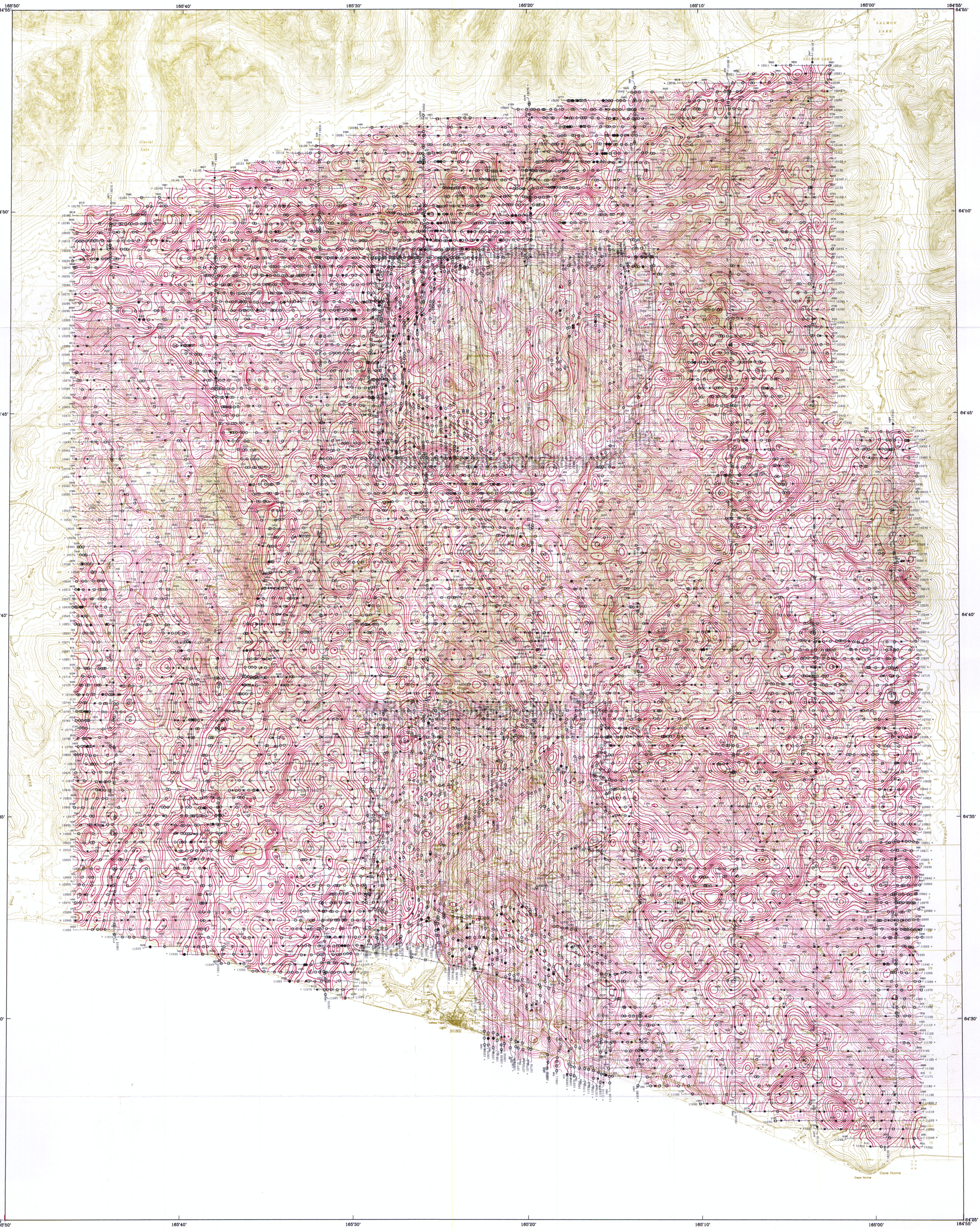
RI94-1-SH1



Base from U.S. Geological Survey Nome B-1; C-1,2; D-1,2; Solomon B-6; C-6; D-6; Quadrangles, Alaska, 1950

This publication, released by the Division of Geological & Geophysical Surveys, was produced and printed by Map Art in Toronto, Ontario, Canada, at a cost of $2.70 per copy. Publication is required by Alaska Statute 41, "to determine the potential of Alaskan land for production of metals, minerals, fuels, and geothermal resources; the location and supplies of ground water and construction materials; the potential geologic hazards to buildings, roads, bridges, and other installations and structures; and shall conduct such other surveys and investigations as will advance knowledge of the geology of Alaska."

DESCRIPTIVE NOTES

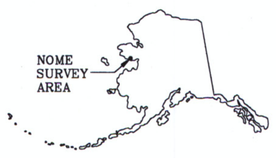
The geophysical data were acquired with a DIGHEM^{V} Electromagnetic (EM) system, a Scintrex cesium CS2 magnetometer, and a Herz VLF system installed in an AS350B-1 Squirrel helicopter. In addition, the survey recorded data from a radar altimeter, GPS navigation system, 50/60 Hz monitors and video camera. Flights were performed 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 three miles.

A Sercel 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 both real-time and post-processing differential positioning 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 166°, 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.

ELECTROMAGNETIC ANOMALIES

To determine the location of EM anomalies or their boundaries, the DIGHEM^{V} EM system measured inphase and quadrature components at five frequencies. Two vertical coaxial coil-pairs operated at 900 and 5000 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 EM anomalies that are indicated are classified by conductance.

Anomaly	Conductance
●	>50 siemens
○	< 50 siemens
✳	Questionable anomaly
△	Weak conductivity associated with an EM magnetite response



SCALE 1:63,360

1 0 1 2 3 4 MILES

1 0 1 2 3 4 5 KILOMETERS

CONTOUR INTERVAL 100 FEET
DATUM MEAN SEA LEVEL

TRUE NORTH
MAGNETIC N
29°

APPROXIMATE MEAN DECLINATION, 1950

TOTAL FIELD MAGNETICS AND ELECTROMAGNETIC ANOMALIES OF THE NOME MINING DISTRICT

1994

TOTAL FIELD MAGNETICS

The magnetic total field contours were produced using digitally recorded data from a Scintrex cesium CS2 magnetometer, with a sampling interval of 0.1 seconds. The magnetic data were (1) corrected for diurnal variations by subtraction of the digitally recorded base station magnetic data, (2) levelled 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, 1985, updated to August, 1993) was removed from the levelled 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.

MAGNETIC CONTOUR INTERVAL

250 nT

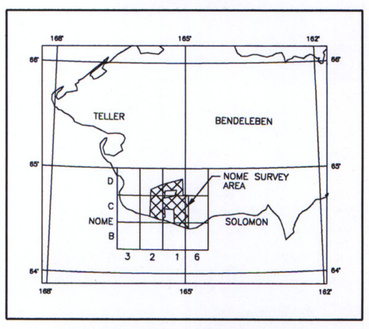
50 nT

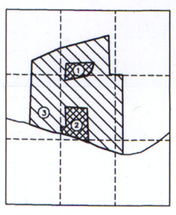
10 nT

5 nT

magnetic low

LOCATION INDEX



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 WGM, Mining and Geological Consultants Inc. Airborne geophysical data for area 3 were acquired by Dighem Surveys & Processing, Inc. in 1993. The data for areas 1 and 2 were provided by Bering Straits Native Corporation. Other products from this survey are available from the Alaska Division of Geological & Geophysical Surveys, 794 University Ave., Suite 200, Fairbanks, Alaska, 99709.