

Teknik geofizik dalam kajian tanah runtuh di kawasan Bau, Sarawak

**UMAR HAMZAH, ABDUL RAHIM SAMSUDIN, RAHMAN YACCUP, ABDUL GHANI
RAFEK, MOHD HAFIZAL MAD ZAHIR DAN LAKAM MEJUS**

Program Geologi, Pusat pengajian Sains Sekitaran & Sumber Alam
Fakulti Sains & Teknologi
43600 UKM Bangi, Selangor D.E.

Limestone terrain or karst is susceptible to surface collapse or subsidence which could cause damage to property and loss of life. Surface depressions in the limestone terrain which is always covered by alluvium may be caused by solution in the limestone. Dissolution of the limestone always take place along discontinuities or cracks and cavities which are filled up by rain water or subsurface solution. Therefore it is necessary to investigate the possibility of collapse before any project in limestone areas is carried out. This paper presents a few surface geophysical techniques to detect subsurface cavities and cracks in collapsed limestone in the Bau area, Sarawak. These techniques include seismic refraction, seismic reflection and geoelectrical imaging. ABEM Terraloc MK3 seismograph together with 100 Hz frequency detectors are used

for the seismic work. Sound wave energy is produced by impinging a 5 kg sledgehammer on a squared steel plate placed on the tarmac road. A total of 24 detectors which are linearly arranged with the source are used to receive signals returning to the surface. These signals are then processed to produce profiles of distance versus depth and 2-D seismic sections. Velocity values calculated are used for rocks and structural interpretations. On the other hand, ABEM AC Terrameter is the instrument used in the geoelectrical survey together with a total of 50 steel rods representing electrodes for injecting currents into the ground and measuring the potential difference between them. Final 2-D pseudosection shows the resistivity distribution laterally and vertically. This variation is used for interpreting the earth material and the type of water content in it. In this study, the three techniques were tried in order to detect any possible cavity or cracks underneath a peripheral shaped cracks on the tarmac road. These techniques have more or less been able to detect the presence of a sinkhole with faults surrounding it underneath the cracks. Depth and width of the cavity is about 7–10 m.
