

language skills are critical to their day-to-day operations and future expansion.

So, if you want to become a successful and professional IT specialist the knowledge of English must be one of your main skills and priorities.

***K.M. Kovbyk***

***V.O. Kalinichenko, research supervisor***

***N.O. Holiver, language adviser***

***SIHE “Kryvyi Rih National University”***

### **INUNDATION INFLUENCE ON STOPING OPERATIONS DEPENDING ON ORE DRAWING MODES AT KRYVYI RIH IRON ORE MINES**

To date, the majority of Kryvyi Rih underground mining enterprises face the problem of deposit inundation. Considering the difficult geological conditions as most operations are performed at 1000 m deep, we have to deal with a rather complicated geological body in terms of its further development. Deposit inundation adds a number of specific features to a mining method. The water in the working space does not only reduce its productivity, but is also hazardous for people working in such conditions. Surrounding rocks absorbing water become weaker and tend to collapse. Under the action of water, supports lose their strength properties. The amount of water inflow has a significant impact on quantitative and qualitative characteristics of ore extraction.

To solve such problem as inundation one can many techniques. The main ones include drainage and deposit drainage (site drainage). These processes are characterized by considerable technical and economic expenditures. To solve this problem we analyzed the measures taken at other deposits: (flat, oil etc.). Based on the analysis we suggest using partial and secondary methods of inundation prevention.

Some effective methods and technical measures of stoping in the inundation environment of Kryvyi Rih mining enterprises are almost absent. The authors propose to manage the ore drawing mode depending on the block state and water inflow into the stope. The changed modes of ore drawing can theoretically increase the quantity

of the extracted mineral and partly preserve the original performance of the block (before the water intrusion into the stope).

It is planned to conduct a series of experiments using mathematical models, ore drawing simulation under high deposit inundation taking into account water discharge into the block. It is necessary to determine the impact of the ore drawing process, the status of mining operations in conditions of high inundation and to analyze the influence of the changed ore drawing modes on the quantity of the extracted mineral.

To confirm the research results performed on mathematical models we created a three-dimensional physical model considering mathematical modeling indicators. The result is to clarify the ore drawing regularities in deposit inundation as mathematical parameters and physical components.

We have determined the regularities controlling the efficiency of mining operations under inundation conditions, which reveal their dependency on the changed ore drawing modes, thus increasing the overall productivity of the process.

The authors have calculated the approximate economic efficiency and impact of the measures to prevent inundation. The technical and economic indicators of improving underground mining operations in conditions of high deposit inundation are established.

Further research will allow the authors to determine the optimal modes of ore drawing for various conditions of a stoping face, to establish general regularities of ore drawing in case of secondary inundation. It is planned to determine the dependencies of ore drawing indicators on geological, technological and hydrogeological occurrence modes and iron ore mining at considerable depths.

*Olena Kremer, student*  
*T.V. Kurbatova, language adviser*  
*SIHE “Kryvyi Rih National University”*

## **ECOLOGICAL PROBLEMS OF KRYVYI RIH MINING**

The mining industry has a rather wide range of activities. Extraction of rocks has both advantages and disadvantages. At present, all major disadvantages deal with environmental problems. The reason for this is active and unreasonable human activities. Environmental