

Geophysical Approach of the Lead-zinc Mineralization the Synclinorium of Verviers (Belgium)

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The synclinorium of Verviers district (Eastern Belgium) has produced the overwhelming majority of the Belgian Pb-Zn concentrates (more than 2 million tons) from historical time until the beginning of the 20th century, but some unexploited ore deposits are still present in the basement such as in Lontzen. During the 80's a drill hole campaign has been lead in Lontzen to explore the root of the Pb-Zn mineralization under the old mining works and to explore if the extensional faults are also mineralized. Three (non-connected) ore bodies have been evidenced: Lontzen, Poppelsberg East and Poppelsberg West. The drillings have crosscut Pb-Zn mineralization at depth between 5 and 110m according to the places.

Three geophysical techniques have previously been used in this project to inspect this MVT ore deposits: electrical, gravimetric and magnetometric methods. These observations are now completed with a conclusive electromagnetic survey.

This survey has been made with a Geonics EM 34-3 using coaxial and coplanar configuration with 20m and 40m spacing between the two coils. The frequency is fixed in function of the coil spacing: 1.6KHz for 20m spacing and 0.4 KHz for 40m spacing.

Due to a large amount of electric wires and railway catenaries, the prospected area has been restricted to the Poppelsberg East vein.

An electromagnetic anomaly has been detected on the Northern part of the Poppelsberg E vein by the four EM configurations. This excellent result on a part of the Pb-Zn deposit of Lontzen/Poppelsberg is probably due to the local amount of pyrite and marcasite with the sphalerite and galena. On the other parts of the prospected area, where the mineralization is nearly exclusively composed of sphalerite, no significant anomalies have been evidenced. The EM technique is efficient on the deposit of Poppelsberg when the sphalerite is present with conductive mineral.