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Geological Mapping and Reinterpretation of the Gold Prospect "Descoberto" Located Near the World-Class Cuiabá Orogenic Gold Deposit, Minas Gerais, Brazil

Beatriz A. F. Andrade¹, Carolina P. N. Moreto¹, Ricardo O. A. Mabub²

1. University of Campinas (UNICAMP), Institute of Geosciences, Campinas, SP, Brazil, 2. AngloGold Ashanti Córrego do Sítio Mineração S.A, Sabará, MG, Brazil

The Iron Quadrangle is a world-renowned mineral district known for its iron, manganese, gold, gems, and industry minerals deposits. It is located in the southern part of the São Francisco Craton in Minas Gerais, Brazil, and responsible mining and studies of gold prospects are encouraged in the region due to its historical gold extraction since the 18th century. However, several questions remain open, with emphasis on a better understanding of the structural architecture that hosts the mineralization at the deposit scale. The study area is within the geological context of the metavolcanosedimentary sequence of the Archean Rio das Velhas greenstone belt, with mineralization predominantly hosted in quartz veins. The Descoberto prospect area presents a scarcity of outcrops and is inserted in an area of dense vegetation cover, with a high degree of weathering, steep reliefs, and well-developed soils due to the tropical climate. In this context, the integration of geochemical, geophysical, and SRTM data with field mapping greatly assists in geological interpretation at local and regional scales. Detailed cartographic studies have been conducted in the region in the past; however, the most recent interpretation of structural geology and drillhole data suggests a new cartographic interpretation of the area related to a geometry change of the main structure where the prospect is hosted. Although the latter interpretation is debatable, the integration of existing historical data into this research is valuable, along with newly acquired data. For this research, pre-field cartographic products were carried out, and geophysical surveys of Induced Polarization (IP), regional geophysical surveys, multi-element soil analyses, as well as a set of geological interpretations from field mapping and drilling campaigns, were considered.