Place Of Earth Faults In Geology And Main Tectonophysical Indicators

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ABSTRACT

It is difficult to limit the place of earth cracks in geology, no matter how high it is appreciated. It plays a key role in the formation of mineral deposits. Whether minerals are solid (gold, copper, aluminum, etc.), liquid or gaseous (groundwater, oil and gas), affects their location and migration. The structure of the geological environment, the course of the processes taking place in it, the increase or decrease in the amount of stress and deformation depend on the morphology, density and other parameters of the earth's cracks. Even the formation of earthquake foci is related to cracks. Therefore, the study of cracks is of great importance not only in mining and seismology, but also for solid construction - in the correct implementation of the engineering-geological conditions.

Keywords: *Lithosphere, mantle, Tavoksoy, Karjantog, Zarafshan mountain range, earth fault, seismogeodynamics.*

Enter (INTRODUCTION) In this article, based on the analysis of how much attention is paid to the development of this important direction in Uzbekistan, the goal is to state the need to attract and introduce new theoretical information.

What is a fault? What are the categories? What will be their indicators? Many researchers are interested in what should be paid attention to. According to the descriptions given in geological dictionaries, "crack" (in the sense of "break") is "a large disjunctive dislocation of the earth's crust" [1, 166 p.]. The term "razryv", "razryvnoe narushenie" - "discontinuity", "discontinuous faults" is used as a generalized term for earth cracks. In geology, special terms are used depending on the size of the discontinuities.

Earth "cracks" are used as a general term. The largest cracks in the earth's crust that penetrate into the lithosphere and mantle are called "deep cracks" [2]. Faults that reach the middle of the Earth's crust can be called "regional faults", smaller ones that develop further up are called "faults". Cracks that cross one or two layers in mountain massifs can be called "discontinuous fault", "local crack" or "major crack". It should be noted that usually the crack does not develop along a single line, but in a zone with a certain width. Therefore, special emphasis is placed on it as "fault zone" in geology.

LITERATURE REVIEW Among the scientists who studied deep and regional earth faults in Uzbekistan in detail, we should mention the names of M.A. Akhmedjanov, O.M. Borisov, D.Kh. Yakubov. In addition, R. N. Ibragimov, Sh. A. Arslanbekov, D. B. Djamalov, A. K. Khodzhayev, R. A. Umurzakov and many other scientists studied for the purpose of solving scientific problems in various fields.

In recent years, the articles of L.N. Lodkipanidze and his co-authors summarizing the scientific works of Uzbek scientists in this

direction are known [3,4]. However, until now, important tectonophysical indicators have not been taken into account in the study of fault zones on the territory of Uzbekistan. The dynamic influence area (or zone) of the fault proposed by Russian scientists [5] was only partially introduced by A.R. Yarmukhamedov et al. Relevant new information has been received for that period. Some small high-level discontinuities and cracks in the Karjontog fault zone were not taken into account.

The most important indicator of ground faults is the zone near them - this zone can be called the zone of dynamic influence of the fault. The dynamic impact zone of the crack (DZD) is the space where traces of elastic and residual (plastic and tensile) deformations associated with the process of crack formation and development are observed [5]. This zone appears in the plan as an elliptical zone where the change of the general stress field occurs with dislocations. An example of this is represented by a large fault zone passing through the southern slope of the Zarafshan mountain range of Tiyon-Shon (Fig. 1).

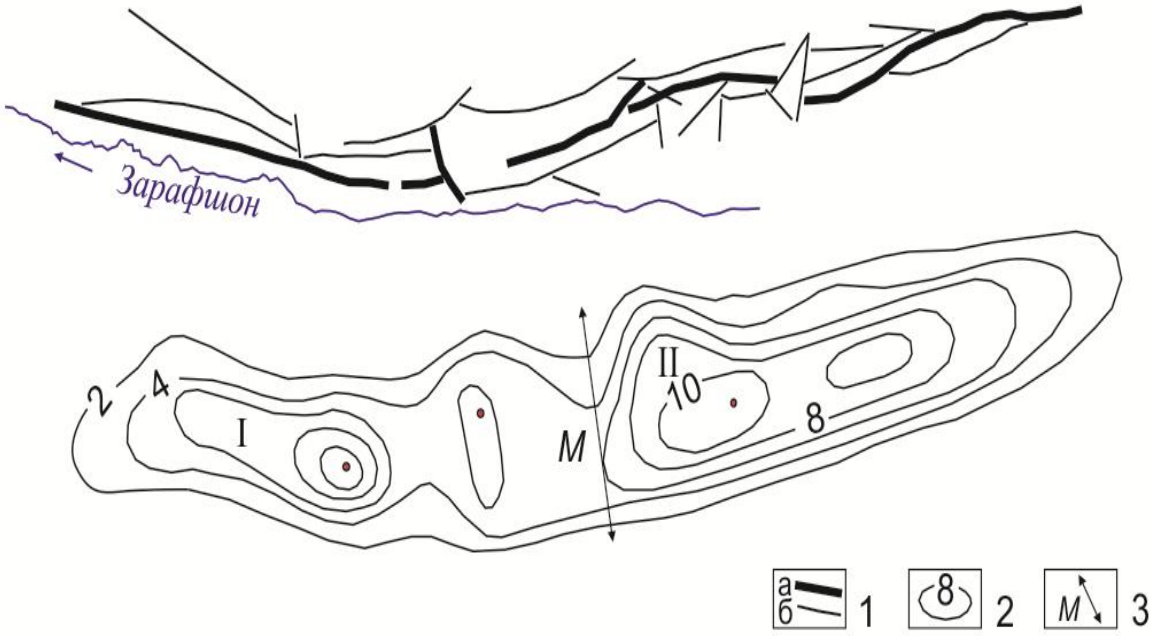

Figure 1. Dynamically affected zone of Zarafshan large earth fault (according to R.M. Lobatskaya): 1 - cracks, a - the trunk line of the main fault, b - internal cracks of the next level; 2 - isolines of the amount of density (m) of small cracks in the dynamically affected zone of a large crack; 3 - the width of the dynamically affected zone of the crack (M).

RESULTS A special methodology has been created to study such indicators of cracks. Due to the fact that the elastic traces of deformations can be determined only on the basis of instrumental observations, the dynamically affected zone of cracks (YODTEZ) can be determined based on the mapping of residual deformations. It is necessary to determine the following parameters of the zone: size (width, depth, length); changes in the extension of the zone and how it is divided into categories; types of dislocations within the zone and mechanisms of their occurrence [5].

Doing these things in practice is very difficult and requires field observation. Geological data should be collected and filled. Earthquake-risk fault zones have not been studied to date. Some of their indicators have been studied only in the Karjontog fault zone, but this is not enough. This Karjatog fault zone is a seismic hazard zone of the region near Tashkent. Although several field geological, geodetic, geodynamic studies have been conducted here, the mechanism of development of this zone has not yet been sufficiently determined.

According to our information, the Karjontog zone is much more complex than other fault

zones, and it is noteworthy that its activity occurs as a result of collisions and combined effects of movements in different directions. It is appropriate that these researches become one of the tasks of the seismogeodynamic research conducted at the Institute of Seismology.

The scientific and practical significance of these studies is especially the possibility of detecting earthquakes that may occur in the seismically active zone of the Tashkent geodynamic range. The following can be cited as proof of this. Based on the graphs of recurrence of earthquakes in the zone of dynamic influence of faults (YODTEZ), S.I. Sherman distinguished four tectonophysical criteria for the formation of a strong earthquake source:

structural (large seismically active faults);

kinematic (large amplitudes of wing movement);

rheological (physical properties of the crack medium - reduced viscosity);

dynamic (increased speed of movements); [7].

It is noted that these criteria are different depending on the types of cracks (thrust, thrust, sliding, crossing) [8].

CONCLUSION On the basis of these criteria, the possibility of assessing the seismic risk of the zone of the Karjontog fault observed in the Tashkent region will be explored in detail. Determining the zone of dynamic influence of faults in other regions is the basis for quantitative assessment of the width of seismogenic zones of the territory of Uzbekistan and serves to increase the accuracy of seismic zoning maps.

Studying the quantitative indicators of the dynamic impact zone of earth cracks and the corresponding zones of internal small cracks is important in the search and exploration of mineral deposits. The size of the affected zone - the zone of alteration of rocks under hydrothermal influence can be determined, and the exact places of mineral exploration can be predicted.

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