McPHAR INTERNATIONAL

AIRBORNE GEOPHYSICAL SURVEYS

SINGAPORE • INDIA • CANADA • SOUTH AFRICA

A Neterwala Group Company

www.mcpharinternational.com

HIGH-RESOLUTION AEROMAGNETICS

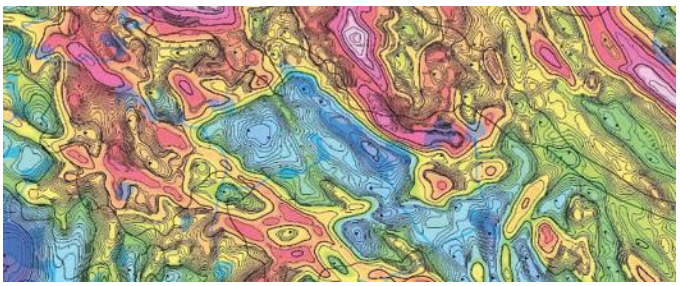
HIGH-RESOLUTION AEROMAGNETIC maps from data acquired by a total-field magnetometer reflect the underlying geology of the survey area. Such maps are invaluable tools for explorationists working in all kinds of environments, whether forest, mountain or desert. They are also very important tools in the interpretation of structures and rock type distribution. Aeromagnetic surveys, whether conducted by a fixed-wing or helicopter platform, are rapid and relatively low-cost compared to other exploration techniques, which makes them very attractive as a reconnaissance tool in the early stages of an exploration project.

SURVEY DESIGN AND LOGISTICS

- Line spacing should be selected to accurately resolve main geological features/target of interest
  - high resolution = 100 to 200 m
  - regional = 400 or 500 m
- Tie-line spacing should be designed at a ratio of 1:5 or 1:10 times the line spacing
  (e.g. for a 100 m line spacing, tie-lines = 500 or 1,000 m).
- Classic paper by Reid (1980):
  - The line spacing should be no more than twice the height above the magnetic sources to prepare total magnetic field contours
  - The line spacing should be no more than the height above the magnetic sources to measure gradients or compute derivatives
  - The line spacing should be no more than half the height above the magnetic sources to fully define anomalies for modeling

  NOTE: The height above sources incorporates the height above ground of the sensor, and the sources' depth of burial below ground surface.
- Tie-lines are best if flown consecutively
- Generally, the line direction should be perpendicular to the strike of the geological features, however, near the Equator, north-south flight directions are best
- Safety issues determine flying height – but the lower the better.
- The dimensions of the survey area should extend well outside the area of interest, to map the geological setting.

McPHAR's aeromagnetic systems are available installed on a variety of fixed-wing aircraft or helicopters, usually installed in a boom (stinger) attached rigidly to the airframe of the aircraft or helicopter. In some instances, however, we can also provide an aeromagnetic system in a towed-bird aerofoil for use with a light helicopter.



Total magnetic intensity colour image.

NEW DIMENSIONS IN EXPLORATION

HIGH-RESOLUTION AEROMAGNETICS

HELICOPTERS

McPHAR uses several different helicopters to undertake aeromagnetic surveys, with either rigid-boom (stinger) or towed-bird aerofoil mounted cesium magnetometer sensors. These include the Eurocopter AS350 series (B, BA, B2 and B3) A-Star / Ecureuil, Eurocopter SA315 LAMA, Bell 206L Long Ranger and Bell 206B Jet Ranger.

Total-field magnetometer installation in a rigid-boom on an ***EUROCOPTER AS350B2 A-STAR HELICOPTER***

High-resolution magnetometer aerofoil installed on a ***EUROCOPTER AS315B LAMA HELICOPTER***

High-resolution magnetometer aerofoil installed on a ***BELL 206B3 JET RANGER HELICOPTER***

FIXED WING AIRCRAFT

McPHAR uses several different aircraft to undertake aeromagnetic surveys, in particular the Piper PA-31 Navajo, the Beech C90 King Air, THE pac750xstol AND THE Cessna C210.

Magnetometer installation on a ***PIPER PA-31 NAVAJO AIRCRAFT***

Magnetometer installation on a ***BEECH C90 KING AIR AIRCRAFT***

2-sensor Magnetometer installation on a ***CESSNA C210 AIRCRAFT***

3-sensor magnetometer installation on a PAC-750XSTOL AIRCRAFT