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ABOUT THE REASONS FOR THE AMPLITUDE INCREASE OF THE SEISMOACOUSTIC OSCILLATIONS WITH FREQUENCIES OF THE HAZARD RANGE AT COAL SEAMS MINING

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Purpose. Determine the reasons for the amplitude increase (growth) of the seismoacoustic oscillations with frequencies of 700-1400 Hz in mine workings, which is one of the main criteria in the gas-dynamic phenomena predict.

Methodology. The studies were carried out by the spectral analysis of signals that were previously obtained as the result of the seismoacoustic studies in the different mines.

Findings. It is shown that the amplitude increase in the 700-1400 Hz frequency range of the oscillations can lead to the sudden jump in the critical crack lengths. That can initiate the gas-dynamic phenomena. The possible mechanism of these changes in the oscillation field near the mining workings is considered, when various rock-fracturing working mechanisms act as a source of oscillations. The analysis of seismoacoustic signals is carried out. These signals were obtained in various mines. Possible reasons for the amplitude increase of the oscillations in this frequency range are considered within the framework of the resonating elastic oscillatory system model and the elastic waveguide model. It is shown that an increase of the oscillations intensity in the frequency range under consideration can

be caused by a change in the state of the enclosing rocks in the immediate vicinity of the coal seam and the conditions at the seam-enclosing rock boundary.

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Key words: gas-dynamic phenomena, seismoacoustic forecast, spectral analysis of signal.

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