

عنوان مقاله:

Assessment of Geothermal Potential of Parts of Middle Benue Trough, North-East Nigeria

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خلاصه مقاله:

This research deals with assessment of geothermal potential in parts of middle Benue Trough, north-east of Nigeria. The study area lies within the Longitude $9^{\circ}\text{E} - 10^{\circ}\text{E}$ and Latitude $8^{\circ}\text{N} - 9.5^{\circ}\text{N}$ with an estimated total area of $18,150 \text{ km}^2$. Regional/Residual separation was performed on the total magnetic intensity using polynomial fitting. The residual map was divided into 14 overlapping spectral blocks, and the log of spectral energies were plotted against frequency. Centroid depth and depth to top boundary obtained were used to estimate the Curie point depth isotherm, which was then used to compute geothermal heat flow of the study area. The result shows that the geothermal heat flow varies between 50.02 and 15.1 mWm^{-2} with highest value in the southern part (Akiri and Ibi) and north-western part (Pankshin) of the area. The geothermal heat flow obtained from this study indicates that the study area possess a good source of geothermal potential. The aero-radiometric data covering the study area was also analysed to estimate the radiometric heat contribution. The analysis of aero-radiometric data shows that the area possesses high content of Uranium, Potassium and Thorium. The radioactive heat production values vary between $1.58 \mu\text{W/m}^3$ and $2.53 \mu\text{W/m}^3$ with an average of $2.21 \mu\text{W/m}^3$. Thus, harnessing the geothermal potential in this area would be of added values and advantage to power generation in Nigeria.

کلمات کلیدی:

Centroid depth, Curie point depth isotherm, Geothermal, Heat flow and Spectral

