THE DEVELOPMENT OF INNOVATIVE TECHNOLOGY OF DRILLING AND BLASRING OPERATIONS BY BOREHOLE EXPLOSIVE CHARGES OF DIRECTED ACTION OF DETONATION PRODUCTS USING THE CUMULATIVE EFFECT

F. Y. Umarov
Doctor of Technical Sciences,
Director of Almalyk branch
of NUST «MISiS»,

G. S. Nutfulloev,
Candidate of Technical Sciences
Head of the Department of education quality control of Almalyk branch of NUST «MISiS»

Z. S. Nazarov,
Candidate of Technical Sciences
Associate Professor,
Department of Mining
Of Navoi State Mining Institute

A. U. Fathiddinov
Doctoral student of Tashkent State Technical University

S. B. Riskulova
Master of Navoi State Mining Institute

ABSTRACT

Improving the efficiency of mining is inextricably linked with the improvement of explosive technologies. The quality of the rock mass preparation for further processing and obtaining the final product depends on ensuring an increase in the pace and efficiency of economic development of mining countries. The analysis of promising methods for improving explosive preparation of rock mass showed that the main direction is inextricably linked with the use of modern physical fields aimed at intensifying detonation processes. One of these areas is the use of the cumulative effect. The authors developed the design of the borehole explosive charge (EC) using a cumulative effect, which allows to lower the bottom of the ledge and reduce the cost of drilling and blasting. This design of the charge due to the location of the explosive charge directly above the zone of the bottom of the ledge will increase the effect of the explosion on it. The cumulative recess forms a stream, which creates a shock wave directed down and away from the well. In its turn, the stress waves from the cumulative charge directed upward produce additional crushing of the overlying rocks. The direction of the energy of one part of the explosive charge to the lower part of the well increases the time of the explosion on the array and creates two waves of stresses that affect the entire array. The proposed technology also provides for the dispersion of the explosive charge in an inert gap, the lower element of which is made of explosives, corresponding to the strength characteristics of the rocks of the base zone of the ledge, and the upper one should correspond to the exclusivity category of the rocks constituting the ledge. The location of a cumulative funnel in the bottom of the well affects the intensity of explosive destruction of rocks. The effective parameters of the cumulative funnel in the design of the borehole explosive charge are determined.

Keywords: well; design; explosive charge (EC); cumulative effect; ledge sole; penetration depth; height of cumulative facing; action of a detonation wave; numerical modeling; emulsion explosive substances.