

**MAGNETOMETER CHARACTERIZATION OF
IRON ORE DEPOSIT IN BUTTALA, SRI LANKA**

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by

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Abstract

Sri Lanka is endowed with mineral resources though many mineral occurrences were not fully assessed and quantified identifying the true potential. Mostly the geological formations of the valuable mineral engage with complex structures such that a detailed exploration program is essential to assess the grade, recovery, characteristics and quantity of the ore(s).

The occurrence of the magnetite in Palawatte area was first discovered by the GSMB during the geological field mapping of the Buttala sheet (1:50,000) in 1999. Based on some sporadic studies as regards this iron ore were reveal that, the deposit containing considerably higher amount of magnetite but the significant factor is in the reserve estimations, most of the previous studies considered the total interesting area (the ridge of the Horakagodakanda hill) as the deposit. Since the underneath geological settings of the deposit is unknown, such an evaluation can be misled the future investigations and development of the deposit.

Magnetic method is a very successful approach for exploring of minerals deposits with magnetic signature. As the one of the material that poses magnetic properties naturally, ferrous containing rocks and minerals provide anomalous signatures than of the background magnetic field that enabling to screen the same.

A Proton Precession Magnetometer was used for the data acquisition (model - GSM-19TW). Based on the geomorphological and terrain conditions field data acquisition was continued randomly with an integrating GPS antenna to the magnetometer. Acquired raw data files were processed integrate with the *Gem Link* (version 5.2) and *Geosoft.Oasis.Montaj* (version 6.4.2 HJ) software.

The processed total field magnetic intensity map and the anomaly map show the intensity of the positive anomalies is higher than the negative anomalies and a systematical stretch of positive and negative anomalies. Furthermore the anomaly map conspicuously illustrates the dipole behavior of the magnetic source beneath the interested area and confirms the geological configuration of the source body is a dike which dipping along the south-east direction.

Key words – Iron ore, Magnetic method, Magnetic anomalies.