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Using geophysical data for modelling of copper ore bodies in IOCG Sin Quyen deposit, Lao Cai, North Vietnam

Abstract

The Sin Quyen deposit is classified as IOCG skarn-type deposit. It is located in the complex geological setting of the Red River Zone (shear zone). The deposit was discovered by geophysical survey. Using the computer modelling software “Minescape 5.12TM”, archival geophysical data recorded from 146 boreholes, 21 tunnels and 216 outcrops distributed around the studied area, including the latest chemical analysis for 50 samples and geological knowledge and computational tools, 3D geometric and distribution models of seventeen copper ore bodies was built. The modelling procedure consisted of various steps and could be easily edited and updated a variety of new data. Based on the models, the reserves of each 17 ore bodies and the total reserves of all ore bodies was calculated. It was estimated that they are in total 570 000 tons of Cu, 200 tons of U and 25 tons of Ag. The models indicate that almost of ore bodies are hydrothermal vein-type. They are extending in NW–SE strikes and dipping around 70°. These observations nearly correspond with the geological studies.