

Dyke complex characterized Mehri-Ordubad granitoid intrusive situated in the south-west of Miskhana-Zengazur metallogenic zone.

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The decision of questions of age and formation of dike complexes of the Ordubad ore region, Miskhano-Zangezur zone of the south of the Lesser Caucasus is considered. Three groups of dykes belonging to different stages of the manifestation of the volcanoplutonic process have been identified. Dykes and dyke-like bodies of the final phase of the Megrid-Ordubad intrusion, mainly granodiorite-porphyry and diorite-porphyry have a close spatial, possibly genetic relationship with copper-molybdenum porphyry mineralization.

Complex structured Mehri-Ordubad granitoid intrusive is situated in the south part of Lesser Caucasus, in the south-west of Miskhana-Zengazur metallogenic zone. Mehri-Ordubad and Delidagh intrusive masses are situated in this zone, which differ from each-other by their geological-structural and petrographic composition and a lot of associated industrial ore and non-metallic minerals are also concentrated in this zone. In terms of metallogeny these deposits are assembled in ancient Azerbaijani lands - Ordubad, Delidagh and Gafan ore regions. Ordubad ore region is separated by Mehri-Ordubad granitoid batholith and the dyke complex with rich petrographic composition characterizing its different phases. The role of dyke complex is valued highly in location and concretion of the endogenic ore deposits in the region. The dyke complex rocks of ore region can be divided into 2 parts according to their petrographic composition: 1) Acidic and medium-acidic dykes - aplites, pegmatites, granodiorite-porphyries, granosyenite-porphyries, coarse-grained granodiorite and granosyenites, syenite-diorites; 2) Main and medium compositional dykes - diabases, gabbro-diabases, quartz diabases, gabbro-diorites, andesite and diorite-porphyries, quartz porphyrites and lamprophyres (spessartites, kersantites, vogesites and minettes). They were formed till pluton and at all stages of pluton. As it is known ore deposits are accompanied by large depth dislocation and when contact plane of ore-bearing intrusives combines with wall rocks and these depth faults, sometimes coincides, mineralization is situated in endo- and exo-contacts of intrusives depending on their shapes. Mineralization concentrates mainly in convenient ore-oriented structures, which are formed in intersections of regional control structures and different directed local fault systems.

Copper-porphyry, gold-bearing copper-porphyry, polymetal, pyrite-polymetal, gold-bearing copper-molybdenum and other native metal-bearing many types of sulphide deposits on the structural blocks, which were formed by Paragachai Goygol-Goydagh, Gapijikh-Goygol ore-oriented faults in north-east direction along Ordubad-Delidagh-Gadabey regional ore controlling depth fault, are situated in complex geological structural Mehri-Ordubad pluton intrusives, mainly in contact stripe of granosyenite and granodiorite-porphyry intrusives. Younger granodiorite-porphyries spread widely in ore regions. Dykes belonging to granodiorite-porphyry intrusive spread widely in all ore areas of the region. Their

thicknesses range from 0,4 to 20-23 m, sometimes 45-50 m, extend from several meters to 6-7 km. It extends beyond borders in the west ends of ore region. Studying the formation sequence of magmatic rocks, various dykes, small intrusives and the analysis of their interaction with mineralization show that placer-vein, copper-molybdenum-porphyry mineralization are related mainly with granodiorite-porphyry body, dykes and dyke-like intrusives. However, there is a variety of opinions among researchers, which leads to the wrong results in the assessment of the ore deposits during search and exploration works. So, when V.T.Pokolova (10) studied ore deposits situated in the south slopes of Lesser Caucasus, she stated in her book "The basis of assessment and prognosis of natural resources" that the majority of copper-molybdenum mineralization is accumulated in porphyry rock bodies, dyke-like intrusive formation and dykes. When V.S.Popov (9) described the origin and geology of copper and molybdenum porphyry deposits, he showed that ore deposits belonging to copper-porphyry formation situated in Miskhana-Zengazur ore zone of Lesser Caucasus is associated with potassium-sodium granitoids, mainly with porphyry dykes. When V.A.Pervago (8) studied Garajan ore deposit in Miskhana-Zengazur ore region, he concerned granodiorite-porphyry dykes to the period of ore formation and before it, at the same time he showed that diorite-porphyry dykes belong to the period of ore formation. When M.P.Isaenko and others (10) studied copper-molybdenum deposits situated in Miskhana-Zengazur ore region, they stated that placer-veinlets, copper-molybdenum mineralization are accompanied by porphyry dykes, mainly granodiorite-porphyry, diorite-porphyry dykes.

When S.V.Yefremova (7) studied copper-molybdenum ore formation in Miskhana-Zengazur region of Lesser Caucasus, she showed that most of copper-porphyry deposits are mainly related to dyke-like formation and dykes of granodiorite-porphyry and porphyry rocks. But he noted that endogenic ore deposits in Ordubad ore region are associated with relatively young diorite-porphyry, granosyenite, granodiorite-porphyry dykes. According to F.I.Vekilova (1954) copper-molybdenum mineralization is richer in lamprophyre, mainly in granite and aplite dykes in Paraghachai ore area of Ordubad ore region. V.M.Babazdeh, V.G.Ramazanov, A.A.Masimov, N.A.Abbasov (1,2) show that copper, copper-molybdenum, copper-porphyry mineralization in Ordubad ore region is associated with small intrusive, but S.M.Suleymanov, E.M.Mammadov (13) stated that they are related to dykes of misdag and pezmere types. When V.M.Babazadeh, V.G.Ramazanov (4,5) studied spreading peculiarity of alkaline elements in magmatic rocks in Ordubad ore region of Mehri-Ordubad pluton, they noted that the amount of alkaline elements is high in aplite (100 g/t rubidium), andesite-dasite (48 g/t rubidium) and andesite-porphyry (45 g/t rubidium) dykes. S.A.Baktashi (6) correlates copper-porphyry and polymetal mineralization genetically with granite and granosyenite intrusives in Ordubad ore region, shows their paragenetic relation with granodiorite-porphyry, granite-porphyry and lamprophyre dykes. At the same time, he noted that occurrence of native metals is related with contact halo of longitudinal body-like intrusive veins with paragenetic diorite-porphyry composition. Occurring of body-like granodiorite-porphyry

intrusive on the surface of ground is observed relatively in wide area in Zangazur pass in Ordubad ore region. Many dykes of body-like intrusive divide and extend for 25-30 km at intervals in Diakhchai, Shalala, Yashillig ore deposits.

We consider that, mainly granodiorite-porphyry, diorite-porphyry dykes play important role in restricted localization of copper-porphyry and related gold ore situated in the north-west and central part of Ordubad ore region and at the same time granodiorite-porphyry dykes in explored part of Mehri-Ordubad pluton are represented by two stages of dyke-formation– granosyenite phase and granodiorite-porphyry phase: granodiorite-porphyry dykes are involved almost in structure of all ore areas of ore region. From this point of view Paraghachai, Gapichig, Goygol, Goydagh, Aghyurd, Shalala, Goyhundur, Diyakhchai copper-molybdenum-porphyry, gold-bearing copper-molybdenum deposits play great role in clarifying the relation of dykes with mineralization in ore region. Mainly granodiorite-porphyry, granosyenite-porphyry, diorite-porphyry dykes spread widely in Paraghachai ore area. It should be noted that these dykes are associated closely with copper-molybdenum mineralization in ore-controlling structure. Quartz-molybdenite veins are observed in granodiorite-porphyry and diabase bearing dykes situated within coarse-grained diorite intrusive in Paraghachai deposit. Both rocks are cut by quartz-chalcopyrite and sometimes quartz-carbonate veins and veinlets. Different directed and crossing quartz-chalcopyrite veinlets are accompanied mostly by spreading pyrite in granodiorite-porphyry dykes, also in quartz syenite-diorite in Munundere deposit. Sometimes quartz-molybdenum veinlets, mainly these dykes intersect with quartz veinlets with many wrong morphological shaped small faults in contact of granodiorite-porphyry dykes with coarse-grained in Munundere area. These features of quartz show that there was local compression and expansion when these veinlets were formed. These quartz veins are rich with placer molybdenum mineralization. A part of copper-molybdenum-porphyry deposits of industrial importance is situated in Goydagh-Goygol ore area of Ordubad ore region. Goydagh, Goygol, Khanadagh, Jajikhli, Gumushdere, Dikyurd, Bashkendchai copper-porphyry, copper-molybdenum, gold-bearing copper-molybdenum ore deposits and occurrences, which are situated in endo- and exo-intersect strip of Sekersu and Goydagh granosyenite intrusives in the transverse structure layer of the ore area, are characterized by “Daykali” tin-lead mineralization occurrence. Interaction of ore masses and dykes in this type of deposit play great role in mineralization. Unlike copper-molybdenum-porphyry deposits and besides dykes of granosyenit and granodiorite-porphyry phases, Middle Eocene aged dykes and dyke-like andesite and andesite-dacites also participate in the structure of polimetal deposits situated not far from the contact halo of intrusives comparatively than copper-molybdenum porphyry deposits mainly in the central and north-west part of the ore region.

As a result it should be noted that dyke complex of Ordubad ore region is divided into acid and basic dykes according to petrographic composition and they were formed till pluton period and at all stages of pluton. Analysis of interaction of mineralization dykes in gold-bearing copper-molybdenum-porphyry deposits in the ore region show that mineralization spread widely in granodiorite-porphyry dykes,

mainly in its side part, whereas mineralization weakens a little far away from it and generally ore veinlets wedge to it. This also shows that there has been a certain active tectonic movement between mineralization and granodiorite-porphyrines and it witnesses their formation at the same time. Structural network of gold-bearing copper-porphyry and gold copper-porphyry deposits and occurrences situated in ore region is defined by small intrusive complex and dykes system belonging to the last granodiorite-porphyry phase of intrusive activity of the ore region. Moreover, spatial orientation of dyke often defines the orientation of ore masses.

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АННОТАЦИЯ

Рассматривается решение вопросов возраста и становления дайковых комплексов Ордубадского рудного района, Мисхано-Зангезурской зоны юга Малого Кавказа. Выделено три группы даек, принадлежащие различным стадиям проявления вулканоплутонического процесса, Дайки и дайкообразные тело заключительной фазы внедрения мегри-Ордубадского интрузива, представленные в основном гранодиорит-порфиров и диорит-порфиров имеет тесную пространственную, возможно и генетическую связь с медно молибден порфировая минерализация.