which run to far depths in the ground. These veins are not continuous all the time and the mining methods adopted in the above three operating mines vary drastically. The current demand for graphite has shown a rapid increase, so comparison of these mining methods is found to be important and it leads to a clear understanding about the Sri Lankan Underground Graphite Mining Industry and its future development. With a clear idea about the mining method, it is easy to plan the mine layout and operations while reducing the cost of unwanted exploratory work.

The three different mining methods used in three mines were analyzed using their mining methods, vein conditions, stope dimensions, host rock conditions, production costs and data relating to underground operations. This allowed the authors to evaluate each mining method, so that the best practiced mining method for the Sri Lankan terrain was identified. This will help the new mining entities to plan their mining layouts and activities more easily with higher degree of efficiency.

The results obtained gives a clear indication about the best mining method which is currently practiced at Bogala mines with the lowest cost of Rs. 14,985 per ton of ore and the highest graphite production of 0.1232 tons/m per day, given the fact that the country rock at Bogala is very much fractured and needs more support. Although Kahatagaha and Ragedara mines show a good potential with safer underground environment provided by the competent country rocks in those areas, they trail behind due to lack of systematic mining. It is evident that the competent country rock has lead Kahatagaha and Ragedara mines to follow un-systematic mining methods, but there will be a certain point where they will fail to succeed with their development in future.