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GEOMETRIZATION OF MINERAL DEPOSITS

Actuality of the topic. Conduction of geometrization ensures the accuracy and appropriateness of a deposit development using the most efficient machines and systems. Geometrization of mineral deposits gives a possibility to predict the accurate location and time for mining. To create a complete picture of exploration and mining planning, results of study are depicted in graphic documentation of structural and qualitative characteristics of mineral deposits.

The goal of this paper is to identify the main regularities and characteristics of a deposit location, qualitative features of a deposit and the analysis of the research results.

The analysis of the study. The experience of working out deposits shows that the problem of geometrization study is topical for the whole period of deposit exploitation. It is important to consider new deposit parameters which are critical and can affect the state of the rock mass at each stage of a field working.

A significant contribution to the problem of geometrization was made by a well known scientists M.Leontovskyy, V.Bauman and P.Sobolevskyy. Further development of these issues was continued by their students and followers: I. Ushakov, P. Ryzhov, Z. Nyzhuretskyy, V. Bukrynskyy, V. Hudkov, H. Vilesov, D. Kazakovskyy, O. Trofymov, V. Kalynchenko, V. Kuzmin and others.

Types of geometrization of mineral resources. Geological indicators are divided into features that characterize the shape of the rock mass, its properties and processes in the subsoil.

Following types of geometrization are distinguished depending on the field of subsoil study: geometrization of the form of mineral deposits and the conditions of their occurrence; geometrization of physico-chemical and technological properties of deposits and inside rocks; geometrization processes that occurred and are occurring in subsoil.

Depending on the stage of the field study, specific problems of mining and geometrical drawings, as well as regional and detailed prospecting, and operational geometrization of fields are distinguished.

The regional geometrization is carried out at the scale from 1: 50,000 to 1: 500,000. The data on prospecting, as well as space, aerophotographic, geological and geophysical surveys are taken into account. It allows making generalizations and general forecasts, and identifying areas which are perspective for further exploration.

Detailed stakeout geometrization is carried out at scales from 1: 5,000 to 1: 50,000 on the basis of detailed prospecting, as well as geological, structural, geophysical and geological surveys. Various mining-geometric graphs of the conditions of a deposit occurrence and the raw material contained in a deposit are

drawn at this stage. Geometrization data are taken into account when evaluating deposits, estimating resources and planning mining enterprise.

Operating geometrization of a deposit is carried out at a scale of 1: 100- 1: 5000. It is performed on the basis of detailed prospecting and geological information obtained when performing preparation works and cleaning of mining workings.

Operating geometrization allows to reveal structural and qualitative patterns which helps to build forecasts on deposits and on their rational development.

The methodology of geometrization considers techniques and methods of detection and imaging of field form and properties, the conditions of a field occurrence and the processes occurring in the depths.

The source of information is the exploration of a deposit. The basic method of exploration is testing. The results of a deposit testing by boring wells should be considered as a system of irregularly spaced samples, which enclose cavities and layers of other rocks.

Different methods of creating topographical surfaces are required to gather information about the heterogeneity of the tests on the area, the distribution and spread of the indicators values of the minerals layer.

For example, to build hypsometric plan of the layer following materials are used:

- ✓ Geological map of exposed layers at the Earth's surface or in deposits at the scale of 1: 10000. The grid, the horizontal surface, as well as line cuts and exploratory wells are drawn;

- ✓ Geological sections at the scale of 1: 10,000;

- ✓ Results of geological surveys of exploratory wells;

- ✓ Normal stratigraphic sections of the rock strata at the scale of 1: 2000.

Thus, geometrization of a deposit enables a deposit modeling using information obtained in the exploration, and the development with regard to technological requirements of exploitation. A comprehensive study of qualitative indicators which shows relationships between indicators can be carried out by geometrization methods and qualimetry of mineral resources.

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