SLEETMUTE ELECTROMAGNETIC AND MAGNETIC AIRBORNE GEOPHYSICAL SURVEY DATA COMPILATION

L.E. Burns, G.R.C. Graham, J.D. Barefoot, Fugro Airborne Surveys, and Stevens Exploration Management Corp.

Geophysical Report 2019-16

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STATE OF ALASKA
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF GEOLOGICAL & GEOPHYSICAL SURVEYS

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SLEETMUTE ELECTROMAGNETIC AND MAGNETIC AIRBORNE GEOPHYSICAL SURVEY DATA COMPILATION

L.E. Burns[1], G.R.C. Graham[1], J.D. Barefoot[1], Fugro Airborne Surveys, and Stevens Exploration Management Corp.

ABSTRACT

Sleetmute electromagnetic and magnetic airborne geophysical survey geophysical survey is located in western Alaska in the Aniak mining district, about 270 kilometers west of Anchorage, Alaska. The survey is adjacent to the Aniak and Holitna Basin geophysical surveys. Frequency domain electromagnetic and magnetic data were collected with the DIGHEM^V system in October 2002. A total of 5014.4 line kilometers were collected covering 1746.8 square kilometers. Line spacing was 400 meters (m). Data were collected 30 m above the ground surface from a helicopter towed sensor platform ("bird") on a 30 m long line.

PURPOSE

This airborne geophysical survey is part of a program to acquire data on Alaska's most promising mineral belts and districts. The information acquired is aimed at catalyzing new private-sector exploration, discovery, and ultimate development and production. The purpose of the survey was to map the magnetic and conductive properties of the survey area. Whereas the Aniak mining district has a history of placer gold mining, there are also inactive mercury mines and prospects in the area, including the Red Devil deposit. Other gold and base-metal anomalies, altered zones, favorable lithologies, and structural zones are known to exist throughout the survey area.

SURVEY OVERVIEW DESCRIPTION

This document provides an overview of the survey and includes text and figures of select primary and derivative products of this survey. A table of digital data packages available for download is provided to assist users in data selection. For reference, a catalog of the available maps is presented in reduced resolution. Please consult the metadata, project report, and digital data packages for more information and data.

ACKNOWLEDGMENTS

Funding was provided by the U.S. Department of Interior Bureau of Land Management (BLM).

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[1] Alaska Division of Geological & Geophysical Surveys, 3354 College Road, Fairbanks, Alaska 99709-3707

AVAILABLE DATA

Data Type	Provider	Description
ascii_data	contractor	ASCII format line data, other ASCII data
databases_geosoft	contractor	Geosoft format database of final line data, other Geosoft format databases
documents	contractor and DGGS	Project and field reports, survey background information, gridded data explanations, other documentation
grids_ermapper	contractor and DGGS	Geographically registered gridded data, ER Mapper ERS format
grids_geosoft	contractor and DGGS	Geosoft-format grids, these grids can be viewed in ESRI ArcMap using a free plugin from Geosoft or the free viewer available from Geosoft
images_registered	DGGS	GeoTiff format images of all gridded data
kmz	DGGS	keyhole markup language (kml) kmz archive files of project data. Viewable in Google Earth and other compatible programs
maps_pdf_format	contractor and DGGS	Printable maps in pdf format. Includes a geographically registered pdf (GeoPDF) for use with mobile devices such as GPS enabled smartphones and tablets, other devices, and programs
maps_prn_format	contractor	Printable maps in HPGL/2 printer file format with extension .prn
profiles_stacked	contractor	Distance-based profiles of the digitally recorded geophysical data are generated and plotted at an appropriate scale. The profiles display electromagnetic anomalies with their respective interpretive symbols. Printable in pdf format
vector_data	contractor and DGGS	Line path, data contours, and survey boundary in ESRI shapefile (SHP) format, ESRI Geodatabase format, and/or AutoCAD dxf format
video_flightpath	contractor	Survey flight path downward facing video

REFERENCES

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, n. 4, p. 589–602.

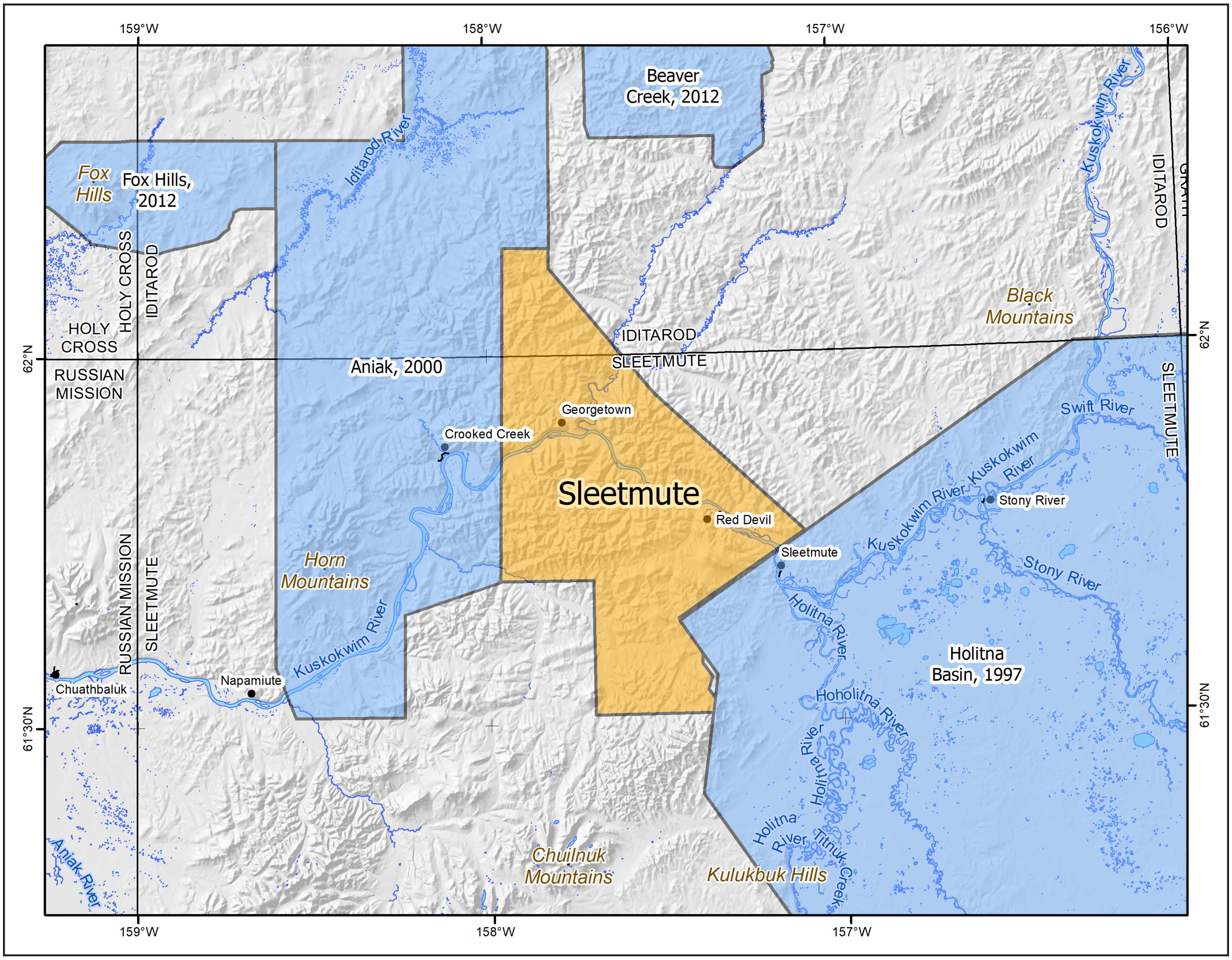
Burns, L.E., U.S. Bureau of Land Management, Fugro Airborne Surveys, and Stevens Exploration Management Corp., 2003, Line, grid, and vector data of the airborne geophysical survey data of the Sleetmute area, southwestern Alaska: Alaska Division of Geological & Geophysical Surveys Geophysical Report 2003-10, 1 DVD. http://doi.org/10.14509/2994

Burns, L.E., U.S. Bureau of Land Management, Fugro Airborne Surveys, and Stevens Exploration Management Corp., 2003, Plot files of the airborne geophysical survey data of the Sleetmute area, southwestern Alaska: Alaska Division of Geological & Geophysical Surveys Geophysical Report 2003-9, 1 DVD. http://doi.org/10.14509/2976

Burns, L.E., U.S. Bureau of Land Management, Fugro Airborne Surveys, and Stevens Exploration Management Corp., 2003, Portfolio of aeromagnetic and resistivity maps of the Sleetmute area, southwestern Alaska: Alaska Division of Geological & Geophysical Surveys Geophysical Report 2003-12. http://doi.org/10.14509/2996

Fraser, D.C., 1978, Resistivity mapping with an airborne multicoil electromagnetic system: Geophysics, V. 43, p. 144-172.

Stephens, Mark, and Fugro Airborne Surveys, 2003, Project report of the airborne geophysical survey of the Sleetmute area, southwestern Alaska: Alaska Division of Geological & Geophysical Surveys Geophysical Report 2003-11, 211 p., 2 sheets, scale 1:63,360. http://doi.org/10.14509/2995



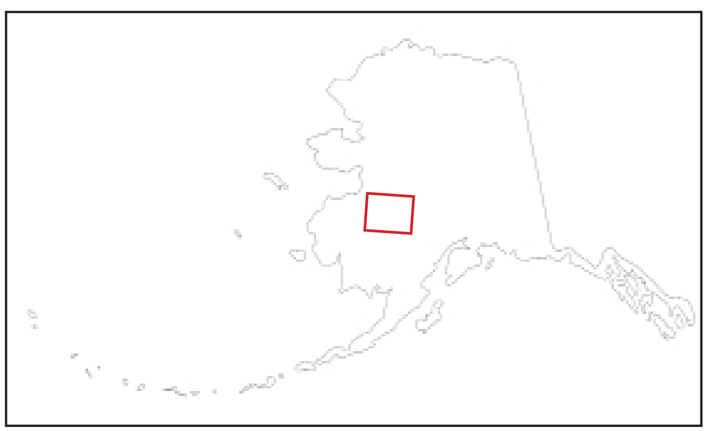


Figure 1. Sleetmute electromagnetic and magnetic airborne geophysical survey location shown in western Alaska (inset). Sleetmute survey area shown with adjacent DGGS geophysical surveys, landmarks, relevant 1:250,000-scale quadrangle boundaries, mountain ranges, rivers, glaciers, and elevation hillshade.

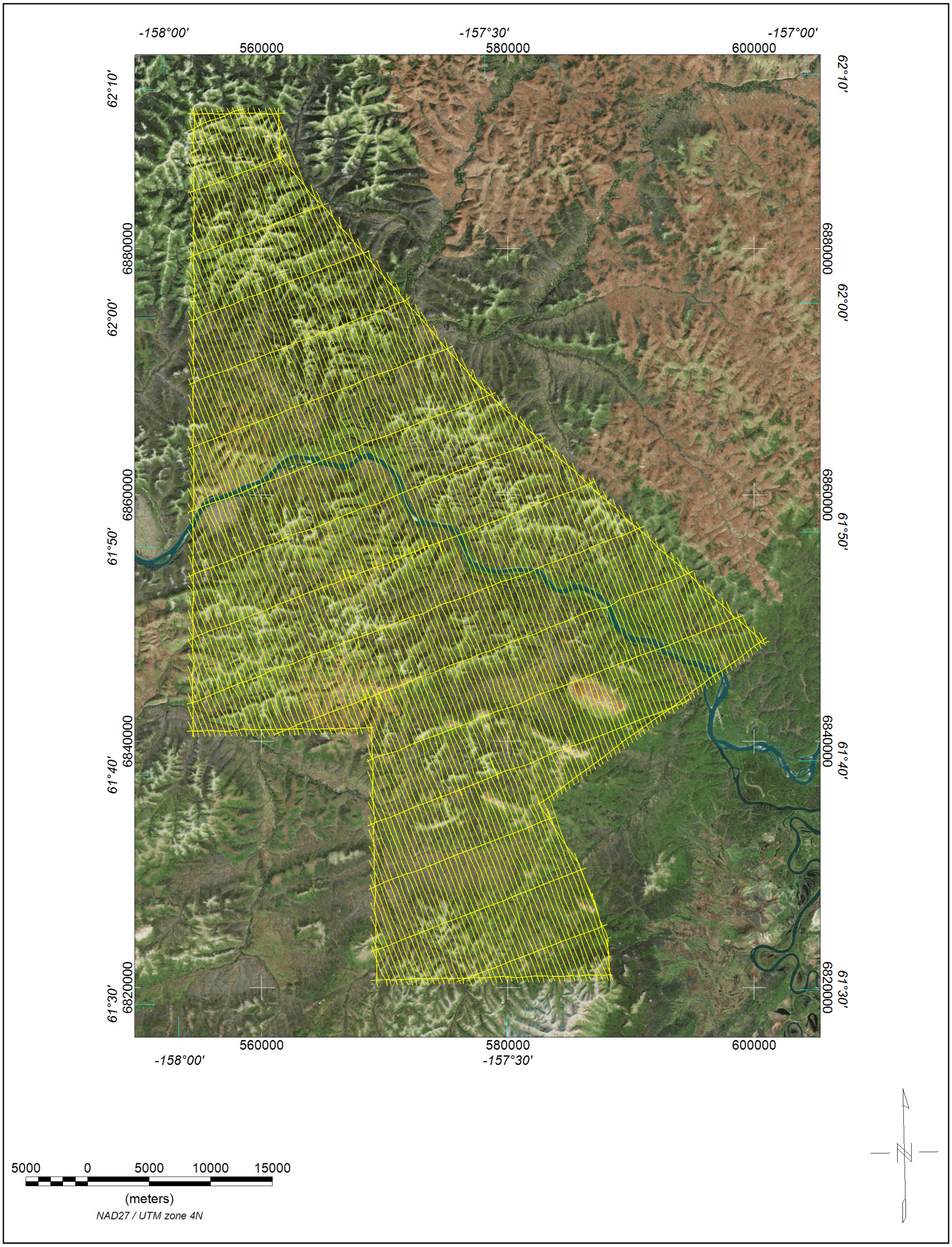


Figure 2. Flight path with orthometric image.

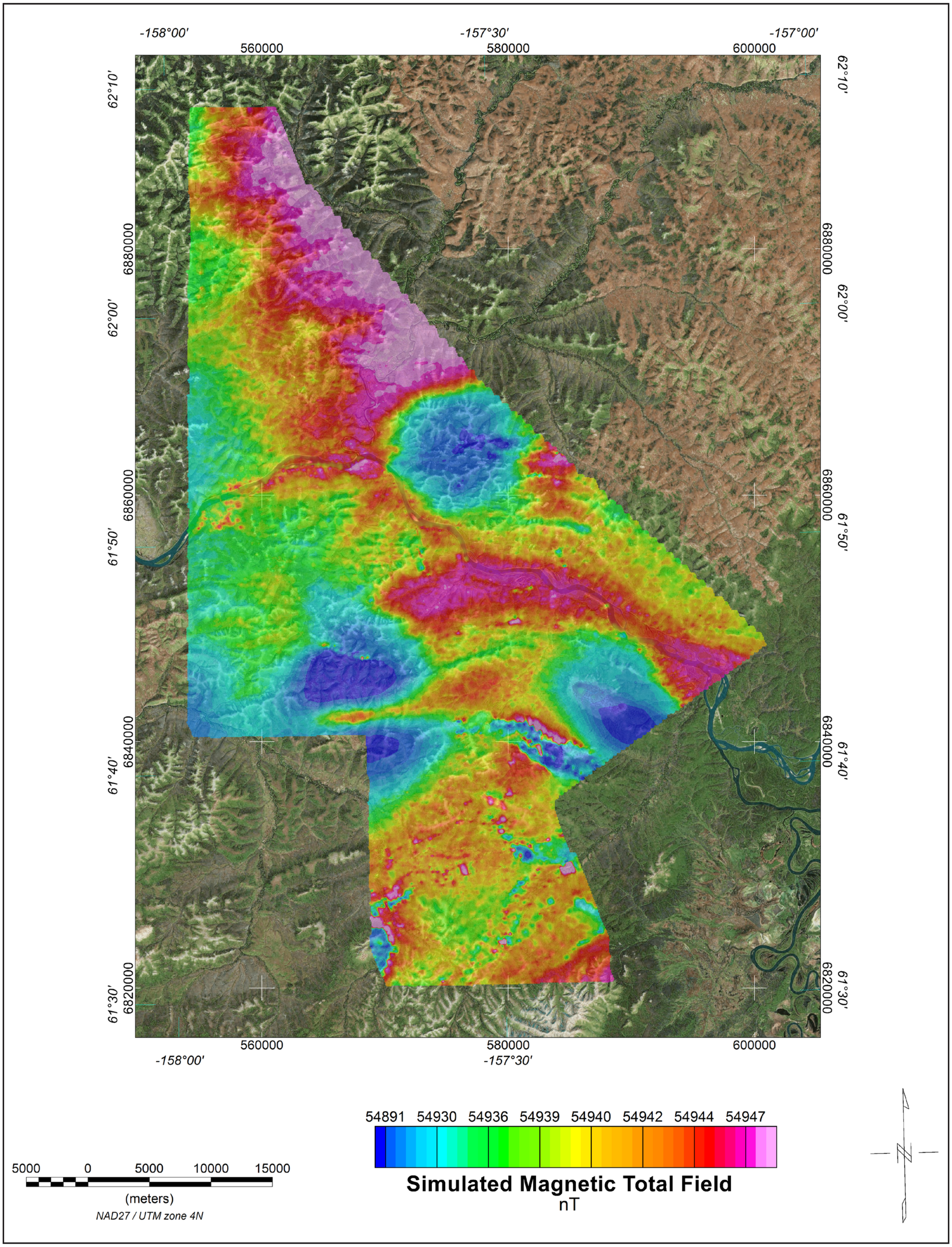


Figure 3. Simulated Magnetic Total Field Grid with orthometric image. The magnetic total field data were processed using digitally recorded data from a Scintrex cesium magnetometer. Data were collected at a sampling interval of 0.1 seconds. The magnetic data were (1) corrected for diurnal variations by subtracting the digitally recorded base station magnetic data, (2) IGRF corrected (IGRF model 2000, updated to September 2002), (3) leveled to the tie line data, (4) a constant value of approximately 55,000 nT was added to all data, and (5) interpolated onto a regular 100 m grid using a modified Akima (1970) technique.

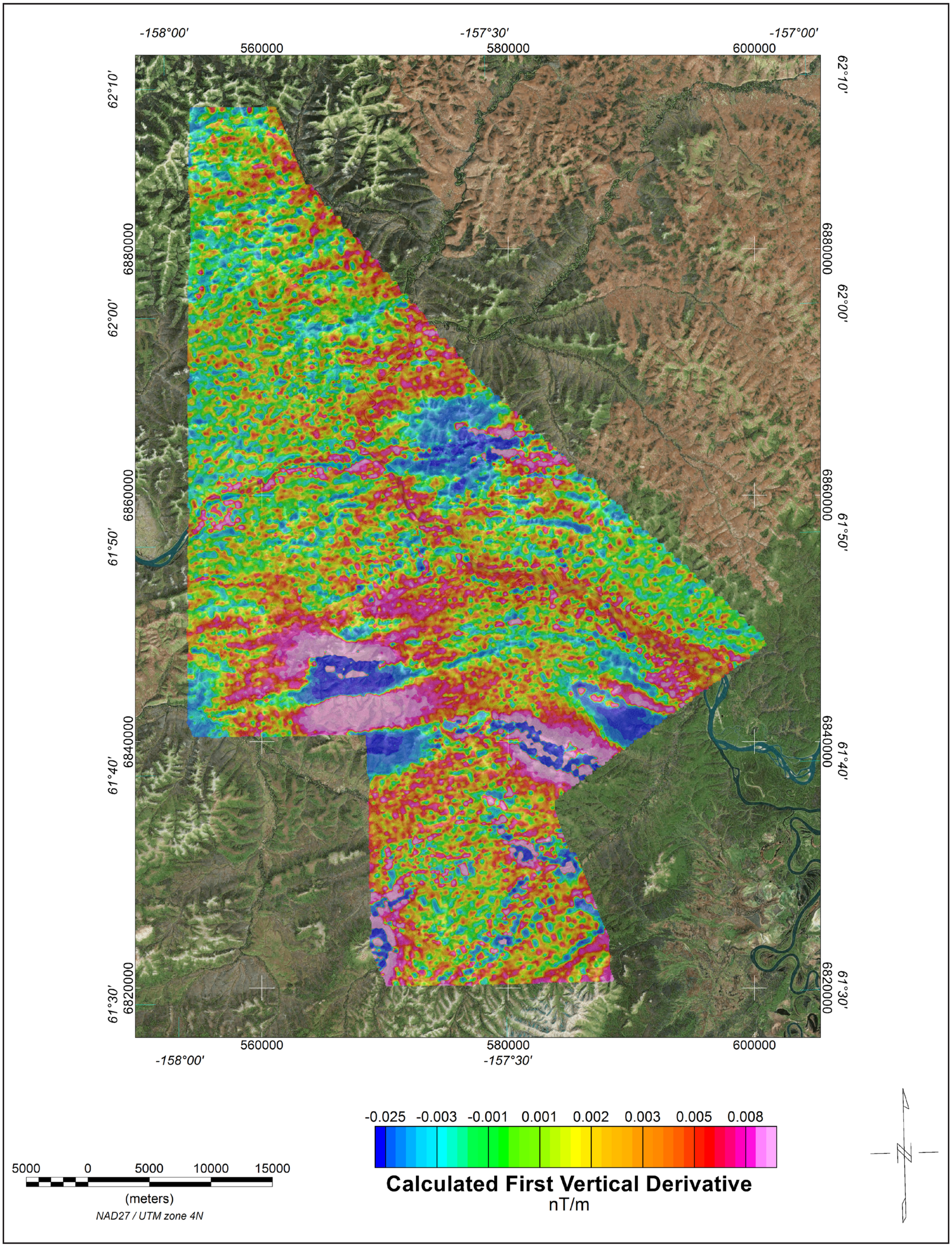


Figure 4. Calculated First Vertical Derivative Grid with orthometric image. The first vertical derivative grid was calculated from the diurnally-corrected, IGRF-corrected total magnetic field grid using a FFT base frequency domain filtering algorithm. The resulting first vertical derivative grid provides better definition and resolution of near- surface magnetic units and helps to identify weak magnetic features that may not be evident on the total field data.

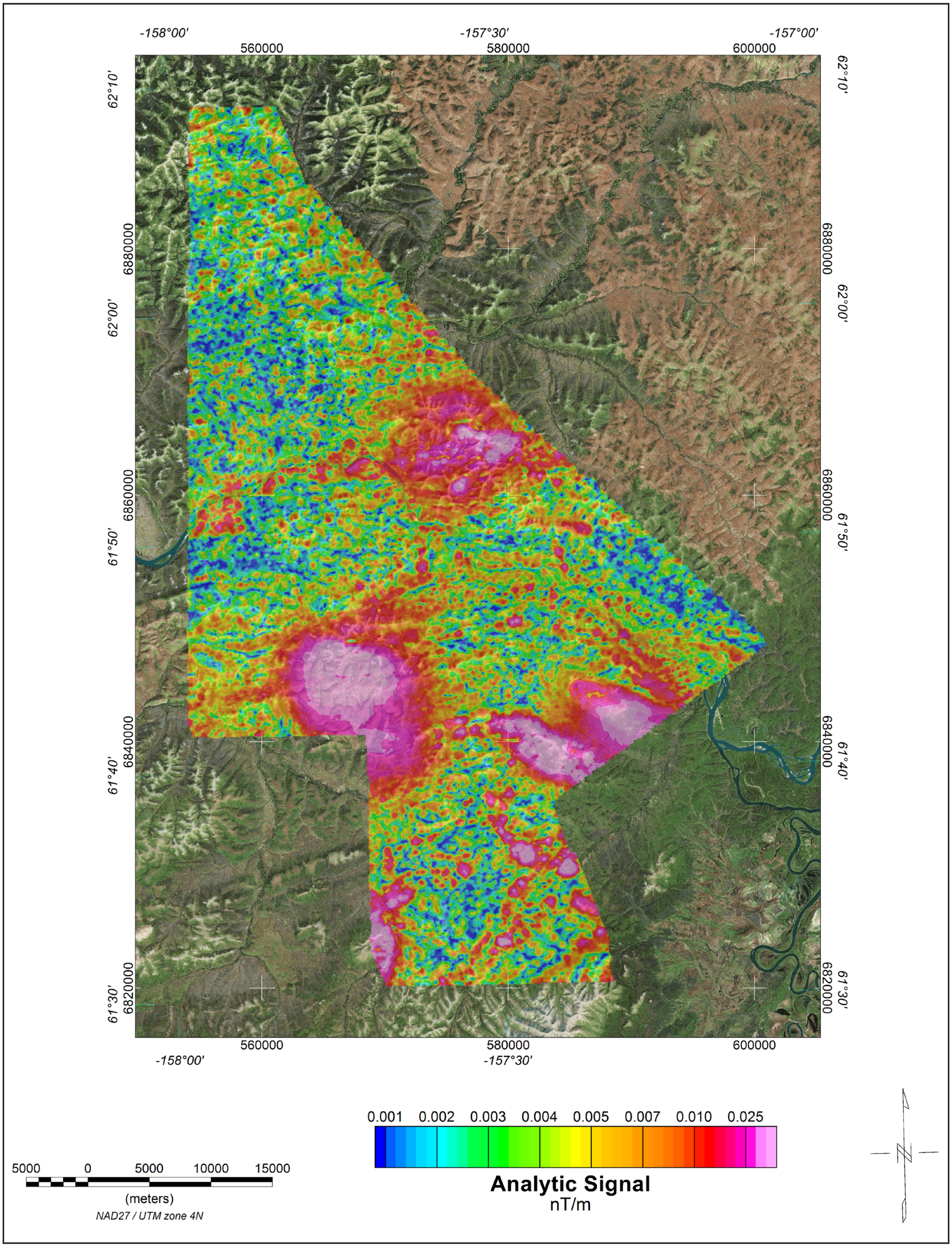


Figure 5. Analytic Signal Grid with orthometric image. Analytic signal is the total amplitude of all directions of magnetic gradient calculated from the sum of the squares of the three orthogonal gradients. Mapped highs in the calculated analytic signal of magnetic parameter locate the anomalous source body edges and corners (such as contacts, fault/shear zones, etc.). Analytic signal maxima are located directly over faults and contacts, regardless of structural dip, and independent of the direction of the induced and/or remanent magnetizations.

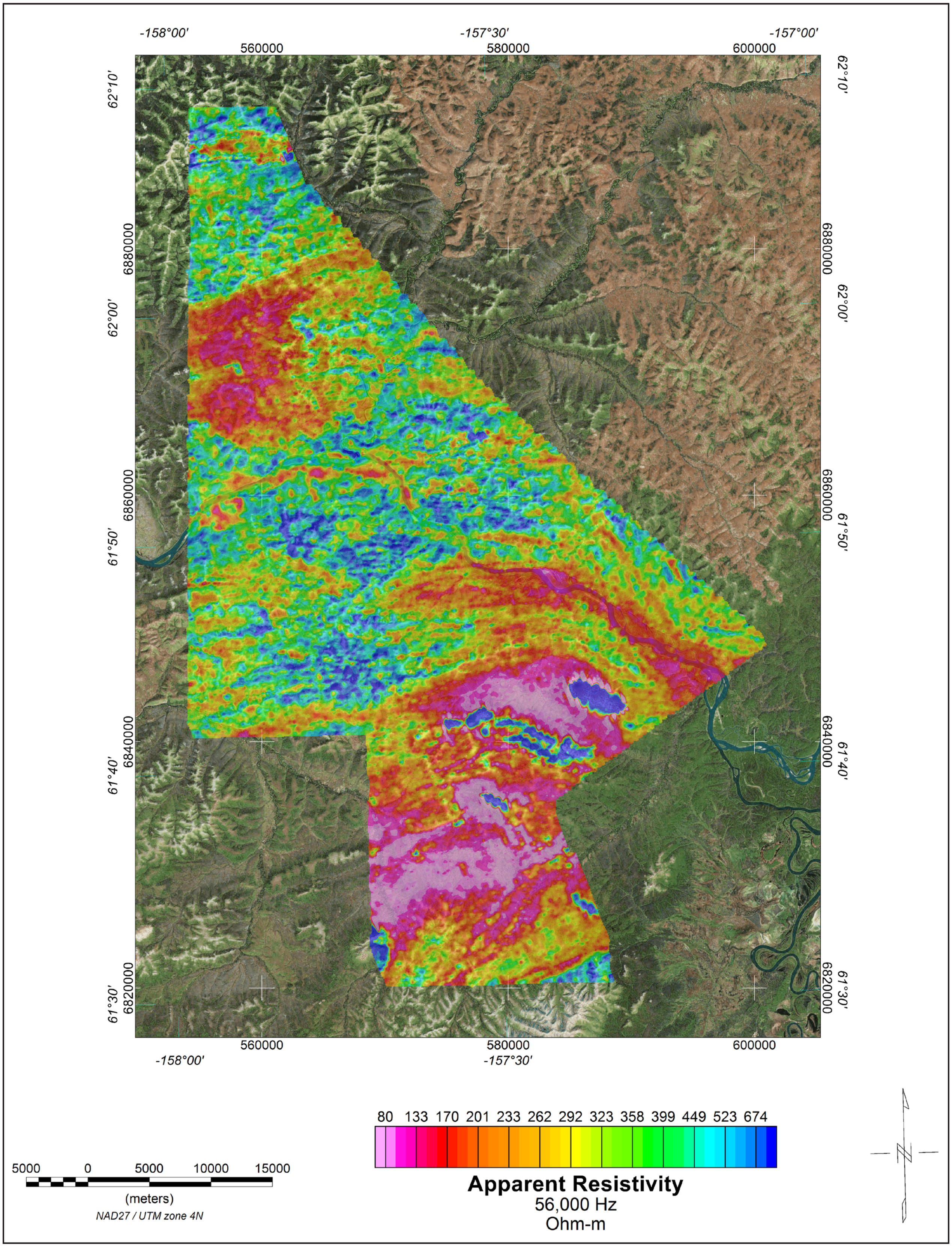


Figure 6. 56,000 Hz coplanar Apparent Resistivity Grid with orthometric image. The DIGHEM^{V} EM system measured inphase and quadrature components at five frequencies. Two vertical coaxial coil-pairs operated at 1000 and 5500 Hz while three horizontal coplanar coil-pairs operated at 900, 7,200, and 56,000 Hz. EM data were sampled at 0.1 second intervals. The EM system responds to bedrock conductors, conductive overburden, and cultural sources. Apparent resistivity is generated from the inphase and quadrature component of the coplanar 56,000 Hz using the pseudo-layer half space model (Fraser 1978). The data were interpolated onto a regular 100 m grid using a modified Akima (1970) technique.

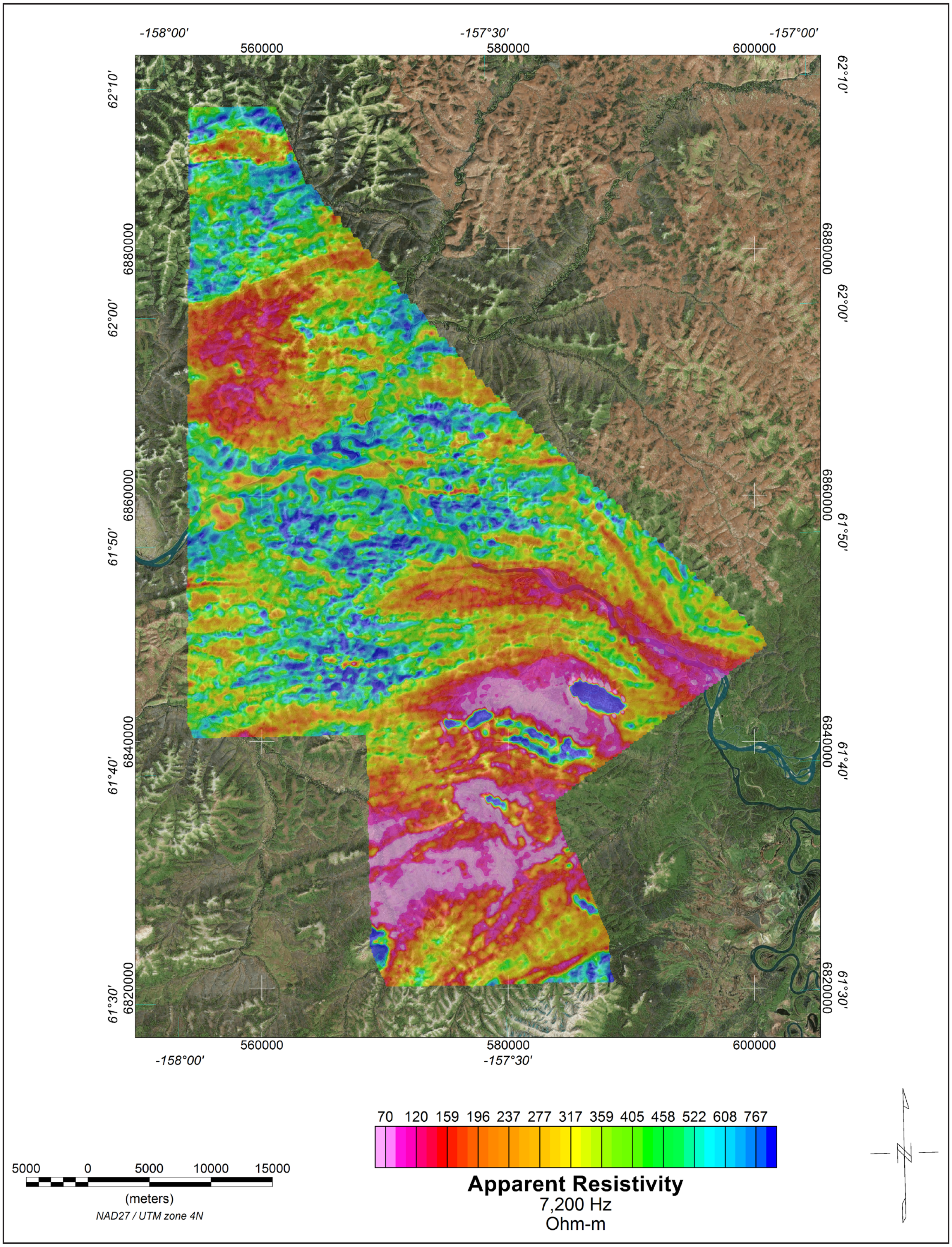


Figure 7. 7,200 Hz coplanar Apparent Resistivity Grid with orthometric image. The DIGHEM[V] EM system measured inphase and quadrature components at five frequencies. Two vertical coaxial coil-pairs operated at 1000 and 5500 Hz while three horizontal coplanar coil-pairs operated at 900, 7,200, and 56,000 Hz. EM data were sampled at 0.1 second intervals. The EM system responds to bedrock conductors, conductive overburden, and cultural sources. Apparent resistivity is generated from the inphase and quadrature component of the coplanar 7,200 Hz using the pseudo-layer half space model (Fraser 1978). The data were interpolated onto a regular 100 m grid using a modified Akima (1970) technique.

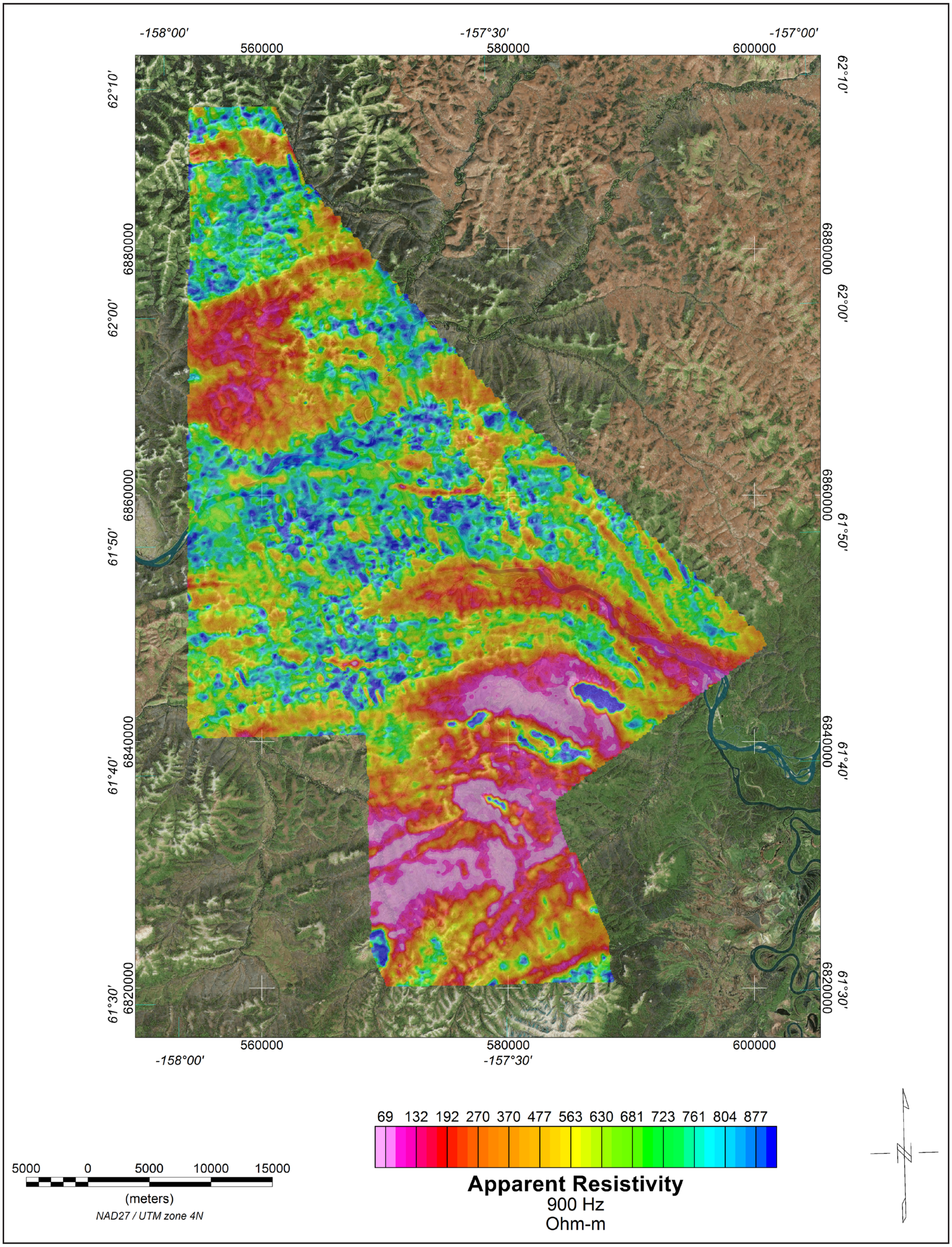


Figure 7. 900 Hz coplanar Apparent Resistivity Grid with orthometric image. The DIGHEM[V] EM system measured inphase and quadrature components at five frequencies. Two vertical coaxial coil-pairs operated at 1000 and 5500 Hz while three horizontal coplanar coil-pairs operated at 900, 7,200, and 56,000 Hz. EM data were sampled at 0.1 second intervals. The EM system responds to bedrock conductors, conductive overburden, and cultural sources. Apparent resistivity is generated from the inphase and quadrature component of the coplanar 900 Hz using the pseudo-layer half space model (Fraser 1978). The data were interpolated onto a regular 100 m grid using a modified Akima (1970) technique.

Table 1. Copies of the following maps are included at the end of this booklet. The low-resolution, page-size maps included in this booklet are intended to be used as a search tool and are not the final product. Large-scale, full-resolution versions of each map are available to download on this publication's citation page: http://doi.org/10.14509/30223.

Map Title	Description
sleetmute_sim_magtf_topo_map_1of2.pdf	simulated magnetic total field grid with topographic base map
sleetmute_sim_magtf_topo_map_2of2.pdf	simulated magnetic total field grid with topographic base map
sleetmute_sim_magtf_contours_plss_map_1of2.pdf	simulated magnetic total field grid and contours with public land survey system base layer
sleetmute_sim_magtf_contours_plss_map_2of2.pdf	simulated magnetic total field grid and contours with public land survey system base layer
sleetmute_sim_magtf_shaded_plss_map_1of2.pdf	shaded simulated magnetic total field grid with public land survey system base layer
sleetmute_sim_magtf_shaded_plss_map_2of2.pdf	shaded simulated magnetic total field grid with public land survey system base layer
sleetmute_emanomalies_sim_magtf_contours_plss_map_1of2.pdf	EM anomaly map with simulated magnetic total field grid contours and public land survey system base layer
sleetmute_emanomalies_sim_magtf_contours_plss_map_2of2.pdf	EM anomaly map with simulated magnetic total field grid contours and public land survey system base layer
sleetmute_emanomalies_sim_magtf_contours_detailed_topo_map_1of6.pdf	EM anomaly map with simulated magnetic total field grid contours and topographic base map
sleetmute_emanomalies_sim_magtf_contours_detailed_topo_map_2of6.pdf	EM anomaly map with simulated magnetic total field grid contours and topographic base map
sleetmute_emanomalies_sim_magtf_contours_detailed_topo_map_3of6.pdf	EM anomaly map with simulated magnetic total field grid contours and topographic base map
sleetmute_emanomalies_sim_magtf_contours_detailed_topo_map_4of6.pdf	EM anomaly map with simulated magnetic total field grid contours and topographic base map
sleetmute_emanomalies_sim_magtf_contours_detailed_topo_map_5of6.pdf	EM anomaly map with simulated magnetic total field grid contours and topographic base map
sleetmute_emanomalies_sim_magtf_contours_detailed_topo_map_6of6.pdf	EM anomaly map with simulated magnetic total field grid contours and topographic base map
sleetmute_res7200hz_topo_map_1of2.pdf	7,200 Hz apparent resistivity grid with topographic base map
sleetmute_res7200hz_topo_map_2of2.pdf	7,200 Hz apparent resistivity grid with topographic base map
sleetmute_res7200hz_contours_plss_map_1of2.pdf	7,200 Hz apparent resistivity grid with contours and public land survey system base layer
sleetmute_res7200hz_contours_plss_map_2of2.pdf	7,200 Hz apparent resistivity grid with contours and public land survey system base layer
sleetmute_res7200hz_bw_contours_plss_map_1of2.pdf	black and white 7,200 Hz apparent resistivity grid with contours and public land survey system base layer
sleetmute_res7200hz_bw_contours_plss_map_2of2.pdf	black and white 7,200 Hz apparent resistivity grid with contours and public land survey system base layer

Table 1, continued. Copies of the following maps are included at the end of this booklet. The low-resolution, page-size maps included in this booklet are intended to be used as a search tool and are not the final product. Large-scale, full-resolution versions of each map are available to download on this publication's citation page: http://doi.org/10.14509/30223.

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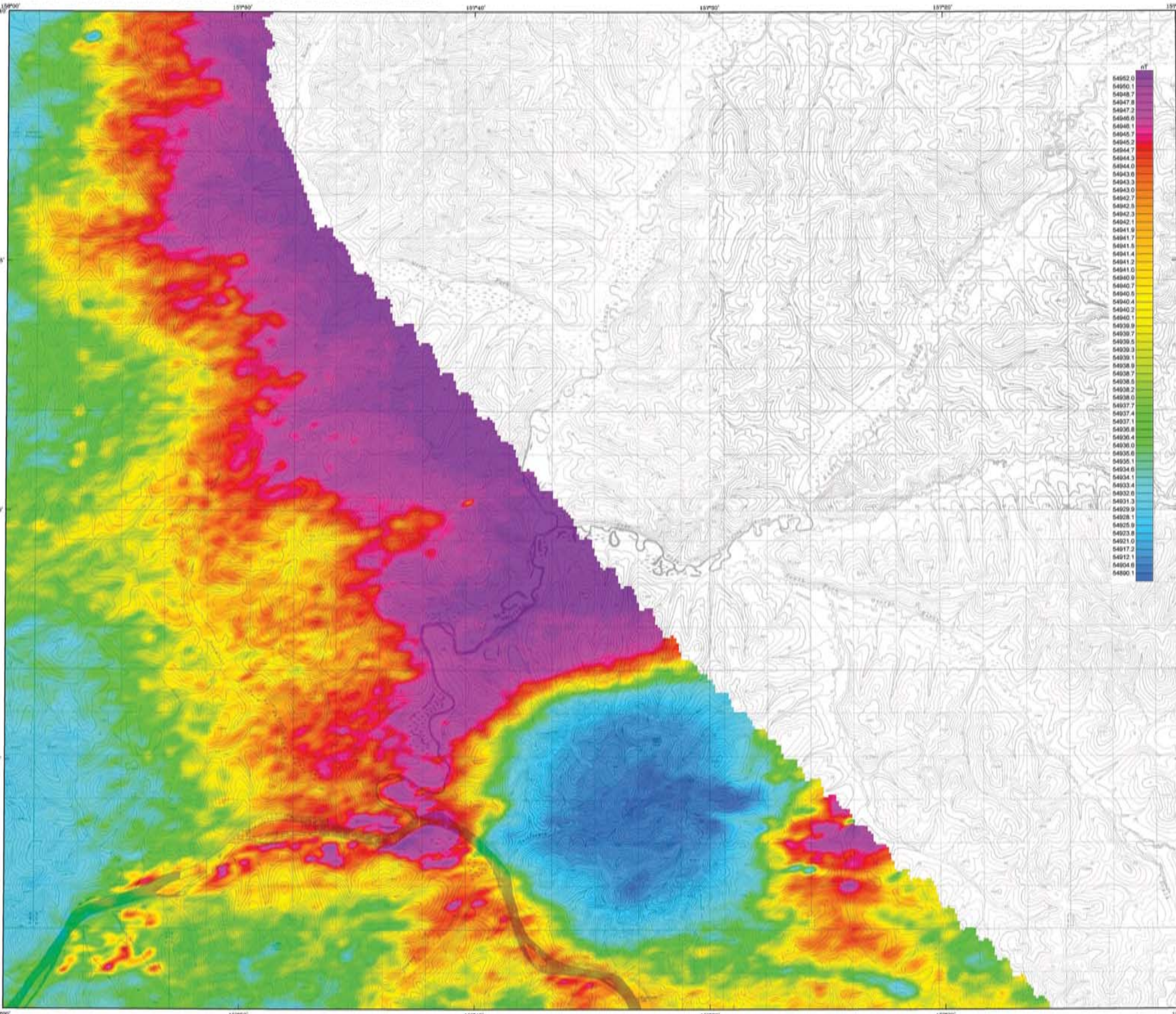
sleetmute_res900hz_topo_map_1of2.pdf	900 Hz apparent resistivity grid with topographic base map
sleetmute_res900hz_topo_map_2of2.pdf	900 Hz apparent resistivity grid with topographic base map
sleetmute_res900hz_contours_plss_map_1of2.pdf	900 Hz apparent resistivity grid with contours and public land survey system base layer
sleetmute_res900hz_contours_plss_map_2of2.pdf	900 Hz apparent resistivity grid with contours and public land survey system base layer
sleetmute_res900hz_bw_contours_plss_map_1of2.pdf	black and white 900 Hz apparent resistivity grid with contours and public land survey system base layer
sleetmute_res900hz_bw_contours_plss_map_2of2.pdf	black and white 900 Hz apparent resistivity grid with contours and public land survey system base layer
sleetmute_flightpath_topo_map_1of2.pdf	flight lines with public land survey system base layer
sleetmute_flightpath_topo_map_2of2.pdf	flight lines with public land survey system base layer
sleetmute_interpretation_plss_map_1of2.pdf	interpretation based on geophysical data with public land survey system base layer
sleetmute_interpretation_plss_map_2of2.pdf	interpretation based on geophysical data with public land survey system base layer

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

GEOPHYSICAL REPORT 2003_9_1a
Sheet 1 of 2



Base from U.S. Geological Survey Iditarod A-3, 1954, A-4, 1954; Sleetmute D-4, 1979, D-3, 1970, D-5, 1980, Quadrangles, Alaska

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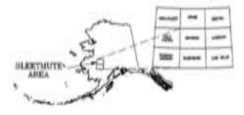
1 0 1 2 3 4 MILES

1 0 1 2 3 4 5 KILOMETERS

CONTOUR INTERVAL 100 FEET
DATUM MEAN SEA LEVEL

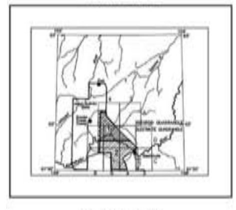


TOTAL MAGNETIC FIELD OF THE SLEETMUTE AREA, SOUTHWESTERN ALASKA

PARTS OF IDITAROD AND SLEETMUTE QUADRANGLES

2003

LOCATION INDEX



DESCRIPTIVE NOTES

The geophysical data were acquired with a DIGHEM[V] 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, 50/60 Hz monitors and video camera. Flights were performed with an AS350B-2 Squirrel helicopter at a mean terrain clearance of 200 feet along NW-SE (340°) 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 instrumentation and flight line direction, altitude, and spacing used for the Aniak survey (2000) were similar to the current survey.

An Ashtech GG24 NAVSTAR / GLONASS 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 4) spheroid, 1927 North American datum using a central meridian (CM) of 159°, 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 September 2002) 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.

APPROXIMATE MEAN DECLINATION 2003

SURVEY HISTORY

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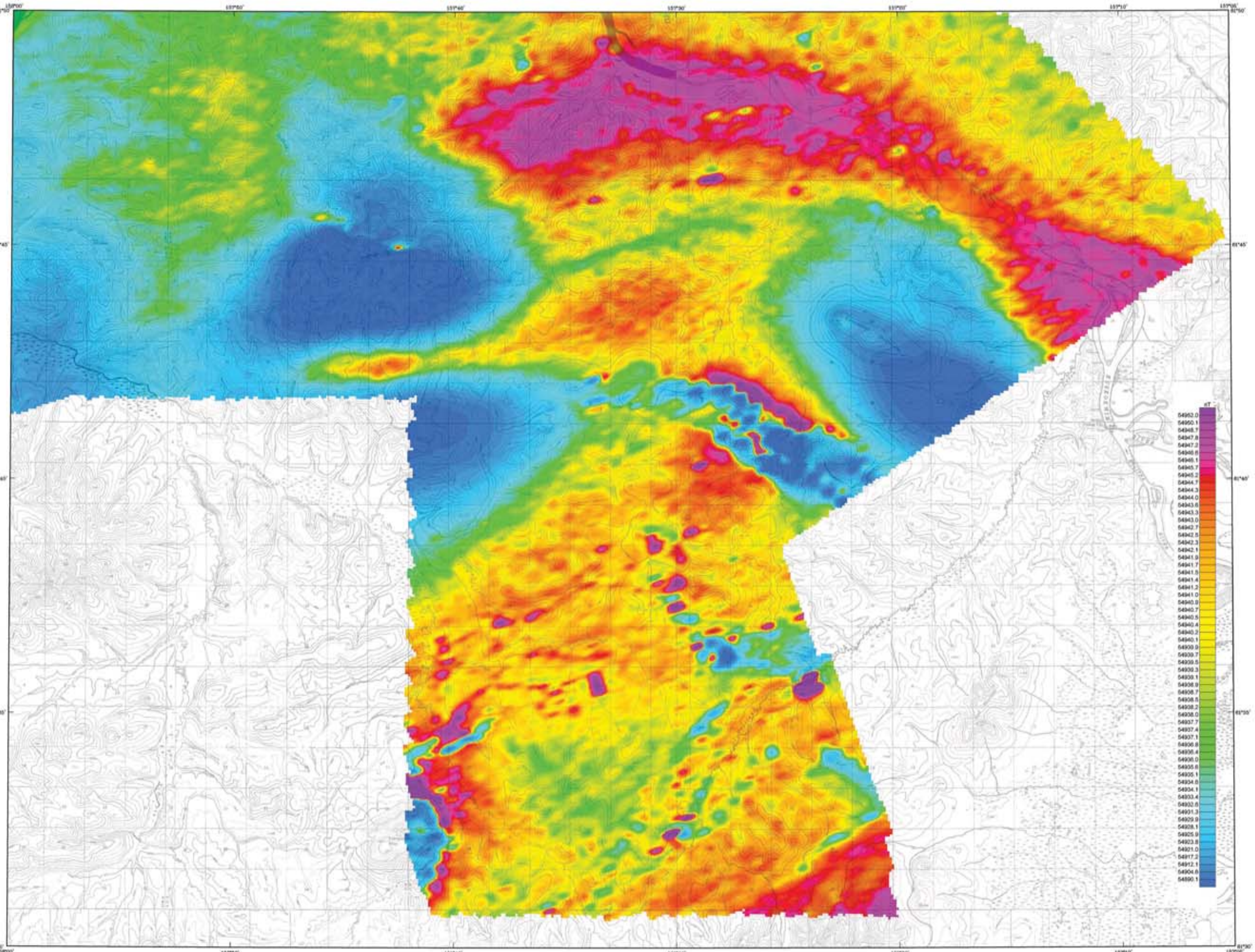
This map and other products from this survey are available by mail order or in person from DGGS, 794 University Ave., Suite 200, Fairbanks, Alaska, 99709. Some products are also available in person only at the BLM's Juneau Mineral Information Center, 100 Savikko Road, Douglas, Alaska, 99824.

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



SCALE 1:63,360

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PARTS OF IDITAROD AND SLEETMUTE QUADRANGLES

2003

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ALASKA DIVISION OF GEOLOGICAL & GEOPHYSICAL SURVEYS
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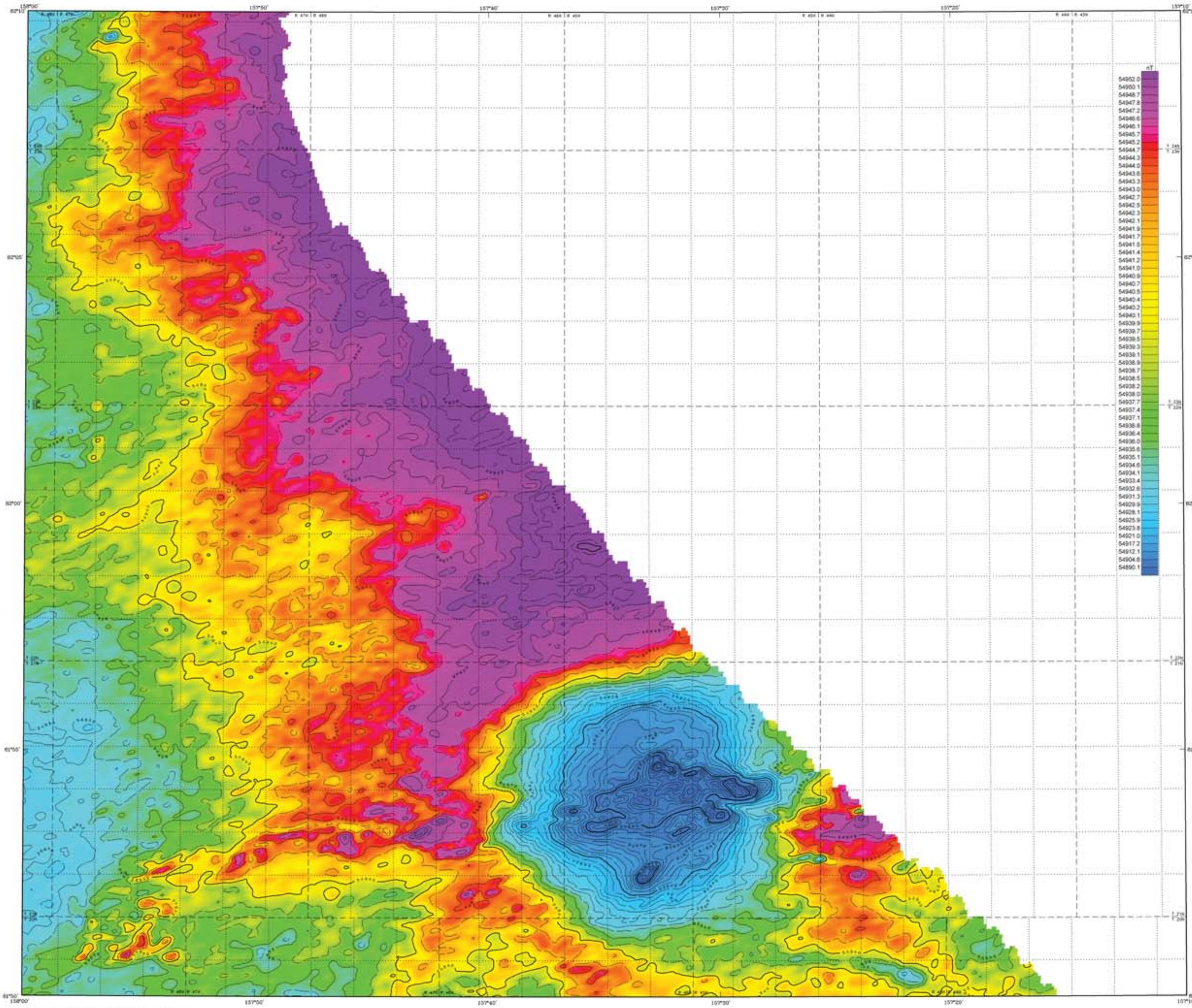
GEOPHYSICAL REPORT 2003_9_1b
Sheet 1 of 2



Section outlines from U.S. Geological Survey Iditarod A-3, 1954, A-4, 1954; Sleetmute D-4, 1976, D-3, 1976, D-5, 1985, Quadrangles, Alaska

SCALE 1:63,360

1 0 1 2 3 4 MILES

1 0 1 2 3 4 5 KILOMETERS

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TOTAL MAGNETIC FIELD OF THE SLEETMUTE AREA, SOUTHWESTERN ALASKA

PARTS OF IDITAROD AND SLEETMUTE QUADRANGLES

2003

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APPROXIMATE MEAN DECLINATION, 2002

MAGNETIC CONTOUR INTERVAL

. . . . 100 nT
. . . . 20 nT
. . . . 4 nT
. . . . 2 nT

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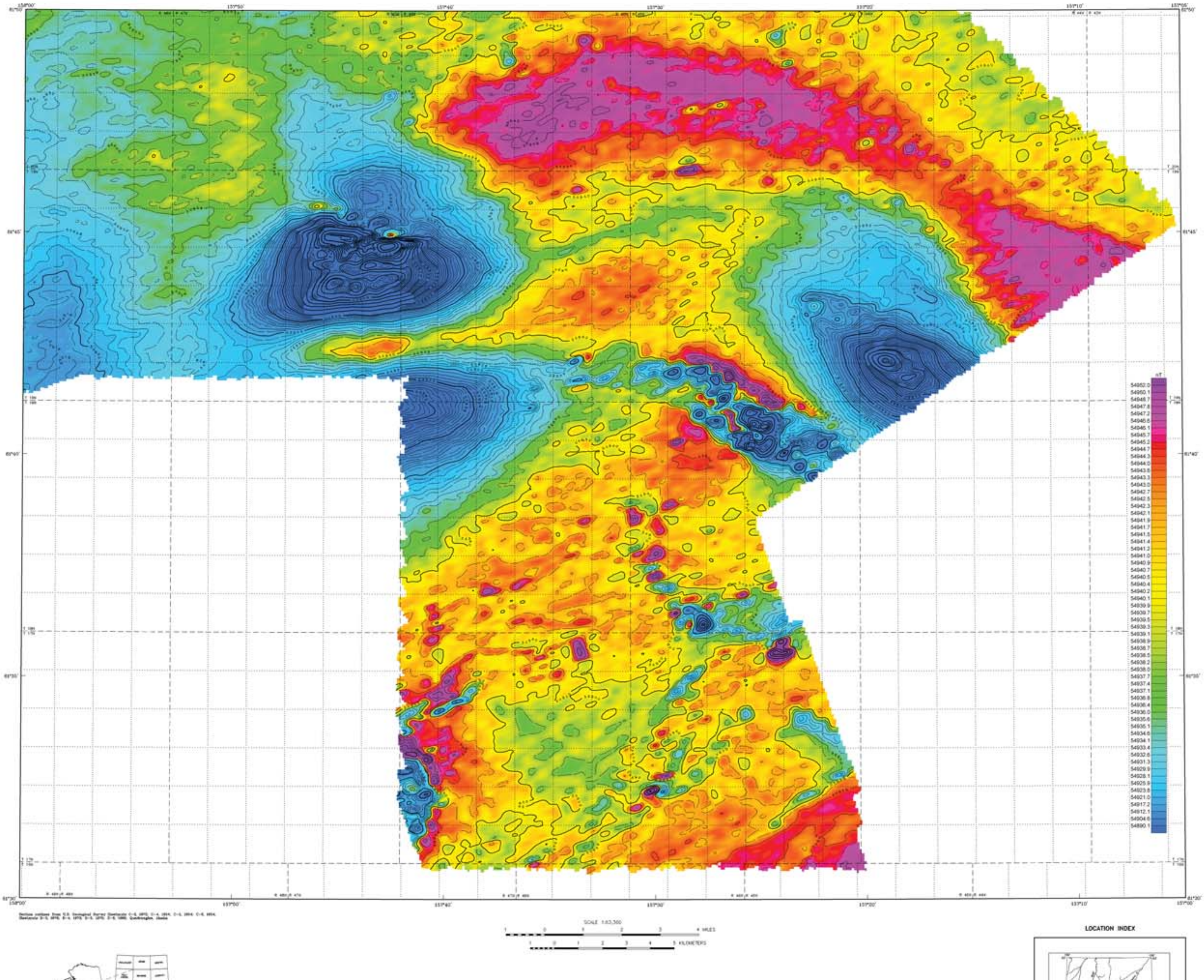

SCALE 1:63,360

TOTAL MAGNETIC FIELD OF THE SLEETMUTE AREA, SOUTHWESTERN ALASKA

PARTS OF IDITAROD AND SLEETMUTE QUADRANGLES

2003

LOCATION INDEX

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, 50/60 Hz monitors and video camera. Flights were performed with an AS350B-2 Squirrel helicopter at a mean terrain clearance of 200 feet along NW–SE (340°) 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 instrumentation and flight line direction, altitude, and spacing used for the Aniak survey (2000) were similar to the current survey.

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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 September 2002) 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.

MAGNETIC CONTOUR INTERVAL

——— (thick)	100 nT
——— (medium)	20 nT
——— (thin)	4 nT
— — — (dashed)	2 nT

SURVEY HISTORY

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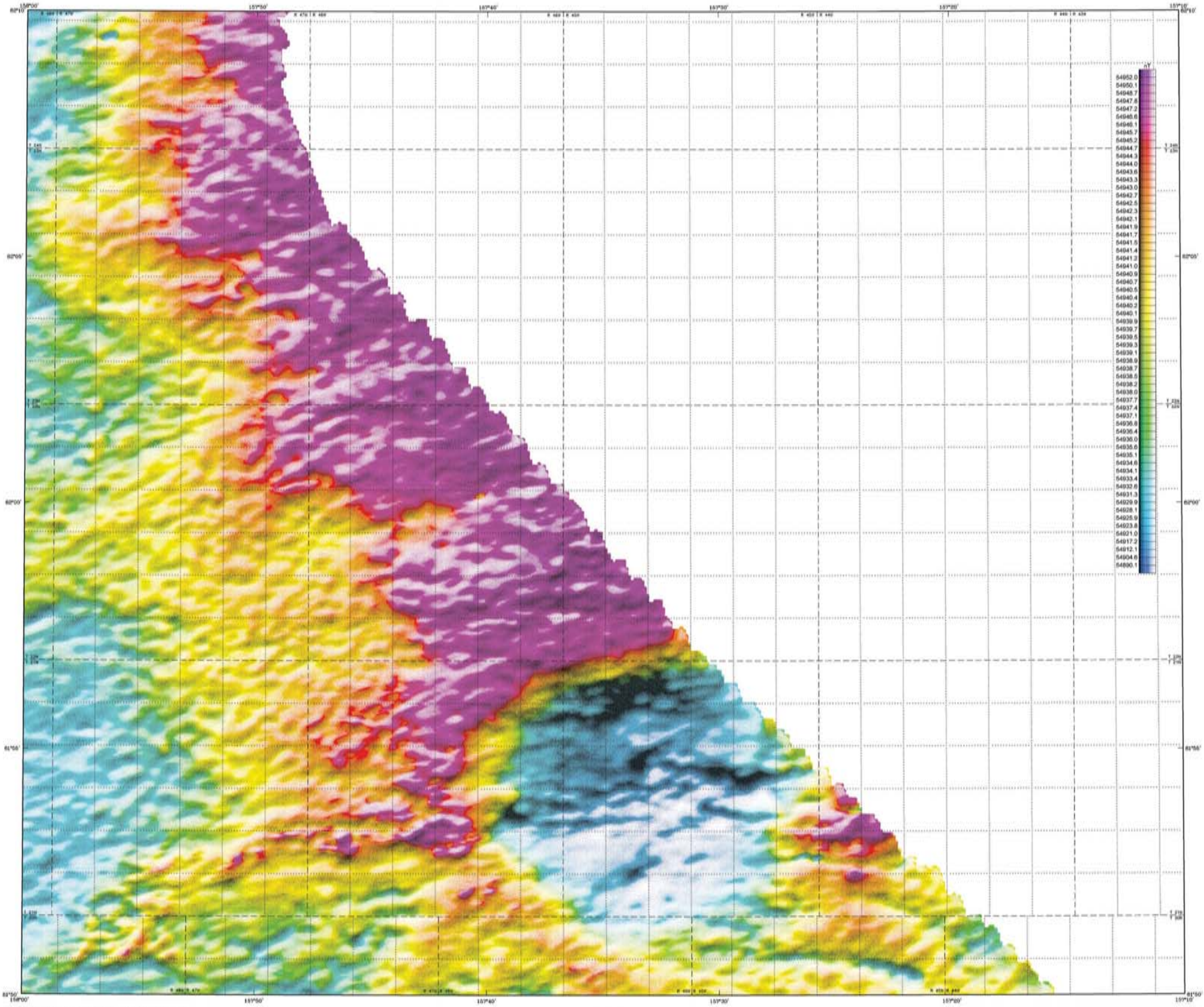
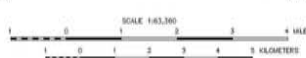
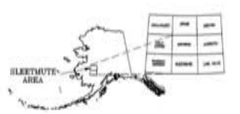
ALASKA DIVISION OF GEOLOGICAL & GEOPHYSICAL SURVEYS
IN COOPERATION WITH THE U.S. BUREAU OF LAND MANAGEMENT

GEOPHYSICAL REPORT 2003_9_1c
Sheet 1 of 2







COLOR SHADOW TOTAL MAGNETIC FIELD OF THE SLEETMUTE AREA, SOUTHWESTERN ALASKA

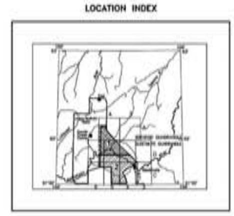
PARTS OF IDITAROD AND SLEETMUTE QUADRANGLES

2003

Sun Azimuth: 340 degrees

Inclination: 30 degrees

LOCATION INDEX



DESCRIPTIVE NOTES

The geophysical data were acquired with a DIGHEM[V] 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, 50/60 Hz monitors and video camera. Flights were performed with an AS350B-2 Squirrel helicopter at a mean terrain clearance of 200 feet along NW-SE (340°) 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 instrumentation and flight line direction, altitude, and spacing used for the Aniak survey (2000) were similar to the current survey.

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TOTAL MAGNETIC FIELD

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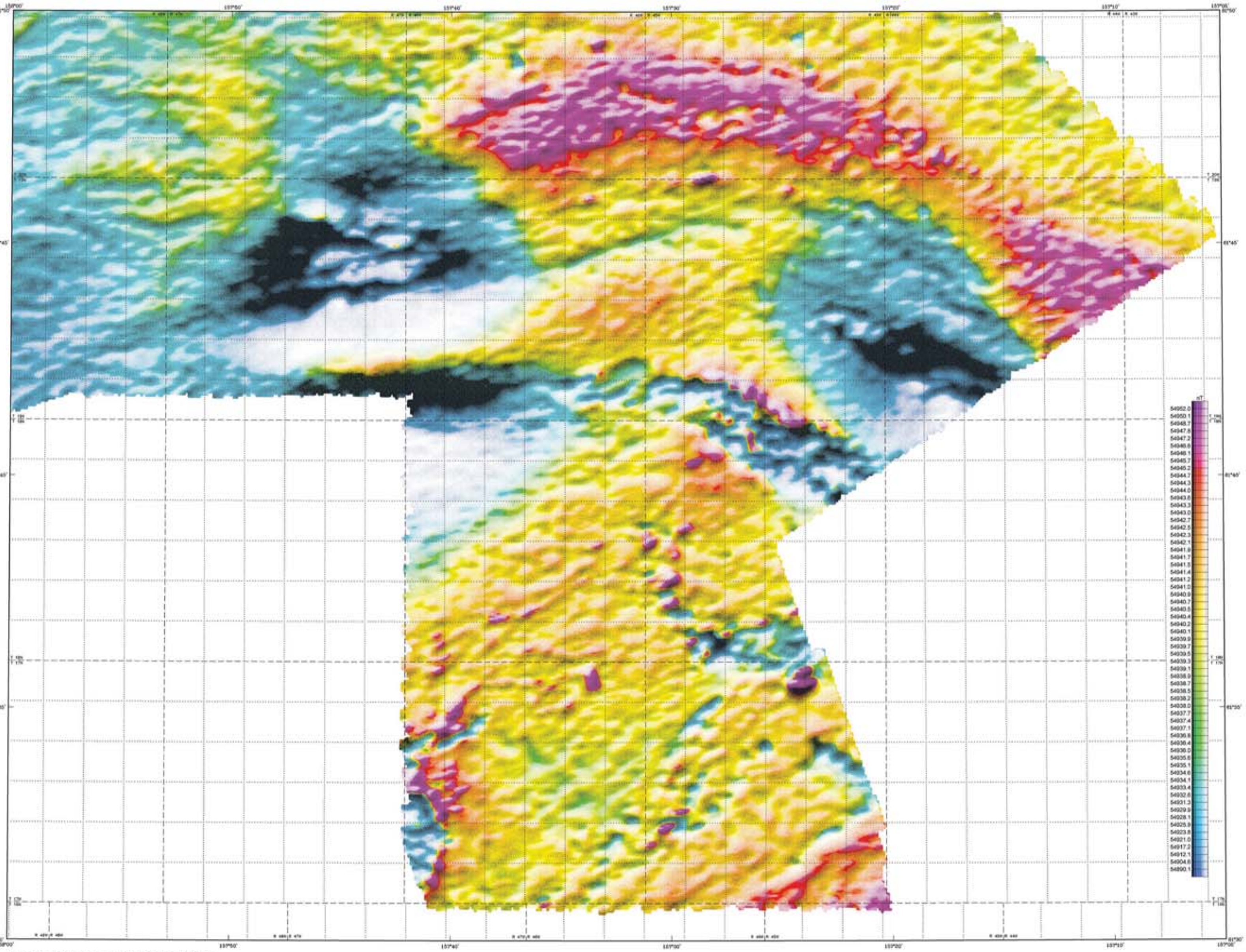
GEOPHYSICAL REPORT 2003_9_1c
Sheet 2 of 2



SCALE 1:63,360

COLOR SHADOW TOTAL MAGNETIC FIELD OF THE SLEETMUTE AREA, SOUTHWESTERN ALASKA

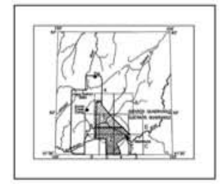
PARTS OF IDITAROD AND SLEETMUTE QUADRANGLES

2003

Sun Azimuth: 340 degrees

Inclination: 30 degrees

LOCATION INDEX



DESCRIPTIVE NOTES

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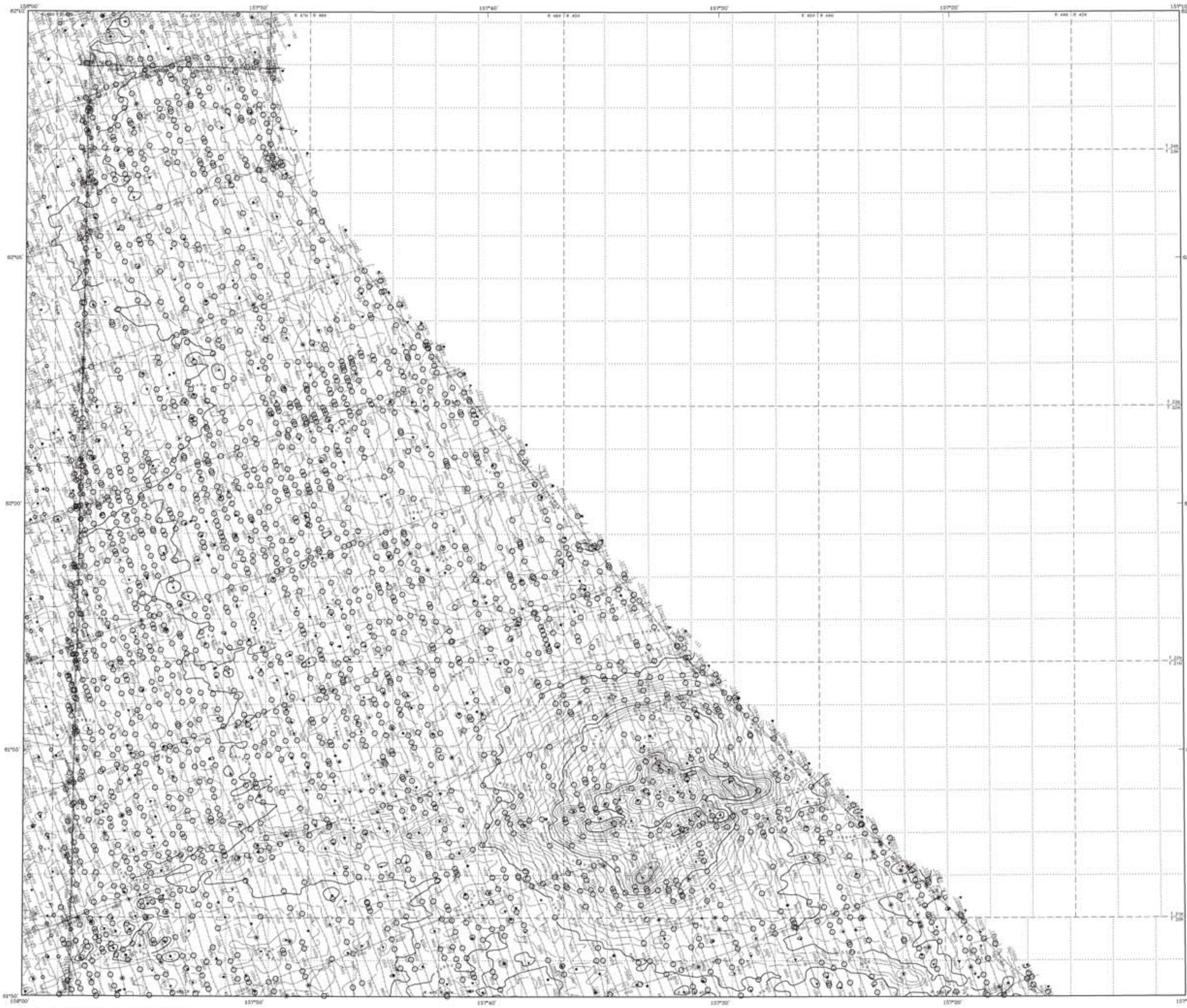
GEOPHYSICAL REPORT 2003_9_1d
Sheet 1 of 2



SCALE 1:63,360

1 0 1 2 3 4 MILES

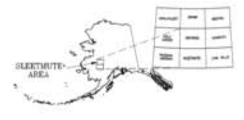
1 0 1 2 3 4 5 KILOMETERS

LOCATION INDEX

TOTAL MAGNETIC FIELD AND ELECTROMAGNETIC ANOMALIES OF THE SLEETMUTE AREA, SOUTHWESTERN ALASKA

PARTS OF IDITAROD AND SLEETMUTE QUADRANGLES

2003



APPROXIMATE MEAN DECLINATION, 2003

DESCRIPTIVE NOTES

The geophysical data were acquired with a DIGHEM[V] 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, 50/60 Hz monitors and video camera. Flights were performed with an AS350B-2 Squirrel helicopter at a mean terrain clearance of 200 feet along NW-SE (340°) 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 instrumentation and flight line direction, altitude, and spacing used for the Aniak survey (2000) were similar to the current survey.

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ELECTROMAGNETIC ANOMALIES

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

ELECTROMAGNETICS

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 1000 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 power line monitor and the flight track video were examined to locate cultural sources. The EM anomalies that are indicated are classified by conductance.

TOTAL MAGNETIC FIELD

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MAGNETIC CONTOUR INTERVAL

100 nT
20 nT
4 nT
2 nT
magnetic low
magnetic high

SURVEY HISTORY

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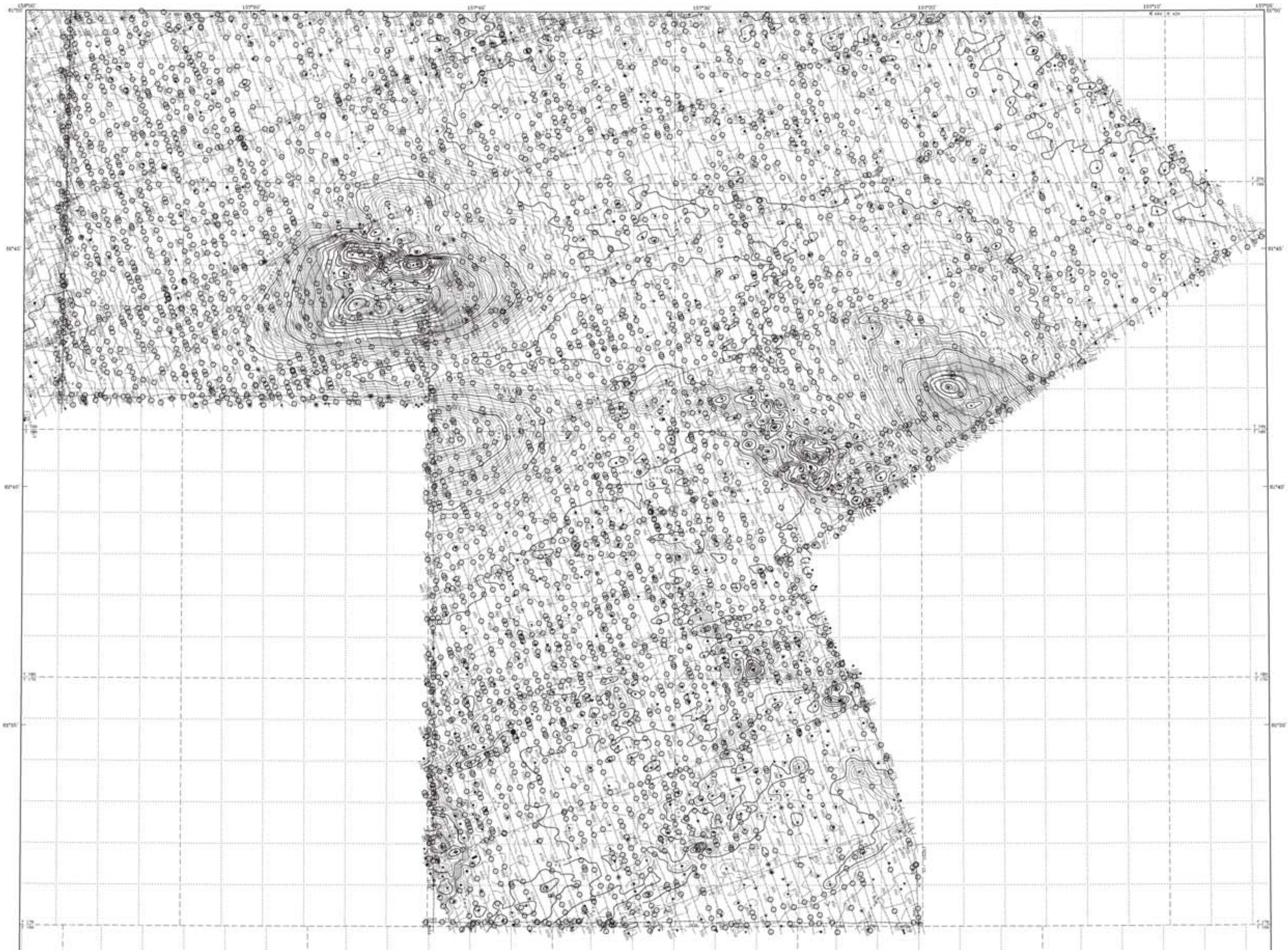
GEOPHYSICAL REPORT 2003_9_1d
Sheet 2 of 2



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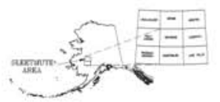

TOTAL MAGNETIC FIELD AND ELECTROMAGNETIC ANOMALIES OF THE SLEETMUTE AREA, SOUTHWESTERN ALASKA

PARTS OF IDITAROD AND SLEETMUTE QUADRANGLES

2003

LOCATION INDEX

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MAGNETIC CONTOUR INTERVAL

————	100 nT
————	20 nT
————	4 nT
— — —	2 nT
(•)	magnetic low
(•)	magnetic high

SURVEY HISTORY

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ALASKA DIVISION OF GEOLOGICAL & GEOPHYSICAL SURVEYS
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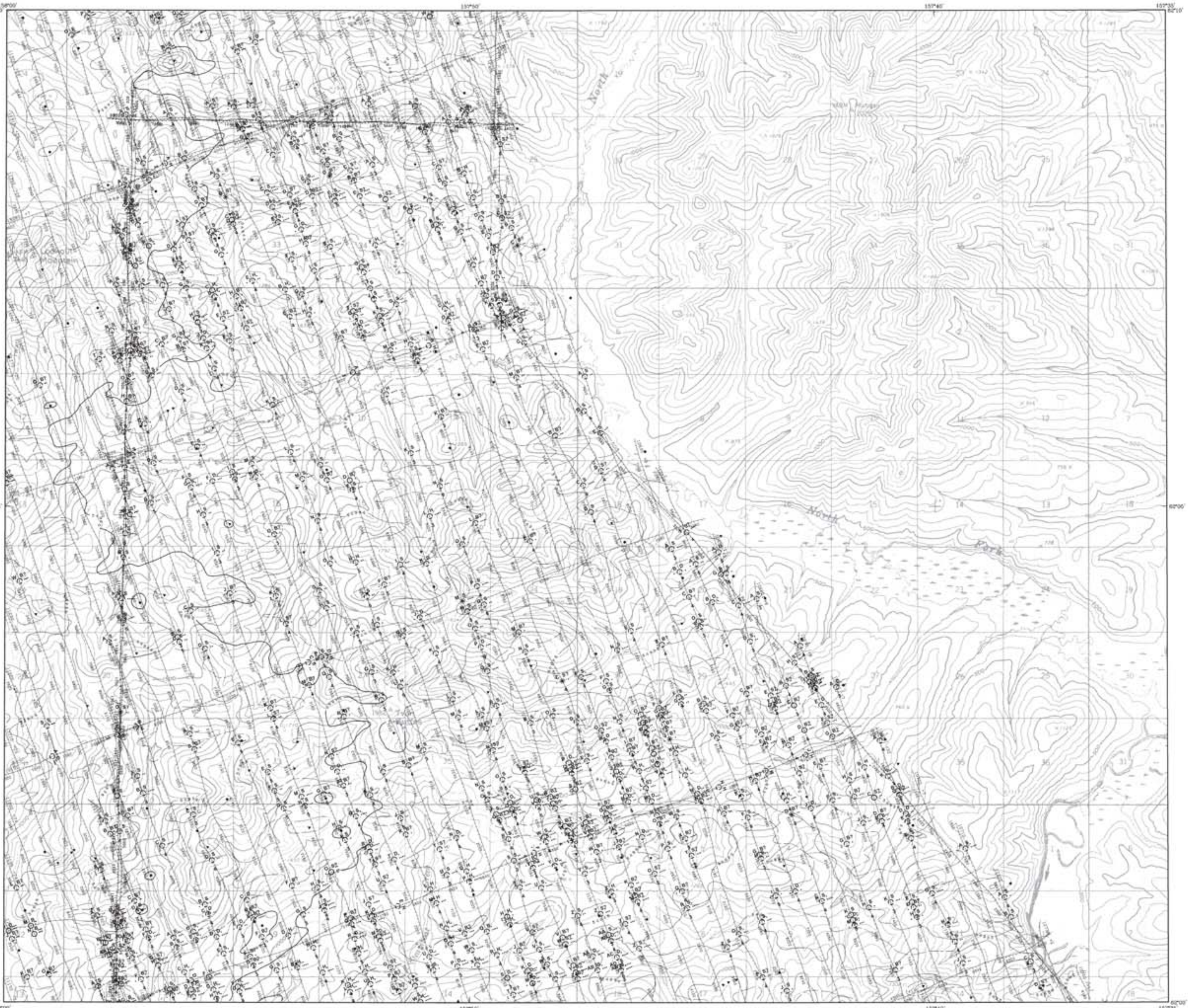
GEOPHYSICAL REPORT 2003_9_2a
PART OF IDITAROD A-4 QUADRANGLE



SCALE 1:31,680

CONTOUR INTERVAL 100 FEET
DATUM MEAN SEA LEVEL

TOTAL MAGNETIC FIELD AND DETAILED ELECTROMAGNETIC ANOMALIES OF THE SLEETMUTE AREA, SOUTHWESTERN ALASKA

PART OF IDITAROD A-4 QUADRANGLE

2003

LOCATION INDEX FOR SCALE 1:31,680

DESCRIPTIVE NOTES

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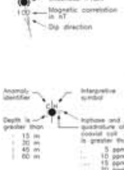
ELECTROMAGNETIC ANOMALIES



Anomaly	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

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

ELECTROMAGNETICS

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 1000 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 with conductor and magnetic patterns and topography. The power line monitor and the flight track video were examined to locate cultural sources.

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 September 2002) was removed from the leveled magnetic data.

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MAGNETIC CONTOUR INTERVAL

heavy solid line	100 nT
solid line	20 nT
thin solid line	4 nT
dashed line	2 nT
ellipse with dot	magnetic low
ellipse with dot	magnetic high

SURVEY HISTORY

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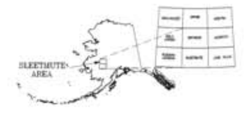
GEOPHYSICAL REPORT 2003_9_2b
PARTS OF SLEETMUTE D-5 AND D-6 QUADRANGLES

SCALE 1:31,680

0.5 0 0.5 1 1.5 2 MILES

0.5 0 0.5 1 1.5 2 2.5 KILOMETERS



TOTAL MAGNETIC FIELD AND DETAILED ELECTROMAGNETIC ANOMALIES OF THE SLEETMUTE AREA, SOUTHWESTERN ALASKA

PARTS OF SLEETMUTE D-5 AND D-6 QUADRANGLES

2003

LOCATION INDEX FOR SCALE 1:31,680

DESCRIPTIVE NOTES

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ELECTROMAGNETIC ANOMALIES

Arcs indicate the conductor has a thickness >10m

Magnetic correlation in nT

Dip direction

Anomaly	Conductance
●	>100 siemens
◕	50–100 siemens
◒	20–50 siemens
◔	10–20 siemens
⊕	5–10 siemens
○	1–5 siemens
◌	<1 siemens
*	Questionable anomaly
△[M]	EM magnetite response

Anomaly identifier

Interpretive symbol

Depth is greater than: 15 m, 30 m, 45 m, 60 m

Inphase and quadrature of coaxial coil is greater than: 5 ppm, 10 ppm, 15 ppm, 20 ppm

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

ELECTROMAGNETICS

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 1000 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 with conductor and magnetic patterns and topography. The power line monitor and the flight track video were examined to locate cultural sources.

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 September 2002) 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.

MAGNETIC CONTOUR INTERVAL

———	100 nT
———	20 nT
———	4 nT
— — —	2 nT
(•)	magnetic low
(•)	magnetic high

SURVEY HISTORY

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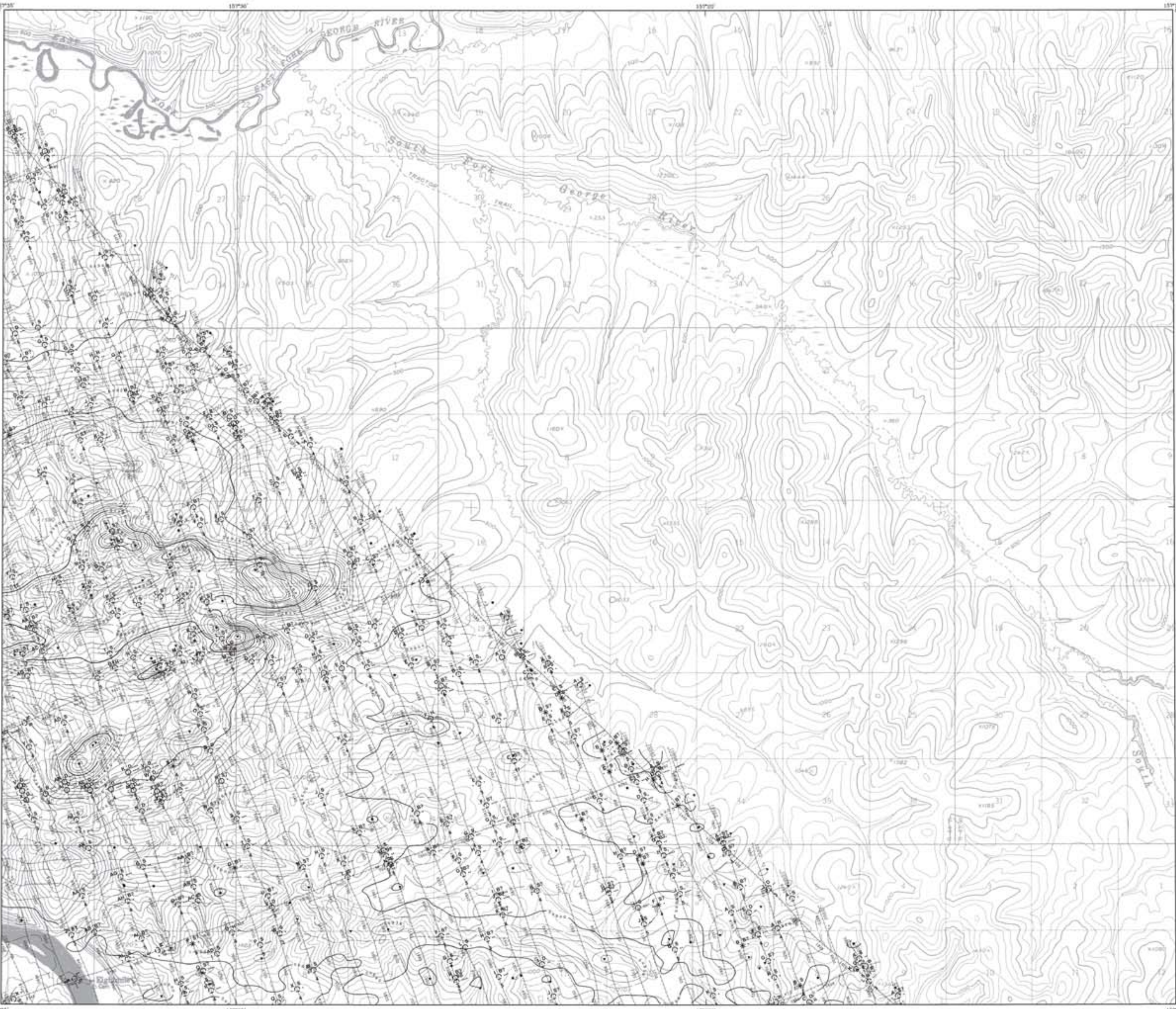


TOTAL MAGNETIC FIELD AND DETAILED ELECTROMAGNETIC ANOMALIES OF THE SLEETMUTE AREA, SOUTHWESTERN ALASKA

PARTS OF SLEETMUTE D-4 AND D-5 QUADRANGLES

2003

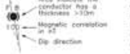
LOCATION INDEX FOR SCALE 1:31,680

DESCRIPTIVE NOTES

The geophysical data were acquired with a DIGHEM[V] 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, 50/60 Hz monitors and video camera. Flights were performed with an AS350B-2 Squirrel helicopter at a mean terrain clearance of 200 feet along NW–SE (340°) 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 instrumentation and flight line direction, altitude, and spacing used for the Aniak survey (2000) were similar to the current survey.

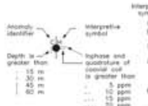
An Ashtech GG24 NAVSTAR / GLONASS Global Positioning System was used for navigation. The helicopter position was derived every 0.5 seconds using post–flight differential positioning to a relative accuracy of better than 5 m. Flight path positions were projected onto the Clarke 1866 (UTM zone 4) spheroid, 1927 North American datum using a central meridian (CM) of 159°, 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



Anomaly — 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



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

ELECTROMAGNETICS

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 1000 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 with conductor and magnetic patterns and topography. The power line monitor and the flight track video were examined to locate cultural sources.

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 September 2002) 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.

MAGNETIC CONTOUR INTERVAL

- 100 nT
- 20 nT
- 4 nT
- 2 nT
- magnetic low
- magnetic high

SURVEY HISTORY

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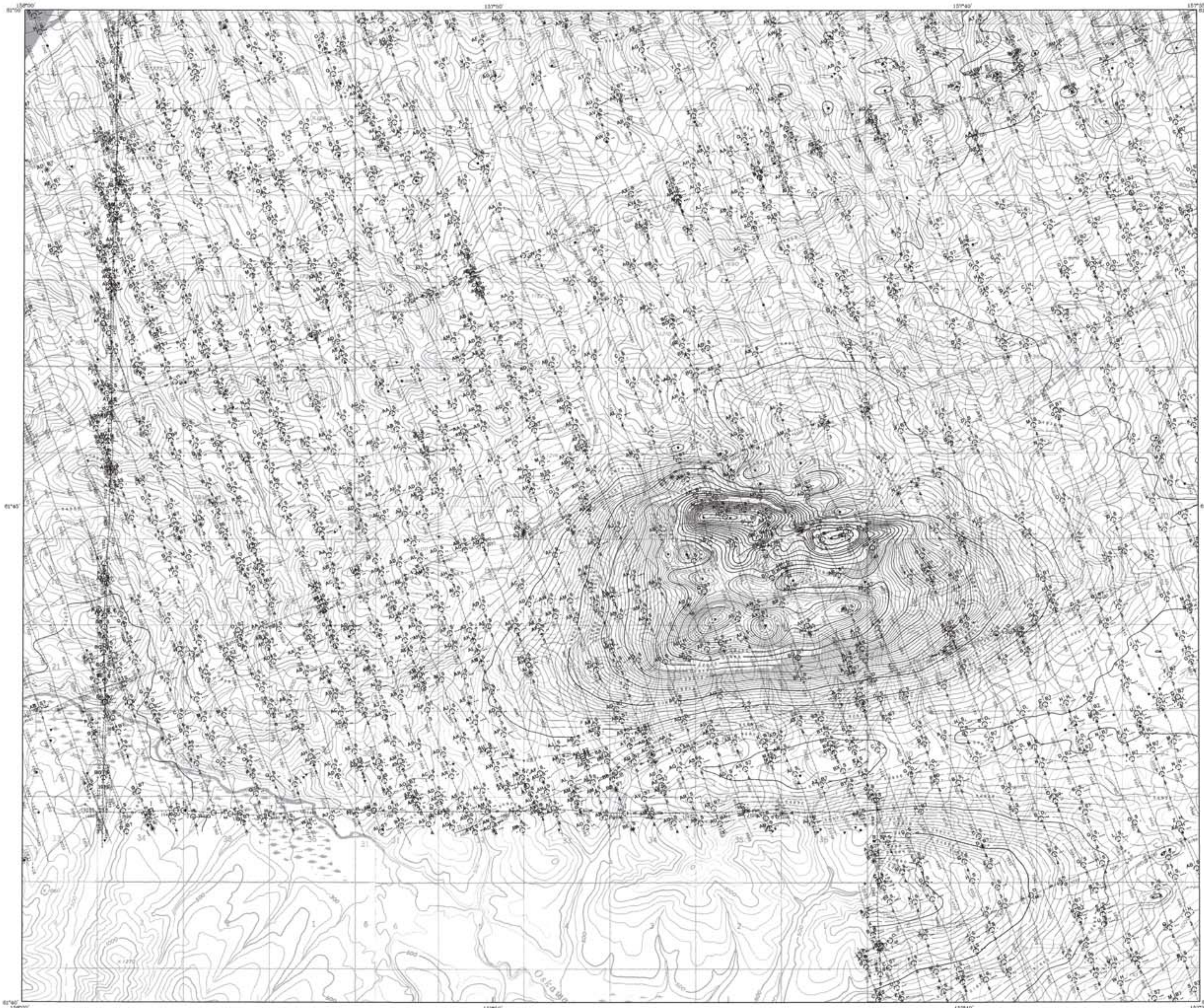


SCALE 1:31,680

0.5 0 0.5 1 1.5 2 MILES

0.5 0 0.5 1 1.5 2 2.5 KILOMETERS

TOTAL MAGNETIC FIELD AND DETAILED ELECTROMAGNETIC ANOMALIES OF THE SLEETMUTE AREA, SOUTHWESTERN ALASKA

PARTS OF SLEETMUTE C-5, C-6, D-5 AND D-6 QUADRANGLES

2003

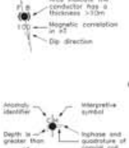
LOCATION INDEX FOR SCALE 1:31,680

DESCRIPTIVE NOTES

The geophysical data were acquired with a DIGHEM[V] 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, 50/60 Hz monitors and video camera. Flights were performed with an AS350B-2 Squirrel helicopter at a mean terrain clearance of 200 feet along NW-SE (340°) 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 instrumentation and flight line direction, altitude, and spacing used for the Aniak survey (2000) were similar to the current survey.

An Ashtech GG24 NAVSTAR / GLONASS 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 4) spheroid, 1927 North American datum using a central meridian (CM) of 159°, 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



Anomaly	Conductance
●	>100 siemens
	50–100 siemens
	20–50 siemens
	10–20 siemens
	5–10 siemens
○	1–5 siemens
	<1 siemens
	Questionable anomaly
△[M]	EM magnetite response

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

ELECTROMAGNETICS

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 1000 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 with conductor and magnetic patterns and topography. The power line monitor and the flight track video were examined to locate cultural sources.

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 September 2002) 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.

MAGNETIC CONTOUR INTERVAL

100 nT
20 nT
4 nT
2 nT
magnetic low
magnetic high

SURVEY HISTORY

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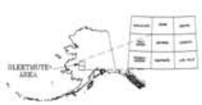
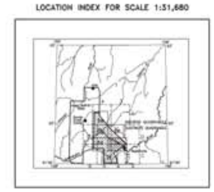


LOCATION INDEX FOR SCALE 1:31,680



TOTAL MAGNETIC FIELD AND DETAILED ELECTROMAGNETIC ANOMALIES OF THE SLEETMUTE AREA, SOUTHWESTERN ALASKA

PARTS OF SLEETMUTE C-3, C-4, C-5, D-3, D-4 AND D-5 QUADRANGLES

2003

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, 50/60 Hz monitors and video camera. Flights were performed with an AS350B-2 Squirrel helicopter at a mean terrain clearance of 200 feet along NW–SE (340°) 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 instrumentation and flight line direction, altitude, and spacing used for the Aniak survey (2000) were similar to the current survey.

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ELECTROMAGNETIC ANOMALIES

Arcs indicate the conductor has a thickness >10m
Magnetic correlation in nT
Dip direction

Anomaly	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

Anomaly identifier
Interpretive symbol
Depth is greater than: 15 m, 30 m, 45 m, 60 m
Inphase and quadrature of coaxial coil is greater than: 5 ppm, 10 ppm, 15 ppm, 20 ppm

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

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 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 with conductor and magnetic patterns and topography. The power line monitor and the flight track video were examined to locate cultural sources.

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 September 2002) 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.

MAGNETIC CONTOUR INTERVAL

thick solid line	100 nT
solid line	20 nT
thin solid line	4 nT
dashed line	2 nT
ellipse with dot	magnetic low
ellipse with dot	magnetic high

SURVEY HISTORY

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ALASKA DIVISION OF GEOLOGICAL & GEOPHYSICAL SURVEYS
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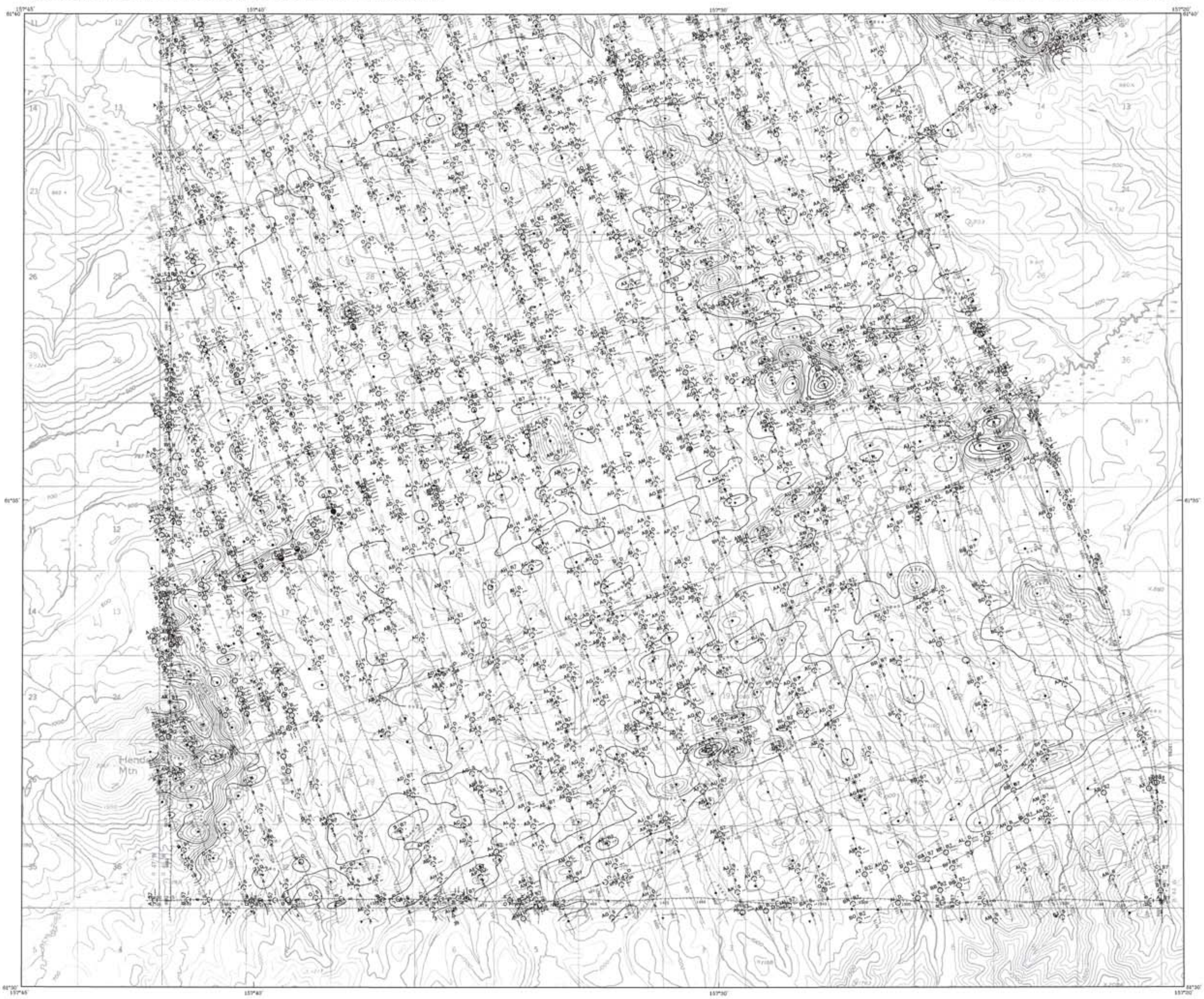
GEOPHYSICAL REPORT 2003_9_2f
PARTS OF SLEETMUTE C-4 AND C-5 QUADRANGLES

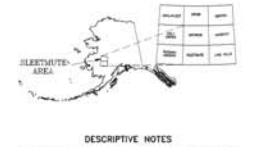


SCALE 1:31,680

TOTAL MAGNETIC FIELD AND DETAILED ELECTROMAGNETIC ANOMALIES OF THE SLEETMUTE AREA, SOUTHWESTERN ALASKA

PARTS OF SLEETMUTE C-4 AND C-5 QUADRANGLES

2003



DESCRIPTIVE NOTES

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ELECTROMAGNETIC ANOMALIES

Arcs indicate the conductor has a thickness >10m
Magnetic correlation in nT
Dip direction

Anomaly	Conductance
●	>100 siemens
	50–100 siemens
	20–50 siemens
	10–20 siemens
	5–10 siemens
○	1–5 siemens
	<1 siemens
	Questionable anomaly
△[M]	EM magnetite response

Anomaly identifier
Interpretive symbol
Depth is greater than: 15 m, 30 m, 45 m, 60 m
Inphase and quadrature of coaxial coil is greater than: 5 ppm, 10 ppm, 15 ppm, 20 ppm

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

ELECTROMAGNETICS

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 1000 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 with conductor and magnetic patterns and topography. The power line monitor and the flight track video were examined to locate cultural sources.

TOTAL MAGNETIC FIELD

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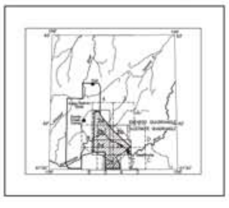
MAGNETIC CONTOUR INTERVAL

100 nT
20 nT
4 nT
2 nT
magnetic low
magnetic high

LOCATION INDEX FOR SCALE 1:31,680



SURVEY HISTORY

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ALASKA DIVISION OF GEOLOGICAL & GEOPHYSICAL SURVEYS
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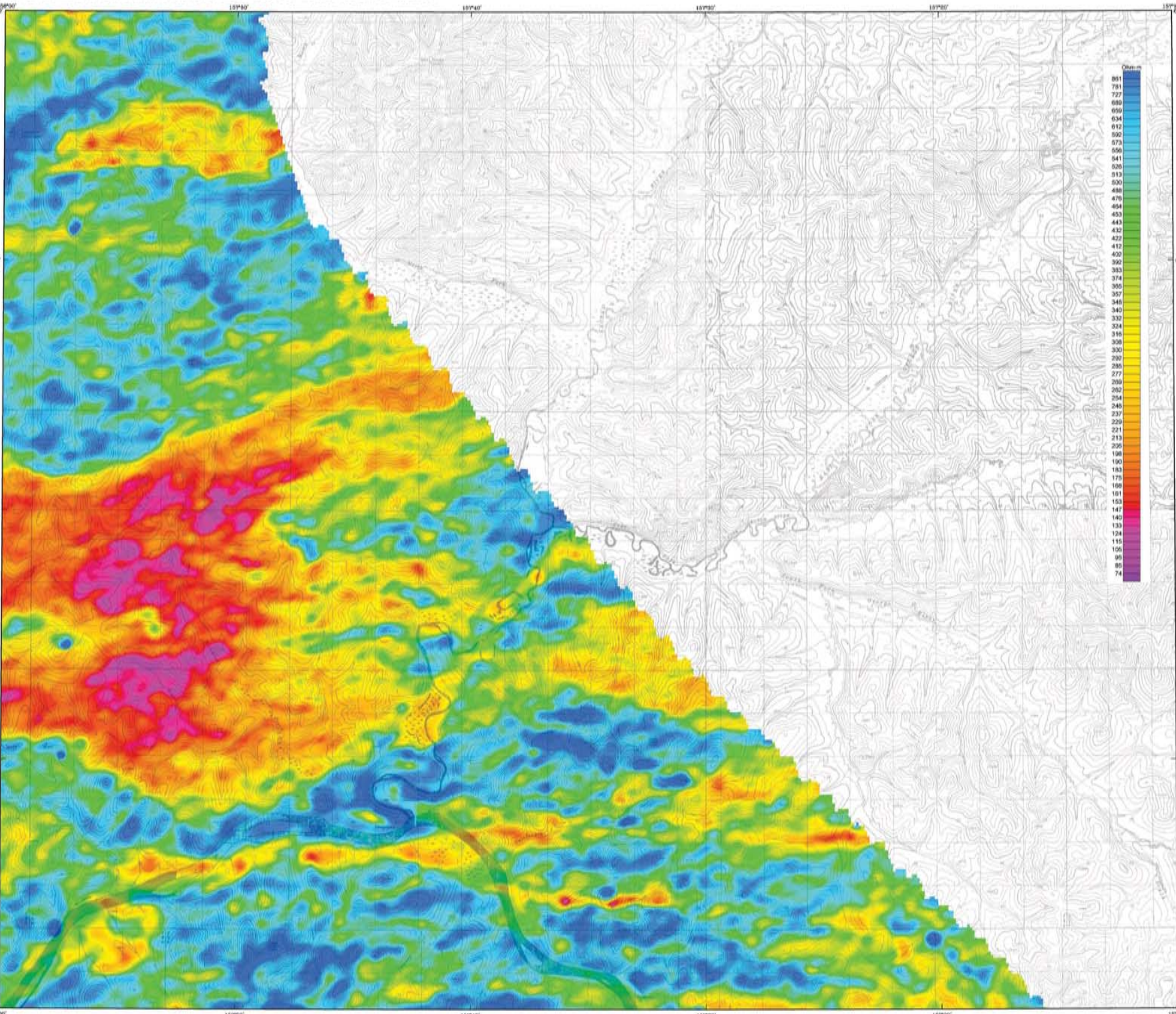
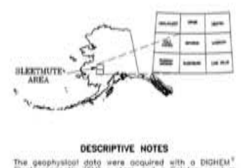
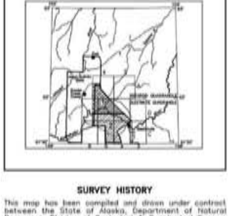
GEOPHYSICAL REPORT 2003_9_3a
Sheet 1 of 2



SCALE 1:63,360



LOCATION INDEX



7200 Hz COPLANAR RESISTIVITY OF THE SLEETMUTE AREA, SOUTHWESTERN ALASKA

PARTS OF IDITAROD AND SLEETMUTE QUADRANGLES

2003

DESCRIPTIVE NOTES

The geophysical data were acquired with a DIGHEM[V] 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, 50/60 Hz monitors and video camera. Flights were performed with an AS350B-2 Squirrel helicopter at a mean terrain clearance of 200 feet along NW-SE (340°) 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 instrumentation and flight line direction, altitude, and spacing used for the Aniak survey (2000) were similar to the current survey.

An Ashtech GG24 NAVSTAR / GLONASS 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 4) spheroid, 1927 North American datum using a central meridian (CM) of 159°, 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.

RESISTIVITY

The DIGHEM[V] 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 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. Apparent resistivity is generated from the inphase and quadrature components of the coplanar 7200 Hz using the pseudo-layer half space model (Fraser 1978). The data were interpolated onto a regular 100 m grid using a modified Akima (1970) technique.

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.

Fraser, D.C., 1978, Resistivity mapping with an airborne multicoil electromagnetic system: Geophysics, v. 43, p. 144–172.

SURVEY HISTORY

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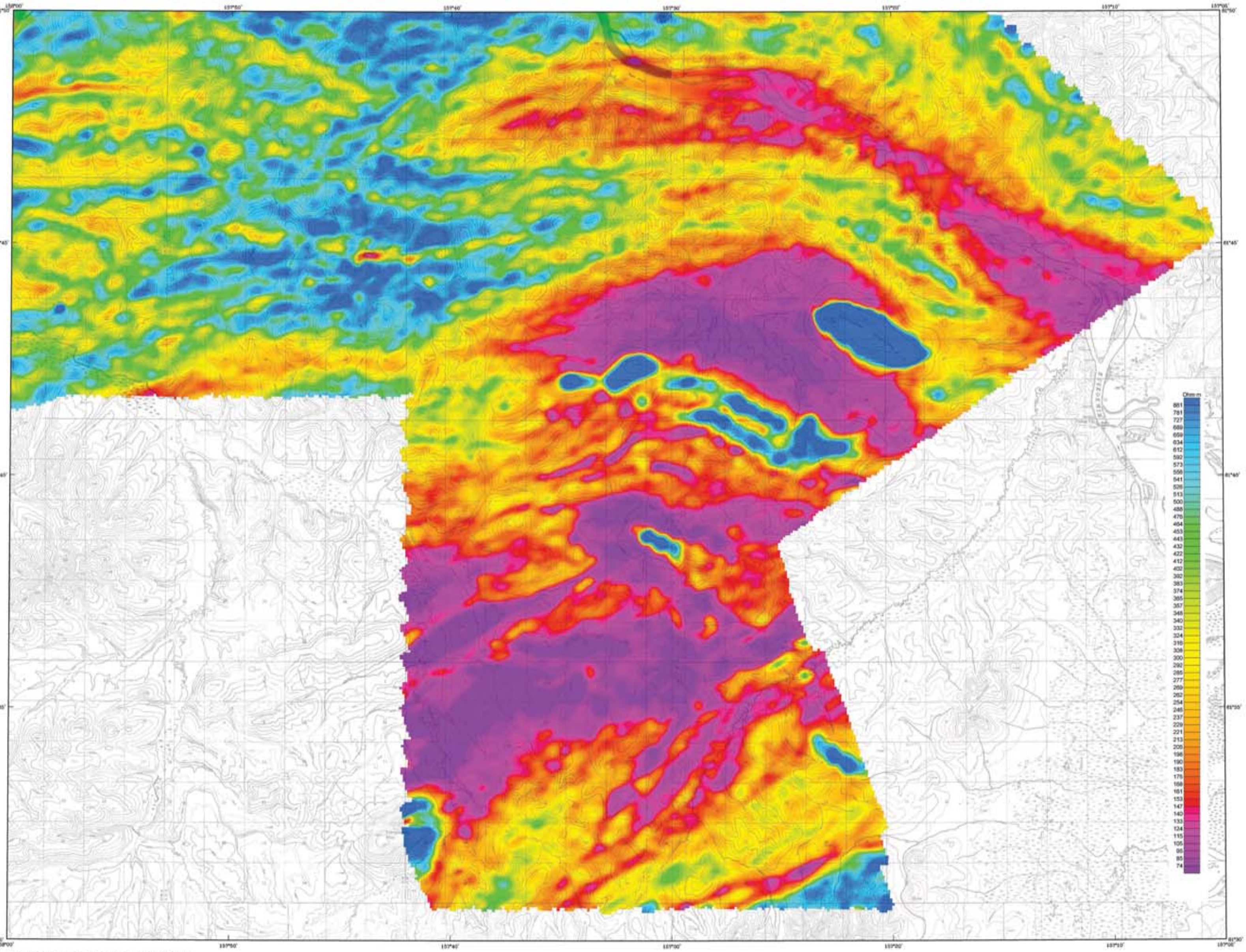
GEOPHYSICAL REPORT 2003_9_3a
Sheet 2 of 2



SCALE 1:63,360

7200 Hz COPLANAR RESISTIVITY OF THE SLEETMUTE AREA, SOUTHWESTERN ALASKA

PARTS OF IDITAROD AND SLEETMUTE QUADRANGLES

2003

LOCATION INDEX

DESCRIPTIVE NOTES

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RESISTIVITY

The DIGHEM[V] 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 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. Apparent resistivity is generated from the inphase and quadrature components of the coplanar 7200 Hz using the pseudo-layer half space model (Fraser 1978). The data were interpolated onto a regular 100 m grid using a modified Akima (1970) technique.

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SURVEY HISTORY

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ALASKA DIVISION OF GEOLOGICAL & GEOPHYSICAL SURVEYS
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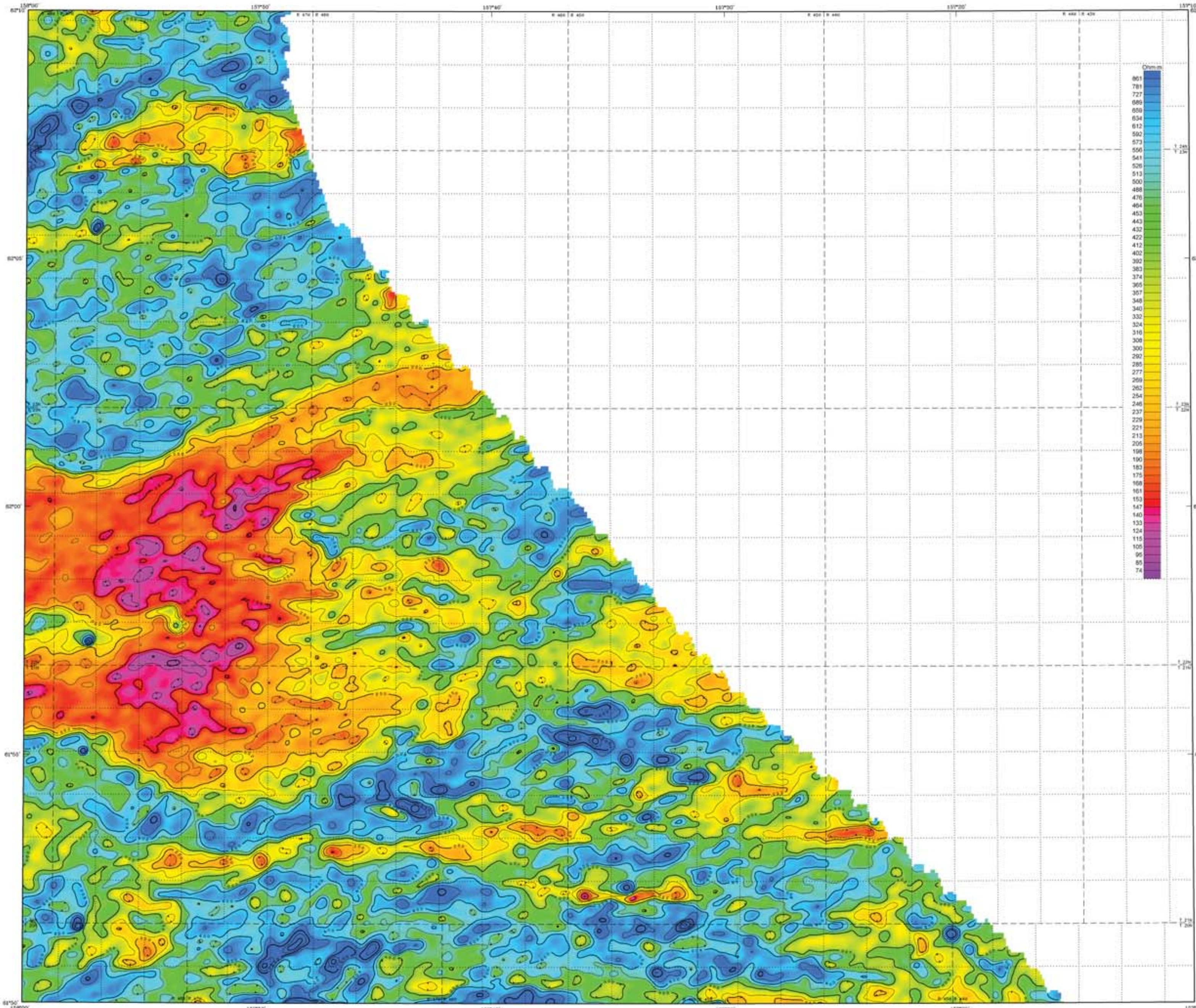
GEOPHYSICAL REPORT 2003_9_3b
Sheet 1 of 2



SCALE 1:63,360

LOCATION INDEX

7200 Hz COPLANAR RESISTIVITY OF THE SLEETMUTE AREA, SOUTHWESTERN ALASKA

PARTS OF IDITAROD AND SLEETMUTE QUADRANGLES

2003

DESCRIPTIVE NOTES

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RESISTIVITY CONTOURS

1000
800
600
500
400
300
250
200
150
125
100

Contours in ohm-m at 10 intervals per decade

resistivity low

SURVEY HISTORY

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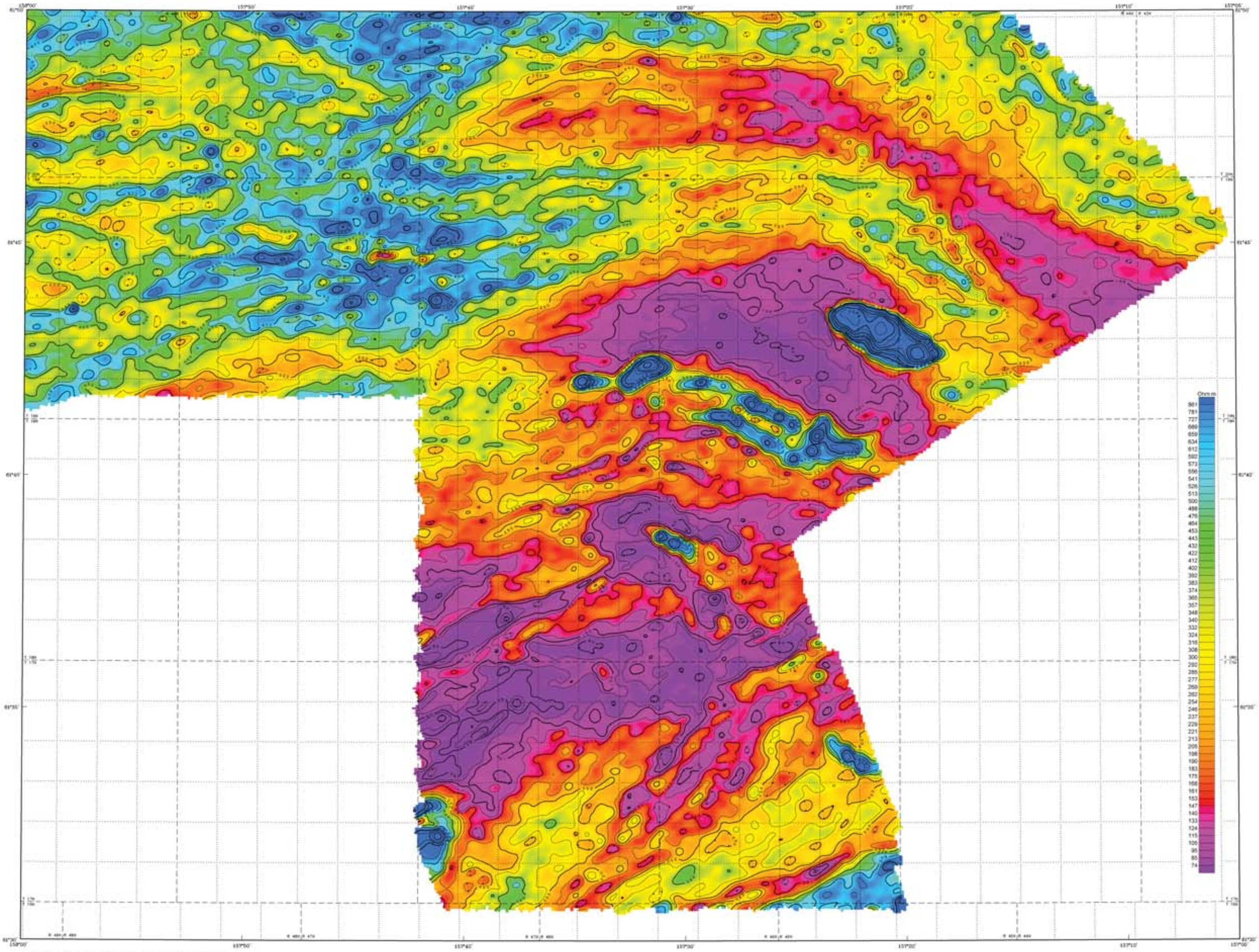
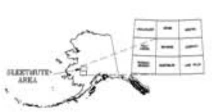


SCALE 1:63,360

4 MILES

5 KILOMETERS



7200 Hz COPLANAR RESISTIVITY OF THE SLEETMUTE AREA, SOUTHWESTERN ALASKA

PARTS OF IDITAROD AND SLEETMUTE QUADRANGLES

2003

LOCATION INDEX

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RESISTIVITY CONTOURS

1000
800
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500
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125
100

Contours in ohm-m at 10 intervals per decade

resistivity low

SURVEY HISTORY

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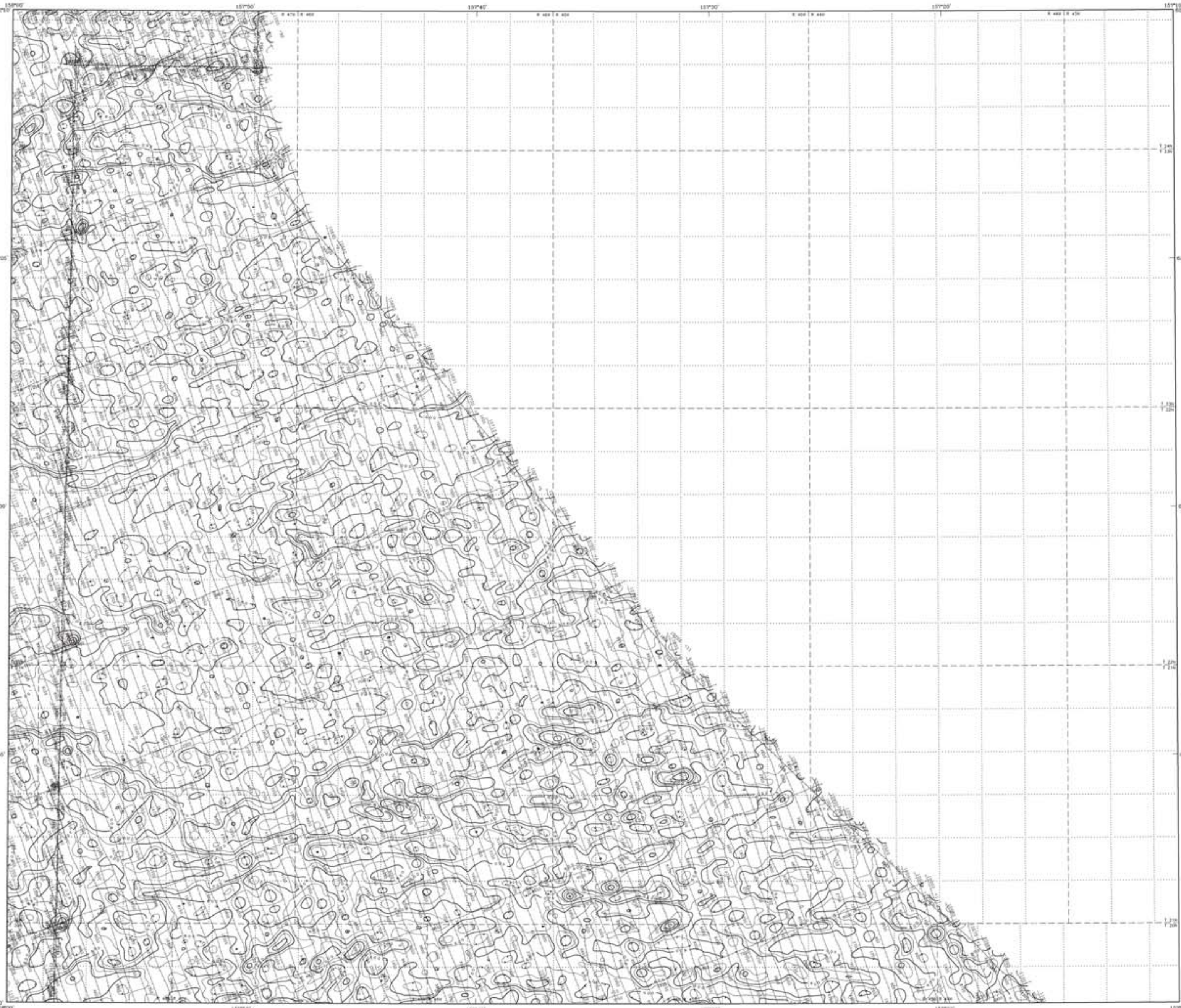
GEOPHYSICAL REPORT 2003_9_3c
Sheet 1 of 2



Section outlines from U.S. Geological Survey Iditarod A-3, 1954; A-4, 1954; Sleetmute D-4, 1975; D-5, 1975; D-6, 1986. Quadrangles, Alaska

SCALE 1:63,360

1 0 1 2 3 4 MILES

1 0 1 2 3 4 5 KILOMETERS

7200 Hz COPLANAR RESISTIVITY OF THE SLEETMUTE AREA, SOUTHWESTERN ALASKA

PARTS OF IDITAROD AND SLEETMUTE QUADRANGLES

2003

LOCATION INDEX

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RESISTIVITY CONTOURS

1000
800
600
500
400
300
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150
125
100

Contours in ohm-m at 10 intervals per decade

resistivity low

SURVEY HISTORY

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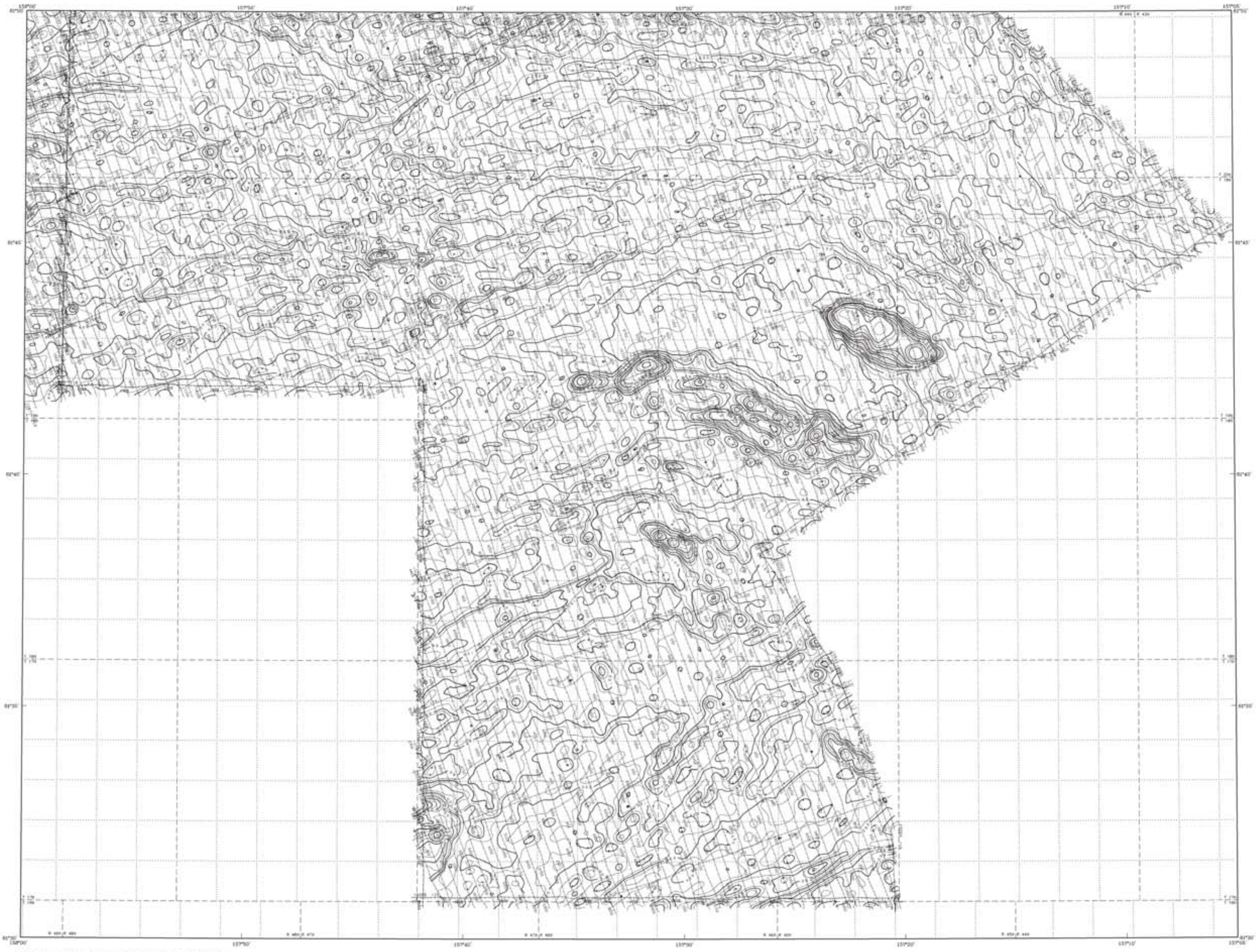

SCALE 1:63,360

1 0 1 2 3 4 MILES

1 0 1 2 3 4 5 KILOMETERS

7200 Hz COPLANAR RESISTIVITY OF THE SLEETMUTE AREA, SOUTHWESTERN ALASKA

PARTS OF IDITAROD AND SLEETMUTE QUADRANGLES

2003

LOCATION INDEX

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RESISTIVITY CONTOURS

1000
800
600
500
400
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250
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125
100

Contours in ohm-m at 10 intervals per decade

resistivity low

SURVEY HISTORY

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ALASKA DIVISION OF GEOLOGICAL & GEOPHYSICAL SURVEYS
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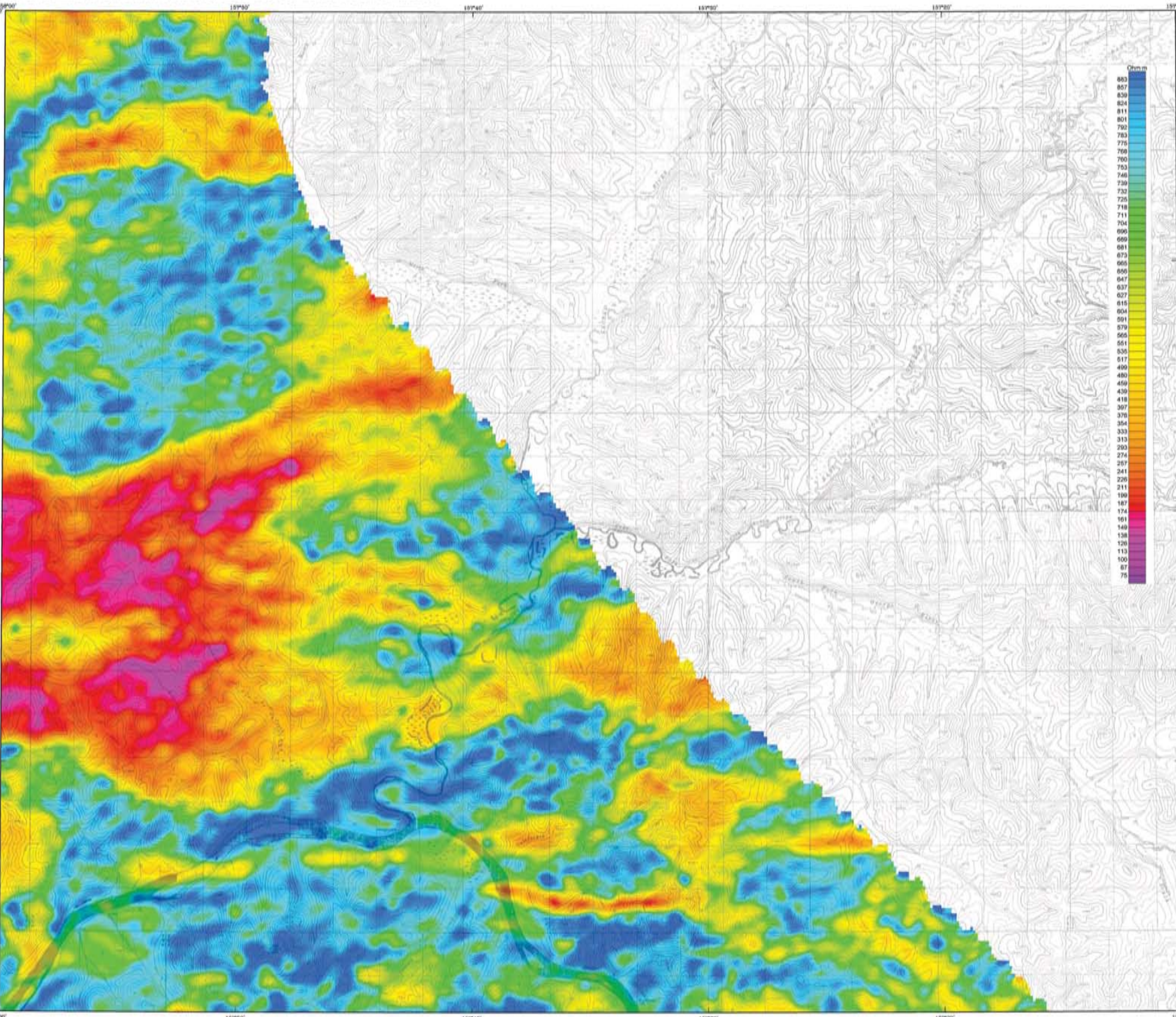
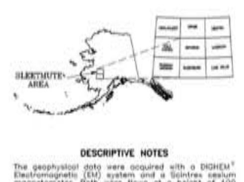
Sheet 1 of 2



SCALE 1:63,360

CONTOUR INTERVAL 100 FEET
DATUM MEAN SEA LEVEL

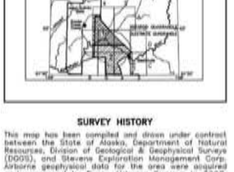


900 Hz COPLANAR RESISTIVITY OF THE SLEETMUTE AREA, SOUTHWESTERN ALASKA

PARTS OF IDITAROD AND SLEETMUTE QUADRANGLES

2003

LOCATION INDEX



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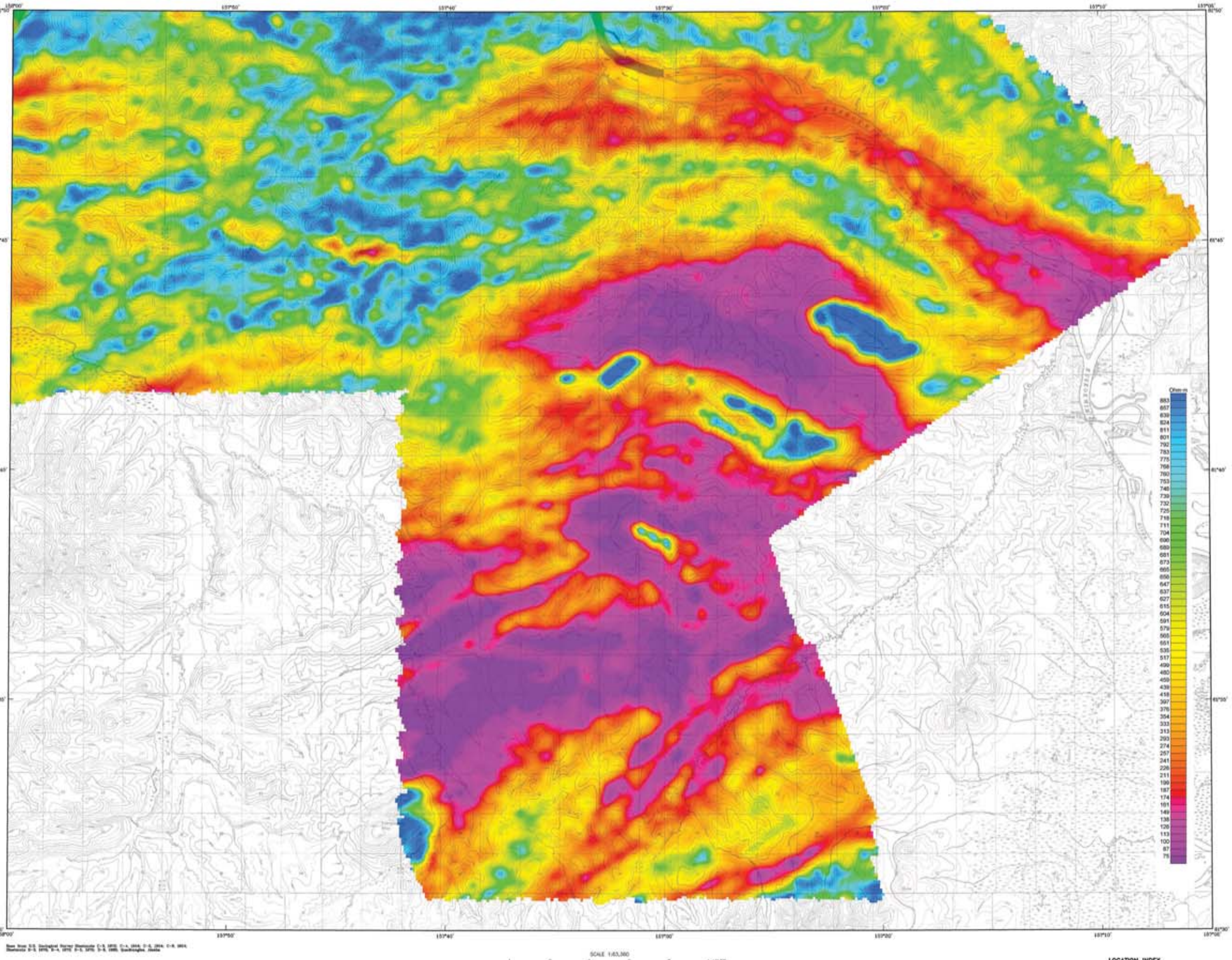

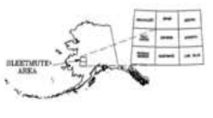

900 Hz COPLANAR RESISTIVITY OF THE SLEETMUTE AREA, SOUTHWESTERN ALASKA

PARTS OF IDITAROD AND SLEETMUTE QUADRANGLES

2003

DESCRIPTIVE NOTES

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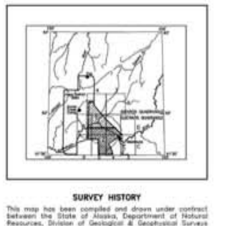
LOCATION INDEX



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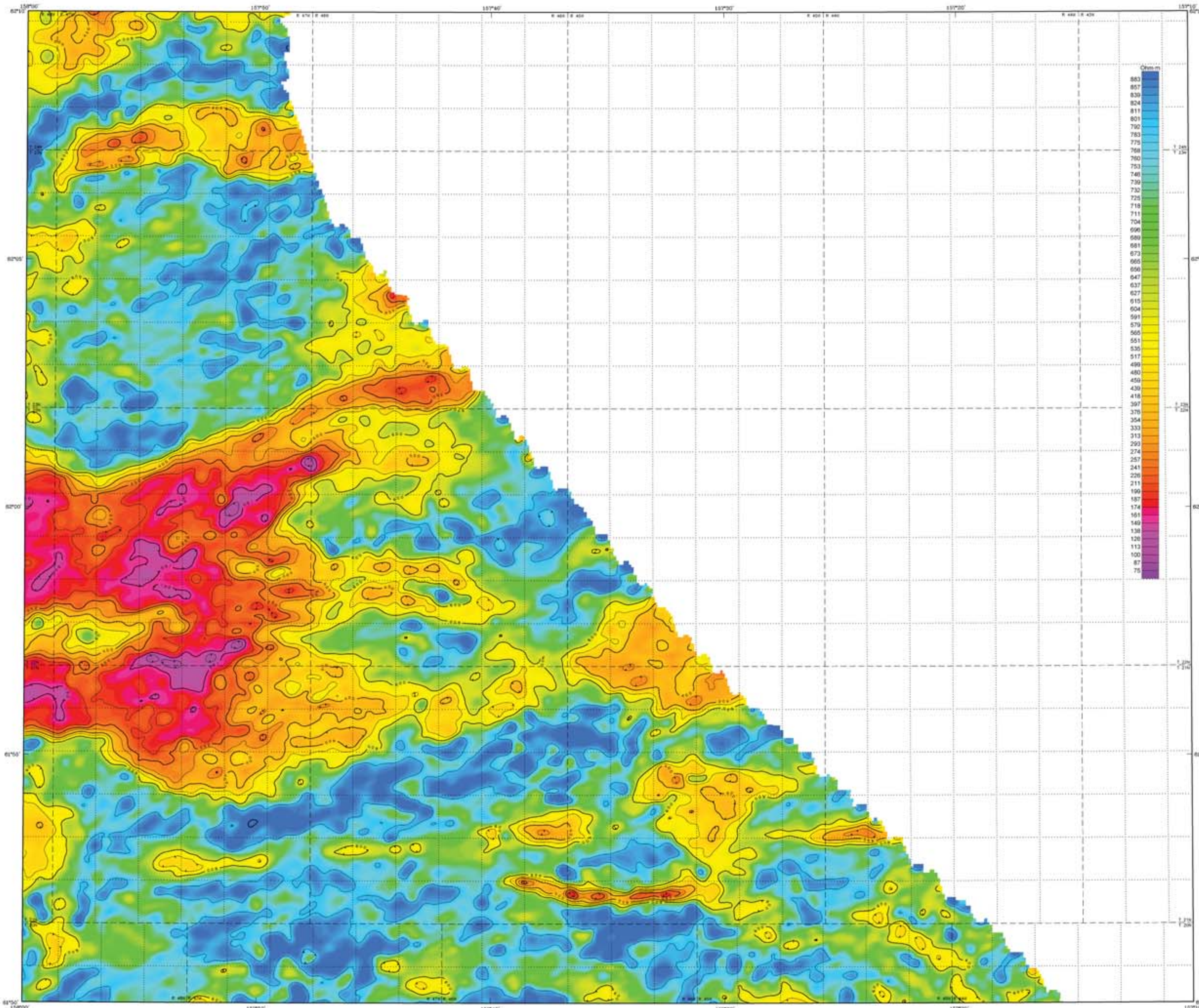
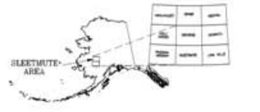
Sheet 1 of 2



SCALE 1:63,360

1 0 1 2 3 4 MILES

1 0 1 2 3 4 5 KILOMETERS

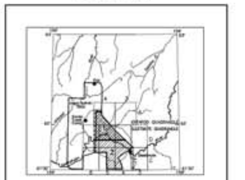


900 Hz COPLANAR RESISTIVITY OF THE SLEETMUTE AREA, SOUTHWESTERN ALASKA

PARTS OF IDITAROD AND SLEETMUTE QUADRANGLES

2003

LOCATION INDEX



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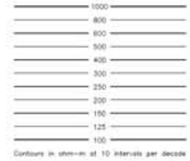
APPROXIMATE MEAN DECLINATION, 2002

RESISTIVITY CONTOURS



Contours in ohm-m at 10 intervals per decade

SURVEY HISTORY

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ALASKA DIVISION OF GEOLOGICAL & GEOPHYSICAL SURVEYS
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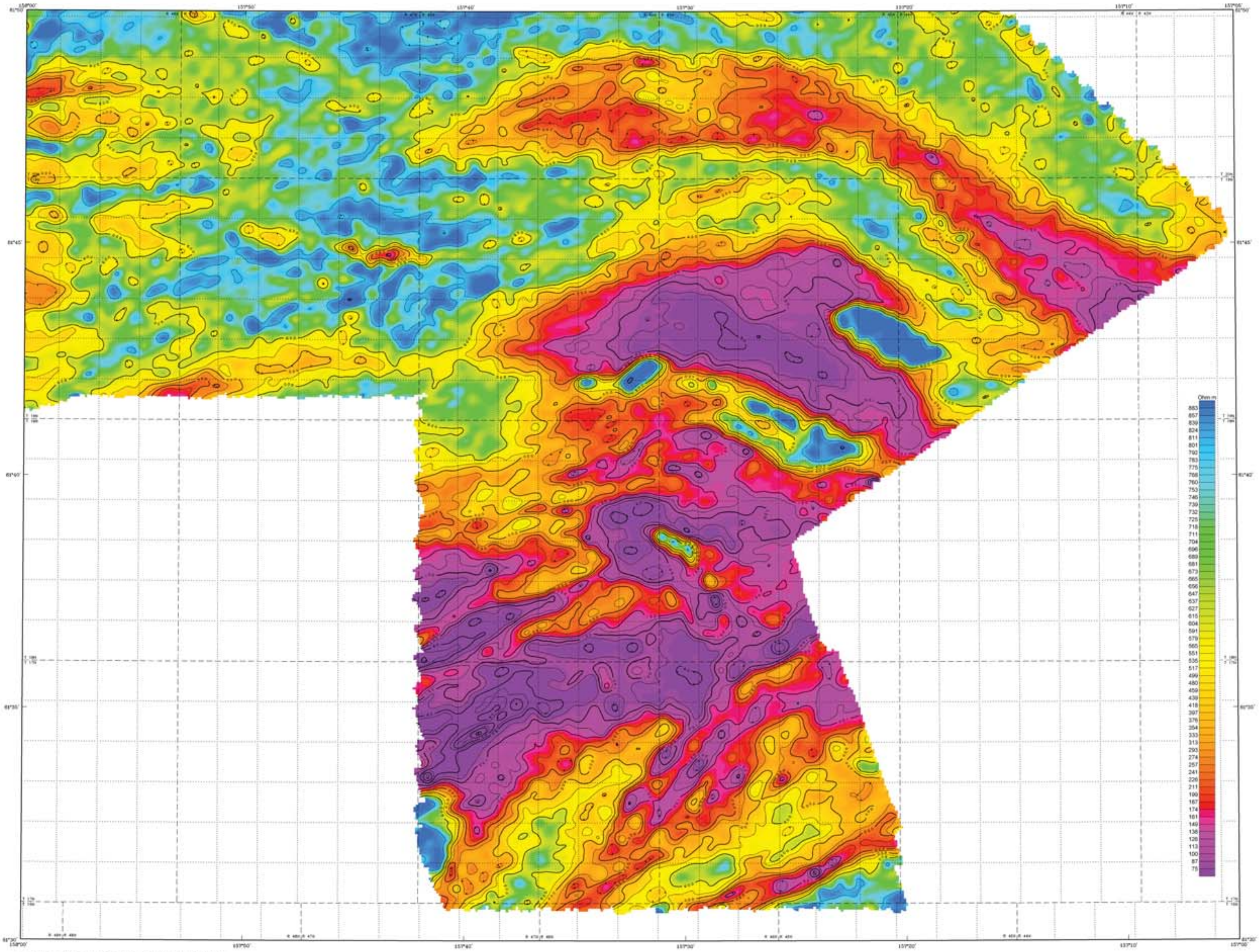

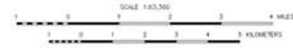

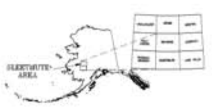

900 Hz COPLANAR RESISTIVITY OF THE SLEETMUTE AREA, SOUTHWESTERN ALASKA

PARTS OF IDITAROD AND SLEETMUTE QUADRANGLES

2003

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, 50/60 Hz monitors and video camera. Flights were performed with an AS350B-2 Squirrel helicopter at a mean terrain clearance of 200 feet along NW–SE (340°) 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 instrumentation and flight line direction, altitude, and spacing used for the Aniak survey (2000) were similar to the current survey.

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RESISTIVITY CONTOURS

1000
800
600
500
400
300
250
200
150
125
100

Contours in ohm–m at 10 intervals per decade

resistivity low

LOCATION INDEX

SURVEY HISTORY

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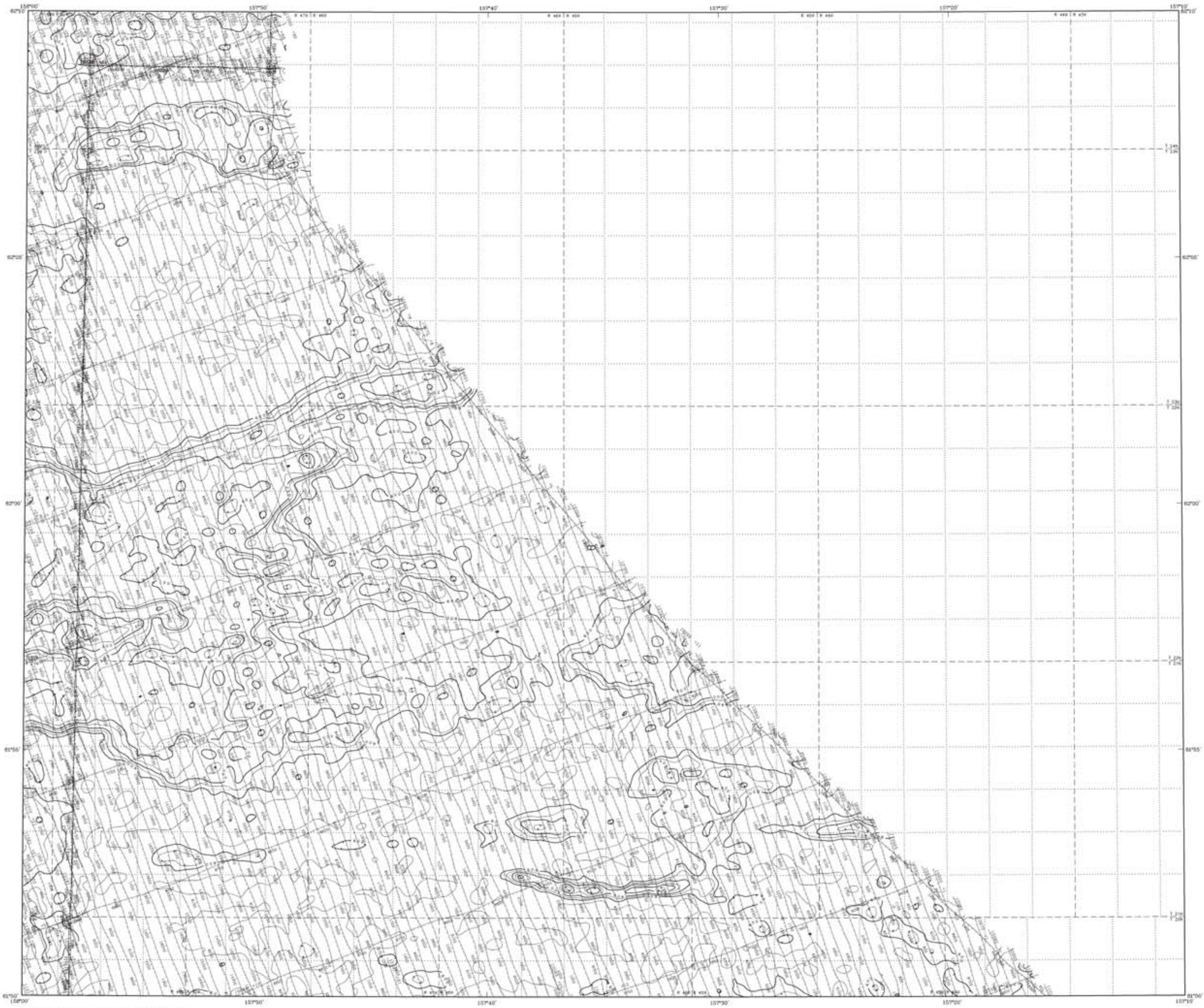
Sheet 1 of 2



LOCATION INDEX

900 Hz COPLANAR RESISTIVITY OF THE SLEETMUTE AREA, SOUTHWESTERN ALASKA

PARTS OF IDITAROD AND SLEETMUTE QUADRANGLES

2003

DESCRIPTIVE NOTES

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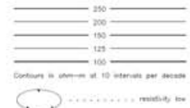

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ALASKA DIVISION OF GEOLOGICAL & GEOPHYSICAL SURVEYS
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GEOPHYSICAL REPORT 2003_9_4c
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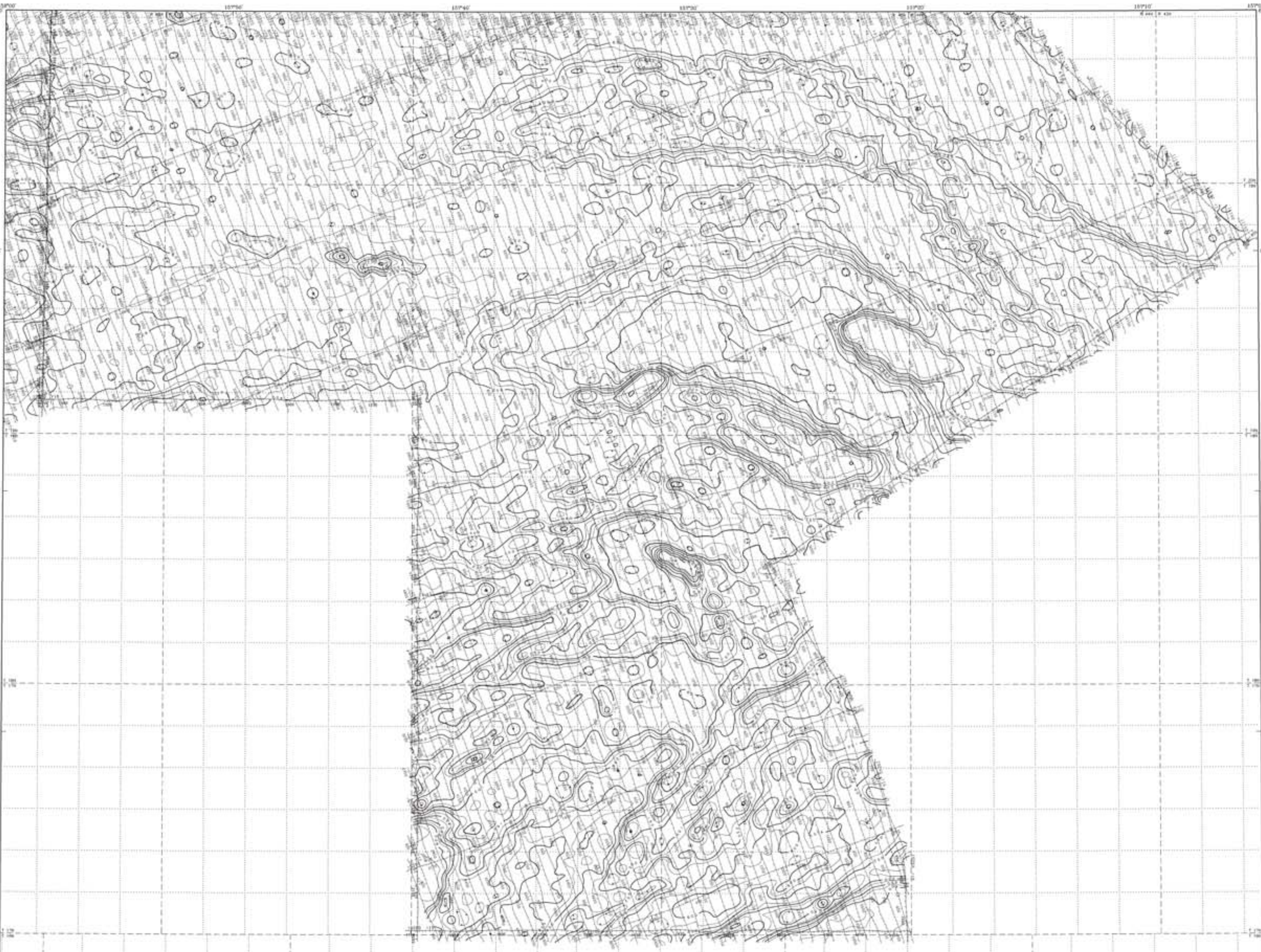
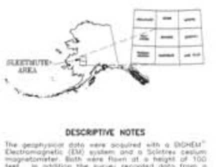


SCALE 1:63,360

1 0 1 2 3 4 MILES

1 0 1 2 3 4 5 KILOMETERS



900 Hz COPLANAR RESISTIVITY OF THE SLEETMUTE AREA, SOUTHWESTERN ALASKA

PARTS OF IDITAROD AND SLEETMUTE QUADRANGLES

2003

LOCATION INDEX

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RESISTIVITY CONTOURS

1000
800
600
500
400
300
250
200
150
125
100

Contours in ohm–m at 10 intervals per decade

resistivity low

SURVEY HISTORY

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ALASKA DIVISION OF GEOLOGICAL & GEOPHYSICAL SURVEYS
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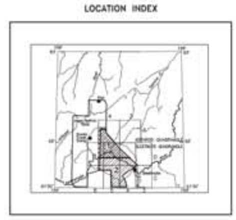
GEOPHYSICAL REPORT 2003_9_5
Sheet 1 of 2

SCALE 1:63,360

CONTOUR INTERVAL 100 FEET
DATUM MEAN SEA LEVEL

LOCATION INDEX



FLIGHT LINES OF THE SLEETMUTE AREA, SOUTHWESTERN ALASKA

PARTS OF IDITAROD AND SLEETMUTE QUADRANGLES

2003

DESCRIPTIVE NOTES

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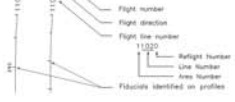
FLIGHT LINES



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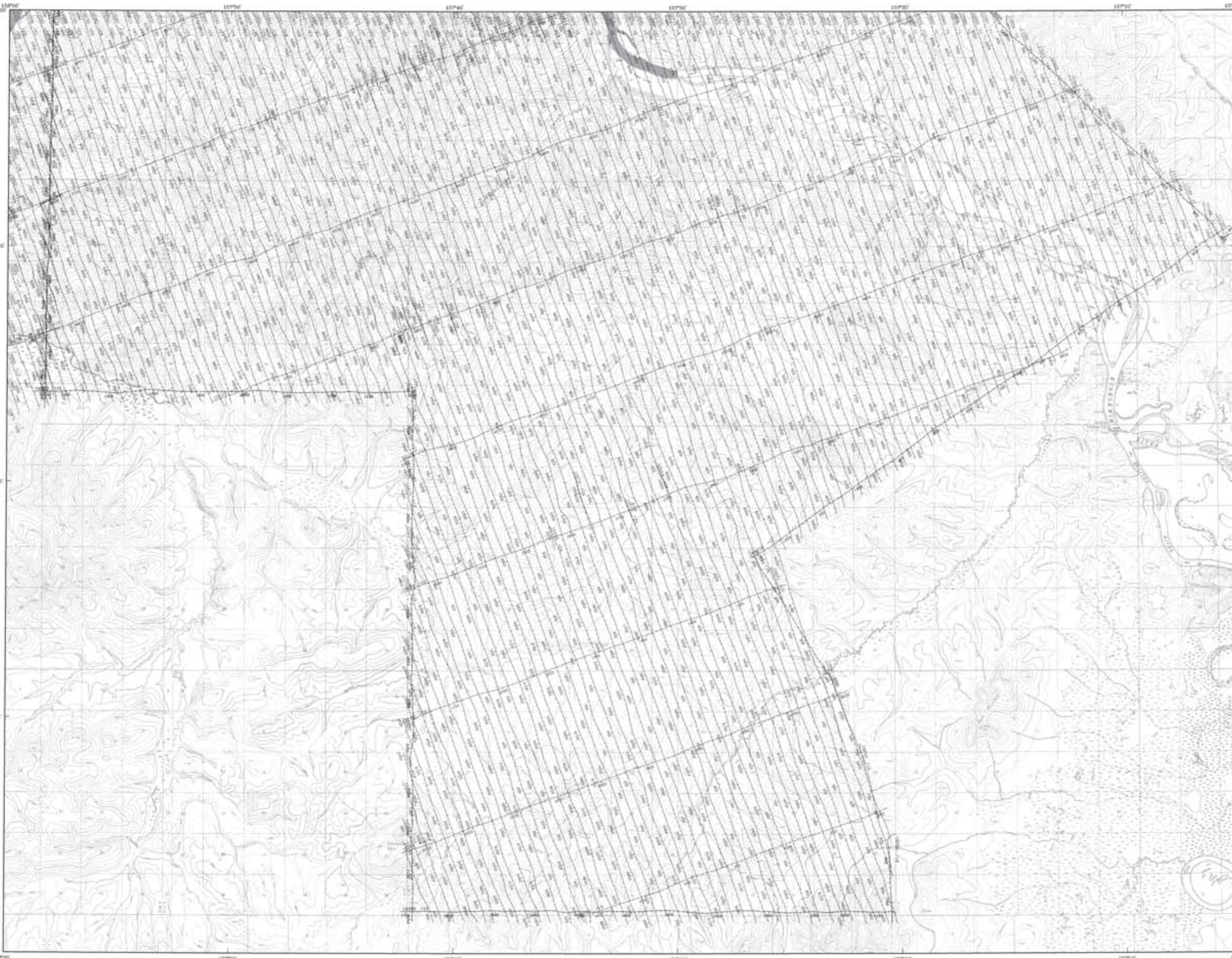
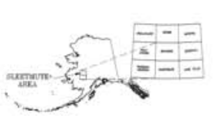
Sheet 2 of 2





FLIGHT LINES OF THE SLEETMUTE AREA, SOUTHWESTERN ALASKA

PARTS OF IDITAROD AND SLEETMUTE QUADRANGLES

2003

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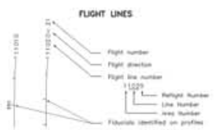

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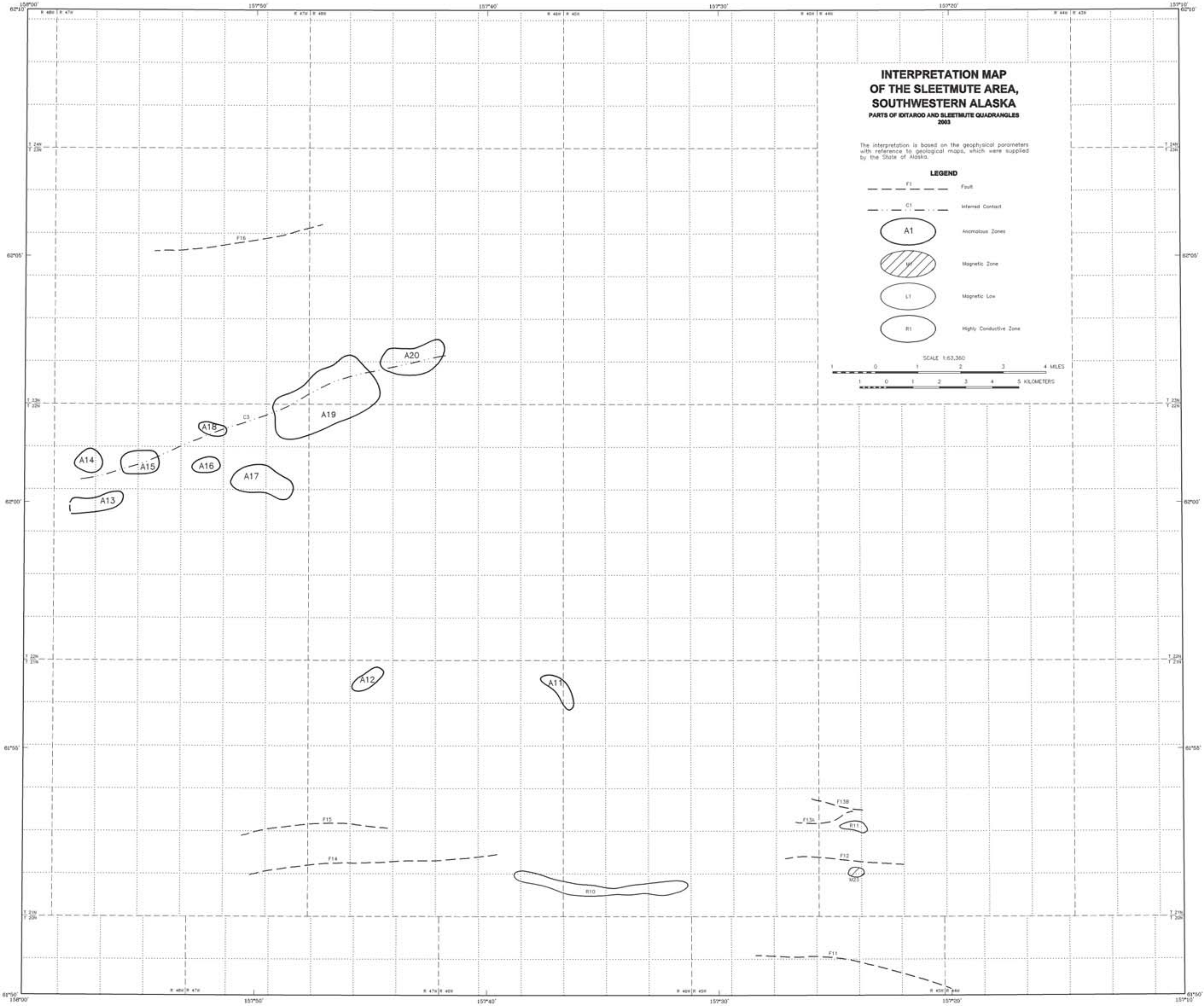
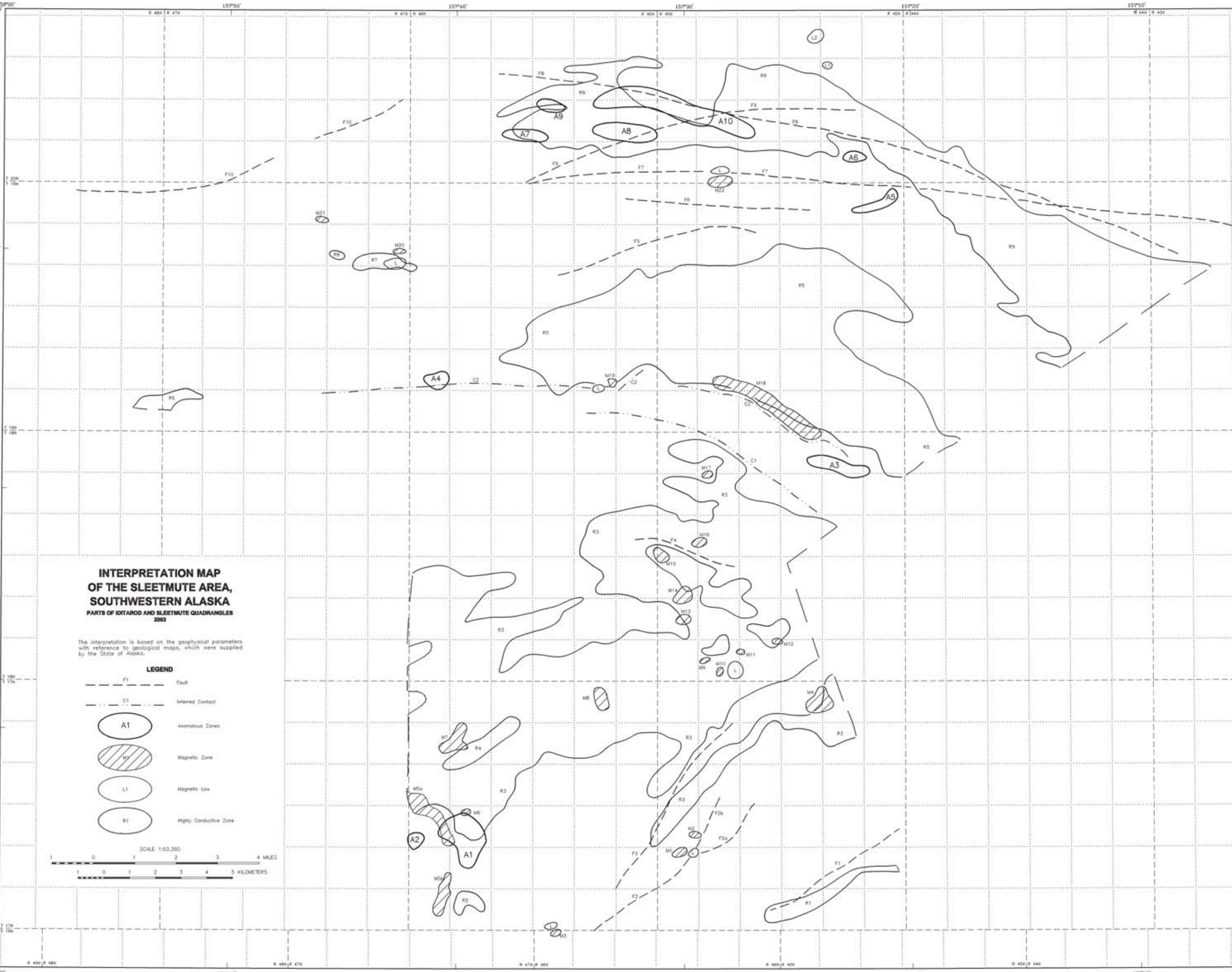

INTERPRETATION MAP
OF THE SLEETMUTE AREA,
SOUTHWESTERN ALASKA
PARTS OF IDITAROD AND SLEETMUTE QUADRANGLES
2003
The interpretation is based on the geophysical parameters with reference to geological maps, which were supplied by the State of Alaska.
LEGEND
F1
Fault
C1
Inferred Contact
A1
Anomalous Zones
Magnetic Zone
L1
Magnetic Low
R1
Highly Conductive Zone
SCALE 1:63,360
1 0 1 2 3 4 MILES
1 0 1 2 3 4 5 KILOMETERS
A20
A19
A18
A14
A15
A16
A17
A13
A12
A11
R10
R11
M23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LEGEND
F1 Fault
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SCALE 1:63,360
1 0 1 2 3 4 MILES
1 0 1 2 3 4 5 KILOMETERS
A1
A2
A3
A4
A5
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A7
A8
A9
A10
R5
R9
R3
M18
C1
C2
F10
61°45'
61°40'
61°35'
157°50'
157°40'
157°30'
157°20'
157°10'