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The use of retrospective data for creating 3D models on the example of the Balakhivka graphite deposit

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SUMMARY

The creation of an electronic archive, database of retrospective data and their use for creating 3D model is considered on the example example of the Balakhivka graphite deposit.

Figure 3 *Database of the Balahivka deposit – table structure*

The geological interpretation was performed by contouring the geological bodies in the profiles using lithological control and composite samples, with cut-off grade 1% (Fig. 4) (Bariatska et al., 2018).

Figure 4 *Delination of geological bodies in profile*

The wireframe modeling method was used to create a three-dimensional model of the Balakhivka graphite deposit (Fig. 5) (Bariatska and Safronova, 2019).

Figure 5 *Wireframe model of the Balakhivka graphite deposit*

Exploration work on the Balakhivka graphite deposit was not carried out in full scope- there is no data on the graphite grade in some drill holes (the results of logging were used). The drilling program based on a 3D model was created to verify the geological data (Fig. 6). Geological sections and columns were constructed with an indication of rock depths, drillability categories.

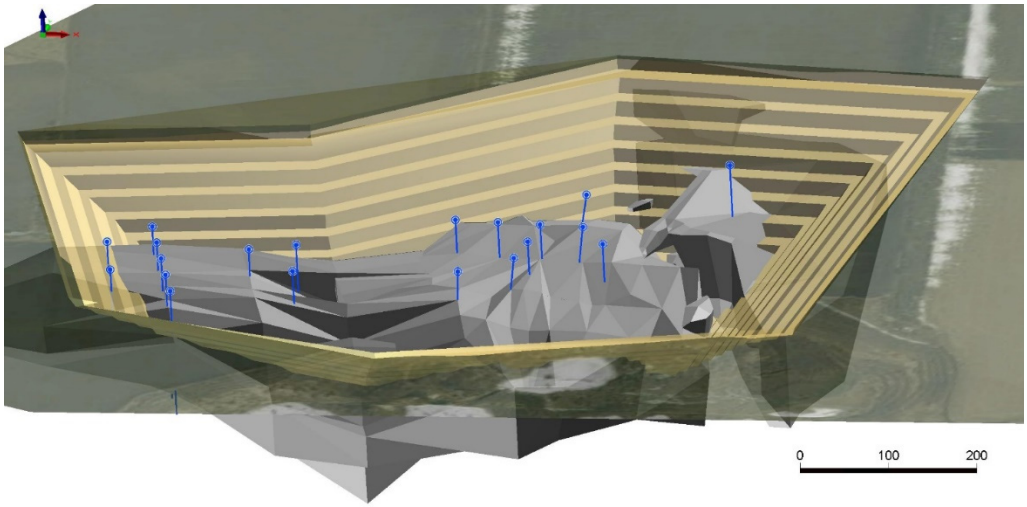

Figure 6 *Project drill holes*

Conclusions

Currently, drilling is in progress, the results of which showed good convergence with the design data.

The data obtained as a result of drilling and laboratory work will more accurately delineate the deposit and reserves estimation using the 3D block modeling method.

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References

Bariatska N., Geychenko M., Safronova N. [2018] Main stages of the three-dimensional modeling ore deposits through the example of Shevchenko deposit. *Fifth scientific-practical conference "Subsoil use in Ukrain. Prospects for investment", (Truskavets, 8-12 October 2018)*. Vol I, 211-217. (in Ukrainian)

Bariatska N. and Safronova N. [2019] Stage-by-stage verification for three-dimensional modeling and resource assessment of ore deposits. *Geoinformatics* **69**(1), 47-57.

Nechayev S. and Yesipchuk K. [2006] Graphite Balakhivka deposit. *Mineral deposits of Ukraine.* Vol II, 128 (in Ukrainian)