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Research Article

THE FORMATION AND PLACEMENT OF ENDOGENOUS TOOLS OF THE CHADAK OREFIELD (UZBEKISTAN) IN A GEODYNAMIC SITUATION

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ABSTRACT
The article was written about the research technique of a geodynamic situation of ore fields in ore formation processes. Results of reconstruction of a geodynamic position of the area of the field Guzaksay at ore deposition are stated.

Keywords: *Geodynamics, Mineralization, Graben, Kinematics, Deformation, Mineralization*

INTRODUCTION
In the development of productive forces of any state, the existence in their depths of mineral raw material resources is essential. Search and investigation of mineral raw materials, expansion of their resources are the main objectives of geology—their task - identification, investigation, and preparation for the industrial development of new mineral deposits.
The era of discovering the fields the close-surface and coming to the Earth's surface in many states long ago is ended. Special attention is paid to territories where ore-bearing structures, geological formations favorable for mineralization placement, are blocked by young deposits. Under such circumstances, the increase in efficiency of prospecting operational works is possible when developing and improving theory-methodological bases of studying genesis, regularity of formation, and conditions of placement of industrial mineralization using innovative technologies.

MATERIALS AND METHODS
Nowadays, for many countries of the world, the main problem of geology is the expansion and strengthening of mineral resources. One solution to this problem is the study and assessment of flanks and the deep horizons of the known and fulfilled fields where consistent patterns of their formation and a condition of placement of mineralization are determined.
At the beginning of the 21st century, the new branch of geodynamics – geodynamics of ore fields-was based on complex researches of geological and structural features of ore objects the geodynamic situation. The movement of the area of manifestation of mineralization which created favorable conditions (positions) in its structures to the course of ore formation is deciphered arose.
At the institute of mineral resources, the technique of reconstruction of a geodynamic situation of ore fields and fields based on results of a geologic–structural examinations of conditions of formation of areas and placement in them endogenous mineralization and experimental works on studying the mechanism of education the ore-controlling of structures and their tectonic tension is created.
In studying the geodynamics of ore formation of the Guzaksay graben, this technique was used. Reconstruction of a geodynamic situation of the period of ore formation is the cornerstone of the materials of laboratories the tectonic-physic of methods of researches of the institute of mineral resources reflecting results of the study the tectonic-physic of conditions of formation the ore-controlling of structures and gold mineralization of the Guzaksay graben and the field of the same name and its ore sites.

The analysis of a tectonic-physic situation of the area of a graben, according to an experiment, allowed Abdullaev (1954) to establish that tectonic tension, deformation, and a geodynamic case of a graben are one many weaker in comparison of the territories adjoining to him where fields of moderate sizes of pressure hold the dominant position. The reason consists, according to them, in the spatial provision of a graben on the relation and the direction of regional tectonic efforts of compression where the graben and reduction have the southerly direction. In this situation, the boundary breaks of a graben are passive in the movement, from here and deformation is poorly changeable. Boundary breaks are almost not mobile (horizontally), and all energy of tectonic compression leaves on their vertical activity forming the waste type of shift. Most likely, it was a significant factor in easing tectonic tension, the manifestation of passivity of deformation, and the formation of a geodynamic situation in a graben before ore formation. The tectonic activity of the Djulaysay break due to which the graben is broken into blocks is characteristic of this period. The action of a vacation was expressed through a horizontal shift clockwise. As a result of it, boundary breaks and blocks of a graben were displaced. Movement on leaves to models is made by 3-8 mm if to transfer him to a natural object, then it will make 60-110 m of Geology – the structural researches conducted by Turapov *et al.*, (2005), allowed to establish shift on the Djulaysay break from 50 to 129 m. Thus, field definitions and experimental data almost coincide.

Interpretation of a geodynamic situation of the period of ore formation shows that under the influence of regional forces (tectonic–magmatic activity during a specific metallogenic era of C3-P1), structures of a graben and components of the Djulaysay break became more active. Explosive structure components, the Djulaysay break a graben into smaller blocks of morphology. According to studying the mechanism of formation and development of the ore-controlling of structures of a graben and the field, the activity of explosive systems is expressed through the shift movement—the maximum amplitude of exercises in a natural object from 50 m to 150 m. The action of breaks was led to the erratic movement of blocks of a graben.

The movement on the Djulaysay break led to the splitting of side breeds with the formation of a series of cracks of the separations parallel to the direction of boundary structures. These structures are accurately reflected in the geological map of the Chadak ore field of scale 1:10000 executed by E.V. Ganiyeva. The main feature of these gaps is that in their further development, they played a specific role in the spatial placement of gold mineralization on sites Akbulak, Karakutan, and Hugo – Western Guzaksay.

The movement on the Djulaysay break caused insignificant local activity in boundary structures. This activity represents horizontal movements that caused the stir of separate blocks and influenced tension distribution, both in the graben and inside blocks. It resulted in the concentration of pressure in sites of interfaces of breaks, thereby having increased tectonic deformation of breeds. Besides, zones of deformation of local stretching along the made active leaves were formed (Akbarov *et al.*, 2014).

On the manifestation of local zone deformation zones and stretching before – and ore stages the northern area (North of the Djulaysay break), a graben is more active in the movement than southern. It means that a north part of a graben of geodynamic is more active, i.e., activities of a surface of earth crust are brighter, than in the southern region where the geodynamics is more passive. Suppose this geodynamic situation makes an overlay of the development of ore mineralization. In that case, it is possible to see that all shows of gold of a graben known today are located within the northern area. It indicates that the ore process caused the activity of a graben, his structural elements, and all these processes happened against the background of tectonic tension and deformation. But despite this, the tectonic physic condition of a graben is defined by tectonic weakening. 90% of the space of a graben is occupied by fields of weak sizes with neutral zones, and the other 10% fall on lots of moderate dimensions. The nature of their distribution entirely depends on the morphology and geodynamics of explosive violations. Their contrast distribution in near-ore space is defined by the movement on a break and their morphology. The graben is broken into blocks, each of which has a picture of the distribution of tectonic tension, deformation, and geodynamic feature. The position of blocks and orientation of tectonic activity of their boundary structures define the

spatial movement of blocks rather than each other. It, in turn, influences the extent of migration of efforts of compression on all areas of blocks (Turapov *et al.*, 2005, 2009).

RESULTS

The tectonic activity of graben structures during ore formation did not pass without a trace. The manifested majority of the compression energy went to move along the faults, and only a small number of them, overcoming the resistance of the breaks, penetrated deep into the rake of the block. This was the reason for easing the tension of the robber. Almost the entire area of it is under weak stress values with numerous islands of their neutralization zones.

About 20% of the graben area is characterized by a drop of stresses to zero and is spatially related to faults. If neutral zone parameters in the model are transferred to a natural object, it is about 800 m. Within such limits, the geological environment in the near-fractured space does not experience tectonic tension; on the contrary, it is under the influence of local tension deformation, which causes rock cracking. Thus, increasing their permeability to liquid, gaseous sources of ore formation. Therefore, neutral zones can be considered to be the most favorable for the placement of gold weapons.

As studies of 1991-2008 show. The tectonophysical features of the Chatkalo-Kuramin gold ore deposits, their formation, and placement of gold tools directly depend on the values of tectonic tension, i.e., they are associated with weak stress values neutral zones. The given results of the study of the Guzaksay graben of the Chadak ore field once again confirm this.

In recent years, search work in the Chadak ore field has been aimed at searching in the southern part of the Guzaksay graben as the most promising for discovering new clusters of gold weapons.

In the southern part of the graben, the structural situation is the same as in the central one, where Akbulak - a series of northwestern ruptures complicate Karakutan and Guzaksay ore-casting faults. In this part of the graben are the ore sections of Akbulak, Karakutan controlled by the Akbulak - Karakutan fault, and the South - rear Guzaksay section.

So, in general, for the Guzaksay graben and its southern territory, the decoding of the geodynamic situation is made in two versions (Fig. 1). The basis of geodynamic studies is the results of modeling the South of the graben (Fig. 2), where the basis of the model is established based on the study of geological-structural conditions for forming and placement of gold tools.

In conditions of regional tectonic deformation, movement along northwestern faults is observed. The activation process was accompanied by horizontal displacements and the flaws that caused the blocks to move in space.

The movement of the blocks is so pronounced that one can judge this by the formation of opening cavities by faults.

These opening cavities occurred along with the boundary structures of the graben, at the intersection of them with northwestern faults.

The formation of one of the opening cavities is associated with the Guzaksay fault in the section of its splitting into the Main and Southwestern branches. With this opening zone, the Central area of the Guzaksay deposit is connected with the most potent quartz-ore location and with a significant concentration of gold.

The tectonic-physical state of graben is characterized by a predominance of values of weak stresses. Increasing tectonic tensions are observed on the northern sides of northwestern faults, in areas of their intersection with the border structures of the graben.

The eastern area of the graben is characterized by stability in the tectonophysical and geodynamic situation. Whereas for western - on the contrary, instability, contrast, where the magnitude of stresses varies from zero (neutral zones) to intense and geodynamics is expressed by the activity of northwestern faults.

Since the Chadak ore field, including the Guzaksay graben, is composed of the Upper Paleozoic's volcanogenic and intrusive formations. They are prone to the figure in them of broken, wavy,

morphology-complex fracturing structures. In their further development, significantly when displaced along with them, form fractures in the enclosing environment, crushing and cracking zones. All of them increase the permeability of rocks and create conditions for the manifestation of various geological processes, including ore ones. Given this, along the northwestern faults, it is necessary to look for small break-offs spatially perpendicular to the former. This may be a series of small gaps that could reasonably affect ore formation, acting as ore-accommodating structures.

Thus, in the pre-ore stage of geodynamic development, its southeastern part was tectonophysically weakened. Its structures were in a weakened state.

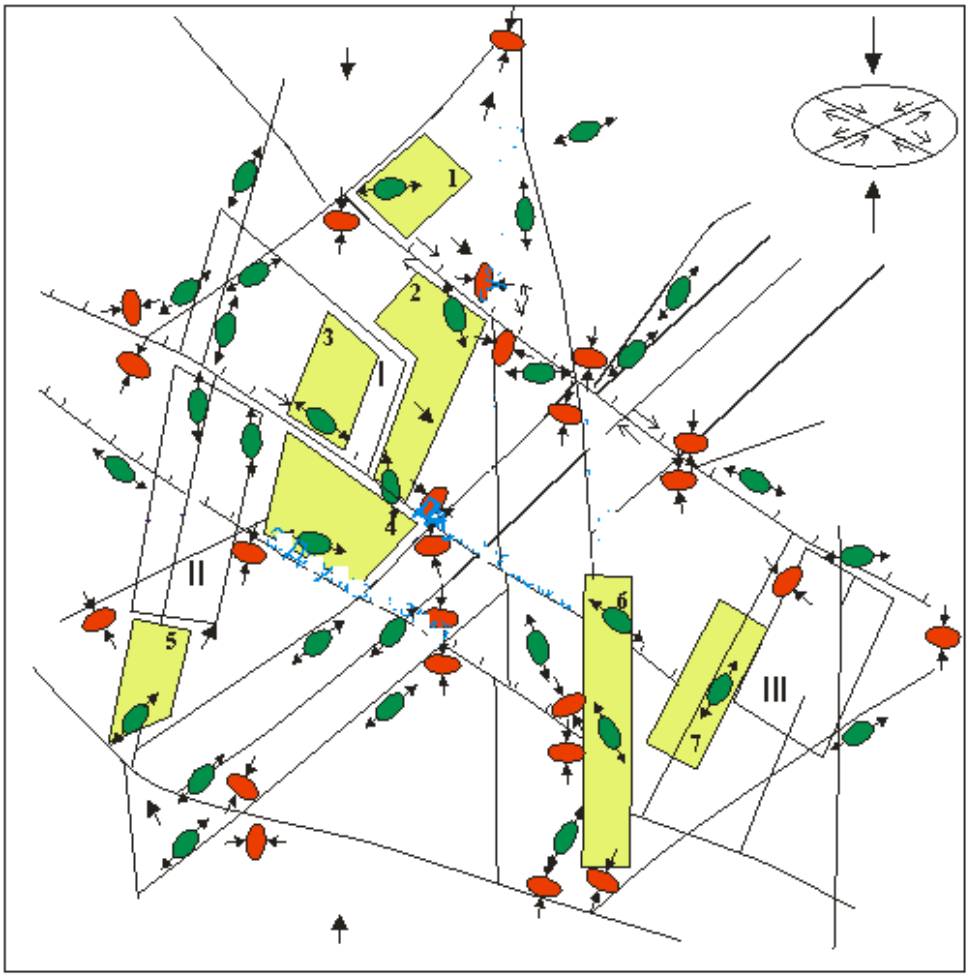
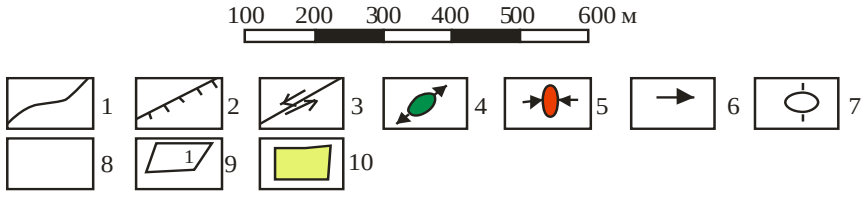


Figure 1: The diagram of the geodynamic situation of the ore-controlling structures and the formation of systems and the construction of gold ore mineralization in the southwestern end of the Guzaksay graben.



Faults: 1-passive; 2-active; 3-direction of defects offsets; 4 - local stretching zone; 5- local compression zone, 6-direction and displacement of tectonic blocks; 7-directions of active compressive forces; 8-ore body; 9-ore sections: I - Karakutan, II - Akbulak, III-Southeast Guzaksay; 10-perspective areas

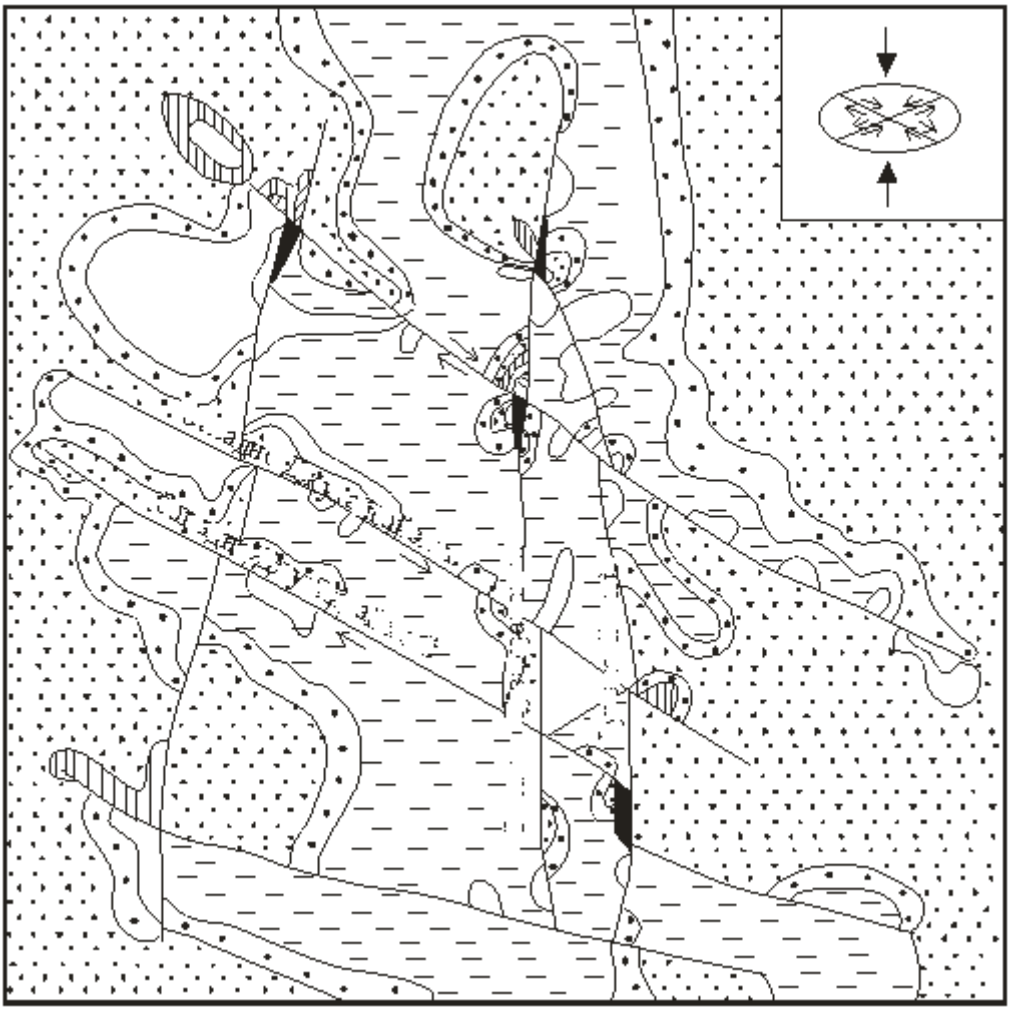
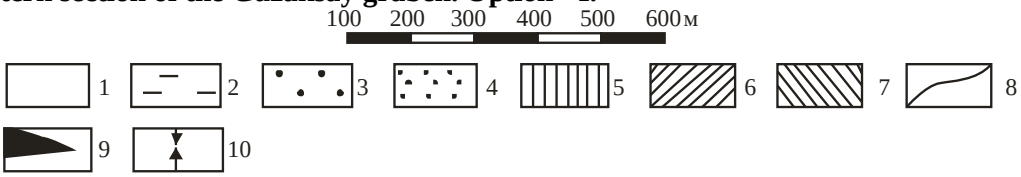


Figure 2. Map the distribution of tectonic stress fields in the model of structures of the southwestern section of the Guzaksay graben. Option - I.



Sizes of the maximum tangent tension (1 <2 <3 <4 <5 <6 <7); 1 lack of tangent pressure; 2.3 fields of weak force; 4.5th fields of moderate tension; 6.7th fields of muscular tension; 8th Line of explosive violations and the direction of shift on them; The 9th cavities of reopening of breaks; The 10th directions of the active squeezing efforts.

Their insignificant activity created conditions for new explosive violations, reopening zones on breaks, zones of cracking, and jointing of breeds. All these are favorable conditions for the spatial placement of endogenous mineralization.

These movements were generally horizontal, followed by redistribution of tectonic tension and deformation change on all areas of the South of a graben. Especially these changes are shown along with explosive structures, sites of their crossings that indicate a role of activity (movement) of breaks in these changes.

The activity in the form of shift displaces boundary structures of a graben and also neogenic breaks. The action of leaves also affected the spatial movements of tectonic blocks. The substantial value is played at the same time also by their morphology. Under the influence of these factors in the model on breaks, we observe several cavities of a reopening.

One of the features of a tectonic-physic state and deformation of the southern part of a graben area is tension in crossings North – the western breaks with Northeast. The concentration of pressure is connected with the change of deformation towards her increase. It means that breeds are in crossings of northern leaves in tectonic the compressed state compared to other sites.

The contrast of tension distribution with the formation of zones of deformation of compression and stretching lengthways the ore-controlling of breaks once again confirms our ideas of complexity of a geodynamic situation of ore formation caused the movement on ore-controlling leaves and shift of blocks of a graben. In this situation, site geodynamics Karakutan is defined by influence tectonic activity Akbulak - Karakutan and Djulaysay breaks. I could lead the influence of activity (dumping) of the first break to the formation of small gaps subparallel to him and on the Djulaysay break – to separation cracks. All these new growths could influence the localization of gold mineralization significantly. At the same time, they are ore-controlling and define the morphology of ore bodies.

CONCLUSION

The analysis of materials on a geologic – structural researches and studying tectonic tension and deformations with the interpretation of geodynamics of ore formation of the site Karakutan show that the essential ore-controlling elements are the Karakutan break. Its plumage is attracted sub-parallel to each other in the southerly direction. If to consider locations of the interface of these structures with Northeast breaks, then on all the extent (within site Karakutan) a tectonic-physic state their stable, at the level of weak sizes of tension. Tectonic and geodynamic all are passive. In cavities, the ore-controlling of submeridional breaks gold mineralization linzo-, lento-, shaped rod and complex forms is localized.

Thus, based on the above stated, it is visible that on materials of studying a geologic – structural conditions of formation and placement of gold, researches tensely of a deforming of the manifestation of mineralization and the mechanism of formation the ore-controlling of structures. The Guzaksay graben's geodynamics and ore-bearing sites too - and in ore formation stages is deciphered. Interpretation of geodynamics of a graben in a location of ore formation allows us to conclude the following:

- the geodynamic situation of Chadak of the ore field and its ore-bearing squares to – and in a stage of ore formation was defined by the impact of external regional, tectonic efforts and internal magmatic processes, their structural structure, morphological features, and a spatial position of systems;
- the geodynamic situation of the Guzaksay graben and sites of manifestation of mineralization are interconnected with their tension and deformation;
- active and passive geodynamic situations connected, respectively tectonic activity and passivity the ore-controlling of structures are observed. Boundary breaks of a graben Akbulak – Karakutan and Guzaksay tested insignificant (local) activity. The highest activity showed cross (Northwestern) breaks – the Djulaysay break and its branches. Shift movements on these breaks along their smectite resulted from new structurization, which played an ore-containing role on Karakutan, Akbulak, and Southwest Guzaksay's fields.

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