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### **PROSPECTS FOR THE USE OF LOAD-HAUL-DUMP IN THE PROCESS OF ORE DRAWING AND DELIVERY OF ORE IN DIFFICULT GEOMECHANICAL CONDITIONS OF ORE DEPOSITS**

To date, the development of natural deposits of rich iron ore in underground mines Kryvbas made at a depth of 1200-1400 m under significant influence of gravitational stress fields with different options sublevel caving method characterized by low rates of ore extraction and design complexity, with increasing depth reduces the competitiveness of underground mining enterprises. Under these conditions, the reserves for further design and technological upgrade sewage extraction technology based on the use of obsolete fixed and hand-held equipment is almost exhausted.

Analysis of the current domestic and foreign experience, scientific works and project materials prove that at the moment the main problem of mining natural rich iron ore is the intensification of its production and the introduction of advanced methods of production using modern mechanization of all production processes. Since it is proved that the intensification of extraction long-hole stoping improve the competitiveness of the mining enterprises of Kryvyi Rih iron ore basin. But the large-scale introduction of the self-propelled machines hinder sophisticated geomechanical conditions of deep horizons of mines Kryvbas, especially in the process of delivery of ore mass since the release of the ore through the crosscut, located at the base of drawbell of production level, it is extremely difficult to keep the workings of cross-sectional area of 12-14 m<sup>2</sup> during their lifetime while ensuring maximum quality and quantity of ore extraction. This raises the question of changing the design of the production level.

To solve this problem, developed a combined method of delivery of ore from the discharge openings to the system of capital ore passes, through multi-bucket scrapers on the horizon, the primary delivery and Load-Haul-Dump on the horizon secondary delivery, which is the most adapted to the complex geomechanical conditions of deep horizons of mines Kryvbas.

In the context of the traditional method of blasting ore solid performance of a scraper installation, is 340-420 m/shift, and Load-Haul-Dump – 700-850 m/shift, depending on its type, a distance average delivery lengths of 90-450 meters. This makes it possible to optimize the distance between the capital ore passes on the basis of a feasibility study.

The use of multi-bucket scraper winches allows the ore drawing all the draw-points along the length of the primary mine working uniform dose delivery («Trench ore drawing method») that improves the quantitative and qualitative of ore extraction. Because based on laboratory studies conducted for the terms of the range of tilt angles of one of the side walls panel stope of ore deposits within 65-90° and height of the layer of ore collapsed draw-points, which in scale modeling is 40 m, it was found that «Trench ore drawing method» reduces the ore to 15 % in fact pure ore extraction, depending on the angle and height of the ore deposit ore collapsed layer, as compared to a uniformly consistent ore-release mode.

This ore drawing method excludes the impact of social factors in the performance of planogram ore drawing, through the use of multi-bucket scraper winch. Since the distance between adjacent scraper winch buckets equal to the distance between the pairs of draw-points from which the ore drawing.

It was found that the use of the developed combined method of delivery of ore allows to create flat horizontal and inclined exposure chamber volume of 23-56,8% of the volume of panel stope length - 25-35 m and height – 40 m, in the development of ore deposits average power 15-37 m. What at times exceeds the volume of compensation chamber with traditional methods of delivery of ore mass.

Application of the method of delivery of ore is not limited to these conditions and can be used in the development of ore deposits of any power that's just presented ores of any strength and stability. And in the implementation of high-quality ore breaking an array with a minimum yield of oversized pieces of ore, volume of compensation chambers can reach 70% of the volume of panel stope, and the performance of the primary means of delivery is increased to 500-600 m/shift.