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About changes of mining-geological conditions of Kalmakyr deposits shortening

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ABSTRACT: The article deals with the emergence of new trained states in rock massifs during the development of the Kalmakyr quarry and the formation of mining-geological process and phenomena in the form of deformation of the sides and ledges of the quarry. As a result of the analysis of geological processes and phenomena, conclusions are drawn that can serve as a basis for studying and predicting various types of deformations.

KEY WORDS: Zones of metamorphism and intense weathering, Geological conditions, Natural stresses, Seismic stress, Density, tectonic cracks, Aquifer, Tectonic disturbance zone, Hydrothermal processes, Crushing and fracturing zones of a blast wave

I.INTRODUCTION

Theanalysis of the methods of assessing the natural strength conditions of Kalmakyr career (mine geological, geological-tectonic, hydrogeological) shows that the rock complexes forming crust pits belong to the subgroup of Group II of the II group and their complexity over the tectonic structure, metamorphism and the presence of intense lighting zones, as well as the variability of the tensile strength [1].

The open-cast mine exploitation results in significant changes of all elements of mining geological conditions. In the massif, the equilibrium of the rocks and the initial natural tension are being broken. The reduction of this voltage leads to the appearance of tension jams in the same place and the reduction of stress in another place. Although extrusion drilling has been under development for many years (1954), for some reasons the actual operation of the North Sea has been stopped, namely there is no working area. One of the main reasons is the occurrence of landslide accidents on the north shore and the presence of large quantities of water in the lead tanks. Combinate's marking service traced the movement of rocks in this area by instrumental observations. According to the recommendation of Marksheyder, in order to reduce the tension in the upper part of the North, from 1996 to 2003, m^3 of the Earth's crust. As a result, the tension and deformation of the rocks have been reduced.

II. SIGNIFICANCE OF THE SYSTEM

However, in our opinion, it cannot be said that the deformation of rocks stopped, it continues in some secret way. Due to the fact that the extraction is stopped on this area, the interior of the trunk is composed of a massif of the same type, and the accumulation of the tension in the rocks can continue until the extraction begins.

III. LITERATURE SURVEY

The northern axis of the Kalmakyr open-cast is mainly composed of cyanide-diorite and diorite-bearing rocks, cores and diorite porphyritic slopes, which break through the body of the granodiorites. The rocks have undergone secondary changes. That means that the changes that lead to the formation of quartz-sericit-biotite-chlorite metasomatites for sienite-diorites, as well as the development of albed and carbonized rocks.

The upper part of the blacksmith is composed of soft loamy quaternary rock of 15-20 meters thick. Sienite-diorites are characterized by a plain-bearing massive rocks, which have changed in the tectonic phase of the gertsin due to rapid hydrothermal processes, particularly the development of sericitization, chlorination, quartzites. The diorites are located behind the Kalmakyr fault in the south and are represented by small and medium-sized rocks, with plagioclase generally exchanged with albit and potassium carbonate, with amphibole and pyroxene exchanged with actinolite, chloride, secondary small tangent biotite. Granodiorites porphyry is present in the form of a large ore body near the North and Kalmakyr cracks. These rocks are small-grain masses and potassium phenocrystalline pink rocks. The main

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mass is intense and constitutes about 45-55% of the rock content. Granodiorites porphyries have been slightly different from the sienit-diorite porphyry, but they are characterized by sericitation and quartzite [2].

In the northern part of the densely rocks, lonely diorite porphytonite dykes are characterized by thickness of north-east, thickness 8-10 m and south-east slope (65^0).

In the geologo-tectonic structure of the northern axis of Kareer there are two large submersible areas - Karabulak and Kalmakyr fault and one northeast - Togop fault. As a result, the northern board is divided into a series of tectonic blocks. The northern limestone body of the corrugated trench is limited to the shkotverk and is characterized by the thickness of the rock (50-60 m) rocks, with quartz-sericite rocks, and is composed of fine-grained red clay rocks on the inner fault, is limited. The thickness of this corridor varies from 1 to 14 meters. The thickness of the bedrock falls to the north below the 75^0-80^0 angle. The Kalmakyr fault falls to the south of the 65^0-75^0 angle and it is characterized by low shrub with shale, silt and chlorinated rocks and their rapid twisting. The sloping wing of the crack shows 70-80 m thickness of the rocky and rocky rocks. The fractures between the towers and the slopes show a number of tectonic faults and cracks in the south, 50-100m apart, occurring during the digging process (Northern faults 1,2,3). In these cracks, the thickness of the rocks exceeds 15-17 meters. There are numerous small faults on the southern part of the Kalmakyr fault and the subsoil and the crushing zone, which extends to the north-south, is distinguished by the Togap fault. The steep (60^0-80^0) falls to the north.

The tectonic cracks and numerous degradation zones and the degree of cracking in fine ore-bearing or non-ore-bearing rocks have increased as a result of the tectonic shift in the Karabulak, Kalmakyr cracks during the ore formation and ore formation. In addition, a large number of base faults have been recorded in the area described in the posture. It is of particular importance that the faults in the north-east and north-west directions are slightly larger than the south and south-east (70^0-80^0) corners. It is believed that the appearance of the tissue except the tectonic cracks appears to have occurred in the rocky rocks near the quarry and the dynamic position of the crust, particularly in connection with the effect of seismic tension. Under the influence of explosion waves (particularly transverse) the tension of the array changes. Thus, due to the weakening of frictional forces on the weak surfaces, the tension of the array varies, and it can be concluded that the crust boat, which has a solidness reserve, can lead to sudden shift.

In the sedimentary rocks, their density varies from 2.54 to 2.66 g/cm^3. For sulfide ore it is 2.60 g/cm^3 and 2.50 g/cm^3 for oxidized ore.

The limit of strength varies from 115.5 MPa for sienit-diorites to 49 MPa for quartz porphyry, whereas in water-saturated state it is reduced to an average of 25%.

As it is shown in the table below, large-scale indicators are related to the different cracks in the rocks and to the composition of the filler composites.

Table 1.The properties of the rocks

Mining rocks	**closeness, g/sm^3**	**durability, MPa**	**Decrease the strength during wetting, %**
Diorites	2,63	110-165	19
Sienite-diorites	2,65	120-160	67
Granodiorite is porphyries	2,60	35-125	18

Studies have not been conducted to determine whether there is a substitution pattern for depth properties. However, it has been established that the consistency depends on the properties of the inner structure of the rocks. The strength of rocks is dramatically reduced to 7-8 times in the zone of tectonic faults and 4-5 times in the rock-bound rock. Reduced strength during humidification in this zone reaches 67%. Depending on the strength of the rock, rocky rocks vary between 29.8-153.5 MPa. Particularly quartz porphyry and diorite are strong rocks, while the strength of the south-western board is 124-154 MPa. Granodiorites porphyries have an average of 49.7-106.5 MPa.

The sienitic-diorite rugs, especially on the north-east board, have deteriorated due to the weathering process. Consistency in the sienite diorites varies between 35-66 MPa. In the cracks and tectonic disturbance areas, the consistency decreases significantly to 6.5-33 MPa.

Increasing the moisture content of the rocks results in the intensity of slope and slope of the arc during accelerated rainfall, as it has led to a decrease in their durability. Picture 1.

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Picture 1.Collapsing rock Kalmakyr career and shift of massifs.

IV. METHODOLOGY

Hydrogeological conditions of the Kalmakyr deposit are favorable for extraction because groundwater is in deep depression. Groundwater of the alluvial deposits in the Kalmakyr field and their direction correspond to the flow of the Almalykhsiy and Nakpaysai rivers and their streams. The sedimentary rocks and gravel-bearing rocks form part of the rock. Their thickness varies from 18 to 25 meters. Alluvial deposits have been excavated during the opening and closure of the cruise ship, with the expansion of the carrier boundary. The Almalyk River was blocked outside the Karmakyr square and its water was turned over to the Nakpaysai River through the Duke River (underground canal). Nakpaysai is surrounded by a pit, with an average and low flow of up to 100 meters thick. The construction of the dam at the upper stream of the river allowed the crew to continuously run down the stream, reducing the groundwater flow. The flow of the Almalyk rivers is 15 to 22 l/sec, and Nakpaysai - 35-110 l/sec. Nakpaysai's burial ground was blocked at the last stop of the blacksmith. However, the Nakpaysai River basin is at an altitude of 160-215 m, located on the rocks of the left bank of the river. Therefore, it is not expected that the run-off of the north-east board would increase the amount of groundwater flow. Groundwater in the middle drainage, low-carbon sedimentary rocks, does not exist in the area of groundwater. Groundwater in the upper paleozoic intrusive rocks forms the main part of the quarry area. Sienite-diorites, cyanides, diorites, gabbrodiorites, granodiorite porphyrys are water-bearing rocks. They can be pre-determined depending on how the rock is cracked. In intrusive magmatic rocks, the water-bearing horizon has a pressure and pressure. The abundance of water in these rocks is not a threat to production. As the deeper the deeper, the groundwater extraction is $170m^3$/hr, with the extensive precipitation up to $360\text{-}570m^3$/hr. Water removal is carried out by mobile pumping stations [3].

V. EXPERIMENTAL RESULTS

However, with the expansion of the extraction area on the north side of the quarry area, the depth of digging and the shape of the drill varies, resulting in a zone of tectonic degradation. In this regard, due to the discovery of rocky rocks during excavation of the North, extensive conditions for the accelerated development of mining geological processes are created.

400 meters north of the shore, 20 years ago, the excavation was stopped, and today there is a huge Kurgashinkon shale. The Karabulak fault, described above, is very complex in the area between the lead and the thickness of the field, and

the two quarters are divided into two sections in a tectonic sense. Currently, 25 million cubic meters of water is accumulated at the Kurgashinkon reservoir, where mining is suspended, and there is a great danger for the Kalmakyr field. At the present time, the water level of the Kurgashinkon is about 145 meters above sea bed. Picture 2.

Picture 2. *1 Kurgashinkon, 2- Kalmakyr careers*

Both quarters are made of non-hermetic walls and tubs, with a huge amount of artificially generated potsherds. There is insufficiently available information on the spatial distribution of the rocks, the degree of cracking of the rocks formed by the karst cavities and the tectonic cracks, and the natural and man-made cracks that lead to the collapse of the Earth from the Kurgashinkon shaft to the Kalmakyr reservoir, and the northern crust and can lead to adverse effects in the mining process.

VI. CONCLUSION AND FUTURE WORK

There is a need to establish a permanent monitoring of the open-cast's location on the crust and the weakening zones, the location of tectonic cracks and cavities, and the presence of unknown ground snowstorms, and the presence of groundwater from the Kurgan coal pit to Kalmakyr.
Open-cast's long-term stagnation (shift, avoidance of slides) requires the removal of stagnant minerals resulting from extraction of minerals. In order to solve this problem, we consider it necessary to carry out experimental work in order to clarify the parameters of the slopes to their present size.
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