

# PERTEMUAN PERSATUAN MEETINGS OF THE SOCIETY

## Ceramah Teknik (Technical Talk)

### Chairman's Lecture III

**Saturday, 22nd February 2003**

**Geology Programme**

**Universiti Kebangsaan Malaysia**

## **Technique and roles of geophysics in unravelling subsurface structures and information of the earth**

ABDUL RAHIM SAMSUDIN

### **Laporan (Report)**

Prof. Dr. Abdul Rahim Samsudin, Head of Geology Programme, School of Environment & Natural Resource Science, Universiti Kebangsaan Malaysia, Bangi, Selangor, and currently Chairman of GSM Geophysical Working Group, gave the above talk on Saturday 22nd February 2003 at 11.00 am at Geology Programme, Universiti Kebangsaan Malaysia. The talk was organised by the Geophysical Working Group of the Geological Society of Malaysia in collaboration with the Geology Programme of Universiti Kebangsaan Malaysia and was attended by a mixed crowd of Society members and postgraduate and undergraduate students of Universiti Kebangsaan Malaysia (~ 40 participants). There was a good round of questions and lively discussions after the presentation.

### **Abstrak (Abstract)**

Geophysics is a branch of earth science which uses principles of physics to study the interior of the earth. This field of science has developed for several decades and has become an important technological tool to unravel the earth's internal structures in order for geologists to either credit or discredit the global tectonic theory of the earth. By measuring different physical properties of the earth material, geophysicists have successfully mapped subsurface structures deep enough to enable exploitation of hydrocarbon resources which are the lifeline of the modern industrial nations in the world. The rapid development of electronically based geophysical field equipment assisted with microcomputer data processing technology have increased the efficiency and cost effectiveness of the geophysical techniques, especially in exploration of natural resources as well as resolving many geotechnical and geoenvironmental problems. There is great potential for this technology to be used for archaeological investigation.

In recent years the application of geophysics for solving geotechnical problems has increased especially in mapping subsurface weak structures and in evaluating problematic zones of development sites. Improved geophysical technology and interpretation procedures have been successfully used in resolving environmental problems especially on the issue of groundwater contamination and assessment of contaminated land of a development area.

The greatest challenge for the geophysicists in the 21st century is the paradigm shift in their research orientation from a strong bias towards the hydrocarbon industry to other important areas of applied sciences such as for geotechnical engineering and environmental applications. The wealth accumulated from the hydrocarbon industry should be invested in such studies as well as venturing in research for other possible sources of environment-friendly energy. In addition, there is an obvious need for both engineering and environmental geophysics to be introduced to all the engineers and environmentalists. In order for such geophysics to become more useful to the geotechnical engineers, better means of communication are necessary between these two groups of scientists. The rapidly expanding discipline of archaeo-geophysics needs to be brought to the attention of all archaeologists so that the geophysical techniques can be used as part of the routine procedure in the archaeological exploration programme.

