Sergey Merkulov, Alyona Maximova
S. D. Golovko, research supervisor
I. A. Ivanchenko, language adviser
SHEI «National Mining University», Dnipropetrovsk

History of Mine Surveying Development

Mine surveyor originated in ancient times with the emergence of mining urged by the necessity to produce measurements determining the extent of underground mine workings, their relative position and location of objects relative to the earth's surface.

In ancient times the most common method of constructing contours of mining on the ground was the direct one, and it consisted in the fact that in mines using cords was constructed a chain of triangles, then, using the same strings played contours of excavation on the surface in full size.

New, more advanced technical means of production was a compass filming having being used for surveying filming since XI-XII centuries. For many centuries bussol survey using aerial devices was the only way of underground surveying shooting.

In the mid-nineteenth century there started the work on the practical application of geodetic surveying instruments - theodolites and levels, which were ushered in the so-called new art of surveying. The theodolite survey and direct leveling the mine were widely applied.

By the twentieth century as a result of long-term observations of strata movement and surface being influenced by mining there had been accumulated extensive factual material revealing a number of displacement regularities and developing rules for the structures protecting major coal basins and a number of fields from the harmful influence of mining. In the area of the connecting equipment surveys the techniques of optical and gyroscopic orientation of underground surveying methods were created and developed. The significant work on creating new tools and instruments for surveying shooting was performed.

Further development of surveying in our country was due to the continuous technical progress in the mining industry and the introduction of new methods of surveying shooting, technology and adjustment of underground polygonometry analysis.

With the introduction of high-performance automated systems of excavating minerals, mines and quarries have started to widely use geometric building identifying the form of a mineral occurrence, its properties and quality with sufficient completeness and accuracy. Every year the technologies are being improved, the instruments accuracy is increasing. All in all that extends capabilities of the surveyors.