

**PROBLEMS OF TOPOGRAPHIC WORKS IN DEVELOPMENT  
OF POTASH DEPOSITS**

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The intensification of underground mining of potash deposits entails negative geomechanical consequences, which are a catalyst for socio-economic damage and involve the displacement of the earth's surface, which leads to the loss of support points of geodetic and surveying networks.

Reduction or prevention of geomechanical processes is implemented by a complex of studies on forecasting the results of antropogenic impacts at all stages of the operation of potash deposits. At the same time, despite a number of significant scientific and practical achievements at the present stage of potash production development, it is not possible to completely exclude or prevent displacement, loss of points of survey networks.

The points of the state geodetic network, condensation networks and topographic survey are the basis of topographic plans. Displacement and loss of points at potash plants caused by the influence of geomechanical processes on the Earth's surface, taking into account that real technological processes occur in a large time interval, require constant reconstruction, analysis of the accuracy of constructed and projected networks.

At the same time, the purpose of topographic plans in the potash industry is great. They are necessary for drawing up overview plans of construction systems projects, drawing up industrial territory planning projects, drawing up technical projects of enterprise facilities, drawing up general surveying plans of the field, preliminary exploration of new field sites, solving mining engineering tasks, drawing up executive plans,

complex engineering surveys, for developing working drawings, detailed exploration and reserves calculation.

As a result of the improvement of topographic works, several technological methods of survey have been formed. They differ in the use of tools, speed of measurements, and accuracy. Laser scanning and remote sensing are productive and promising methods that are widely used in surveying practice. Total station survey is used mainly when monitoring the safety of the centers of geodetic points and creating topographic plans of mineral deposits to solve current geodesic and surveying tasks. A gyrotheodolite is also used to determine the azimuth of the oriented direction.

By now a large number of topographic survey materials have been accumulated, performed by traditional methods in different periods of time. Sharing a variety of information about surveys of the Earth's surface and objects on it, the digitization of large-scale survey materials and topographic plans created on their basis dictates the task of bringing them into a unified coordinate system. In order to carry out topographic plans to a unified basis, there is a need to solve the problem of converting their coordinate systems. It should be noted that the transformation of coordinate systems is an important issue in the mining industry.

At this stage of research, an algorithm for converting rectangular coordinate systems based on the least squares method has been developed and the effectiveness of its work has been shown, it has been carried out an analysis of a different number of connecting points and their different location on the site under consideration.

To systematize topographic and geodetic databases, a comprehensive research method has been adopted, on the basis of which studies have been carried out on the creation and development of a field compilation survey of mining enterprises, on modeling the process of accumulation of directional angle error, establishing the measurement error of horizontal angles, assessing the accuracy of measuring horizontal angles.

The conducted research makes it possible to improve the quality of network construction, reduce the cost of creating and restoring points of support networks.