

GEOPHYSICAL INVESTIGATIONS OF TIN-DEPOSITS IN THE RONDÔNIA TIN-PROVINCE (RTP), BRAZILIAN AMAZONIA.

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Ground geophysical experiments were conducted on several primary (greisen bodies and veins) and secondary (alluvial and elluvial) tin deposits of the RTP aiming to test the utility of geophysical methods as a prospecting tool. Field tests were conducted at Santa Bárbara and Bom Futuro mining districts, respectively operated by CESBRA and EBESA tin companies, using the following methods: gravity, magnetics, electromagnetic (SLINGRAM), electrical soundings and ground penetrating radar (GPR). For primary tin deposits we verify that greisen bodies are less magnetized than the host rocks and yield a weak (but detectable) magnetic anomaly up to 4 nT of peak-to-peak amplitude. Also determined from magnetic anomalies is the transitional contact between granite and gnaiss even when hidden beneath a thick sedimentary cover. In this case a favorable mineralization structure was clearly detected. Shallow greisen bodies can be recognized from GPR sections expressed by irregular reflection pattern and deeper electromagnetic wave penetrations. The depth of the contact between bed rock and sedimentary alluvial systems can be mapped by a closely-spaced vertical electrical soundings due to the high resistivity contrast among sediments and the underlying weathered rock. Bed rock also can be inferred from SLINGRAM profiles and gravity anomalies. Such results suggest that geophysical methods are effective tools for the exploration of tin deposits of the RTP and certainly also for deposits in similar environment in the Amazonian craton.