

1. ground speed
2. drift angle
3. distance to go to destination
4. distance right or left of selected course.

The output information is obtained by sending to the ground four beams of continuous wave energy and measuring the change in frequency of the energy return from the ground to the aircraft. This change in frequency commonly known as "Doppler Shift" is proportional to the aircraft speed in the direction that the beam is pointing. By checking the speed in the four directions in which the beams are pointing, the system derives ground speed and drift angle data and presents it on the Doppler Indicator on the instrument panel. This drift angle information is then combined with aircraft heading data and is fed along with ground speed information to the navigation computer. The computer accepts this information and computes automatically and continuously the aircraft's ground position relative to the selected course and point of origin. The Doppler unit is guaranteed to an accuracy of $\pm 1\%$ of the distance flown by the survey aircraft, i.e. approximately one mile off track for a distance of sixty miles.

3. MAGNETOMETER.

- a) The magnetometer used on this survey was a Gulf Research and Development Corporation Total Magnetic Field Saturable Core Magnetometer Mark 111 recording through a Gulf 7-1 Recording Potentiometer. The sensing or detecting head was mounted on the tail stinger of the Aero Commander.

b) Technical Data:

(i) Sensitivity: The instrument was set to record a full scale deflection of 300 gamma for a complete excursion of a Leeds and Northrup ten inch chart and the recorder was run at a speed proportion to ground speed as determined by the Doppler output.

(ii) Noise level: The noise level as recorded at no time exceeded two gamma.

(iii) Instrument drift: During the course of this survey, the instrument did not drift at any rate greater than four gamma per hour.