

CONTRIBUTION OF THE INTERPRETATION OF AERO-GEOPHYSICAL DATA IN THE INCREASE OF GEOLOGICAL AND STRUCTURAL KNOWLEDGE, IN THE PROVINCE OF CABO DELGADO, MOZAMBIQUE.

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Abstract:

The evolution of geosciences, with the appearance of new techniques of data collection and analysis, and the implementation of new technologies in its various fields of action have led to the development of more realistic geological maps, thus contributing to the growing discovery of new mineral deposits.

In 1970, the first aero-geophysical surveys were carried out by Italian company CGG with a view to boosting geological research work and contributing to the increase of geological knowledge at the country level. But it was in 2004/5 that the geophysics in Mozambique witnessed a major evolution, with the performance of aero-geophysical surveys by FUGRO, of high resolution, with flight lines spacing of 300 m, flight height of 100 m, and comprises data from Total magnetic field and gamma-spatter.

The integration of the high-density aero-geophysical data interpretation as a tool to support the geological mapping allowed an easy discrimination of the geological complexes, structural and kinematic interpretation and identification of intrusive bodies. The examples presented here refer to the province of Cabo Delgado, an area with potential for research of several mineral resources, but which has few publications of geological mapping works.

In this region, the aero-geophysical surveys conducted by FUGRO in 2004/5 were of fundamental importance in assisting the geological mapping for the project to compile the Geological Map of Mozambique, carried out by Norconsult in the periods of 2002 to 2007, and financed by several national and foreign institutions.

In addition, some dissertation work was carried out in the Province of Cabo de Delgado, being (Danta, 2009) the most relevant on processing and interpretation of aero-geophysical data, in the province of Cabo Delgado.

As an example, the interpretation of radiometric data of high resolution added to field observations revealed the existence of folded and mylonitic contact between the geological complexes of Xixano and Marrupa, in the province of Cabo de Delgado.

In addition, Nipepe Klippe is a geological structure whose discovery was made possible by combining ternary images of radioelements (K, Th, U) resulting from high-density aero-geophysical data and field observations. The image of the first vertical derivative superimposed on the satellite image revealed the existence of dikes inside the complex of Marrupa.

This information, based on the data processing related to high-density aero-geophysical surveys and field observations, contributed significantly to the increase of geological and structural knowledge for the improvement of the geological map of the province of Cabo Delgado.

Keywords: Importance, aerogeophysic, geological mapping

