GEOLOGICAL SURVEY OF CANADA
DEPARTMENT OF ENERGY, MINES AND RESOURCES

1255 A

MAGNETIC ANOMALY MAP OF CANADA

Scale 1:5,000,000

Miles 100 0 100 200 Miles

Kilometres 100 0 100 200 300 Kilometres

LAMBERT CONFORMAL CONIC PROJECTION, STANDARD PARALLELS 49°N. AND 77°N., MODIFIED POLYCONIC PROJECTION NORTH OF LATITUDE 80°

LEGEND

- > +200 gammas
- 0 to +200 gammas
- 0 to −200 gammas
- −200 to −400 gammas
- < −400 gammas

This map is derived from approximately 3400 standard total field aeromagnetic maps published at a scale of one inch equals one mile, under the Federal/Provincial Aeromagnetic Survey Plan. The standard line spacing for these surveys was ½ mile at an average terrain clearance of 1000 feet. The process of constructing the map consisted of reducing the contour interval from 10 gammas on the one-mile maps to 200 gammas and removing the regional variation of the earth's total magnetic field as determined from the Dominion Observatories Branch map of F for 1965.0. If the regional variation is not removed, a severe banding effect which is not related to the geology subdues the magnetic pattern caused by the geology.

Areas of extensive and broad-scale features on this map were not apparent on the one-mile aeromagnetic maps. The most striking characteristic of this map is the manner in which the boundaries between the various geological provinces are evident. There are, however several major magnetic features several hundreds of miles in extent which, as yet, have no geological explanation.

Magnetic features less than about 5 miles wide, regardless of their intensity are too narrow to be prominent on the scale of this map. As the narrow anomalies are known to be caused by relatively near-surface features, the map can be regarded as mainly reflecting the major deeper-seated effects. For example, there is no evident change in the pattern at the boundary of the Canadian Shield as there is on the one-mile maps. This map will assist in interpreting regional geological structure in the basement rocks both where they are exposed and where they are overlain by cover rocks.

An obvious correlation when the map is compared to a geological map in addition to the parallelism of magnetic and geological trends is that the broad magnetic 'low' areas coincide very well with regions of predominantly sedimentary and volcanic rocks and their gneissic equivalents. The magnetically 'high' areas, on the other hand, correlate well with more extensively granitized terrain.

Aeromagnetic data used in this map are derived from the Federal/Provincial Aeromagnetic Series, from maps published previously by the Geological Survey or by Provincial Government Departments. Data was also contributed by the Dominion Gulf Company, the Newmont Mining Company, and the Atlantic Richfield Company.

The work involved in the more than 3 million miles of aeromagnetic survey flying and compilation of the data by Aero Photo Inc., Canadian Aero Service, Hunting Survey Corporation, Lockwood Survey Corporation, and Spartan Air Services is an outstanding contribution to Canadian geology.

L. W. Morley, A. S. MacLaren, and B.W. Charbonneau, 1967.

CONTINENTAL SHELF EXTENSION
Scale 1 : 10,000,000

For Continental Shelf extension see inset map

Published, 1968