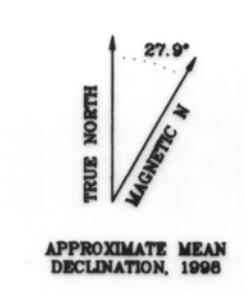
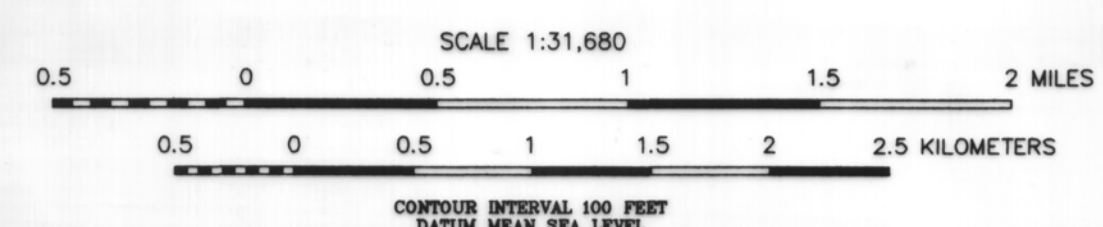
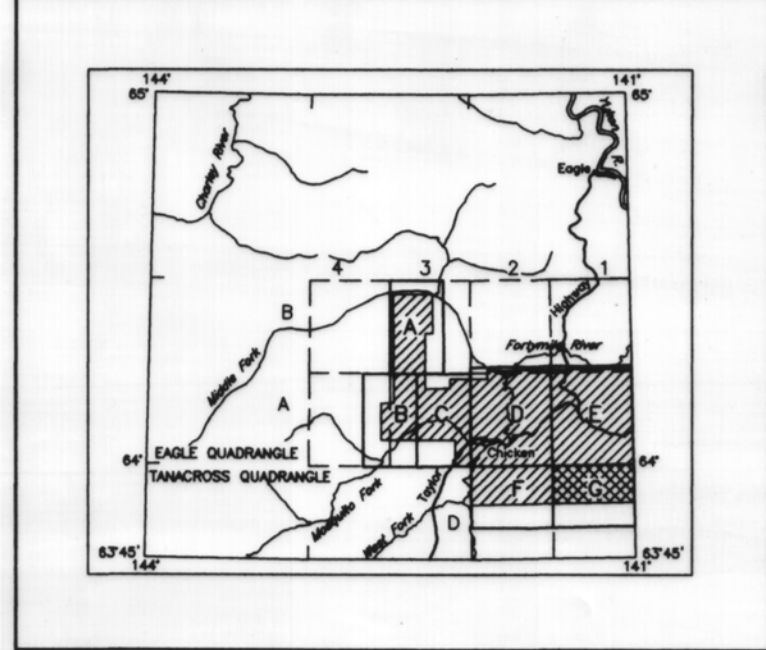


Base from U.S. Geological Survey Topographic D-1 1996, Quadrangle, Alaska



LOCATION INDEX FOR SCALE 1:31,680



# TOTAL FIELD MAGNETICS AND DETAILED ELECTROMAGNETIC ANOMALIES OF PART OF THE FORTYMILE MINING DISTRICT, ALASKA

SOUTHERN EAGLE and NORTHERN TANACROSS QUADRANGLES

MAP G  
1999

**DESCRIPTIVE NOTES**  
The geophysical data were acquired with a DIGHEM<sup>®</sup> Electromagnetic (EM) system and a Scintrex cesium magnetometer. Both were flown at a height of 100 feet. A Herz VLF system was flown at a height of 130 feet. In addition the survey recorded data from a radar altimeter, GPS navigation system, 50/60 Hz monitors and video camera. Flights were performed with an AS-300B-2 Squirrel helicopter at a mean terrain clearance of 200 feet along 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.

An Ashtech/Rocal Real-Time Differential Global Positioning System (RT-DGPS) was used for both navigation and flight path recovery. The helicopter position was derived every 0.5 seconds using real-time differential positioning to a relative accuracy of better than 10 m. Flight path positions were projected onto the Clarke 1866 (UTM zone 7) spheroid, 1927 North American datum using a central meridian (CM) of 141°, 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.

**ELECTROMAGNETICS**  
To determine the location of EM anomalies or their boundaries, the DIGHEM<sup>®</sup> EM system measured inphase and quadrature components at five frequencies. Two vertical coaxial-coil pairs operated at 300 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	
	Magnetic correlation in nT
	Dip direction
	Arcs indicate the conductor has a thickness >10m
	EM magnetite response
	Questionable anomaly
	< 1 siemens
	1-5 siemens
	5-10 siemens
	10-20 siemens
	20-50 siemens
	50-100 siemens
	> 100 siemens
Interpretive symbol	
	Bedrock conductor
	Narrow bedrock conductor ("thin die")
	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
Anomaly identifier	
	Depth is greater than 15 m
	30 m
	45 m
	60 m
	5 ppm
	10 ppm
	15 ppm
	20 ppm
	Inphase and quadrature of coaxial coil is greater than

MAGNETIC CONTOUR INTERVAL	
	100 nT
	20 nT
	4 nT
	2 nT
	magnetic low
	magnetic high

**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 (DGGG), and Stevens Exploration Management Corp. Airborne geophysical data for the area were acquired by Geotrex-Digheim, a division of CGG Canada Ltd., in 1998.

This map and other products from this survey are available by mail order or in person from DGGG, 794 University Ave., Suite 200, Fairbanks, Alaska, 99709.

**TOTAL FIELD MAGNETICS**  
The 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 September 1998) 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.