Gravity and magnetic explorations of porphyry-copper and gold-bearing ore mineralizations in mountains areas

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Key words: gravity, magnetics, exploration, ore, mountain

Abstract

Geophysical land surveys in mountains areas face problem due to the complicated relief of high level differences and strong height gradients, as well as because of difficulties in accessibility of observation points. Modern aeromagnetics can be applied instead, but the use of constant level reduce the signal from the remote objects of interest, while flight lines following local relief produce data of changeable heights like in a ground survey. Detailed ground gravity and magnetic surveys can be very useful in the process of exploration in case of opencast mining. Such conditions exist at the "Elatsite" ore deposit in Stara Planina mountain, Bulgaria. Gravity data analysis and interpretation there contribute to the delineation of faults and hydrothermal zones, while magnetic data are important base in the search for magmatic structures that create conditions for ore mineralizations. Field geophysical data and interpretation results are shown for the opencast mine "Elatsite" of 500 m quarrying depth and diameter of 2 km.