N E W S
OF THE NATIONAL ACADEMY OF SCIENCES OF THE REPUBLIC OF KAZAKHSTAN
SERIES OF GEOLOGY AND TECHNICAL SCIENCES
ISSN 2224-5278
Volume 2, Number 428 (2018), 141 – 148

Z. T. Umarbekova, K. R. Plekhova, K. Sh. Dyussembayeva,
M. N. Nuraly, D. A. Khairullayev

Institute of Geological Sciences named after K. Satbayev, Almaty, Kazakhstan.
E-mail: zama7777@mail.ru

THE HALIDES OF SILVER IN THE HYPERGENE ZONE GOLD-SILVER DEPOSIT ARKHARLY (SOUTH ZHONGAR)

Abstract. Halide minerals of silver in the oxidation zone of the Arkharli deposit, which are located in close intergrowths with native silver and gold, have been identified and studied. Native silver, gold and silver-containing sulphides are sources of silver for halogen minerals, as evidenced by their joint zonal aggregations. In the low flanges, among the halide minerals of silver are determined chlorargyrite, iodobromite, embolite, iodargyrite. The hypergenic nature of gold is indicated by the close paragenesis of silver, silver and silver halides. The favorable conditions in the paleozone of the oxidation of the Arkharly deposit with dry and hot climate led to the dissolution of gold and silver, their migration by acid solutions and their further settlement in the corresponding geochemical barriers, in which it was possible to plant hardly soluble chlorides, bromides and iodites.

Key words: gold, native silver, Arkharly, supergene, deposit.

Introduction. The Arkharli deposit is part of the gold-silver formation, which is described in detail in the works of I.S. Rozhkov, N.A. Shilo [1], Yu.G. Shcherbakova [2], T.M. Zhautikova et al. [3]. It is divided into two subformations: gold-silver adularia and gold-silver secondary quartzite or quartz-hydromicaceous. According to N.V. Petrovskaya, it is a formation of near-surface gold and gold-silver deposits, confined to the volcanic-plutonic belts that make up the upper structural assize of the warehouse regions of Kazakhstan. The formation under consideration was first isolated by V. Lindgren in 1934 under the name epithermal. Also, terms such as shallow, volcanic, propylitic, quartz-carbonate-kaolinite, etc., were used to determine this expression.

Kazakhstan deposits of gold-silver adularia subformation are confined to the Upper Paleozoic ring volcanic-tectonic structures. In their arrangement the leading role belongs to the zones of deep faults (Dauletbai, Kalmakemelsky, etc.), largely hidden under the volcanic structures of the Upper Paleozoic. Zones of faults are represented by a series of subparallel-oriented discontinuous faults, over which dykes and subvulcanbodies [4].

In the age range of occurrences of the gold-silver formation, the deposits of South-Western Dzungaria are the youngest. The late Permian-Early Triassic age of ores is unambiguously determined by the superimposition of mineralization on the Permian-Triassic deposits of the lyparite-basalt formation (K.A. Azbel, M.R. Borukaeva) and by the data of plumbous-isotopic studies N.G. Syromyatnikova, O.G. Koshevoi et al. (the mean value of the model age of plumb from galena for 8 samples was 240±4 million years), The Arkharli deposit is the most typical representative of the formation in this region. In the ore locuses of this deposit, there is a distinct overlap of mineralization on the dykes of the lamprophyre series, intruding Permian-Triassic volcanogenic rocks.

In determining the tectonic features of the Arkharly deposit, the leading role is played by the ruptures imposed on the elements of the palevolcanic structure and formed in the result of the long shear deformation. Ore-bearing quartz veins perform eccentrically echeloned ruptures developing over potential shifts in the foundation of the volcanic structure to some extent subordinate to the elements of the ring volcanic-tectonic structures.