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## **RESEARCH OF INTERPOLATION QUALITY CHANGING THE ACCURATE DATA OF GEOLOGICAL SAMPLING**

The interpolation function is determined by a matrix  $P$  of real numbers, whose elements (coordinates) are assigned to nodes of a regular rectangular grid covering the domain  $D$  [4]. In geology this task is most often run into constructing the maps of the face of formation based on well-drilling data.

An interpolation/approximation method is sufficiently flexible and robust enough for solving large problems, provides results comparable with the Kriging method (respectively with the Radial basis function method or Minimum curvature method).

The research aim is to explore the productive (Mezhygirya) strata of the southern part of Volodymyrets ambar district with the help of the interpolation method changing the accurate data of geological sampling.

There are a lot of programs that fulfil similar tasks. To solve our problem we used Surfer, because it is quite a common, relatively cheap and easy to learn program. Ordinary Kriging that was used for our interpolation research is included into Golden Software Surfer – one of the most common commercial packages for spatial interpolation.

Surfer is a full-function 3d visualization, contouring and surface modeling package that runs under Microsoft Windows. Surfer is used extensively for terrain modeling, bathymetric modeling, landscape visualization, surface analysis, contour mapping, watershed and 3d surface mapping, gridding, volumetrics, etc. [3].

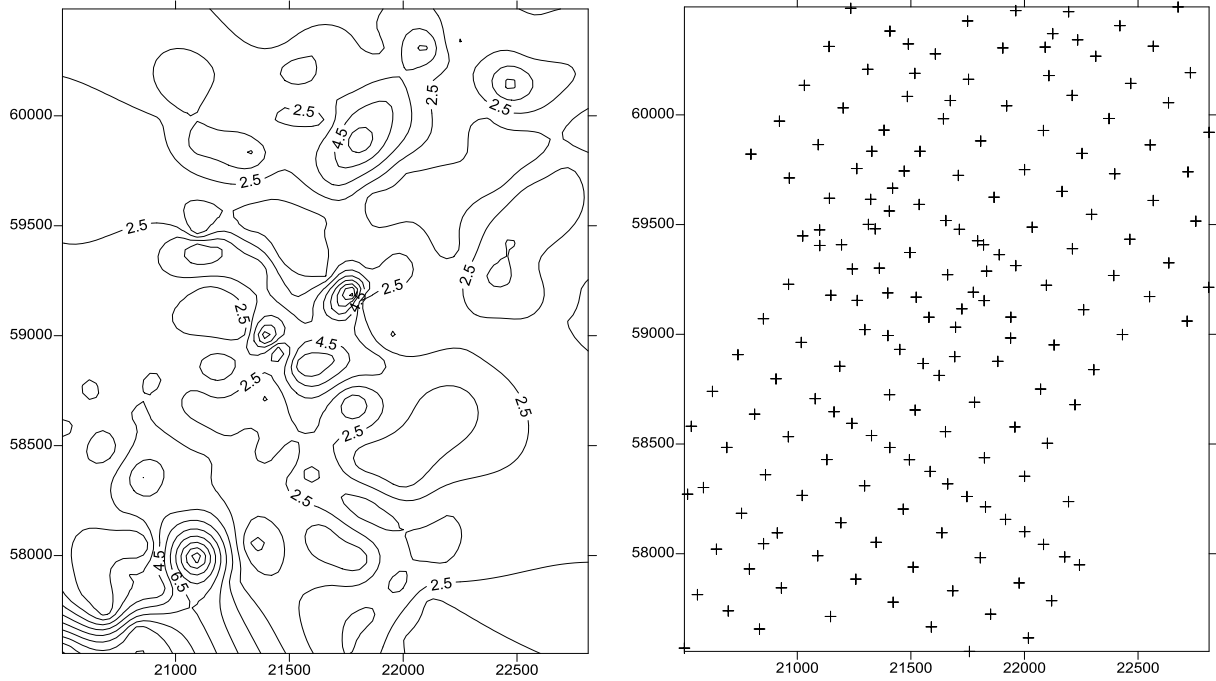
Surfer's sophisticated interpolation engine transforms your XYZ data into publication-quality maps. Surfer provides more gridding methods and more control over gridding parameters, including customized variograms, than any other software package on the market. You can also use grid files obtained from other sources, such as USGS DEM files or ESRI grid files. Display your grid as outstanding contour, 3D surface, 3D wireframe, watershed, vector, image, shaded relief, and post maps. Add base maps and combine map types to create the most informative display possible. Virtually all aspects of your maps can be customized to produce exactly the presentation you want. Generating publication quality maps has never been quicker or easier [3].

The thickness of productive deposits ranges from the first ten centimeters on the slopes and in the shallows to 11.5 m in the dips. The average thickness of mezhygiryan deposits is 1-2 m and 5-7 m in the cavities [1].

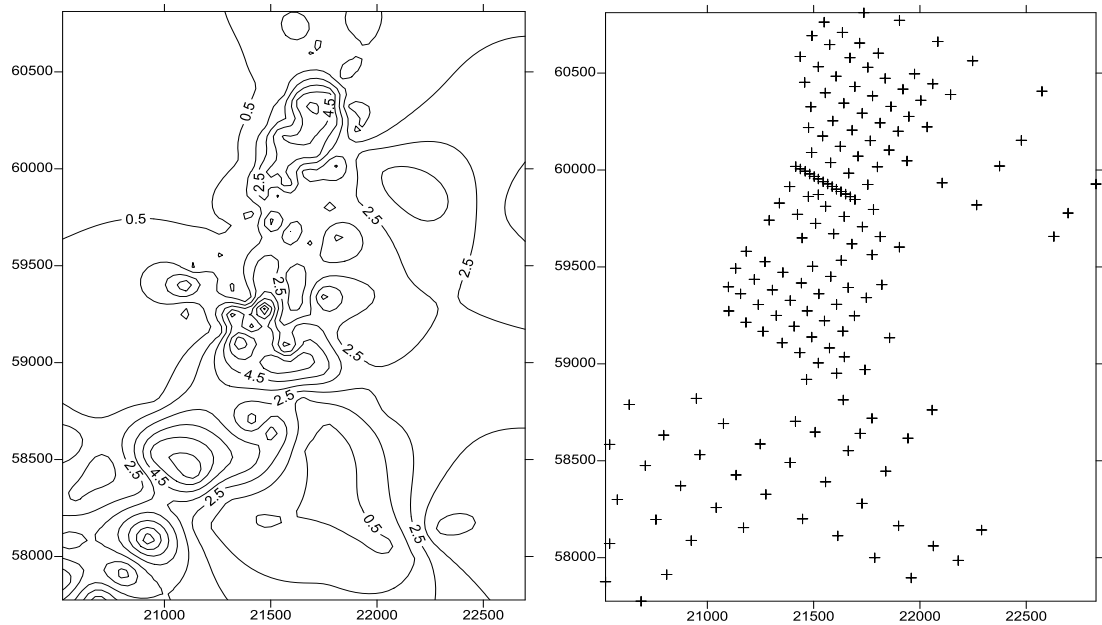
The geological structure of deposit is determined on the basis of sampling of the mining holes and bore pits set, the spacing of which within the limits of the explored area

made 100x100 m and 200x200 m that is compatible with “Instruction of the State Commission on reserves of Ukraine” [2].

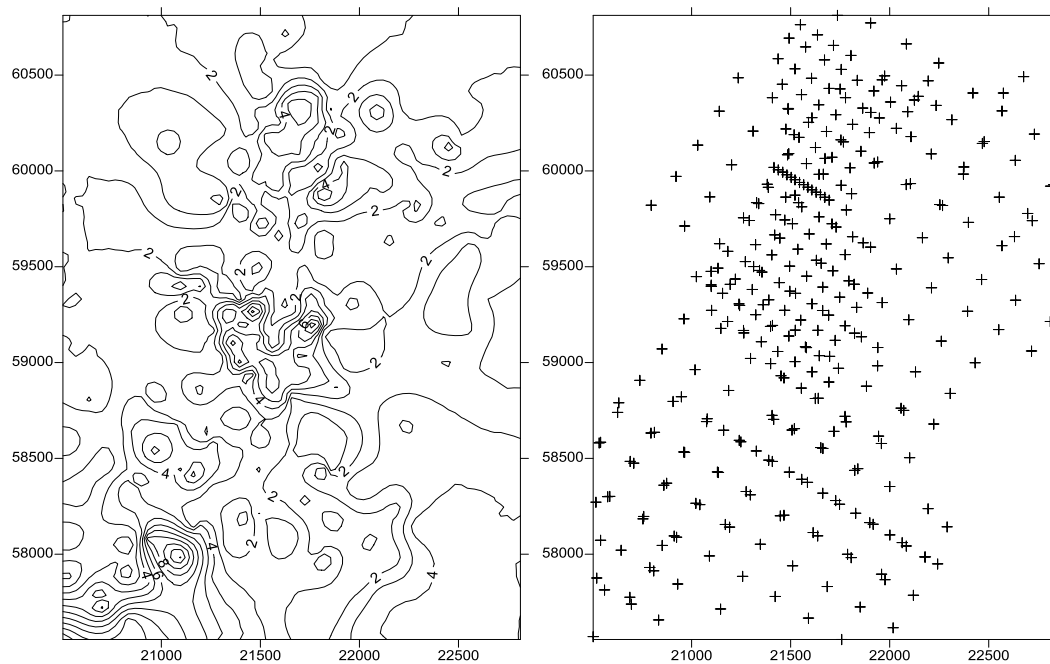
We have interpolated the Mezhygirya strata thickness of district part according to the data in mining holes (Fig. 1), bore pits (Fig. 2) and using common data from mining holes and bore pits (Fig. 3) with the cross-sectional height of 1 m starting from 0,5 m bed contour line.



*Fig. 1 Interpolation of area according to geological assay data in mining holes*



*Fig. 2 Interpolation of area according to geological assay data in bore pits*



*Fig. 3 Interpolation of area according to geological assay data in mining holes and bore pits*

Without doubt we will get more reliable result using the greatest number of raw data. According to Fig. 2 some data may be redundant that results in the increase of economic expenses. The assessment of productive deposits thickness with different raw data may be the reason for seeking more rational scheme of geological prospecting.

## REFERENCES

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