Model of the genesis of collisional porphyry copper deposits Mishano-Zangezur zone in the South of the Lesser Caucasus

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The article deals with the questions of genesis of collision of the copper-molybdenum deposits Mishano-Zangezur zone in the South of the lesser Caucasus. As a result of the studies revealed that copper-porphyry deposits forming the island arc belt Lesser Caucasus ore-magmatic system is associated with two (Megri-Ordubad and Dalidagskiy) various intrusive complexes, in the petrographic composition. Copper-porphyry, gold-copper-molybdenum, copper-molybdenum and gold-polymetallic formation with polymetallic form a genetic series - ore complex paragenetic associated with the Eocene-Miocene intrusive activity in Mishano-Zangezur zone.

In the regionalization schemes based on the principles of plate tectonics, the geodynamic setting and the rotational-shear movements Mischano, Kafan trany and Olborsky plate (M. Rustamov, 2008), with different density of island arc development in postneoliberal stage soldered regional transform faults forming the southern island arc belt lesser Caucausus ore-magmatic system. In all geodynamic constructions intense multi-stage magmatism of postpeace-Miocene in the South of the lesser Caucasus spatial alignment of the subduction zone and distribution of magmatism are also other types of deflections and hail epicontinental Islands of volcanic and tectonic origin, are divided into two sectors, which differ in deep structure, composition, age and Genesis of composing their complexes, controlled by two zones deep faults in Mishano-Zangezur zone (7) the First Zangezur raising, (Ordubad ore region), second Akerinsky raising (Dalidag ore district).

The intensity of copper mineralization in porphyry Mischano-Zangezur zone, the similarity of the mineral composition of the products of mineralization, and polystageness it significantly complicated to determine their age and a genetic link with certain intrusions. Most common in this area of the ore field associated with discontinuities, intersecting intrusives of igneous rocks, deals a certain position in folded structures, as well a certain position intersecting faults (3). In this regard, within these areas, ore fields include such ore field, which are confined to transverse fractures in areas with branching and mates in different directions. Ore field in the areas of branching and coupling faults of different directions are significant spread in the South of the area. They are characterized by the fact that their localization effect block structure. In General terms, branching and pairing of faults with different directions there are a large number of relatively small too differently oriented faults and cracks between the branches of larger, regional long-lived faults. The result is a kind of frame (block) of more or less dense network of cracks, which creates favorable conditions for the circulation of ore-bearing solutions and the phased deposits of ores. This is especially typical in the South of this zone in the Central and extreme North-Western part of the Ordubad ore region, where the bifurcation of the major regional Ordubad-Dalidag-Gadabay fault is at small angles. Therefore, in Diakhchay and Agurt-Shelalinsky ore fields formed weakened areas are wedge-shaped and the ore bodies have the form of tectonic wedges (Shelale, Diakhchay, Danaly,

Muradkhanly). For most ore fields in these areas are often characterized by rather complex shape of ore bodies or intersecting and willing bodies, as we see for example in Goygol-Geydagsky, Agurt-Shalinsky and Teymurchaydagsky ore field on Mischano-Zangezur.

Regional Ordubad-Dalidag-Gadabay deep the rift is a highly important structural elements having a very large ore-controlling value on all distance (Azerbaijan part) lesser Caucausus ore belt. These long-developing fault structures penetrating to the very depths, confined various igneous formations of endogenous deposits, as in Tobacco ore district as well in a number of other ore districts of the lesser Caucasus (Dalidag and Gadabay). In areas where Agurt-Shalalinsky ore field, branching and pairing gaps in different directions are significant spread. They are characterized by the fact that their localization is influenced by the so-called frame (block) structure. In many cases, these sites of branching and pairing gaps in different directions there are a large number of relatively small gaps between the branches of larger gaps. The result is a sort of skeleton of more or less dense network of cracks, which created favorable conditions for the circulation of ore-bearing fluids and deposition of ores. In many cases, these areas of branching and coupling faults in different directions, as noted above there are a large number of relatively small faults between the branches of larger regional faults of a stretch. In the Northern and North-Eastern part Mischano-Zangezur zone in its physical and mechanical properties very different from the enclosing rocks are favorable for the localization of copper-molybdenum mineralization and is subordinate importance core type. In this case the ore concentration are concentrated in endo-and exocontact zone of Intrusive Kalidascope array, and temporary displays of copper-molybdenum-porphyry ores correspond to the final stage of formation of the granitoid intrusion. Ramazanov, V. G.(9) here notes a clear controlling mineralization from dikes of quartz-diorite porphyry, which are products of the final stage of granitoid magmatism in the Central and southwestern part of the area. While ore veins and dikes are confined to the same system of cracks. Questions of age and genetic relationship of porphyry copper mineralization and associated pyrite-polymetallic and gold-ore and gold porphyry copper-gold ore cannot be considered as finally settled. To resolve questions of age and genetic relationship of mineralization of copper-molybdenum-porphyry deposits is important to understanding the relationship of intrusive rocks, dikes and mineralization, which already many years are the subject of intense debate. Comprehensive studies of intrusive rocks, hydrothermal-metasomatic formations and copper-molybdenum mineralization conducted by a large team of geologists IGEM, Academy of Sciences of the Russian Federation under the leadership of S. V. Efremova (1984), S. A. Pashkov (1975) and others found that copper-molybdenum mineralization in the aftermath of the aplite dikes, torn at the time of formation of the intrusion of the dikes oligoclase quartz-diorite. Some researchers (M.V.Lygin, S.E. Guleva 1953) on the example of the Kadjaransky deposit dikes of Zangezur considered post-ore, the other (M. P. Isaenko, etc. 1975), all the dikes of the Zangezur ore district belong to prior-ore formations. In addition prior-ore dikes of aplite and diorite porphyry composition, allocates and post-ore in relation to the main productive stages of granodiorite-porphyry dykes, which, however, in relation to polymetallic stages are prior-ore.

Interaction with dykes of granodiorite-porphyries, Sh.M. Azizbeyov, T. G. Hadjiyev M. I. Rustamov (1961, 1964), etc. is not installed. Given that the dikes of granodiorite porphyry, and in places the diorite-porphyry cut by quartz-molibden veins and veins and these veins contain fragments observed in the dike and turn intersected quartz-chalcopyrite veins, intruded after the

quartz-molybdenite, but the quartz-pyrite-chalcopyrite stage of mineralization. Features of composition and structure, irregular contacts with numerous branching apophyses allowed S. V. Ephraimov (1984), E. A. Mamedov, (1981), S. A. Pashkov (1986) and others assume that composing the dyke material was characterized by large permeability in the host rock due to saturation of the melt volatile, is a product of differential residual lesion and cannot be seen as a manifestation of a new phase of intrusive activity.

The study collected us the actual material on the Ordubad and Dalidag ore district, confirms the conclusion that composing the noted dyke material was characterized by large permeability, which in our opinion can be attributed to other causes, in particular the assimilation of a significant amount of ore minerals molybdenite, chalcopyrite, pyrite of the early stage of mineralization. Therefore it seems not justified to assume that dikes originating the lesion was residual and differential and hence to deny the possibility of the formation of these dikes resulted in a new phase of Intrusive activity. Detailed microscopic study of a large number of polished sections of dyke species shows that both the granodiorite-porphyry and diorite-porphyrites (Geydag-Goygol) is included in the dyke and the dyke itself bear ore mineralization. Are pyrite, chalcopyrite, molybdenite (Diakhchay, Shelale, Goygol), as well as sphalerite, galenite, gold and silver, the quantitative interaction which in diorite-porphyrite and in the dyke variety. In Geydagsky field of quartz syenite-diorites contain considerably more molybdenite than the dikes of granodiorite-porphyry composition, and the latter contains mainly chalcopyrite mineralization with disseminated molybdenite and gold sometimes intersecting polymetallic veins. All this, in our view, confirms the previously stated point of view on duration and phasing of industrial rudoobrazovanie process of Ordubad ore region (1993, 1999, 2003) and in copper-molybdenum deposits of Mischano-Zangezur zone, shown apparently due to the formation of two (Megri-Ordubad and Dalidagsky) various intrusive complexes, in the petrographic composition. The formation of multi-formational deposits or ore fields, in our opinion, more correct to explain the evolution of the magma chamber, which depending on the tectonic conditions of collision belts, periodically supplying the upper layers of the earth's crust by magma and hydrothermal ore-bearing solutions. In this case, it would be natural to expect more complicated interaction of intrusive rocks, dikes and mineralization (Fig.2;3). Post-ore stage to the early stage of the breed should be prior-ore for a later phase, but the igneous rocks taken as a whole, if they are associated with ore-hearth, must be prior-ore, for the last stage of ore formation usually distorts and obscures the facts, widely studied on dikes and rocks of the late stage against the early mineralization stage.

It should be noted that the quartz-molybdenite veins and veinlets Geydagskiy deposits relate to an earlier phase of mineralization compared to the gold-polymetallic ore-deposits. According to V. M. Baba-zade, V. G. Ramazanov, A. A. Masimov and N.A.Abbasov copper-molybdenum and gold-polymetallic formation with polymetallic form a genetic series-ore complex paragenetic associated with the Eocene-Miocene Intrusive activity in Mischano-Zangezur zone. It is possible to assume that copper-molybdenum and gold-sulphide mineralization are formed after the implementation of the aplite dikes, granodiorite-porphyry, spessartite and diorite-porphyrite which are genetically associated with magmatic centers and is due to the emergence of a qualitatively distinct, isolated foci, which differ in the ratio of the useful components of Mo, Cu, Au, Ag, Zn, Pb, As, Bi.

In the mineral composition of ores in addition to the main ore-forming minerals of pyrite, chalcopyrite, sphalerite and galenite participate native gold, fahlores, marcasite, bismuthinite, from the gangue minerals quartz, calcium. .

Along the veins of the breed intensively sericitizationed and piritizationed, sometimes kaolizationed, carbonizationed and quartzationed. Ore in general, are the result of a multistage process of mineralization. Various researchers (1,3,5,8) are allocated from 6 to 10 stages of mineralization, among which the main ones are productive for metallopeptidase zones of molybdenite-chalcopyrite, quartz-molybdenite-chalcopyrite, quartz-pyrite-chalcopyrite. More than half of the molybdenum deposits associated with quartz-molybdenum stage and fewer with quartz-molybdenite-chalcopyrite. The bulk of the copper associated with quartz-pyrite-chalcopyrite stage, relatively weakly manifested quartz-galenite-sphalerite and quartz-magnetite stage. In the ore zone, showing (as in the region and also in Dalidagsky ore district) zoning of the distribution of mineralization, expressed in the alternation of the relatively high temperature of low-temperature stages as the distance from the main Ordubad (Ordubad ore region) and Qatardash-Dalidasgsky. (Dalidagsky ore district) is a ore-controlling, representing fragments of Ordubad-Dalidag-Gadabay long-lived, cross-cutting lineament structure, copper-molybdenum-porphyry and specialization which are identified everywhere. Mineralization within Kalidascope ore district is localized on segments of fault zones, saturated dykes of granodiorite-porphyry, granodiorite-syenite-granitic composition. In the North-Eastern part Mischano-Zangezur zone of Terter along the transverse fault, the porphyry intrusions, in apical parts, which developed a rich intense fracturing and hydrothermal processing of rocks, was a favorable environment for the placement of copper-molybdenum ores.

On the Eastern part of Mishano-Zangezur zone, posteocene-low-miocene granite-granosyenites formation Dalidagsky pluto spatial and paragenetic associated copper-molybdenum Dalidagsky, SultanGeydarsky, Teymurachadagsky symptoms. In the ore-bearing rocks - granodiorites, granodiorite-porphyries and quartz sienite-diorite widely developed complex series of dykes of granodiorite-porphyries and other vein rocks. However, as the mineralization develops close to them, they can be considered the number one of the search characteristics of the copper-molybdenum ore.

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