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Discontinuities, Distribution Scales and Formation Conditions of Gujareti-Khachkovi Ore Field

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ABSTRACT : Discontinuities, distribution scales and formation conditions of Adjara-Trialeti Gujareti-Tskarostavi ore field are reviewed in the work. As known, studying ore field structures has got big significance for increasing efficiency of investigation works. Gujareti-Tskarostavi ore field is highly complicated by tectonic viewpoint. Various type dysunctives and fractures are observed. Part of fold structures, Arjevani-Bakuriani fault and other geological elements in distribution of ore field is represented in the article. Characterization of ore column structures has got big part, which is connected to magmatic creatures, fold forms and discontinuities. Basic and specialized methods of studying structures are used in the work. Besides, Gujareti-Tskarostavi ore field was studied by us with distant probing method, resulted of which basic fault and stress structures were revealed, where the best conditions are made for establishment of ore field. In particular, adjacent territory of Arjevani-Bakuriani fault represents convenient conditions for oreing-down.

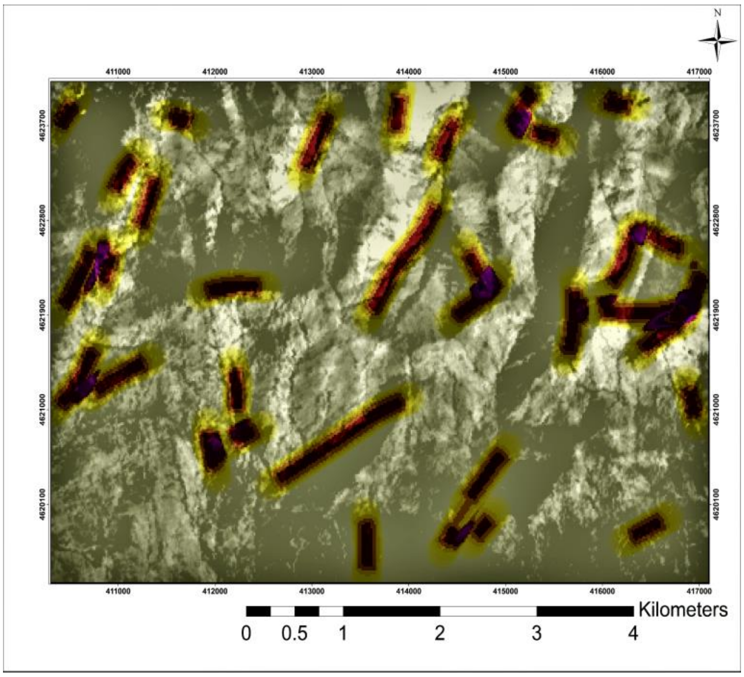
KEYWORDS : ore field, fold system, fault, column, discontinuities, fractures.

I. INTRODUCTION

The geological structure of the Gujarat-Khachkov ore field is mainly composed of Cretaceous, Paleogene volcanogenic-carbonate and flysch-terrigenous sediments, as well as subintrusive and Daikite formations. Of particular interest in terms of runoff are the Middle Eocene sediments, which make up 85% of the district. The Middle Eocene of the Dviri range consists mainly of effusions of effusive rocks with dolerite or andesitic microstructure, with porphyriclastic and porphyry inserts, while the cement is lithoclastic tuffs. The degree of rock replacement varies, with more intensively modified cement. The nature of the change corresponds to the medium and low-temperature propylite change (albite, chlorite, carbonate, epidote-zoite, and pyrite). In the zones of hydrothermally altered rocks, fine-grained quartz is added to these minerals. Magmatic formations are represented in the form of various genetic types of blood vessels, hypabasis, and small subintrusions. The latter are mainly located along the regional fracture of the subgeneric direction, within the hydrothermally altered gold-bearing mineralized zone, and are represented by gabbro diabases. These bodies are also fixed outside the hydrothermally altered zone at a distance of 0.7-2.5 km. They have a stock-like shape, and in the plan, they are bodies with an isometric oval shape of 250 * 500 m square. Gabrodiorite bodies intersect volcanic formations in the Middle Eocene. Small intrusive bodies are characterized by variable compositions corresponding to diorites, diorite-porphyrites, and quartz diorites. The gabbro varieties of these rocks are also known. The rocks are composed of oligoclase-Labrador order plagioclase, often of zonal structure, monoclinic pyroxene, hornbeam, and small-scale chlorinated biotite. In some cases, quartz discharges are observed. Some researchers have noted an excessive amount of silica in these rocks.

THE ROLE OF TECTONICS IN THE FORMATION OF THE GUJARAT-KHACHKOV OREFIELD :

Tectonic faults are an important element of the ore structure. The origin of hydrothermal deposits is mainly determined by areas of intensely pollinated rocks. The presence of intermittent disturbances leading to hydrothermal solutions is essential for the formation of ore bodies. Subsequent movements of the ore are also associated with tectonic faults. The Gujarat-Khachkov orefield is tectonically more complicated. (Fig. 1) The conception of development must have led to the emergence of various types of disjunctive dislocations. Tectonic faults of different orientations and genetic types are observed within the orefield, the frequency of which (Fig. 2) creates a favorable physical environment for the extraction.



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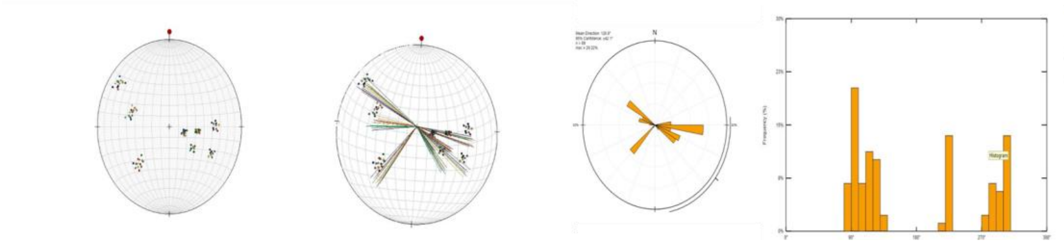
(Fig.1)Map of stress zones.



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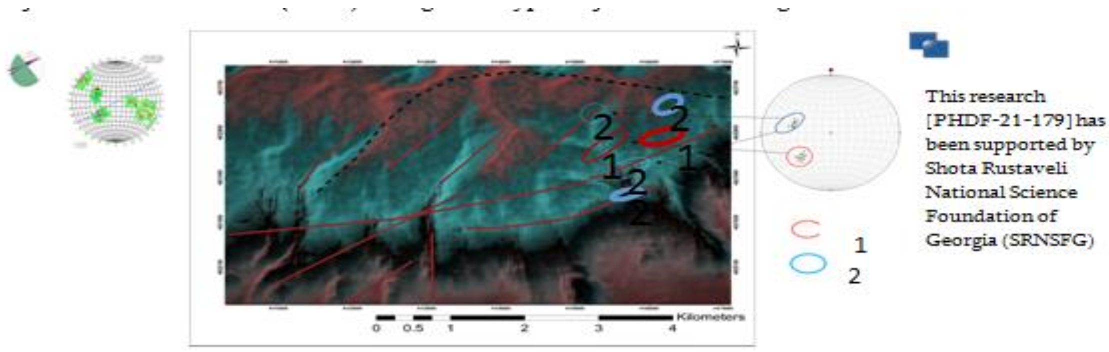
(Fig. 2) Diagram showing the geological orientation of JOINTS and their frequency

III. RESULTS AND DISCUSSION

Determining the nature of disjunctive dislocations, it can be said that within the Gujarat-Khachkov ore field, the ore-bearing system is a sloping-type, steep-oriented fault structure, while the Arjevan-Bakuriani regional faulting creates numerous obstacles for it. In the geometric classification we grouped the joints according to the spatial orientation. They mostly cross bearing rocks. Based on the geometric classification, the genetic types of the joints were determined. (FIG. 3) Two genetic types of joints were distinguished.



(Fig. 3) Genetic types of joints and their determine.

The first system is normally open and shows no trace of any displacement. The created void is often filled with various (hydrothermal and magmatic) formations. Their surfaces are uneven, chaotic, sometimes toothed. Rock debris is observed along the joints. Often these joints heal quickly along the direction and slope. The second system is usually tightly closed. They have smooth surfaces on which displacement studies are often observed in the form of scratches, streaks, and scaling mirrors. Cross-cutting joints are common. These joints are characterized by less variability in direction and inclination. Areas are observed where they are characterized by high throughput. The wide distribution of these types of joints indicates compression of the site. A thin joint is observed in the area adjacent to the faults, which is not permeable. These joints are parallel to the fault plane and have the nature of fault joints. By interpreting tectonic faults along the fold axis and the fault pole, we conclude that in the initial stage of folding, when the axis of the deformation is vertically positioned and the C is maximal compression, horizontal, arc-shaped faults are formed with the fault-type fault position. Subsequent compressive stress caused the plastic deformation to be replaced by fracture dislocation, followed by the formation of dysfunctional structures. The joints that appear at this stage of the folds, which are sharply angled to the plane of the fault, form a system of fracture joints.

IV. CONCLUSION

Ore is found in both genetic fissures. In the fracture joint system, both quartz vessels and strongly metasomatically altered formations are observed, which, according to previous researchers and our work, are gold carriers, while in fracture-type joints, quartz veins are observed. As for the Arjevan-Bakuriani regional disintegration, it must be a complex structure, its complexity is also reflected in the nature of the movement. The severity of the fracture is also indicated by the fact that the fracture systems directly attached to it, which are carriers of quartz veins, intersect the fracture-type fractures originating in the early stage, the latter being gold carriers. Hence the Arjeva-Bakurian subregional regional fissure existed before the fold and probably gave birth to it in the form of a spreading structure, while the fold and the differentiated movement of the crust caused its transformation into a compression system.

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