

GPI (GOLD PROXY INDEX) AS A DISCRIMINANT BETWEEN MINERALIZED (AURIFEROUS) AND LEAN GRADE / BARREN RAB SAMPLES FROM BULYANG OMBE AREA, TANZANIA

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Abstract

Bulyang Ombe-I area is situated in the eastern part of the Nzege greenstone belt and comprises of Nyanzian metavolcanics & metasediments and granite. The area is dissected by NE-SW, NS and WNW-ESE extending faults and a NW-SE trending shear. The gold mineralization is shear hosted and falls in the hydrothermal (mesothermal?) category. Geologically the assemblage has felsic volcanics, mafic volcanics, sediments and quartzo feldspathic intrusion. The mineralized area shows wall rock alteration in the form of chloritization/ sericitization, potash-metasomatism and silicification. Ore bearing fluids in the area are silica rich sulphide solutions, potash rich solutions and silica rich solutions. Twenty mineralized (>20 ppb Au) and three hundred and twenty one lean / barren (<5 ppb Au) Rotary Air Blast (RAB) samples were studied to identify correlations of trace element values with the gold grades in Bulyang Ombe-I area. All the samples were from the mineralized and non-mineralized (lean grade) felsic volcanics. A measure of the potential gold grade based on the trace element has been developed that correlates the “ Gold Proxy Index” (GPI) with the different grades of mineralization . Similarly GPI obtained in Bulyang Ombe-I area of Tanzania were used to differentiate between mineralized and non-mineralized zones. Studies were conducted to identify which elements (out of the 45 analysed) correlate with gold and reflect their barren/ non-mineralized and mineralized zone thus avoiding dependence on gold assay alone. Six Gold Proxy Index (GPI) used were $\{(BexCu)/(CrxSb)\}$, $\{(BexPb)/(CrxSb)\}$, $\{(BaxCu)/(CrxSb)\}$, $\{(BaxPb)/(CrxSb)\}$, $\{(KxCu)/(CrxSb)\}$ and $\{KxPb)/(CrxSb)\}$. It was observed that the GPI values in the Au mineralized logs had values >15000 wherein the GPI values in the non-mineralized zone/lean grade zone is <2. However, this method is not an alternative to gold assaying.

Key words: Tanzania, Bulyang Ombe, Gold, Lithophile, Chalcophile, Gold Proxy Index ,Mineralization