ALASKA DIVISION OF GEOLOGICAL & GEOPHYSICAL SURVEYS
IN COOPERATION WITH U.S. BUREAU OF LAND MANAGEMENT

Public-data File 98-40E

Parts of Chandalar C-4, C-5, D-4 and D-5 Quadrangles

149°20' 149°10' 149°00' 148°50' 148°48'
67°50' 67°45' 67°40' 67°35'

Base from U.S. Geological Survey
Chandalar C-4, 1985, C-5; 1971,
D-4, 1971, D-5; 1974,

Quadrangles, Alaska.
Projected in UTM zone 6

ALASKA



SCALE 1:31 680

0.5 0 0.5 1 1.5 2 2.5 MILES

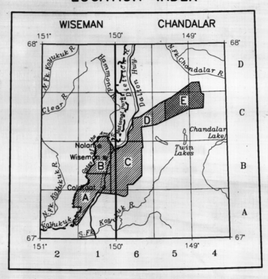
0.5 0 0.5 1 1.5 2 2.5 KILOMETERS

CONTOUR INTERVAL 100 FEET
DATUM MEAN SEA LEVEL



APPROXIMATE MEAN
DECLINATION, 1971

LOCATION INDEX



TOTAL FIELD MAGNETICS AND DETAILED ELECTROMAGNETIC ANOMALIES FOR THE NORTHEASTERN PORTION OF THE KOYUKUK MINING DISTRICT, EASTERN BROOKS RANGE, ALASKA

MAP E

1998

Parts of Chandalar C-4, C-5, D-4 and D-5 Quadrangles

DESCRIPTIVE NOTES

The geophysical data were acquired with a SIGHEM-5 Electromagnetic (EM) system, a Scintrex cesium CS2 magnetometer, and a Herz VLF system installed in a LAMA-N48087 Squirrel helicopter. In addition, the survey recorded data from a radar altimeter (TERRA), GPS navigation system, 50/60 Hz monitors, and video camera. Flights were performed at a mean terrain clearance of 200 ft 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 three miles.

Two Trimble-4000 SE Differential Post-processing Global Positioning Systems were used for both navigation and flight path recovery. The helicopter position was derived every one second to a relative accuracy of better than 10 m. Flight path positions were projected onto the Clarke 1866 (UTM) spheroid, 1927 North American datum using a Central Meridian (CM) of 147° W, 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.

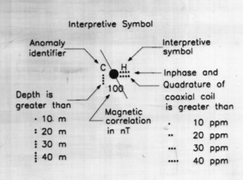
ELECTROMAGNETICS

To determine the location of EM anomalies or their boundaries, the SIGHEM-5 EM system measured inphase and quadrature components at five frequencies. Two vertical coaxial coil-pairs operated at 870 and 4785 Hz while three horizontal coplanar coil-pairs operated at 945, 4212 and 36360 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 patterns of the coaxial and coplanar coils and calculated conductance. The power line monitor and the flight track video were examined to locate the cultural sources.

ELECTROMAGNETIC ANOMALIES

Anomaly	Conductance
●	>100 siemens
◕	50-100 siemens
◑	20-50 siemens
◔	10-20 siemens
⊕	5-10 siemens
○	1-5 siemens
◌	<1 siemens

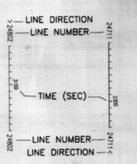
Interpretive Symbol



Conductor ("model")

B Bedrock conductor
D Narrow bedrock conductor ("thin dike")
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

FLIGHT PATH INFORMATION



MAGNETIC CONTOURS

500
100
25
5
L magnetic low
H 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, and On-Line Exploration Services, Inc. Airborne geophysical data for the area were acquired by Sial Geosciences, Inc., in 1997. Funding for the project was provided by the U.S. Department of Interior Bureau of Land Management (BLM).

This map and other products from this survey are available from the Alaska Division of Geological & Geophysical Surveys, 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. A regional trend (IGRF 1995, updated to August 1997) was then 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.