**Fermilab**
**ES&H Section**

INDUSTRIAL HYGIENE EQUIPMENT PROCEDURES

# APPLIED MAGNETICS GAUSSMETER

9/92

## PURPOSE

To provide guidance in the use of the Applied Magnetics Gaussmeter.

## DISCUSSION

The Applied Magnetics Laboratory GM1A is a Hall effect magnetic field meter suitable for surveys of expected field strengths from 3 - 20,000 gauss. Due to poor ergonomic design, however, it needs frequent rezeroing. Rezeroing is required if, while performing a survey, your readings become erratic or nonsensical, or, if rough handling of the device causes one of the dials to move.

## MATERIALS

- AML GM1A with a PT20 probe.
- Pen, pencil, and calculator
- Sampling Notes form.

## PROCEDURE

1. Calibration

    a. Zeroing and calibration should be done in a place relatively free of manmade magnetic fields ( in most cases, outside).

    b. Turn on the **FINE** control knob to mid-rotation. This turns the unit on.

    c. If the **BAT** indicator appears (upper left of display), replace the battery.

    d. Press the **RUN/20K** button. Allow the unit a few seconds to stabilize. *Assure that the probe will not move during calibration.* Adjust the

**OFFSET** dial until the display reads **0.00** unless the display shows under 0.05 Gauss.

e. Press the **2K** button and adjust the **COARSE** dial until the display reads **000.**

f. Press the **200** button and very carefully adjust the **FINE** dial until the display reads between **- 01.0 and 01.0** . This level of zeroing is sufficient for measuring fields greater than 100 Gauss.

g. Press the **20** button. Note the reading on the display. If the meter reads outside the range between **- 1.00** and **1.00,**, carefully adjust the **FINE** dial to bring it in this range. This level of zeroing is sufficient for measuring fields greater than 10 Gauss or for quick checks of fields greater than 4 Gauss.

h. Press **INT. CAL.** . Allow 5 seconds for display to stabilize. Adjust the **"CAL"** control ( small hole, upper right of case) with a small screwdriver so that the display value is equal to the calibration number written on the probe (under the Model No.).

i. Select the **2K** range to verify that display returns to zero. If necessary, re-zero display and repeat the sequence.

j. Record that the unit was calibrated on the Sampling Notes form.

k. To turn off, press **STOP.**

2. Measurement Techniques

a. When you are ready to take measurements, press the **RUN/ 20K.** Select the desired sampling range.

a. Remember that a Hall probe is very directional and the sensing area is very small compared to the overall dimensions of the probe.

b. When making measurements, the peak reading will be obtained by rotating the probe in the field, in addition to simply moving the probe around.

c. You are looking at a very small area with each measurement. You may see large variations in field strength with very little physical movement of the probe. You may have to take quite a few measurements to completely describe the magnetic field.

3. When the survey is completed, turn the meter off with the **FINE** control dial. Return the unit to the ES&H Section. Send a completed Sampling Notes form to the ES&H Section.