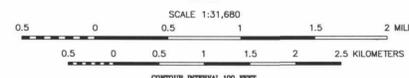


Data from U.S. Geological Survey Healy B-4, 1995, B-5, 1983, Quadrangles, Alaska.



TOTAL MAGNETIC FIELD AND DETAILED ELECTROMAGNETIC ANOMALIES OF THE BROAD PASS AREA, SOUTHWESTERN BONNIFIELD MINING DISTRICT, CENTRAL ALASKA

PARTS OF HEALY B-4 AND B-5 QUADRANGLES

2002

ELECTROMAGNETICS

To determine the location of EM anomalies or their boundaries, the DIGHEM[®] EM system measured inphase and quadrature components at five frequencies. Two vertical coaxial-coil pairs operated at 1000 and 5500 Hz while three horizontal coplanar-coil pairs operated at 300, 7200, and 56,000 Hz. EM data were sampled at 0.1 second intervals. The EM system responds to bedrock conductors, conductive overburden, and cultural sources. The type of conductor is indicated on the aeromagnetic map by the interpretive symbol attached to each EM anomaly. Determination of the type of conductor is based on EM anomaly shapes of the coaxial- and coplanar-coil responses, together with conductor and magnetic patterns and topography. The power line monitor and the flight track video were examined to locate cultural sources.

ELECTROMAGNETIC ANOMALIES

- | | |
|---|--|
| <p>Conductance</p> <ul style="list-style-type: none"> ● >100 siemens ● 50-100 siemens ● 20-50 siemens ● 10-20 siemens ● 5-10 siemens ● 1-5 siemens ○ <1 siemens * Questionable anomaly △ EM magnetic response | <p>Interpretive symbol</p> <ul style="list-style-type: none"> B Bedrock conductor D Narrow bedrock conductor ("thin disk") S Conductive cover ("horizontal thin sheet") H Broad conductive rock unit, deep conductive weathering, thick conductive cover ("half space") E Edge of broad conductor ("edge of half space") L Culture, e.g., power line, metal building or fence |
| <p>Anomaly</p> <ul style="list-style-type: none"> ○ Arcs indicate the conductor has a thickness >10m ○ Magnetic correlation in nT ○ Dip direction | <p>Depth is greater than</p> <ul style="list-style-type: none"> ○ 15 m ○ 30 m ○ 45 m ○ 60 m |
| <p>Inphase and quadrature of coaxial coil is greater than</p> <ul style="list-style-type: none"> ○ 5 ppm ○ 10 ppm ○ 15 ppm ○ 20 ppm | <p>Interpretive symbol</p> <ul style="list-style-type: none"> ○ Anomaly identifier ○ Interpretive symbol |

DESCRIPTIVE NOTES

The geophysical data were acquired with a DIGHEM[®] Electromagnetic (EM) system and a Scintrex cesium magnetometer. Both were flown at a height of 100 feet. In addition the survey recorded data from a radar altimeter, GPS navigation system, 30/60 Hz monitors and video camera. Flights were performed with an AS350B-2 Squirrel helicopter at a mean terrain clearance of 200 feet along North-South (N-S) survey flight lines with a spacing of a quarter of a mile. Tie lines were flown perpendicular to the flight lines at intervals of approximately 3 miles. The blank regions indicate an area where the survey aircraft had to detour around populated areas.

An Ashtech G24 NAVSTAR / GLOMASS Global Positioning System was used for navigation. The helicopter position was derived every 0.5 seconds using post-flight differential positioning to a relative accuracy of better than 5 m. Flight path positions were projected onto the Clarke 1866 (UTM zone 6) spheroid, 1927 North American datum using a central meridian (CM) of 147°, a north constant of 0 and an east constant of 500,000. Positional accuracy of the presented data is better than 10 m with respect to the UTM grid.

TOTAL MAGNETIC FIELD

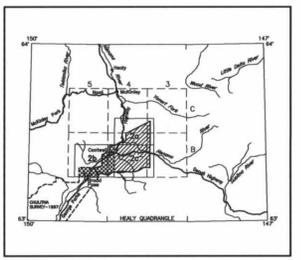
The total magnetic field data were acquired with a sampling interval of 0.1 seconds, and were (1) corrected for diurnal variations by subtraction of the digitally recorded base station magnetic data, (2) leveled to the tie line data, and (3) interpolated onto a regular 100 m grid using a modified Akima (1970) technique. The regional variation (or IGRF gradient, 2000, updated to August, 2001) was removed from the leveled magnetic data.

Akima, H., 1970. A new method of interpolation and smooth curve fitting based on local procedures. *Journal of the Association of Computing Machinery*, v. 17, no. 4, p. 589-902.

MAGNETIC CONTOUR INTERVAL

- 250 nT
- 50 nT
- 10 nT
- 5 nT
- magnetic low
- magnetic high

LOCATION INDEX FOR SCALE 1:31,680



SURVEY HISTORY

This map has been compiled and drawn under contract between the State of Alaska, Department of Natural Resources, Division of Geological & Geophysical Surveys (DGGS), and Stevens Exploration Management Corp. Airborne geophysical data for the area were acquired and processed by Fugro Airborne Surveys in 2001. Laurel Burns was the contract manager for DGGS.

This map and other products from this survey are available by mail order or in person from DGGS, 784 University Ave., Suite 200, Fairbanks, Alaska, 99709.