

Paper Number: 2457

## **Assessment of Geological-geophysical methods for prospecting of chromite deposits in Camagüey province, Cuba**

González, R.<sup>1</sup>

<sup>1</sup>National Office of Mineral Resources, Ignacio Agramonte 271, Camagüey Province, Cuba, 70100, Email: ruben@onrm.minem.cu

---

The abundance of chromite ore in Camagüey province attracted the attention of prospectors since early last century. Starting with the field works carried out by North American geologists, it began a period of intense prospecting that brought Cuba to conquer a prominent place in chromite ore mining and its export during the World War II. Mining of chromite ceased to 1960 for political and economic reasons. Wide potential for chromite ore was undoubtable in the Eastern-central part of the country.

During some years, a crew of geologists and geophysicists carried out prospecting for chromite in extensive areas of the mentioned province. At the same time exploration works developed in a few targets. The used methodology for ore prospecting comprised a complex geological-geophysical research that started with the establishment of theoretical prospecting criteria, indicators and guides. First step was to select prospective sectors near to known deposits and occurrences, partially or totally exploited. The connection of ore bodies to determined levels of ophiolitic complex was an important geological criterion.

Podiform chromitities are located in the transition zone and inside both, the peridotite and cumulative complexes. Based on differences of density between ore bodies and enclosing rocks it had been decided to use the gravity survey as key method for detecting anomalies that could be related to buried ore bodies. The 50 x 25 m. grid could make possible the detection of medium to big sized ore bodies with considerable tonnage of resources. For broadening the range of detection, the 25x 12.5 m. grid covered specially chosen small areas. Magnetic survey and electrical methods helped to obtain additional criteria for judgment at the time of verifying the anomalies. The quantitative analysis of gravimetric anomalies with 3D body modelling enhanced the efficiency of the method.

After a rigorous selection of prospective anomalies, rotary core drilling showed that several geophysical anomalies had the cause in shallow chromite ore bodies. The gravity survey revealed the anomaly Victoria I and later exploration became the deposit into the first open cast mine resulted from this research. It discovered new buried ore bodies: Victoria II, Ferrolana and Rosita, among others. To cover large areas with a complex of geophysical methods and the digital model of the terrain resulted expensive, considering the yield per Km<sup>2</sup>. Therefore, it was necessary to find alternative prospecting methods to assure more resources at lower operating costs.

Expectations of finding new chromite deposits are broad in Camagüey and eastern part of the island. New possibilities of business and investment are open under the actual context for prospecting and mining of refractory chromite in Cuba.



