Magnetic and 2-D resistivity imaging prospecting of shallow buried archaeological remains structure at Sungai Batu, Lembah Bujang, Kedah

NURINA ISMAIL[1], NORDIANA MOHD MUZTAZA[1,*], MOKHTAR SAIDIN[2] & I A ABIR[1]

[1]Geophysics Section, School of Physics, University Sains Malaysia, 11800, Penang, Malaysia
[2] Centre for Global Archaeological Research, Universiti Sains Malaysia, 11800, Penang, Malaysia
*Corresponding author email address: mmnordiana@usm.my

Abstract: In an archaeological study, geophysical method becomes important tools for the scientific investigation and also can be applied to map shallow subsurface structures at the archaeological site. The main purpose of the research is to locate the shallow buried archaeological remains structure in the area of Sungai Batu, Lembah Bujang, Kedah using magnetic and 2-D resistivity methods. The magnetic survey was performed using G-856 proton magnetometer and the spacing between stations was 1 m gridding. The magnetic data revealed high residual zones causing the magnetic anomalies using Surfer8 software. The results of high magnetic values (-65-75 nT) indicated the anomaly features within the study area. These anomaly features are detected according to the magnetic contrast (clay bricks) and the surrounding, mainly sandy clay. In order to provide further data on the site, 2-D resistivity technique was carried out at the same area of SB1 site. Resistivity surveys have been applied using Pole-dipole arrays with 13 survey lines and by 0.75 m electrode spacing. The survey used ABEM SAS 4000 and the data was processed using Res2DINV and Surfer8 software. The 2-D resistivity profiles obtained some high anomalies (≥5000 Ωm) at a depth ranging from 0-1.5 m study area. For being recognized as an area that have great archaeological potential, it must have two main characteristics which are mound area and exposed clay bricks on the surface. Based on the interpretation, the high resistivity value indicates the interesting anomaly which is clay bricks due to the effect of heat at high temperature.

Keywords: Magnetic, 2-D resistivity, shallow buried, archaeological, mound area

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