



EXPLANATION

Magnetic contours with flight traverse;
dashed contours indicate incomplete or doubtful data

Magnetic contour enclosing area
of lower magnetic intensity

Measured maximum or minimum intensity
within closed high or closed low

X 2543

AREA FLOWN
1947-49

Index map of Minnesota

An aeromagnetic survey covering an area of approximately 30,000 square miles in north-central Minnesota was undertaken during May and August 1947, May 1948, and September and October 1949 by the U. S. Geological Survey in cooperation with the Minnesota Geological Survey. The purpose of the survey was to delineate the major magnetic trends associated with the known iron ore deposits and to indicate areas which may be favorable for additional exploration.

North-south traverses were flown at 1-mile intervals. This spacing was selected to cover as large an area as possible with a minimum of flying. The aeromagnetic information is presented in two forms: as an aeromagnetic map, contoured to a common arbitrary datum, and as magnetic profiles which accompany the map.

The measurements were made with an AN/ASQ-3A airborne magnetometer installed in a Beechcraft AT-11 airplane for the 1947 and 1948 flights and in a Douglas DC-3 for the 1949 flights, the detecting element of the magnetometer being towed about 75 feet below the plane. The elevation of the plane, ranging between 900 and 1,100 feet above the ground, was recorded with a continuous-recording radio altimeter. Aerial photographs were used for pilot guidance during the flights, and the flight path was recorded by a gyro-stabilized continuous-strip camera. Positional accuracy of all the surveys after 1947 was increased by use of a gyro-stabilized vertical sight.

The geologic and drill hole information for this map has been furnished by Dr. G. M. Schwartz, Director of the Minnesota Geological Survey.

The entire area shown by this map is covered with glacial drift consisting of terminal moraine, outwash, and till.

At the eastern edge of the area the drift is more than 200 feet thick. A well at Fergus Falls, just beyond the western edge of the mapped area, penetrated 422 feet of glacial drift without contacting bedrock. Another well in sec. 32, T. 132 N., R. 41 W., is believed to have reached granite at 500 feet. A few inches of white sand rested on the solid rock and may represent a remnant of Cretaceous sedimentary rock.

TOTAL INTENSITY AEROMAGNETIC MAP OF THE SOUTHERN PART OF OTTER TAIL COUNTY, MINNESOTA
RELATIVE TO ARBITRARY DATUM



Contour interval 50 and 250 gammas
Flown 1000 feet above surface
1951

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