

# **A Gradient Analysis-Based Study of Aeromagnetic Anomalies of Some Dikes in the Nupe Basin, Central Nigeria**

Olasehinde<sup>1</sup>, P. I. and A. K. <sup>2</sup>Olawuyi

<sup>1</sup>Department of Geology, School of Natural and Applied Sciences, Federal University of Technology, Minna, Nigeria.

<sup>2</sup>Department of Geology, Faculty of Sciences, University of Ilorin, Ilorin, Nigeria.

## **Abstract**

*An aeromagnetic intensity contour map of a part of Nupe Basin of Nigeria was acquired, digitized and analysed. This work was carried out for a better understanding of the study area using the Gradient analysis-based technique to calculate depth to basement and to interpret the aeromagnetic anomaly map of the area. Statistical method of Ajakaiye et al. (1989) was employed to produce a magnetic facies map of the area. Regional-residual separation of the total intensity map was done to produce a residual aeromagnetic intensity data. Depths to the magnetic source bodies were estimated from the profiles obtained from residual data using Pal's (1985) gradient analysis method. The estimated depths ranged from 0.44km to 1.67km which agrees with those predicted by some earlier workers on the Nupe Basin. These depths fall within the lithospheric layer of the earth and the causative magnetic anomalies body are likely basic intrusives. While this approach appears cheap, accurate and cost-effective, it is recommended that other ground geological and geophysical techniques be applied to further strengthen the assertions made in this work.*

**Keywords:** Gradient, Digitized, Aeromagnetic, Intensity, Regional, Residual, Intrusive

Email: gideonola@yahoo.com.

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