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**Abstract:** The article provides information about mining methods. The main production processes of open-pit mining are the preparation of mining rocks for mining, excavation-loading, their transportation and the formation of useless mining rocks.

**Key words:** mine, piles, hill, rocks, open-pit mining.

According to the data, about 2,800 different mineral deposits have been found in our country. More than 850 of them have been fully explored and more than 400 are in use. Mining enterprises have their own characteristics of mining operations, the most important of which are the following:

1) development of mineral deposits has a direct impact on the environment and causes a number of environmental problems;

2) presence of such factors as mining geological conditions becoming more complicated as a result of deepening excavation works, the probability of occurrence of gasodynamic phenomena, and the increase in the temperature of the mine atmosphere. All this makes mining operations complicated and dangerous.

Mineral deposits of any shape, located in different natural conditions, are mined in an open-pit way. The choice of mining technology and mechanization, as well as the general technical and economic indicators, are influenced by the conditions of the location of the mine.

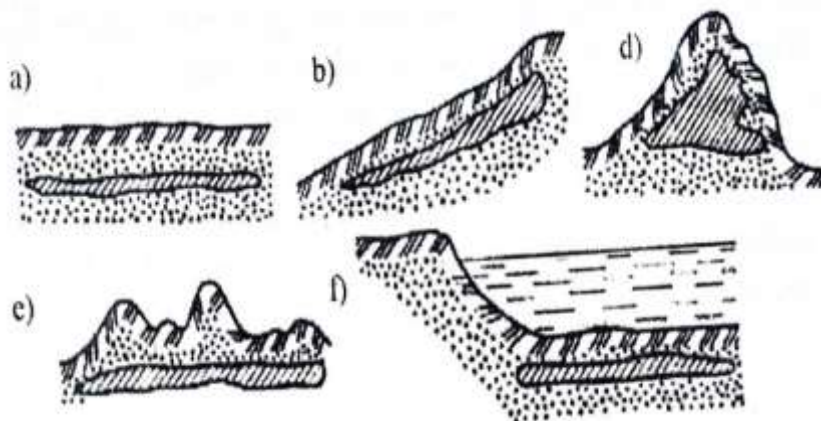


Fig. 1. Views of the surface relief of the mine: a) plain; b) slope; d) increase; e) high-low; f) surface water (under shallow water)

Despite the diversity of these conditions, all of them are divided into the following types according to their distinctive features (Fig. 1).

1. Depending on the shape, deposits can be divided into:

a) layered piles and layers with relatively preserved thickness and upper and lower flat surfaces;

b) piles of complex shape;

c) a system of tectonically broken layers.

2. Depending on the location of the heaps relative to the ground, mines are divided into:

a) surface type deposits located close to the surface of the earth or covered with rocks of a small thickness;

b) deep deposits located below the surface of the earth;

c) deposits of the mountain type located high above the earth's surface, i.e. located on a mountain slope or a hill;

d) high-deep type mines located partly on the mountain or on the mountain slope and in the depth.

3. There are the following types of mineral deposits according to the angle of slope relative to the horizon;

a) horizontal or a slope with a slope angle of 10-15°;

b) slopes with a slope angle from 10-15° to 25-30°;

c) steep piles with a slope angle higher than 25-30°.

4. According to the quality distribution and structure of the piles, they are divided into the following:

a) one-component - simple piles with the same structure and quality indicators are uniformly distributed;

b) multi-component and multi-type complex structural piles, the types and varieties of which are not uniformly distributed according to the location of the piles in plan and depth.

5. According to the dominant types of the mine, the rocks are represented by the following:

a) with rocky rocks and hard ores;

b) with solid ore and rocky rocks;

c) with soft and dense covering rocks;

d) with semi-rocky cover rocks and minerals;

e) with soft cover rocks and soft or dense minerals [2].

There are underground, open, geotechnological, well and mixed methods of mineral extraction, and their extraction is carried out by mining enterprises. The mining enterprise carries out exploration, extraction and beneficiation of deposits. Enterprises that extract minerals and carry out preliminary beneficiation are called mining enterprises. Extractive enterprises include enterprises such as mines, mines, and quarries.

To extract solid minerals, it is first necessary to separate a part of it from the massif. Massif mining in coal mining is mainly carried out by mechanical methods, and ore mines by blasting.

In open pit mining, all mining operations are carried out on the surface through open pits. In open-pit mining enterprises, depending on the conditions of the mine deposits, not only useful minerals, but also large amounts of useless mining rocks are mined. Because these rocks are located above mineral deposits, they are also called cover rocks or outcrop rocks.

The main production processes of open-pit mining are the preparation of mining rocks for mining, excavation-loading, their transportation and the formation of useless mining rocks.

Almalyk is one of the largest mining regions in our republic. In this area, the mine is mainly mined by open pit method.

Open-pit mining of mineral deposits has several advantages as well as disadvantages compared to the underground method.

Positive aspects	Negative aspects
<ul style="list-style-type: none"> <li>- Due to the possibility of high mechanization and automation of production processes, high labor productivity and low mining costs are ensured;</li> <li>- working conditions will be comfortable and relatively safer;</li> <li>- it will be possible to extract the mineral as much as possible.</li> </ul>	<ul style="list-style-type: none"> <li>- sometimes open-pit mining works depend on the weather;</li> <li>- temporary restriction of the use of large land areas for agricultural purposes;</li> <li>- violation of water balance underground.</li> </ul>

Table 2. Features of open pit mining

The geotechnological method of extracting minerals is based on the passage of wells from the surface of the earth or mine deposits to the mineral deposit, mechanical, physical or chemical impact on the mineral and its movement, and extraction to the surface through wells.

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