

SERPENTINITES ASSOCIATED WITH THE PRECAMBRIAN OF SRI LANKA

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ABSTRACT

Located in the extreme south (Ussangoda), south central (Ginigalpelessa and Indikolapelessa and north central (Yodagannawa), four occurrences of serpentinites are known at present. Integrated surveys — geo-physical, geological, geochemical and drilling studies — have been carried out on the first two mentioned.

Soil geochemistry of the Ussangoda deposit indicate an average Ni content of 1000 ppm and a Cr average of 7700 ppm. Core drilling revealed that the serpentinite is 100 metres thick and dips steeply (70°) west. Higher chromium and nickel values in the soil suggest supergene enrichment. The soil is a hematite-rich clayey sand nearly 40 cm thick associated with pebbly layers of which the top 10 cm is very fine grained (loess-like) and cover an area of 3 sq. km. Drilling and field relations shows that the serpentinite is concordant with the host garnetiferous biotite gneiss and hornblende biotite gneiss with some development of flakey graphite at the contact with the former.

The Ginigalpelessa deposit is about 1 sq. km. in extent. Here, the soil is deep brown and poorly developed. The nickel values average at 2100 ppm. and chromium at 10,000 ppm. The deposit is characterised by outcrops of ferricrete, chert, olivine-rich and actinolite-rich rocks and secondary magnesite assaying 42% magnesia. The deepest hole bottomed in garnetiferous biotite gneiss showed a serpentinite thickness of 108 metres. Field relations indicated that the serpentinite occupy a synformal depression with a probable thickness of 1200 metres. As at Ussangoda, host rock contact displayed graphite mineralization.

Thin section microscopy (difficult due to the very fine grained and highly altered nature of the serpentinite) revealed that the major mineral phases were serpophite after antigorite and carbonates. Opaque phases consisted mainly of iron oxides. Mineral sequences favour a pyroxene-derived serpentinite.

Detailed studies of the Indikolapelessa and the Yodagannawa deposits have yet to be carried out.

That the deposits are northerly spread close to the geostatigraphic boundary of the Highland Series and Vijayan Series and that they are fault associated have led to the belief that the serpentinites have a deep seated origin. It is noteworthy that neither chromite nor nickel sulphides have been identified yet.