



AVOIDING THE RISK OF DEFORMATION BY PRESSURE

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ABSTRACT

In this article, a wide range of measures to prevent deformations occurring in the quarry are considered. We think that it is appropriate to reduce the risk of deformation by blasting in places where there is a risk of deformation.

Important signs of construction of underground structures in mineral exploration and production are obtained by forecasting the dynamic phenomena of mine pressures. It allows for the correct design of objects, the selection of the appropriate method and mining systems in the transition of solders, and to ensure the efficiency and safety of mining operations.

The following are taken into account when forecasting dynamic views:

- a) determination of the risk of shaking and eruption of rocks (including mineral layers or deposits) and assessment of rocks considered dangerous at the depth of their location;
- b) identification of areas where dynamic events may occur;
- d) timely prediction of the occurrence of dynamic events.

In other words, as in any forecast, when forecasting the dynamic manifestations of mine pressures, it is envisaged to predict them in the environment (paragraphs a and b) and time (paragraph d).

At present, it is necessary to carry out work on determining the possibility of mine impact and eruptions in all currently explored and mined mines, mines, tunnels and other underground structures that are being designed and built.

According to these cases, mines or a part of mine shocks and eruptions:

1. Safe,
2. Prone to dynamic phenomena,
3. Dangerous.

All mines that are dangerous and prone to dynamic events are subject to industrial safety expertise in construction, expansion, reconstruction, maintenance and operation of technical equipment, mining design documentation and "On industrial safety of hazardous production facilities". state law requirements must be met.



In particular, the following limit conditions are imposed for the objects of construction of underground excavations in mines prone to shocks and rock massifs or their part:

High elastic properties of rocks and ores, the ability to break easily under the influence of force;

Mines (construction objects of underground structures) or its part, i.e. places where rock eruptions, thrusts or mining shocks occurred, such ore bodies in neighboring mines (mines) and similar geological conditions adaptation to boundary conditions.

Mines that are dangerous to mine shocks (underground facilities construction object), that is:

- Microshocks and mine shocks are detected;
- If the forecasting is to determine the impact hazard level of the rock massif, it is determined in the "Dangerous" (impact hazard) category by the local instrumental method.

Mine shock prevention and special forecasting services should be organized under the leadership of scientific and methodical institutes in dangerous and prone objects of mine shocks in every mining enterprise engaged in underground mining operations. The chief engineer of the enterprise deals with the control of these services. The responsibilities of these services include the results of determination of the shock hazard category of all types of mine shocks, microshocks and impulses, eruptions, welds, and the evaluation of their effectiveness with the measures used to prevent dynamic phenomena.

In extremely complex con-geological conditions (major tectonic disturbances and mining at great depth, modern tectonic movements and strong seismically active areas, the surface of the earth has mountainous terrain and other complicating factors, and the occurrence of con-tectonic shocks if possible) it is necessary to organize continuous monitoring of the state of the rock massif. These works are carried out by building seismic stations.

The work of forecasting the dynamic appearance of mine pressure in space is divided into the types of regional and local forecasting of the risk of shock and eruption.

Territorial forecasting is based on the geological description of the mine and the characteristics of the rocks, in terms of the risk of mine shocks and eruptions.

Territorial forecasting information is taken into account in the preparation of a comprehensive project for the development of regional mining operations, in the preparation of the project of mines and quarries, in the design stage of opening and mining in a new horizon.

Forecasting in the regional method is determined by approximation, therefore, they are characterized by the properties and conditions of the rock massif according to a limited amount of data. Its level of reliability is found in connection with the study of the array in question. This information is used to open, prepare and extract mines. checked and adjusted according to the local forecasting method.

Determination of the strength-deformation properties of local forecast rocks, experimental measurement of stress effects, determination of gas pressure in rocks, evaluation of changes in porosity, gas permeability, moisture, sorption volume and properties of rocks, and opening of mine area sections , preparation of blocks for operation, designed to assess the condition of specific sections for individual soldering operations.



In the local forecasting of the risk of eruption, it is determined from the quantitative description of complex indicators, taking into account the main factors of one or another level related to the potential possibility of eruptions.

A third type of forecasting, which is quite complex, is the time prediction of mine shocks or eruption events.

It is organized in order to carry out current forecasting of the state of the rock massif or lahim.

This type of short-term forecasting is based on visual control and instrumental observations, and based on the recording of mining shocks and eruption indicators, changes in the gasodynamic regime of rock stress during mining operations are recorded, and the dynamic process is manifested. is detected in a few minutes or even seconds. The main task of current forecasting is to assess the condition of the massif section and the solder and warn in time whether the condition of the section is dangerous or, on the contrary, safe.

In general, we monitor the defotations in the mine with devices. In our opinion, in order to prevent defotation, which is small and safe in terms of risk, we can isolate the mine mass using the drilling and blasting method. With this, we can ensure the safety of the board and the solder.

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