AP25793783 Development of anti-blowout measures during mining operations in the zone of geological disturbancesю Sc. s. – Aytpaeva A.R.

Abstract of the project:

Coal mining in the Karaganda basin is currently associated with the intensification of mining operations, an increase in the depth of development, the complication of mining geological conditions, the development and implementation of new technological solutions.

The development of high-gas-bearing coal seams in the Karaganda basin is complicated by gas-dynamic phenomena. The greatest danger for miners at present is sudden emissions of coal and gas due to insufficient knowledge of their nature and forecasting capabilities. The danger of damage to people working in the mine by emission products is aggravated by the possibility of overturning a fresh jet of air and gasification of the mine workings of the site, wing and the entire mine.

All sudden emissions in the Karaganda basin occurred in areas of geological disturbances and in areas of disturbed coal. This is primarily explained by the fact that coal seams, prone to sudden emissions of coal and gas, are characterized by a complex structure, the presence of low-strength bundles with difficult to predict tectonic disturbance and crumpling, which reduces their stability. Practice shows that only about 10% of geological disturbances caused by mining operations are explosive, but at the same time it is possible to predict the violation in advance, at the stage of exploration, only in no more than 15% of cases. And therefore, the problem of predicting tectonically disturbed zones is certainly relevant for mines developing explosive formations.

Despite the successes achieved in the prevention of emergencies, which resulted from the work of scientists, researchers and production workers in this direction, the state of emission hazard in coal mines, as analysis and practice show, requires further theoretical study and practical improvement of methods for forecasting and prevention of dangerous gas dynamic phenomena.

Project purpose:

The purpose of the work is to establish the regularities of the formation of the stress-strain state of the carboniferous massif between the geological disturbance and the work carried out on the outburst formation to determine the zones of violation of the continuity of the massif and aimed at improving anti-blowout measures on this basis, increasing the safety of mining operations in coal mines.

Project objectives:

1. Research and study of tectonic disturbance of coal seams and rocks in the conditions of the mines of the Karaganda basin, to quantitatively characterize discontinuous tectonic disturbances within the mine fields.

2. Development of research methods for the patterns of changes in the stress-strain state of a contiguous mountain range in the presence of geological disturbances.

3. Development of a methodology for determining zones of discontinuity of the massif for the development of measures to prevent gas-dynamic phenomena during mining operations in areas of geological violations of numerical simulation.

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