

Paper Number: 157

Gold exploration using integrated geophysical survey methods: A case study for Ncema area of Esigodini in Zimbabwe.

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Reliable data in the form of mineral potential is important for exploration and development of mineral resources. In Zimbabwe mineral resource development has played an important role for sustainable economic development. Small scale mining claims in Zimbabwe often point to possible significant mineralization. The partitioning of ore bodies by small-scale mining claims belonging to different owner's present challenges to modern scientific exploration, this includes Ncema area of Esigodini in Zimbabwe. The potential gold mineralization at Ncema area of Esigodini remains obscured. The significance of this study was such that it would assist in obtaining the obscured potential gold mineralization data at the survey area which lies in the mineral rich greenstone belt. An integrated geophysical surveys which comprised of electro-seismic and electromagnetic methods was adopted. A combined survey was carried out in order to appraise the gold mineralization potential of the area. Measurements of the ground conductivity were carried out using Frequency Domain Electromagnetometer (FDEM-8) while the Electro-Seismic Unit (ESU) was exclusively used to delineate intrusive bodies, contact zones and structural breaks between the contrasting rock units and fractures. FDEM data was obtained along traverses as a first step in order to locate suitable ESU stations. Electro-Seismic Unit was thereafter carried out on these suitable stations. The integrated interpretation of both data successfully confirmed information regarding to interesting structures with potential to host gold mineralization.

References:

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