



## **Разломни структури, водни тела и рудна минерализация от електропроучвателните данни по югоизточния борд на рудник „Елаците”**

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## **Fault structures, water bodies and ore mineralization from electrical prospecting data on the south-eastern edge of the open pit “Ellatzite”**

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Geophysical survey in 2013 and 2015 on the south-eastern edge of "Ellatzite" open pit and adjacent areas to the southeast to river Ravna was accomplished by the methods of vertical electrical sounding and DC electrical tomography profiling by measuring the electrical resistivity and polarization characteristics of the rocks. Chosen methodology allows minimum depth of the study to be about 74 m, and the maximum depth of the study to reach to 156 m. Geophysical cross sections (resistivity and polarization) indicate a heterogeneous rock structure with multiple faults that are developed at the contacts and within individual lithological units. Fault structures control the water bodies and areas with high content of ore minerals in the studied rock massif. Data file containing 46918 records of resistivity, induced polarization and electrical conductivity and corresponding coordinates of media (centers of elementary blocks profiles) is created.

A new index  $K_w$  is calculated as an indicator to determine the water saturation of the rock massif. All zones with index  $K_w \leq 2$  are assumed as water saturated. The standard index MF (metal factor) is also calculated to determine the zones with increased ore mineralization. Zones with  $MF > 100$  F/m are conditionally accepted limit for increased ore mineralization. Corresponding maps of horizons with elevation of 1090 m to 1510 m are composed, taking into account the spatial parameters of the fault network. On these maps the controlling role of the faults on the water bodies in the massif is displayed, as well as the relationship of zones of ore mineralization with some of the faults. 3D models of water index  $K_w$  and the metal factor MF from horizon 1285 m to horizon 1450 m in the research area are built.