EDITED AIRBORNE GEOPHYSICAL ANALOGUE RECORDS
FOR FLIGHT AREA (N.T.)

CONDUCTED BY
McPHAR GEOPHYSICS PTY. LTD.

FOR
AMMCO PTY. LTD.

CONT.
BOOK 6 OF 13 BOOKS

FLIGHT LINES: 51-69
(INCLUDING HIGH ALTITUDE LINES)
AREA M

McPHAR GEOPHYSICS PTY. LTD.
The enclosed original airborne geophysical analog records from the survey conducted by McPhar Geophysics Pty. Ltd. show the radiation spectrometer, total magnetic intensity and radar altimeter traces. The records have been bound into a number of books in order, from the first traverse line to the last traverse line, then the tie lines and flight calibrations.

The records consist of five continuous traces and two which are intermittent. Each traverse line is clearly labelled with the line number and flight direction. The width of the paper has been divided into 50 equally spaced divisions with every 5th division accentuated. The records have continuous lines extending the full width of the paper and these correspond to fiducial values. Each tenth line, corresponding to the tenth fiducial value, has been omitted for ease of tabulation. The start and end fiducial values of each flight line have been labelled on the record analog with every 50 fiducial value.

The radar altimeter record is the uppermost trace, with an upward deflection representing an increase in altitude. An altimeter calibration is made at the end of each flight and a typical section is shown below.

![Altimeter Calibration (in Metres)]
By using the recorded calibration it is possible to measure the altitude at any particular time during the survey.

The other four continuous traces which are positioned on the lower portion of the record are the four outputs of the McPhar AV4 radiation spectrometer. These traces are as follows (in order from top to bottom):

1. the total count channel, lower threshold 0.2 MeV
2. the potassium channel, lower threshold 1.2 MeV
3. the bismuth 214 channel, lower threshold 1.65 MeV
4. the thallium 208 channel, lower threshold 2.5 MeV.

All these channels have an upper threshold of 2.8 MeV.

A typical calibration of the McPhar AV4 radiation spectrometer is shown below.
The first section consists of two straight line portions, one at zero deflection and the second at full scale deflection. The settings and time constant are recorded over the full scale deflection. A check is then made using three sources, cesium, uranium and thorium. Note that an uranium source also records in the potassium and total count channels and that a thorium source gives deflections in all four channels.

The sixth and last trace is the proton magnetometer trace and it consists of two sets of dashed lines as shown below.

Positive magnetic anomalies (i.e. increase in magnetic field strength) are indicated by upward excursions. The magnetic field is sampled at intervals of approximately one second. The observed value of the total magnetic field is then recorded on two scales; the 100 gamma scale of 750 milli-seconds, followed by the 1,000 gamma scale of 250 milli-seconds.
The observed value of the magnetic field is a five digit number; the first three of these are set on the zero line and recorded by the operator at the beginning of each flight. The 1000 gamma scale (coarse scale) is recorded in continuous steps covering the entire 10 units; strong anomalies can be easily traced by the short bars that occur on the record. Full scale deflection (i.e. 0 - 100 units) is adjusted to 100 gammas for the fine scale which is recorded as a longer bar. Thus the absolute value of the magnetic field may be read from the trace to an accuracy of one gamma.