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## **CONCERNING A DEFINITION QUESTION CONDITIONS OF AN ORE DRAWING, WHICH PROMOTE IMPROVEMENT TECHNOLOGIES OF MINING OF ORE DEPOSITS SYSTEMS OF A SUBLEVEL CAVING OF ORE**

Thanks to practical data of mining of ore deposits, it is known, that an ore is drawing – one of the important operations of mining methods floor and a sublevel caving on which depend, both qualitative, and quantitative results of extraction. Therefore, improvement of technologies of working of deposits which provide improvement of parameters of an ore drawing is an actual scientific and technical problem.

The lowest losses and dilution will turn out at horizontal contact of a surface of the brought down ore to lowered barings, the minimum distance between exits of cone raises on an undercut level and a uniform ore drawing from all hatches. However practically to

create such conditions for release it is possible seldom, owing to difficulty of their simultaneous performance and consequently the question usually should be solved compromise by [1].

Release on all area of the block at horizontal contact between ore and settling soils and absence of a strong rock pressure on development workings below an undercut level usually happens, let us assume, under following conditions: 1) at the small area of deposits developed by one block; 2) at an extraction of blocks cut in a cranch or ore and soils (in such conditions half of blocks in chessboard order their extractions is developed, and also a part of blocks and at their consecutive extraction; 3) in some cases at an extraction of blocks only one lateral face, adjoining a goaf, in particular it can be admissible at moderate power of a deposit with the vertical or very abrupt pitch angle, lying in more or less steady adjoining rocks and developed blocks the in width on all power; 4) at an extraction of blocks and the several sides adjoining a goaf, but at small their horizontal sizes.

Usually on development workings simultaneous release is made for pressure decrease on a part of the area of the block at inclined contact between ore and soils. The size of a corner of an inclination changes within  $30 - 70^\circ$ , but on the average prevails  $45 - 60^\circ$ . With increase in this corner of an inclination pressure upon development workings goes down, but simultaneously with it losses and ore dilution increase. The ore drawing is made in regular intervals from all working cone raises and whenever possible in small amounts that the contact surface between ore and soil remained more or less equal.

The maximum area of release is defined by a horizontal projection of a surface of contact between ore and soils at its distribution to an undercut level.

The analysis of experiences shows, that the increase in a corner of an inclination of a surface of contact (especially more than  $50^\circ$ ) negatively influences release indicators: the volume of pure ore extracted prior to the beginning of dilution decreases, and the volume of added barren rocks increases [2].

Caving systems show the greatest losses and ore dilution. The least losses and dilution happen at development of blocks in a cranch thanks to release of the most part of ore without contact with soils

which cave in also to their small size, and at its termination owing to horizontal contact of ore to soils.

The lowest qualitative and quantitative results of extraction are given by an extraction of blocks several lateral faces adjoining a goaf, on contact with which regular losses and dilution, from the beginning and till the end of release having the much bigger value, rather than taking place on contact to soils covering from above turn out.

Application of ways of preparation of blocks and choice of mining methods basically depends from natural (power, a pitch angle, an ore hardness and adjacent strata, technical (the applied equipment) and technological (parameters of blocks) factors.

Cost of carrying out preparatory and access roads makes a considerable part of the cost price on mining method (from 33,0% to 56,2 %). In spite of the fact that from preparatory and access roads 5–10% of pure ore are extracted only, labour input of development workings occupies one of the main places, in general more than labour expenses on sublevel caving mining method.

The accepted way and preparation order, location and section of developments should correspond to following requirements: 1) to answer modern lines of development of technology of conducting mining operations; 2) to provide timely preparation of levels and blocks for preservation of a constant reserve of the reserves of ore prepared and ready to an extraction; 3) to promote a rock pressure decrease on developments within panel; 4) to lead to reduction of expenses on fastening and its repair; 5) to provide the maximum concentration of mining operations and intensive working of reserves of the block; 6) to increase productivity of stope; 7) to reduce labour input on drivages; 8) to provide on system as a whole the minimum cost price of 1 ton of the extracted ore; 9) to plan possibility of application of the high-efficiency chisel, loading and transport equipment; 10) to reduce ore losses in earth entrails; 11) to meet the requirements of sanitary-and-hygienic conditions, safety of conducting preparatory and coal-face works.

One of conformity a variant to these requirements is without the whole scheme of preparation of the blocks, which widespread. Possibility for working of thick deposits in the conditions of a high

rock pressure at an intensive actual mining of panels and secondary use of preparatory orts is the important advantage of a way [3].

So, optimum parameters of the block at sublevel caving system [4] are such which provide the greatest possible extraction of pure ore prior to the beginning of dilution, the minimum expenses for a developments and the minimum production cost of 1 ton of ore.

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### **TECHNOLOGY PERFECTION FOR SUPPRESSION OF SULFUR - CONTAINING GAS AT UNDERGROUND MINING WORKS**

In the Karaganda basin, the release of sulfur - containing gases was observed in the mines V.I. Lenina, "Molodezhnaya", "Tentekskaya", "Kazakhstanskaya", "Shakhtinskaya", "Abayskaya", T. Kuzembaeva and other mines. The release of these gases is confined to the seam D<sub>6</sub> - of the Dolinskaya suite and to the seams K<sub>16</sub>, K<sub>12</sub> and K<sub>10</sub> - of the Karaganda suite.

The concentration of toxic gases in the mine atmosphere and their harmful effects on the human body can be reduced by taking the