

role. The main components of the system are:

- 1- A transmitter
- 2- A receiver
- 3- A tripod mounted sensing coil
- 4- A playback system.

The other less specific components are a motor generator with fuel pump system, wire reels, a battery charger, and a maintenance kit.

#### FIELD OPERATION OF THE UTEM 3 SYSTEM

This functional description explains how the different components of the system are used in normal surveying. After will follow individual descriptions of the components.

In normal field operation, the fixed transmitter is energising a large (say  $1\text{km}^2$ ) wire loop, and the area around it is surveyed using the single sensing coil and the receiver. Time synchronisation is achieved by precise crystal clocks. Adjustment of the clocks is usually done twice a day by connecting a short cable between transmitter and receiver. If extreme accuracy at short time channels is not needed, synchronisation once a day only can be tolerated.

The measurements are recorded automatically on cassette tape by the receiver after a selectable averaging time. All switch settings relevant to data reduction (gains, component selection, etc..) and the label indicating the line and station number are also recorded with the data. The transmitter runs unattended all day after initial set-up. Its precisely regulated output current can be read at the beginning and end of the day by means of a four digit display and is noted for use during data reduction.

At the end of the day, at the base camp, the magnetic cassette is played back by the field computer system which makes an edited back-up copy of the tape on a floppy disk, and then proceeds to reduce and plot the data without further need for the field cassette which is returned to the receiver for the next day of recording.