

GOLD-COPPERPORPHYRY AND LOW-SULFIDATION GOLDBEARING SYSTEM OF BOLNISI MINING DISTRICT

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ABSTRACT

The system is included in the Tethyan-Eurasian metallogenic belt. The belt spreads from the Lesser Caucasus to Turkish Pontides, via Black Sea continues to Bulgarian Srednegorie, till Banat and Carpathian Apuseni and consists of well known copper-porphyry deposits Murgul, Cheratepe, Chelopez, Medet, Elshitsa, Bor, Maidapek and Baye Mare.

Bolnisi mining district consists of two clusters separated by regional fault. The deposits are composed by two zones of mineralization. The high sulphidation zone represent gold-copperporphyry and goldbearing polymetallic mineralization, it is overlain by low sulfidation goldbearing mineralization in quartz-chalcedony and quartz-barite veins and stockworks. The generation of Late Cretaceous volcanics and mineralization is related to island-arc volcanic activity above the subductive slab in the late subduction and syncollision situation. The hinge retreat and slab detachment caused enrichment of the Late Cretaceous magma with depleted mantle material and appearance the ORG and WPG trends in volcanics. The slab retreat was the reason the transtensional block faulting and subsidence, and thus to preservation of near surface magmatic hydrothermal products. So, submerged NW block contained younger cluster of mineralization (80-81Ma), whereas uplifted SE block – older cluster (88-89 Ma). The younger cluster of mineralization in the SE block must be eroded.

Keywords: gold-copper porphyry, low sulfidation, islandarc, goldbearing.

INTRODUCTION

Bolnisi ore region consists of several gold-copperporphyry and goldbearing low sulphidation deposits. The Madneuli deposit, exploited at present, is one of the most important of them. The Tseteli Sopeli, Kvemo Bolnisi, Sakdrisi, Balichi, Bektakari and David Gareji occurrences are also economically interesting. Their geological structure, type and ore composition are similar to that of the Madneuli deposit. All of them have been pretty well studied with estimation of their reserves and resources and follow-up assessment of their prospects and potential. After introduction of high floatation r and Maidapek (the Serbian Timok), Almaz-Stanija and Baye Mare (Carpaths). The belt formation is related to convergence of Eurasian and Afro-Arabian plates resulted in closing of north branch of the Tethys ocean, vigorous Late Cretaceous

and hydrometallurgic modern technologies these ore reserves and resources are considered as being rather promising.

Bolnisi mining district represents one of the constituent parts of the Tethys-Eurasian belt, particularly, of its central and eastern segments. It runs through the Lesser Caucasus, Turkish Pontides, Black Sea basin and further extends in Bulgarian Srednegorie, Timok and Romanian Carpaths (Fig.1).

The belt hosts the most significant Eurasian deposits, such as Murgul, Guzeilaila and Cheratepe (the Turkish Pontides), Chelopez, Medet, Elshitsa and Elasite (the Bulgarian Srednegorie), Bo volcanism and associated mineralization occurred at late-subduction and syn-collision phases of development.