

## Geoelectrical Investigation Around Bomo Area, Kaduna State, Nigeria

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**Abstract :** Electrical resistivity investigation was carried out around Bomo area, Zaria, Kaduna state in order to study the subsurface geologic layer with a view of determining the depth to the bedrock and thickness of the geologic layers. Vertical Electrical Sounding (VES) using Schlumberger array was carried out at fifteen (15) VES stations. ABEM terrameter (SAS 300) was used for the data acquisition. The field data obtained have been analyzed using computer software (IPI2win) which gives an automatic interpretation of the apparent resistivity. The VES results revealed heterogeneous nature of the subsurface geological sequence. The geologic sequence beneath the study area is composed of hard pan top soil (clayey and sandy-lateritic), weathered layer, partly weathered or fractured basement and fresh basement. The resistivity value for the topsoil layer varies from 40 $\Omega$ m to 450 $\Omega$ m with thickness ranging from 1.25 to 7.5 m. The weathered basement has resistivity values ranging from 50 $\Omega$ m to 593 $\Omega$ m and thickness between 1.37 and 20.1 m. The fractured basement has resistivity values ranging from 218 $\Omega$ m to 520 $\Omega$ m and thickness of between 12.9 and 26.3 m. The fresh basement (bedrock) has resistivity values ranging from 1215 $\Omega$ m to 2150 $\Omega$ m with infinite depth. However, the depth of the earth's surface to the bedrock surface varies between 2.63 and 34.99 m. The study further stressed the importance of the findings in civil engineering structures and groundwater prospecting.

**Keywords :** electrical resistivity, CERT (CT), vertical electrical sounding (VES), top soil (TP), weathered basement (WB), partly weathered basement (PWB), fresh basement (FB)

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