

# Initial Magnetic Survey at Tun Hussein Onn University College of Technology, Johor, Malaysia

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## Abstract

As an initial attempt to establish a magnetic observatory in Malaysia, magnetic gradient surveys were conducted at Tun Hussein Onn University College of Technology, Johor, Malaysia. The measurements were made during the months of September to December 2003. The survey was done at six identified potential locations around the campus of the University. A unique feature of the area is that the campus is built on peat and soft soil. A portable proton overhauser magnetometer was used to measure the total Earth's magnetic field. The data were processed and interpreted to determine the local magnetic gradient profiles. The local gradient profiles are an important scientific document as supporting evidence used to develop the magnetic observatory in Malaysia.

## Motivation

1. Uneven distribution of geomagnetic Observatory to generation of global and regional model as International Geomagnetic Reference Field (IGRF). (Macmillan, S and Quinn J. M., 2000 )
2. Lack of permanent continuously recording geomagnetic station in Malaysia present major problem for geophysical survey and special projects to focused on monitoring geomagnetic changes.
3. To ensure the process of site selection for developing magnetic observatory is magnetically clean and scientifically accepted.

## Introduction

- The primary objective of a magnetic survey is to acquire accurate data on the Earth's magnetic field.
- The aims of ground magnetic surveys at Tun Hussein Onn University College of Technology are to obtain details magnetic gradients profiles of absolute values of the geomagnetic field for development magnetic observatory.
- Surveys were carried out on month of September to December 2003 using a portable magnetic instrument GSM-19 with sensor.

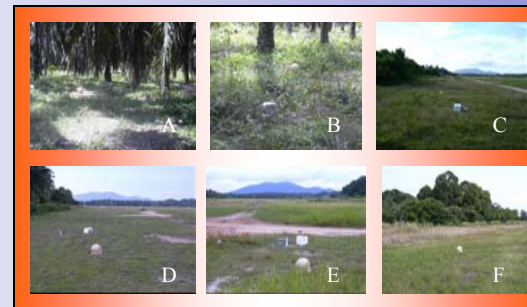
## Magnetic Instrumentation

- Magnetometers are to measure magnetic flux density (nT).
- The GSM-19 is a Portable Vector Proton Overhauser effect instrument supplied by GEMS from Canada.
- Detail specification of GSM-19 are following :



- Resolution : 0.01 nT
- Accuracy : 0.2 nT
- Range : 20,000 to 120,000 nT
- Gradient Tolerance : Over 10,000 nT
- Operating Interval : 3 sec minimum
- Operating temperature : - 40°C to 60 °C.

## Survey Areas/Locations



## Survey Methods

The survey methods are combination of:

1. Preliminary survey.
  - Visually
  - Distance
2. Quick Magnetic Survey.
3. Detail Magnetic Surveys.

## Conclusions

- Magnetic Surveys conducted at Tun Hussein Onn University is part of the University's program to develop and enrich knowledge and also a vital step towards developing a magnetic observatory.
- Location A (Oil palm plantation) is the only location to be considered for the Magnetic Observatory.

## Results

