

ELECTROMAGNETIC ANOMALIES

Interpretive

Arcs indicate the conductor has a thickness >10m

_Magnetic correlation in nT

15 m 30 m 45 m Inphase and quadrature of

is greater than

. 5 ppm .. 10 ppm ... 15 ppm ... 20 ppm Conductance

>100 siemens 50-100 siemens

20-50 siemens 10-20 siemens

5-10 siemens 1-5 siemens

< 1 siemens

Questionable anomaly EM magnetite response

Conductor ("model")

Narrow bedrock conductor ("thin dike")

Conductive cover ("horizontal thin sheet")

Broad conductive rock unit, deep conductive weathering, thick conductive cover ("half space")

Edge of broad conductor ("edge of half space") Culture, e.g., power line, metal building or fence

Bedrock conductor

TOTAL FIELD MAGNETICS AND
DETAILED ELECTROMAGNETIC ANOMALIES
OF SELECTED AREAS NEAR

KETCHIKAN, SOUTHEAST ALASKA

PARTS of CRAIG A-1 and KETCHIKAN A-6 QUADRANGLES

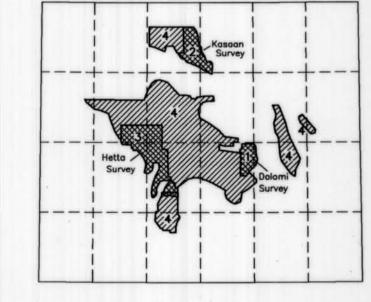
1999

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 900 and 5500 Hz while three horizontal coplanar—coil pairs operated at 900, 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

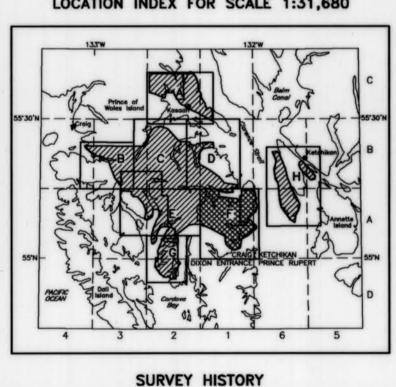
shapes of the coaxial— and coplanar—coil responses, together with conductor and magnetic patterns and topography. The

power line monitor and the flight track video were examined to locate cultural sources.



· · · · · · · magnetic low

· · · · · · · magnetic high



SURVEY HISTORY

This map has been compiled and drawn under contract between the State of Alaska, Department of Natural Resources (DNR), Division of Geological & Geophysical Surveys (DGGS), and WGM, Mining & Geological Consultants, Inc. Airborne geophysical data for area 4 were acquired in 1999 by Geoterrex—Dighem, a division of CGG Canada Ltd. Funding for the project was provided by the U.S. Department of the Interior, Bureau of Land Management (BLM), Ketchikan Gateway Borough, Sealaska Corporation, Alaska State Mental Health Trust Land Office, and the cities of Thorne Bay and Coffman Cove. The data for areas 1, 2 and 3 were flown by Dighem in 1991 and 1992. These data were provided for publication by Sealaska Corporation.

This map and other products from this survey are available by mail order, or in person, from DGGS, 794 University Ave., Suite 200, Fairbanks, Alaska, 99709. Some products are also available, in person only, at the BLM's Juneau Minerals Information Center, Mayflower Island, Douglas, AK.

TOTAL FIELD MAGNETICS

Total field magnetic 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, 1995, updated to March 1999) 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—602.