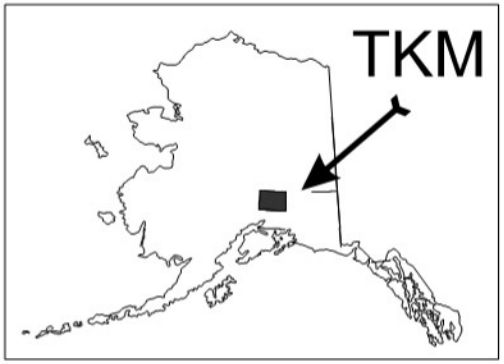
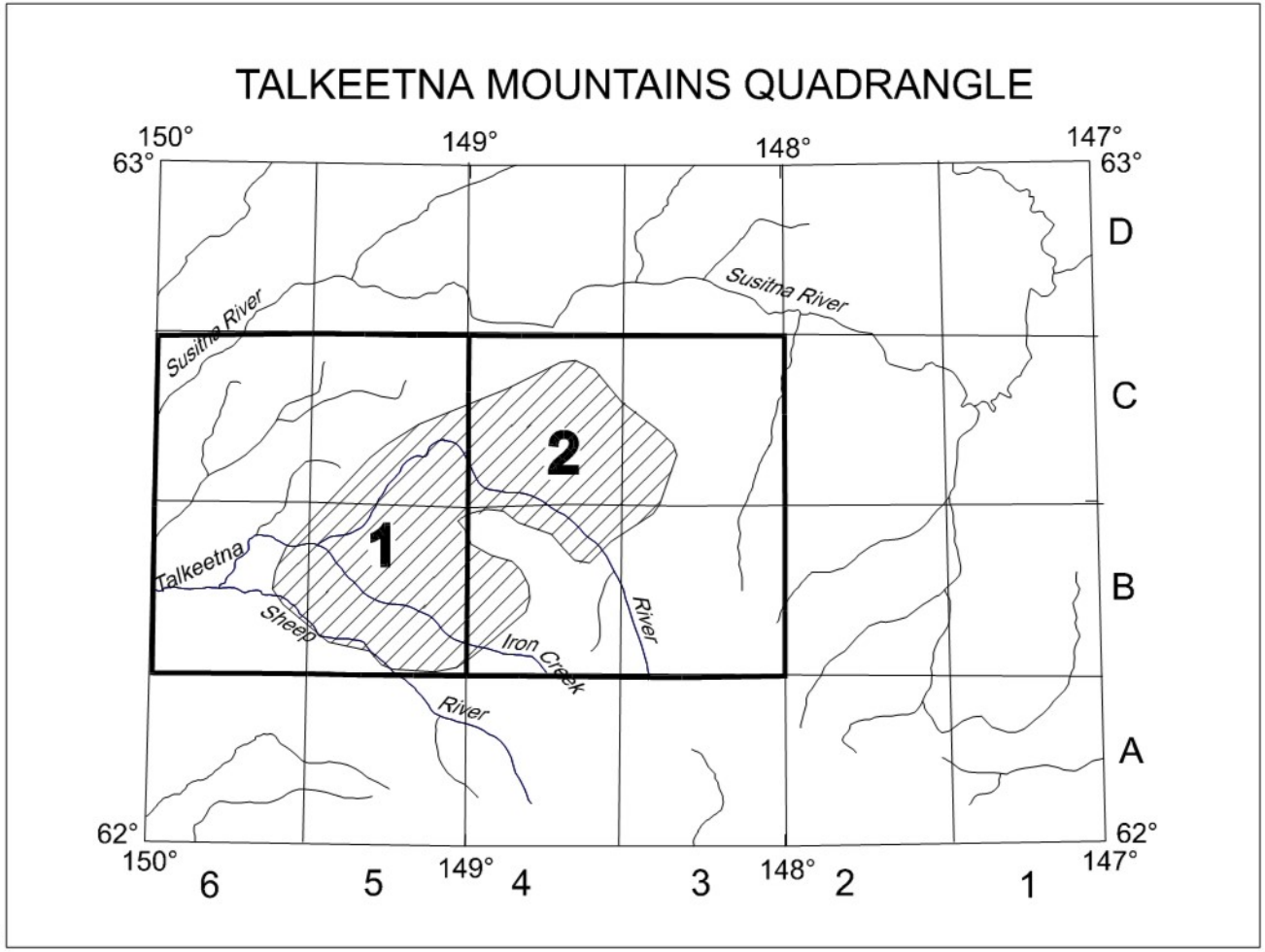
Iron Creek airborne electromagnetic and magnetic geophysical survey data compilation: Alaska Division of Geological & Geophysical Surveys Geophysical Report 2014-6.



Talkeetna Mountains (TKM) 1:250,000 Quadrangle.



Survey location, 1:63,360 Quadrangle index, and map sheet index.

Survey Area

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4	RI 98-1	Sheet 2	Total field magnetics of the Iron Creek Area, southcentral Alaska, scale 1:63,360	1:63,360	Topography included
5	RI 98-1	Sheet 1	Total field magnetics of the Iron Creek Area, southcentral Alaska, scale 1:63,360	1:63,360	Section lines included
6	RI 98-1	Sheet 2	Total field magnetics of the Iron Creek Area, southcentral Alaska, scale 1:63,360	1:63,360	Section lines included
7	RI 98-2	Sheet 1	900 Hz coplanar resistivity of the Iron Creek Area, southcentral Alaska, scale 1:63,360	1:63,360	Topography included
8	RI 98-2	Sheet 2	900 Hz coplanar resistivity of the Iron Creek Area, southcentral Alaska, scale 1:63,360	1:63,360	Topography included
9	RI 98-2	Sheet 1	900 Hz coplanar resistivity of the Iron Creek Area, southcentral Alaska, scale 1:63,360	1:63,360	Section lines included
10	RI 98-2	Sheet 2	900 Hz coplanar resistivity of the Iron Creek Area, southcentral Alaska, scale 1:63,360	1:63,360	Section lines included
11	RI 98-3	Sheet 1	7200 Hz coplanar resistivity of the Iron Creek Area, southcentral Alaska, scale 1:63,360	1:63,360	Topography included
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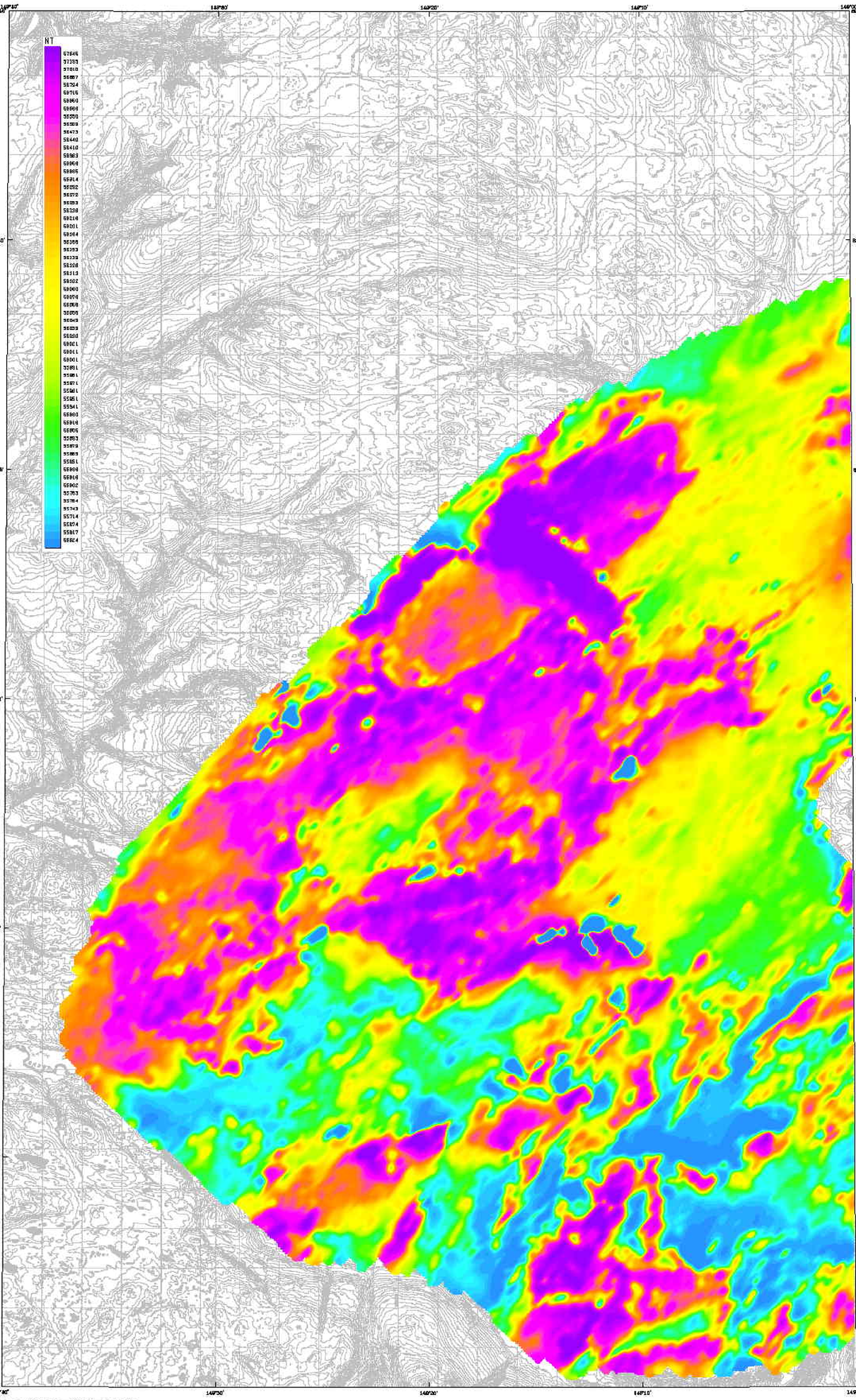
13	RI 98-3	Sheet 1	7200 Hz coplanar resistivity of the Iron Creek Area, southcentral Alaska, scale 1:63,360	1:63,360	Section lines included
14	RI 98-3	Sheet 2	7200 Hz coplanar resistivity of the Iron Creek Area, southcentral Alaska, scale 1:63,360	1:63,360	Section lines included
15	PDF 98-1	Sheet 1	Flight lines of the Iron Creek Area, Southcentral Alaska - Talkeetna Mountains Quadrangle	1:63,360	Topography included
16	PDF 98-1	Sheet 2	Flight lines of the Iron Creek Area, Southcentral Alaska - Talkeetna Mountains Quadrangle	1:63,360	Topography included
17	PDF 98-2	Sheet 1	Total magnetic field and electromagnetic anomalies of the Iron Creek area, Talkeetna Mountains Quadrangle	1:63,360	Magnetic contours and section lines included
18	PDF 98-2	Sheet 2	Total magnetic field and electromagnetic anomalies of the Iron Creek area, Talkeetna Mountains Quadrangle	1:63,360	Magnetic contours and section lines included
19	PDF 98-3	Sheet 1	Total field magnetics and electromagnetic anomalies of the Iron Creek area, Talkeetna Mountains Quadrangle	1:63,360	Magnetic contours and section lines included
20	PDF 98-3	Sheet 2	Total field magnetics and electromagnetic anomalies of the Iron Creek area, Talkeetna Mountains Quadrangle	1:63,360	Magnetic contours and section lines included
21	PDF 98-4	Sheet 1	900 Hz coplanar resistivity of the Iron Creek area, Talkeetna Mountains Quadrangle, southcentral Alaska	1:63,360	Resistivity contours and section lines included
22	PDF 98-4	Sheet 2	900 Hz coplanar resistivity of the Iron Creek area, Talkeetna Mountains Quadrangle, southcentral Alaska	1:63,360	*Resistivity contours and section lines included*
23	PDF 98-5	Sheet 1	7200 Hz coplanar resistivity of the Iron Creek area, Talkeetna Mountains Quadrangle, southcentral Alaska	1:63,360	Resistivity contours and section lines included
24	PDF 98-5	Sheet 2	7200 Hz coplanar resistivity of the Iron Creek area, Talkeetna Mountains Quadrangle, southcentral Alaska	1:63,360	Resistivity contours and section lines included
25	PDF 98-18A	Map A	Total field magnetics and detailed electromagnetic anomalies of the Iron Creek area, southcentral Alaska	1:31,680	
26	PDF 98-18B	Map B	Total field magnetics and detailed electromagnetic anomalies of the Iron Creek area, southcentral Alaska	1:31,680	
27	PDF 98-18C	Map C	Total field magnetics and detailed electromagnetic anomalies of the Iron Creek area, southcentral Alaska	1:31,680	
28	PDF 98-18D	Map D	Total field magnetics and detailed electromagnetic anomalies of the Iron Creek Area, Southcentral Alaska	1:31,680	
29	PDF 98-18E	Map E	Total field magnetics and detailed electromagnetic anomalies of the Iron Creek Area, Southcentral Alaska	1:31,680	
30	PDF 98-18F	Map F	Total field magnetics and detailed electromagnetic anomalies of the Iron Creek Area, Southcentral Alaska	1:31,680	
31	PDF 98-18G	Map G	Total field magnetics and detailed electromagnetic anomalies of the Iron Creek Area, Southcentral Alaska	1:31,680	



Base from U.S. Geological Survey Talkeetna Mountains B-4, 1952
D-5, 1951 D-6, 1952 D-6, 1949 Cantwell Alaska

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

TOTAL FIELD MAGNETICS OF THE IRON CREEK AREA, SOUTHCENTRAL ALASKA

TALKEETNA MOUNTAINS QUADRANGLE

1998

DESCRIPTIVE NOTES

The geophysical data were acquired with a DIGHEM^{V} Electromagnetic (EM) system, a Scintrex cesium magnetometer, and a Herz VLF system installed in an AS350B-2 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 3 miles.

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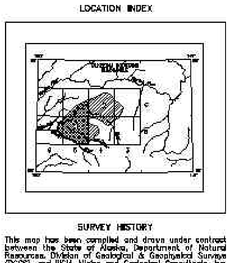
TOTAL FIELD MAGNETICS

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 August 1997) 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.

LOCATION INDEX



SURVEY HISTORY

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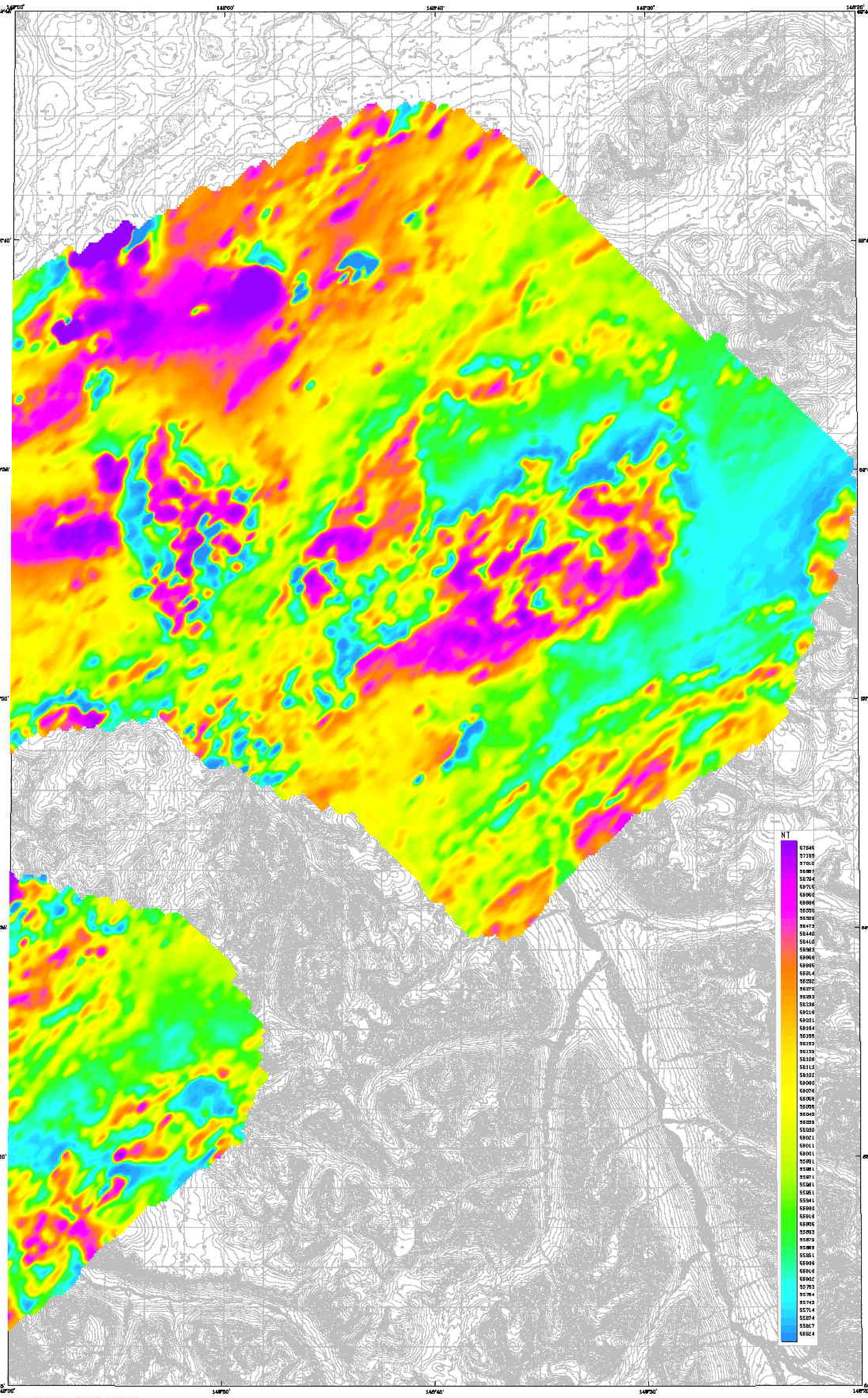

TOTAL FIELD MAGNETICS OF THE IRON CREEK AREA, SOUTHCENTRAL ALASKA

TALKEETNA MOUNTAINS QUADRANGLE

1998

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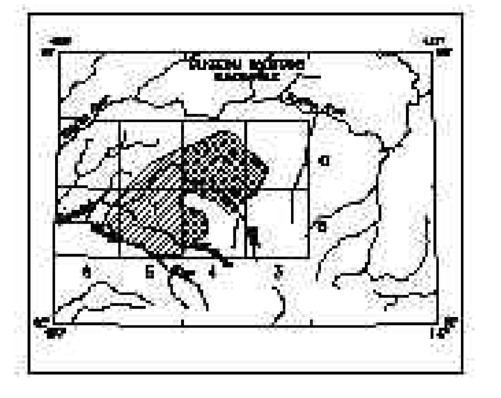

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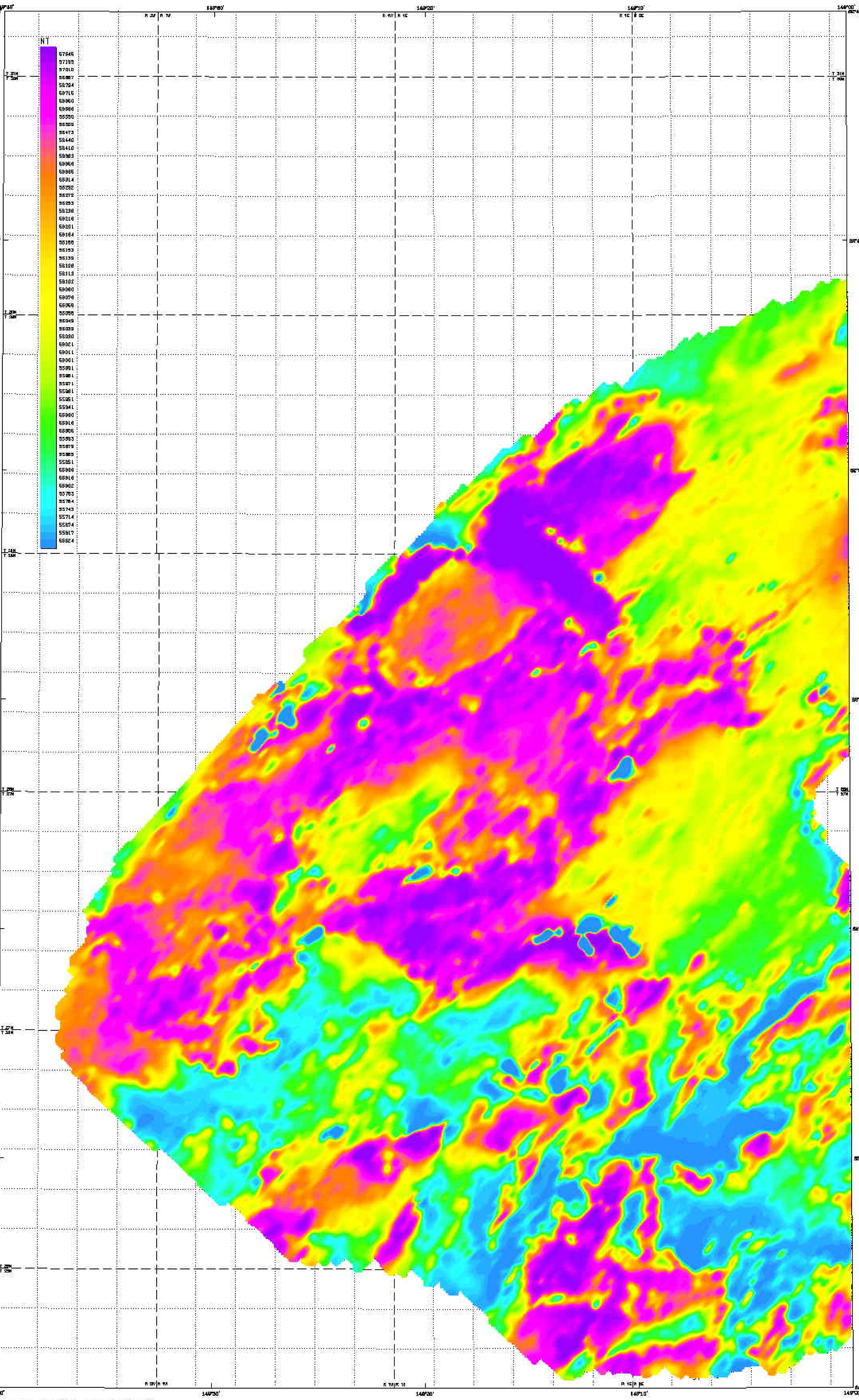
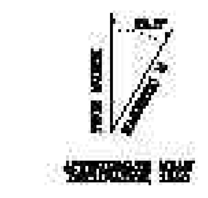
ALASKA DIVISION OF GEOLOGICAL & GEOPHYSICAL SURVEYS



SCALE 1:63,360

1 0 1 2 3 4 MILES

1 0 1 2 3 4 5 KILOMETERS



TOTAL FIELD MAGNETICS OF THE IRON CREEK AREA, SOUTHCENTRAL ALASKA

TALKEETNA MOUNTAINS QUADRANGLE

1998

DESCRIPTIVE NOTES

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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. [illegible]

MAGNETIC CONTOUR INTERVAL

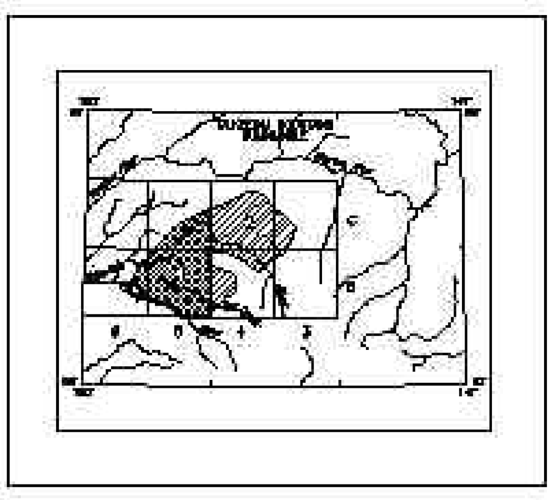
.... 250 nT

.... 50 nT

.... 10 nT

.... 5 nT

LOCATION INDEX



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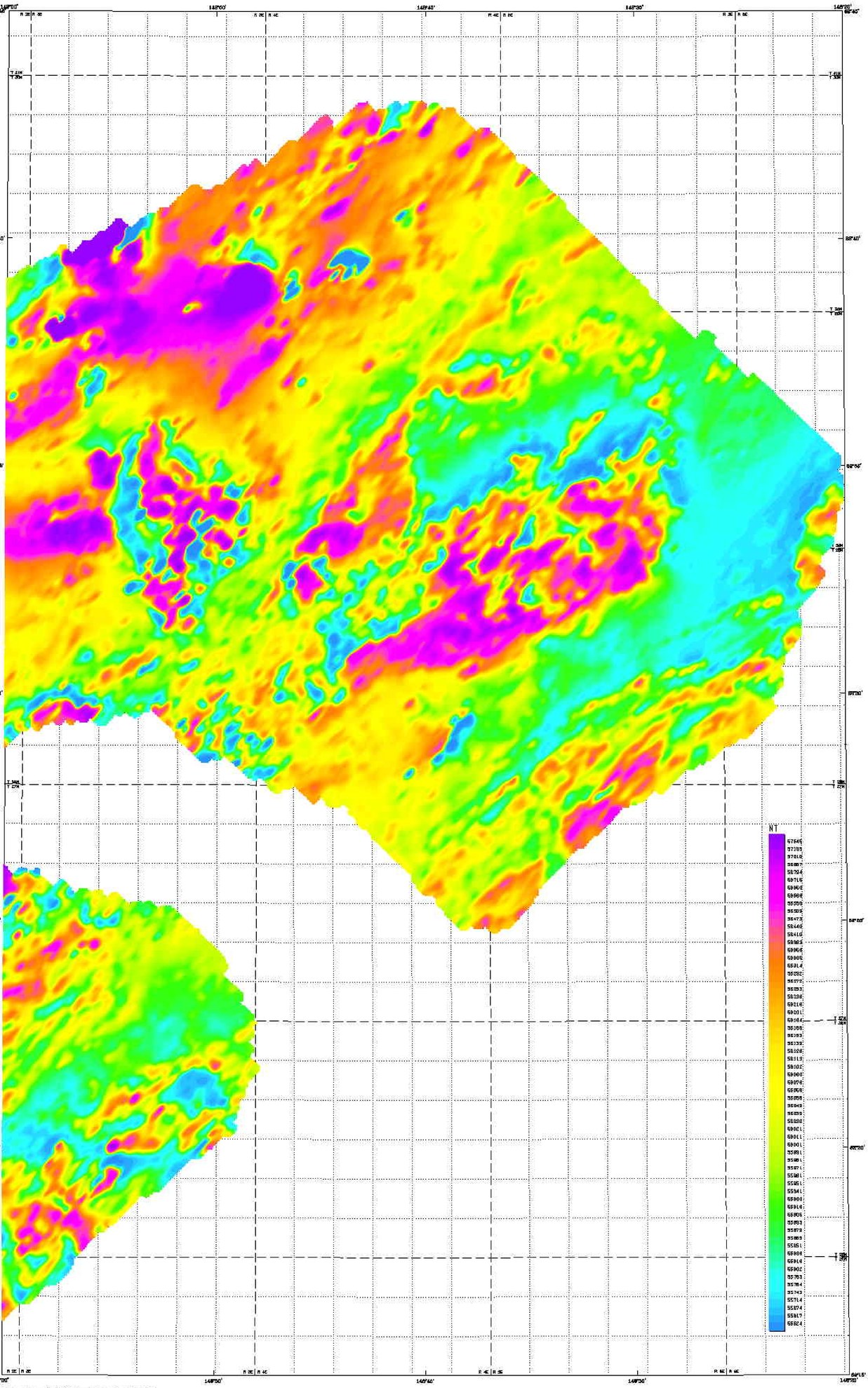

Base map modified from U.S. Geological Survey Talkeetna Quadrangle D-6, SW; 1:250,000 (1:63,360) Anchorage, Alaska

SCALE 1:63,360

1 0 1 2 3 4 MILES

1 0 1 2 3 4 5 KILOMETERS

TRUE NORTH

MAGNETIC NORTH

TOTAL FIELD MAGNETICS OF THE IRON CREEK AREA, SOUTHCENTRAL ALASKA

TALKEETNA MOUNTAINS QUADRANGLE

1998

DESCRIPTIVE NOTES

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MAGNETIC CONTOUR INTERVAL

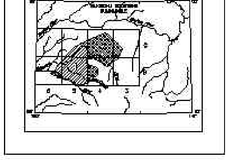
250 nT

50 nT

10 nT

5 nT

LOCATION INDEX



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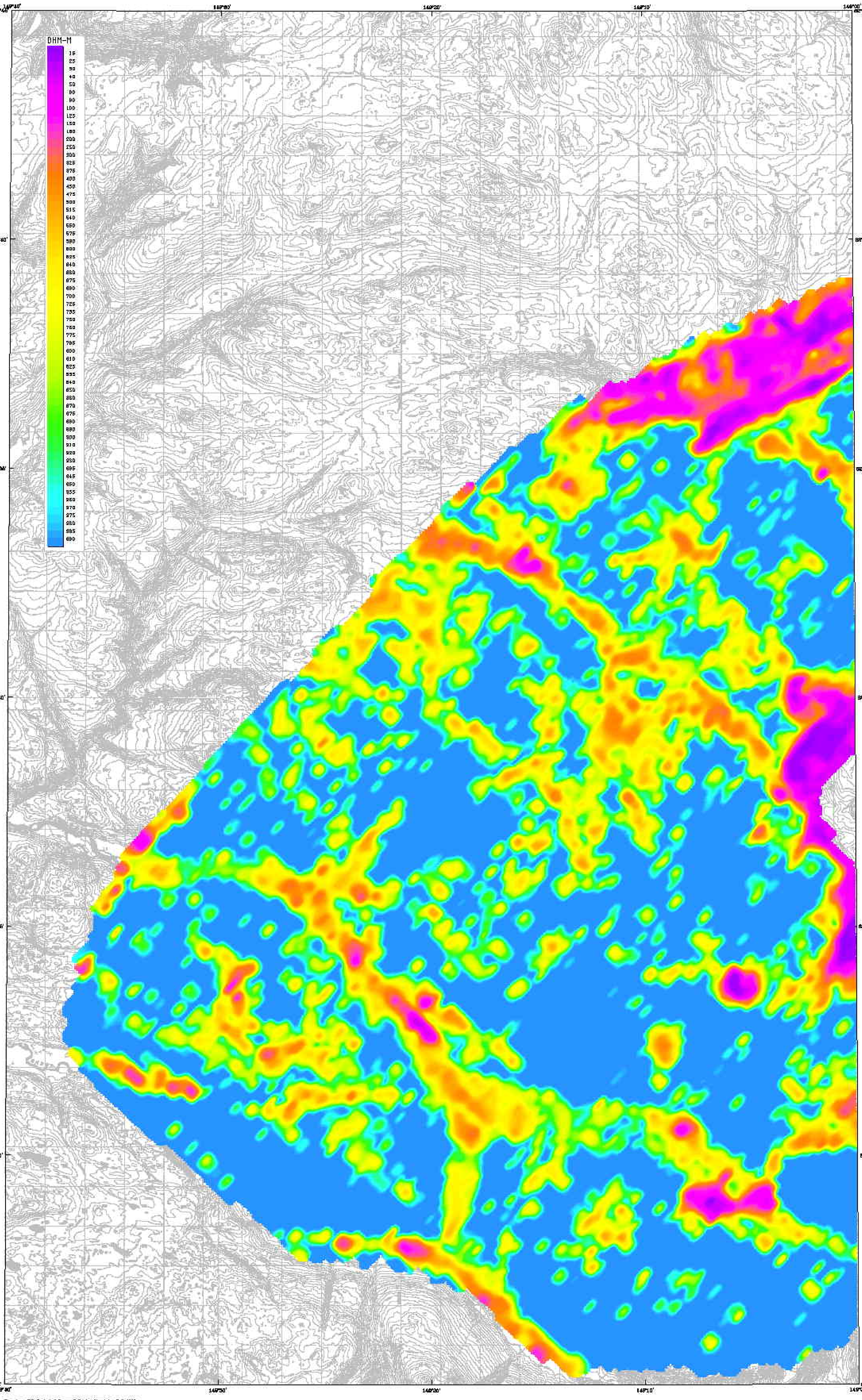
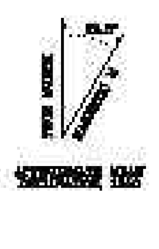


SCALE 1:63,360

1 0 1 2 3 4 MILES

1 0 1 2 3 4 5 KILOMETERS



900 Hz COPLANAR RESISTIVITY OF THE IRON CREEK AREA, SOUTHCENTRAL ALASKA

TALKEETNA MOUNTAINS QUADRANGLE

1998

DESCRIPTIVE NOTES

The geophysical data were acquired with a DIGHEM^V Electromagnetic (EM) system, a Scintrex cesium magnetometer, and a Herz VLF system installed in an AS350B-2 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 3 miles.

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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 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. Apparent resistivity is generated from the inphase and quadrature component of the coplanar 900 Hz using the pseudo-layer half space model. The data were interpolated onto a regular 100 m grid using a modified Akima (1970) technique.

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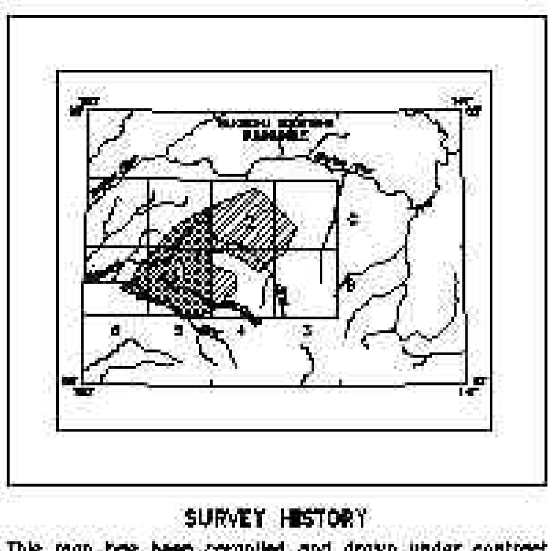
LOCATION INDEX



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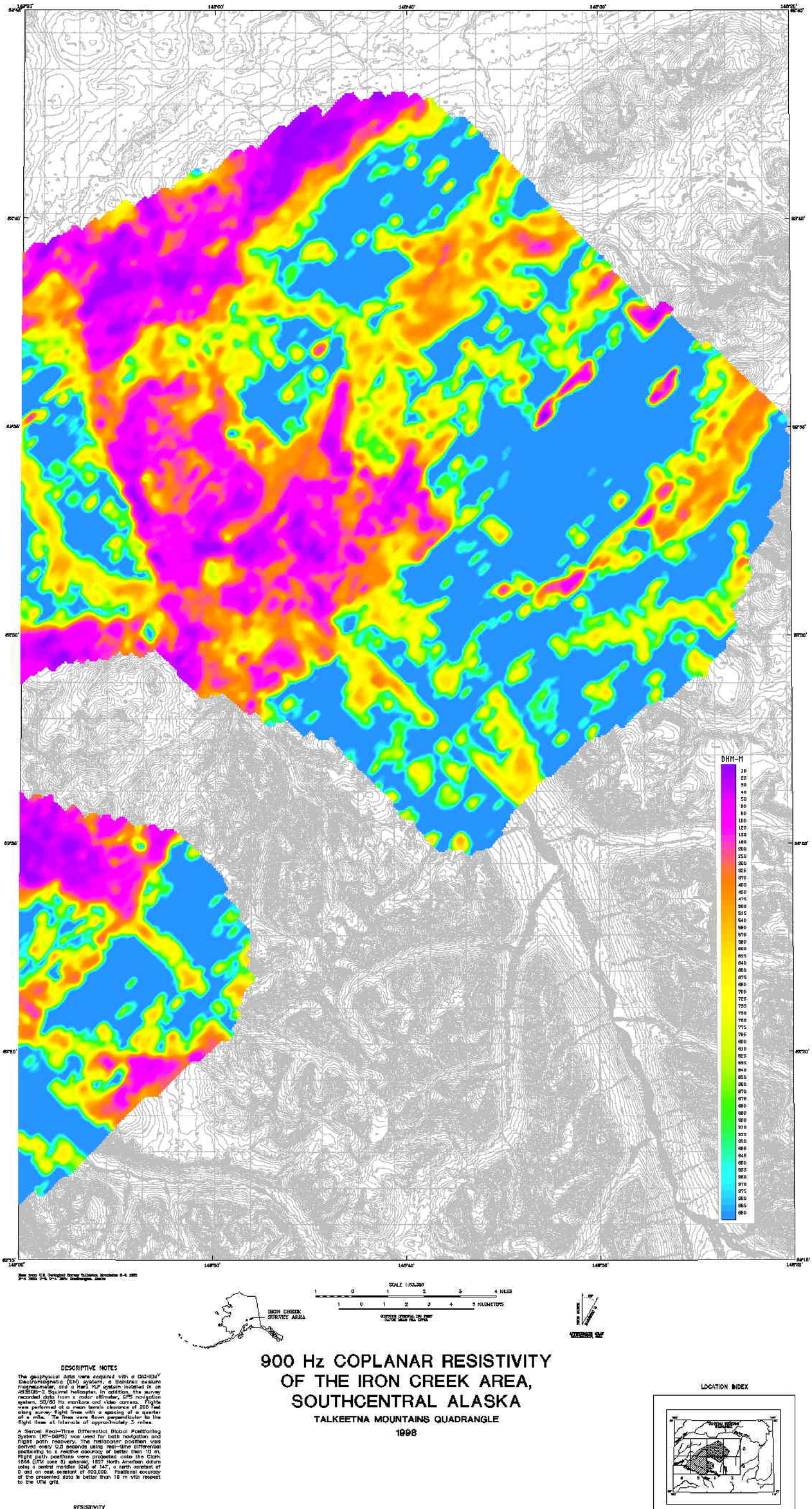

900 Hz COPLANAR RESISTIVITY OF THE IRON CREEK AREA, SOUTHCENTRAL ALASKA

TALKEETNA MOUNTAINS QUADRANGLE

1998

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RESISTIVITY

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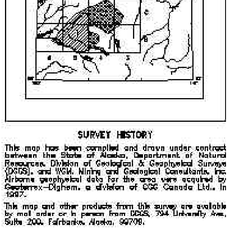

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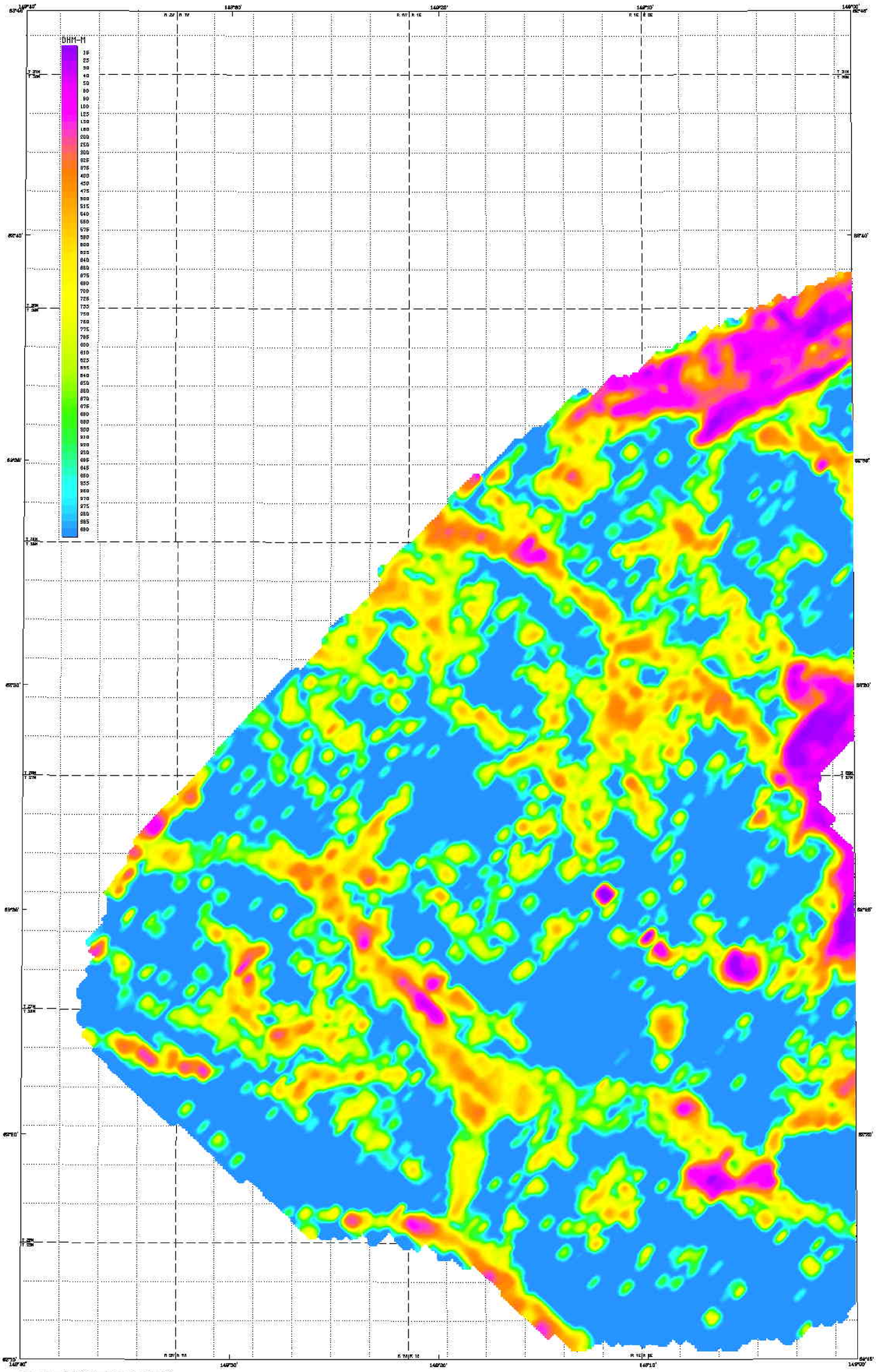

Station coordinates from U.S. Geological Survey Talkeetna Quadrangle 1:63,360 scale, 1:24,000 scale, 1:25,000 scale, 1:250,000 scale.

SCALE 1:63,360

1 0 1 2 3 4 MILES

1 0 1 2 3 4 5 KILOMETERS

TRUE NORTH

MAGNETIC NORTH

900 Hz COPLANAR RESISTIVITY OF THE IRON CREEK AREA, SOUTHCENTRAL ALASKA

TALKEETNA MOUNTAINS QUADRANGLE

1998

DESCRIPTIVE NOTES

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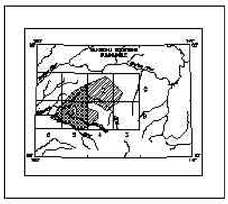
RESISTIVITY CONTOURS

1000
600
800
600
400
300
250
200
150
125
100

Contours in ohm-m at 10 intervals per decade

relatively low

LOCATION INDEX



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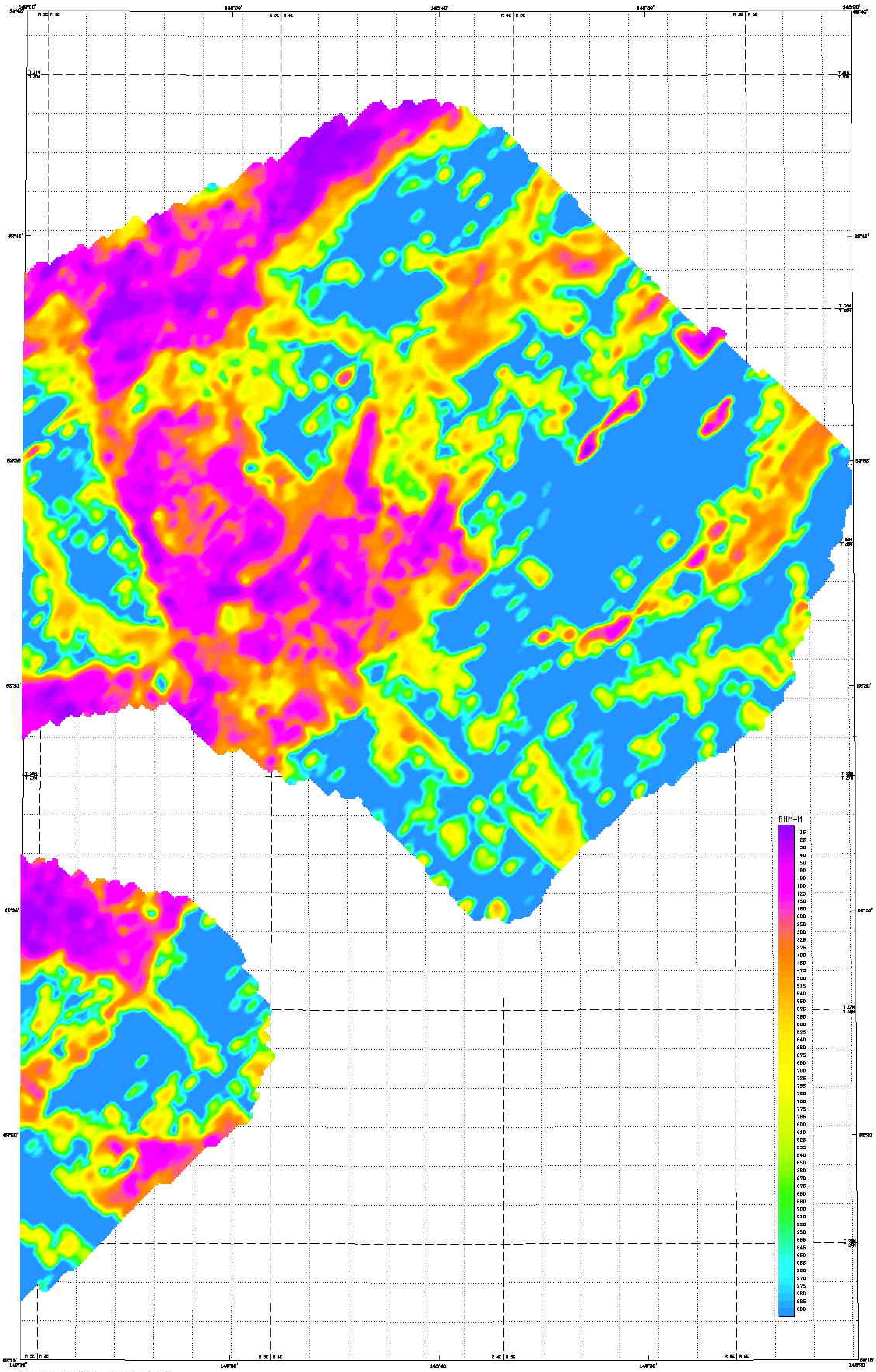
ALASKA DIVISION OF GEOLOGICAL & GEOPHYSICAL SURVEYS



[illegible]

SCALE 1:63,360

1 0 1 2 3 4 MILES

1 0 1 2 3 4 5 KILOMETERS

900 Hz RESISTIVITY OF THE IRON CREEK AREA, SOUTHCENTRAL ALASKA

TALKEETNA MOUNTAINS QUADRANGLE

1998

DESCRIPTIVE NOTES

The geophysical data were acquired with a DIGHEM[V] Electromagnetic (EM) system, a Scintrex cesium magnetometer, and a Herz VLF system installed in an AS350B-2 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 3 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 real-time differential positioning to a relative accuracy of better than 10 m. Flight path positions were projected onto the Clark 1866 (UTM zone 6) spheroid, 1927 North American datum using a central meridian (CM) of 147, 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 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. Apparent resistivity is generated from the inphase and quadrature component of the coplanar 900 Hz using the pseudo-layer half space model. 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.

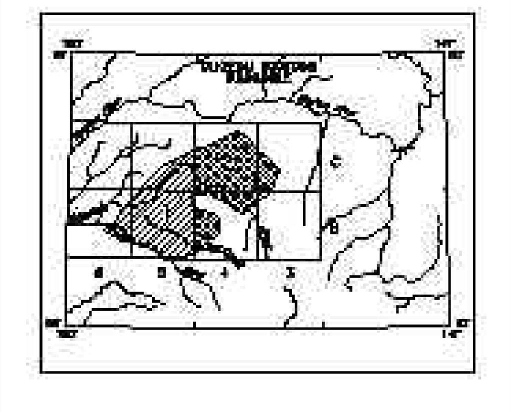
RESISTIVITY CONTOURS

1000
900
800
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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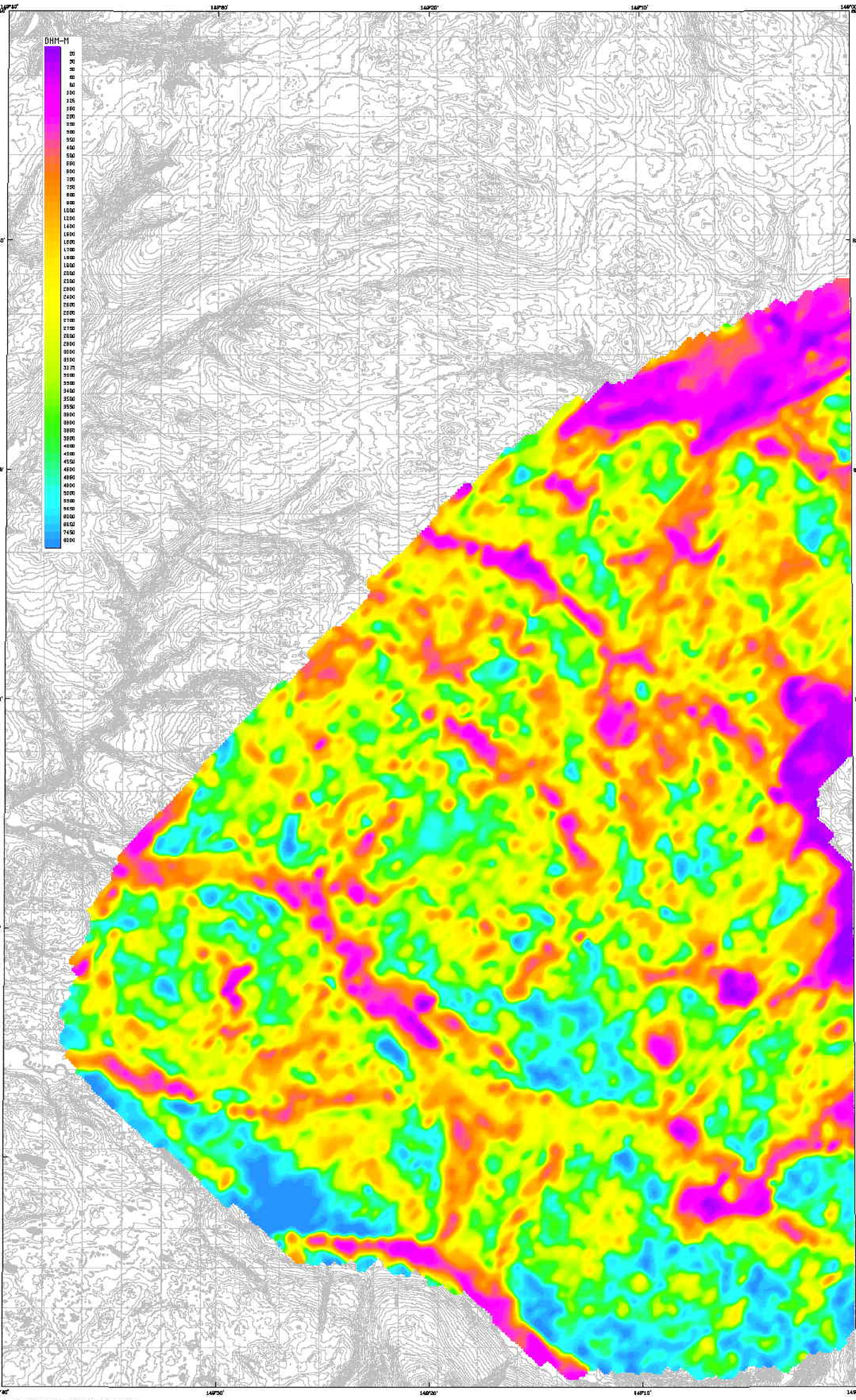


Base from U.S. Geological Survey Talkeetna Mountains B-4, 1951
3-D, 2000 D-4, 1953 D-4, 1949 Cantwell Alaska

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 NORTH

7200 Hz COPLANAR RESISTIVITY OF THE IRON CREEK AREA, SOUTHCENTRAL ALASKA

TALKEETNA MOUNTAINS QUADRANGLE

1998

DESCRIPTIVE NOTES

The geophysical data were acquired with a DIGHEM^{V} Electromagnetic (EM) system, a Sonitrex cesium magnetometer, and a Herz VLF system installed in an AS350B-2 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. The lines were flown perpendicular to the flight lines at intervals of approximately 3 miles.

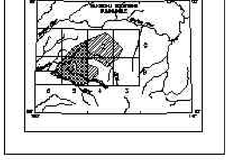
A Sercel Real-Time Differential Dipod Positioning System (RT-DGPS) was used for both navigation and flight path recovery. The helicopter position was derived every 0.2 seconds using real-time differential positioning to a relative accuracy of better than 10 m. Flight path positions were projected onto the Clark 1866 (UTM zone 6) spheroid, 1927 North American datum using a central meridian (CM) of 147°, 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 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. Apparent resistivity is generated from the inphase and quadrature component of the coplanar 7200 Hz using the pseudo-layer half space model. 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.

LOCATION INDEX



SURVEY HISTORY

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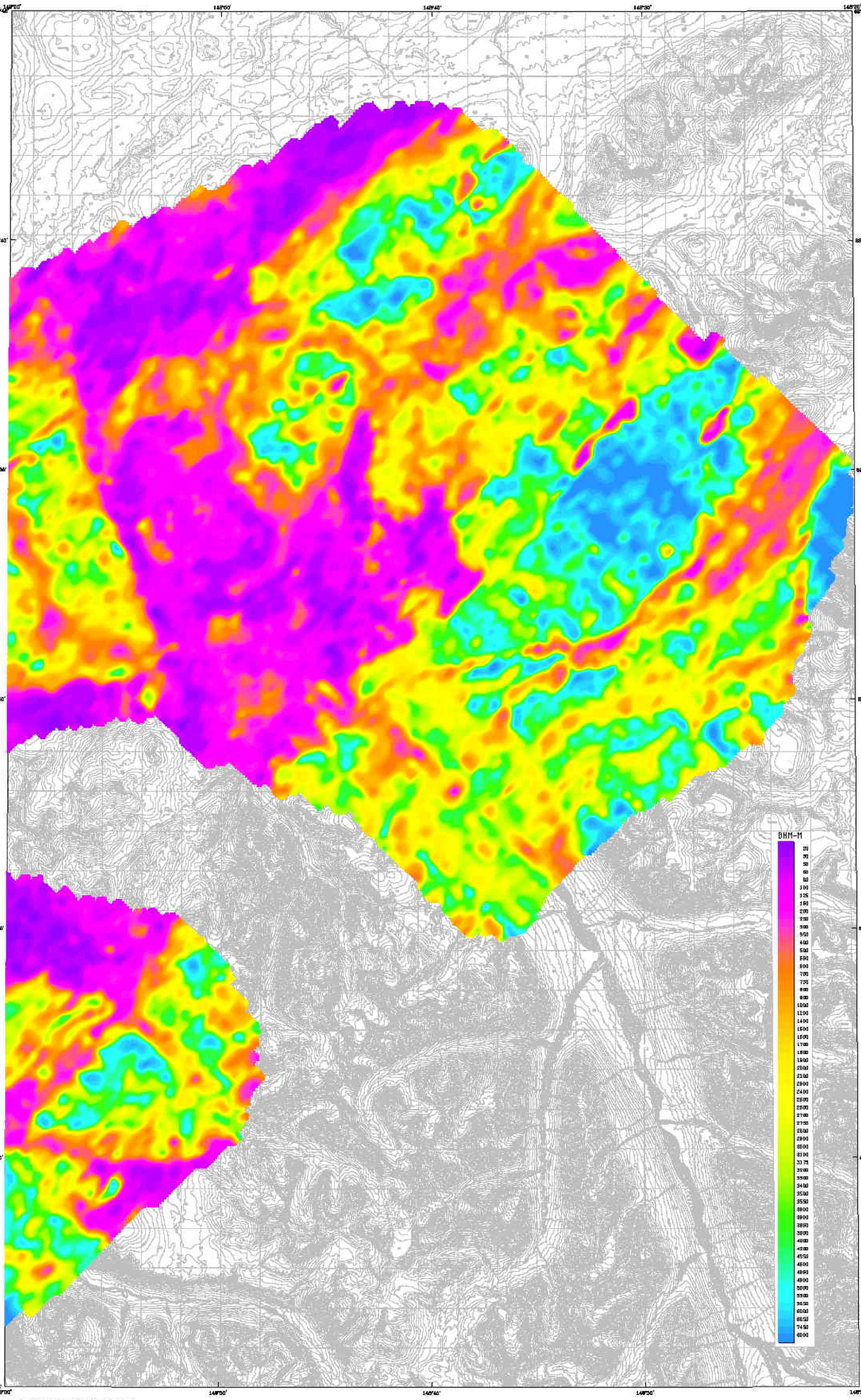


Base from U.S. Geological Survey Talkeetna Mountains B-4, 1951
B-4, 1951 C-4, C-5, 1951 Washington, Alaska

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 NORTH

7200 Hz COPLANAR RESISTIVITY OF THE IRON CREEK AREA, SOUTHCENTRAL ALASKA

TALKEETNA MOUNTAINS QUADRANGLE

1998

DESCRIPTIVE NOTES

The geophysical data were acquired with a DIGHEM^{V} Electromagnetic (EM) system, a Sonotrax cesium magnetometer, and a Herz VLF system installed in an AS350B-2 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. The lines were flown perpendicular to the flight lines at intervals of approximately 3 miles.

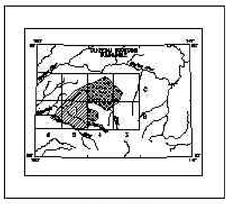
A Sercel Real-Time Differential Digital Positioning System (RT-DGPS) was used for both navigation and flight path recovery. The helicopter position was derived every 0.2 seconds using real-time differential positioning to a relative accuracy of better than 10 m. Flight path positions were projected onto the Clark 1866 (UTM zone 5) spheroid, 1927 North American datum using a central meridian (CM) of 147°, 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 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. Apparent resistivity is generated from the inphase and quadrature component of the coplanar 7200 Hz using the pseudo-layer half space model. 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.

LOCATION INDEX



SURVEY HISTORY

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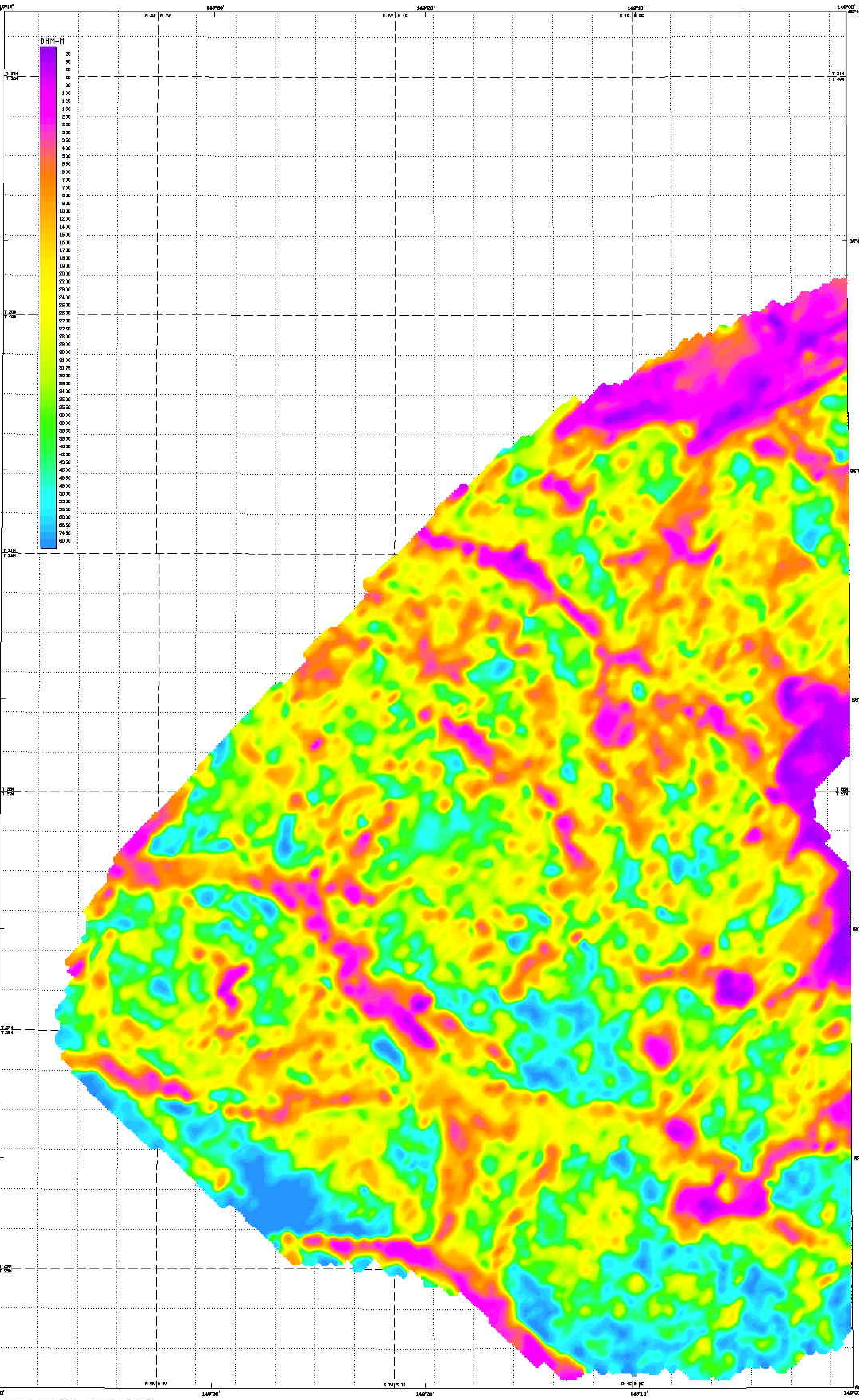
ALASKA DIVISION OF GEOLOGICAL & GEOPHYSICAL SURVEYS



Section corners from U.S. Geological Survey [illegible] 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 IRON CREEK AREA, SOUTHCENTRAL ALASKA

TALKEETNA MOUNTAINS QUADRANGLE

1998

DESCRIPTIVE NOTES

The geophysical data were acquired with a DIGHEM[V] Electromagnetic (EM) system, a Scintrex cesium magnetometer, and a Herz VLF system installed in an AS350B-2 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 3 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 real-time differential positioning to a relative accuracy of better than 10 m. Flight path positions were projected onto the Clark 1866 (UTM zone 6) spheroid, 1927 North American datum using a central meridian (CM) of 147, 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 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. Apparent resistivity is generated from the inphase and quadrature component of the coplanar 7200 Hz using the pseudo-layer half space model. 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.

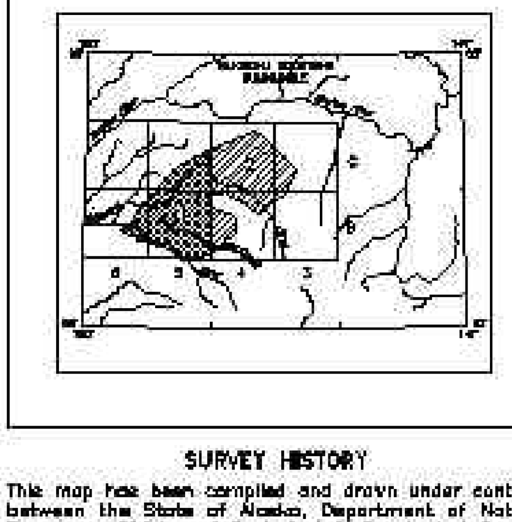
RESISTIVITY CONTOURS

1000
900
800
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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ALASKA DIVISION OF GEOLOGICAL & GEOPHYSICAL SURVEYS

7200 Hz RESISTIVITY OF THE IRON CREEK AREA, SOUTHCENTRAL ALASKA

TALKEETNA MOUNTAINS QUADRANGLE

1998

DESCRIPTIVE NOTES

The geophysical data were acquired with a DIGHEM^V Electromagnetic (EM) system, a Scintrex cesium magnetometer, and a Herz VLF system installed in an AS350B-2 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 3 miles.

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RESISTIVITY CONTOURS

1000
900
800
500
400
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250
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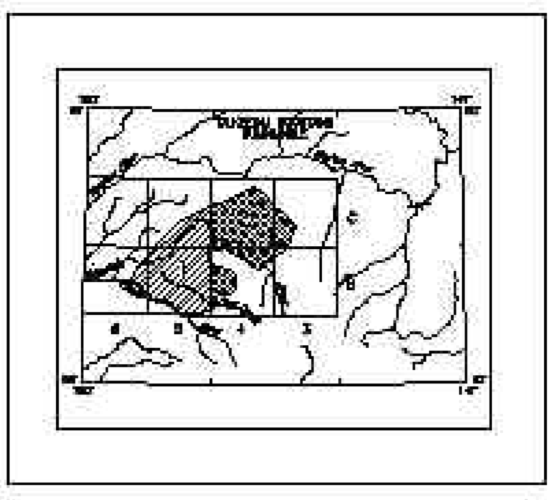
125
100

Contours in ohm-m at 10 intervals per decade

resistivity low

LOCATION INDEX



SURVEY HISTORY

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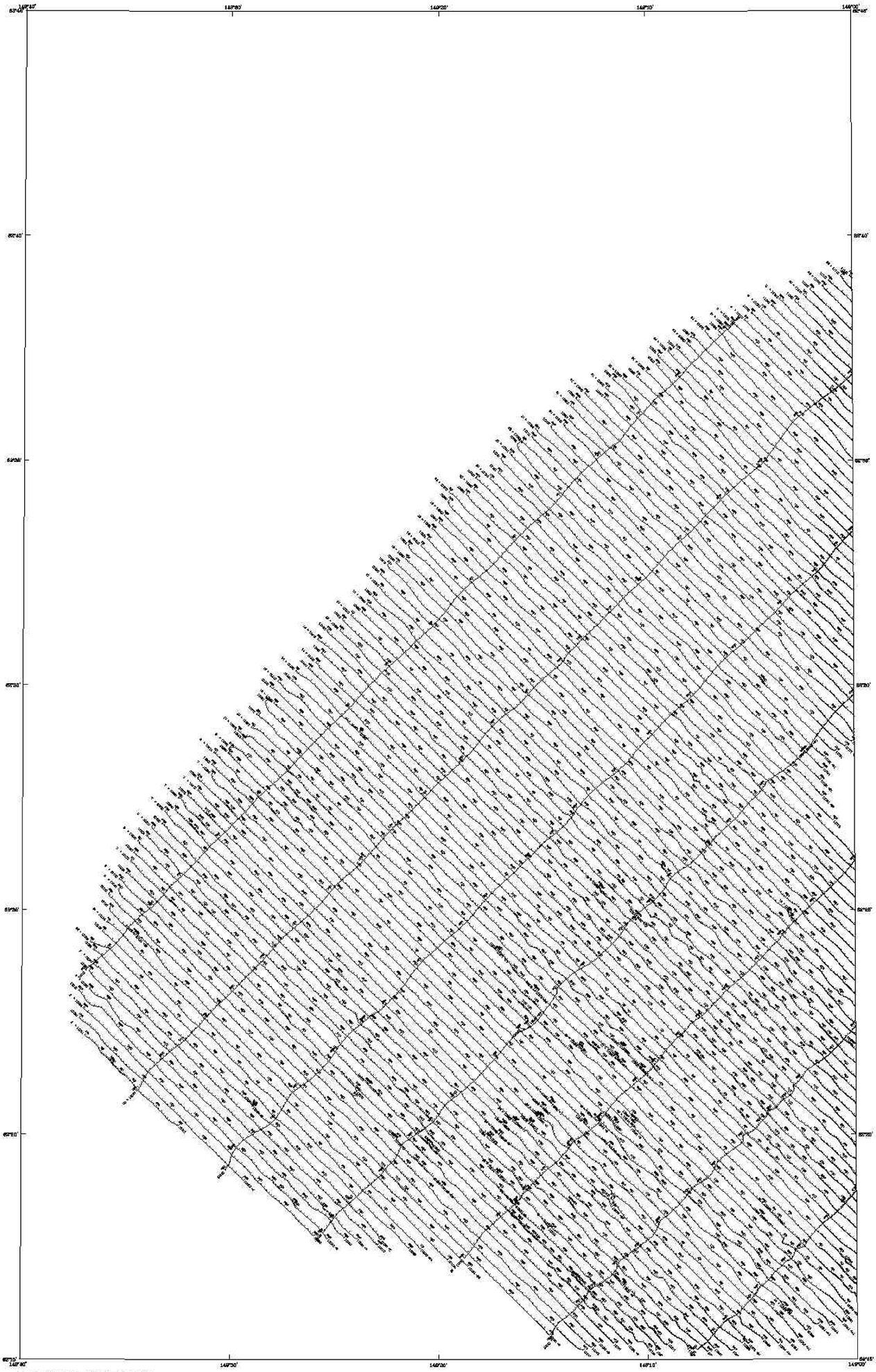


Base from U.S. Geological Survey Talkeetna Mountains B-6, 1951
3-D, 2000 D-6, 1943 D-6, 1948 Gulkana, Alaska

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 NORTH

FLIGHT LINES OF THE IRON CREEK AREA, SOUTHCENTRAL ALASKA

TALKEETNA MOUNTAINS QUADRANGLE

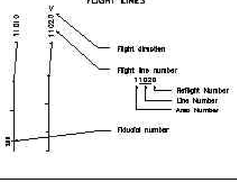
1998

DESCRIPTIVE NOTES

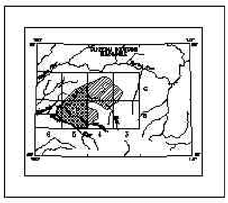
The geophysical data were acquired with a DIGHEM^V Electromagnetic (EM) system, a Schlinx cesium magnetometer, and a Herz VLF system installed in an AS350B-2 Squirrel helicopter. In addition, the survey recorded data from a radar altimeter, GPS navigation system, 50/60 Hz monitors and video camera. Flights 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 3 miles.

A Sercel Real-Time Differential Dipole Positioning System (RT-DGPS) was used for both navigation and flight path recovery. The helicopter position was derived every 0.2 seconds using real-time differential positioning to a relative accuracy of better than 10 m. Flight path positions were projected onto the Clark 1866 (UTM zone 8) spheroid, 1927 North American datum using a central meridian (CM) of 147°, 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.

FLIGHT LINES



LOCATION INDEX



SURVEY HISTORY

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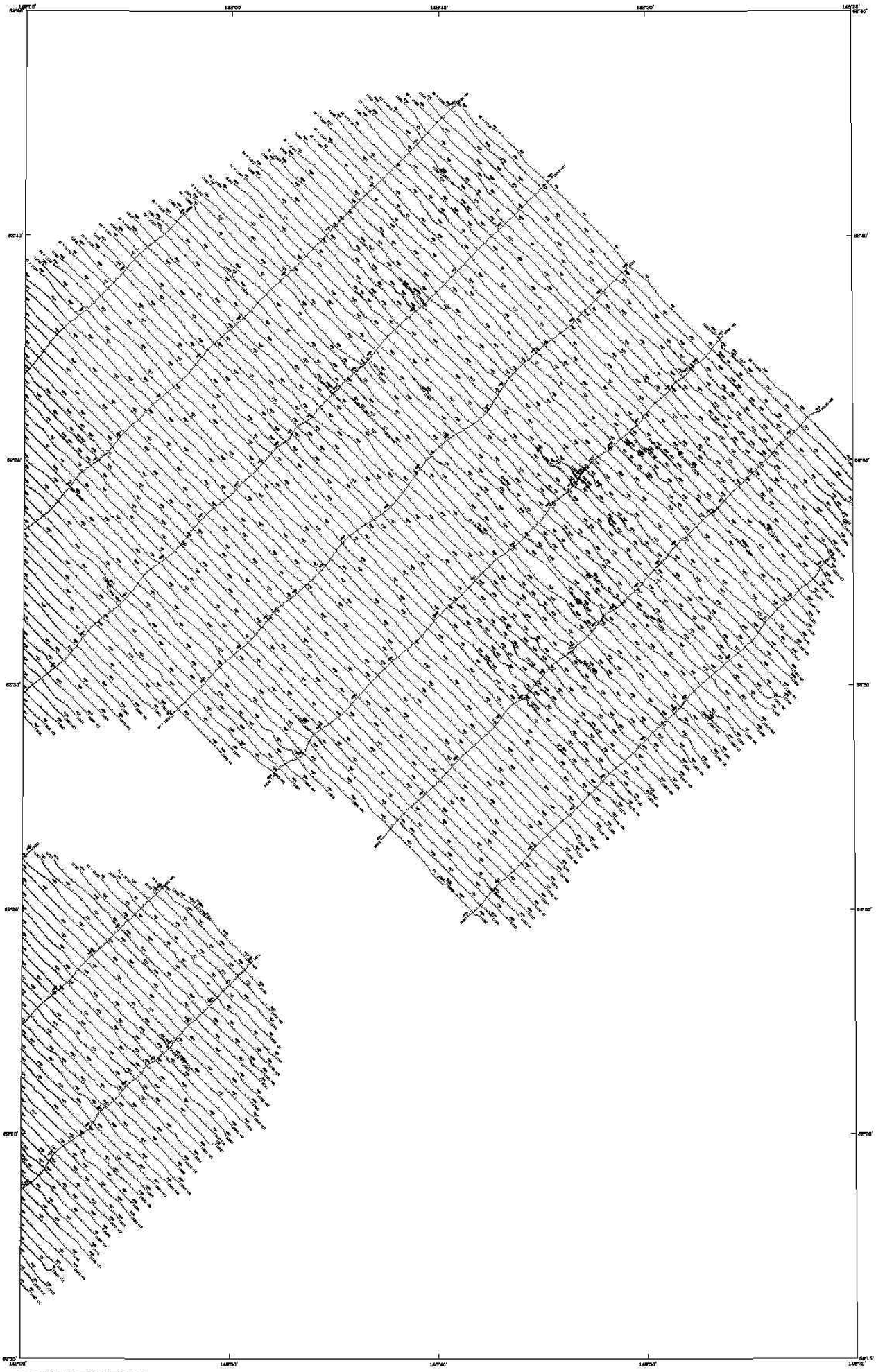

SCALE 1:63,360

1 0 1 2 3 4 MILES

1 0 1 2 3 4 5 KILOMETERS

FLIGHT LINES OF THE IRON CREEK AREA, SOUTHCENTRAL ALASKA

TALKEETNA MOUNTAINS QUADRANGLE

1998

DESCRIPTIVE NOTES

The geophysical data were acquired with a DIGHEM^{V} Electromagnetic (EM) system, a Scintrex cesium magnetometer, and a Herz VLF system installed in an AS350B-2 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 3 miles.

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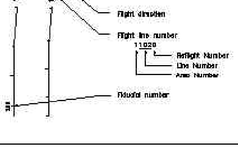
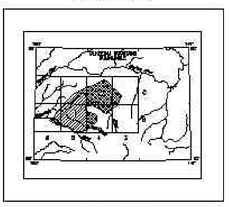
FLIGHT LINES



LOCATION INDEX



SURVEY HISTORY

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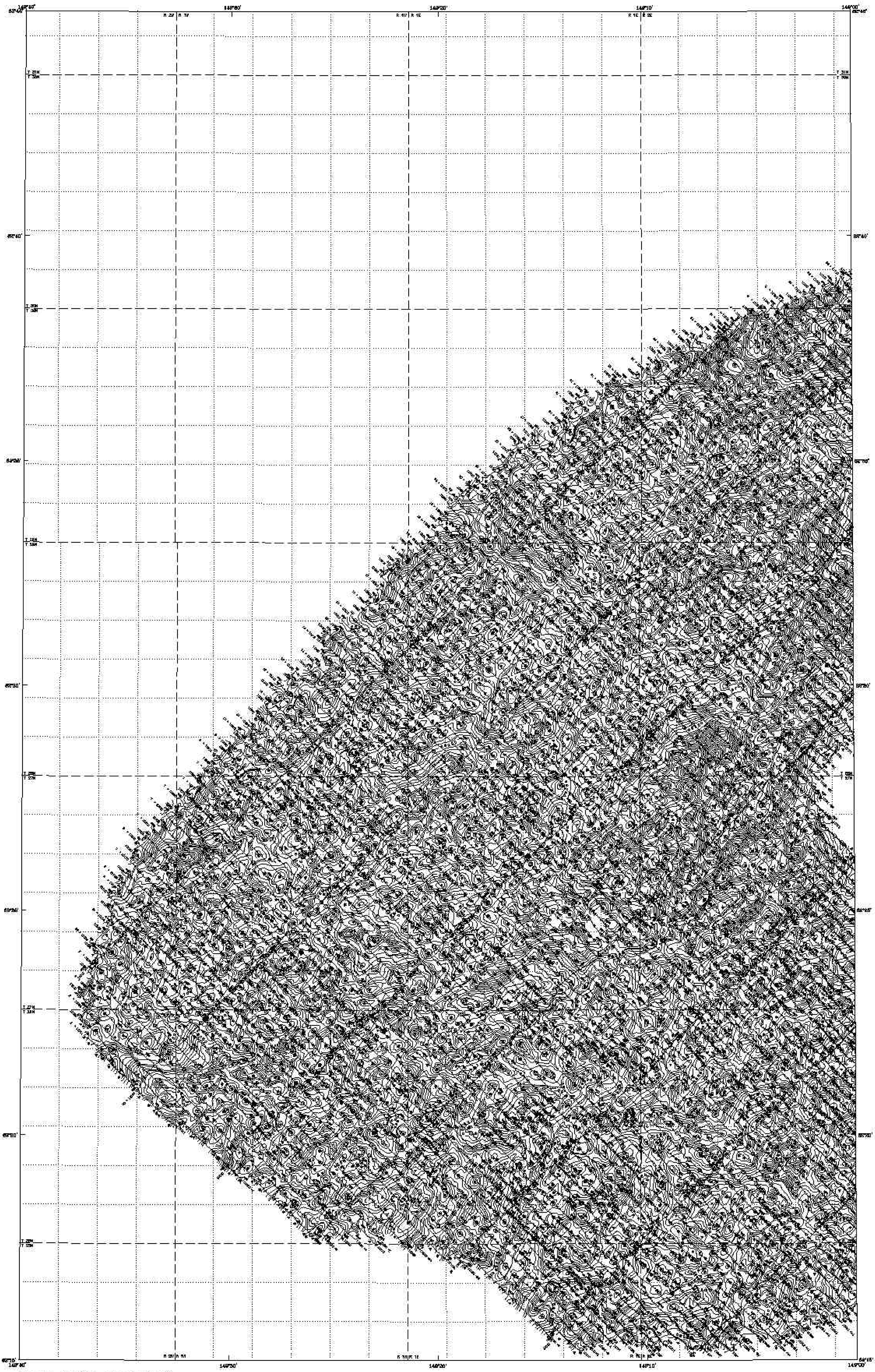

Section corners from U.S. Geological Survey Talkeetna Mountains D-5, 1950; D-6, 1949; C-5, 1950; C-6, 1949 Quadrangles, Alaska.

SCALE 1:63,360

TOTAL FIELD MAGNETICS AND ELECTROMAGNETIC ANOMALIES OF THE IRON CREEK AREA, SOUTHCENTRAL ALASKA

TALKEETNA MOUNTAINS QUADRANGLE

1998

DESCRIPTIVE NOTES

The geophysical data were acquired with a DIGHEM[V] Electromagnetic (EM) system, a Scintrex cesium magnetometer, and a Herz VLF system installed in an AS350B-2 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 3 miles.

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

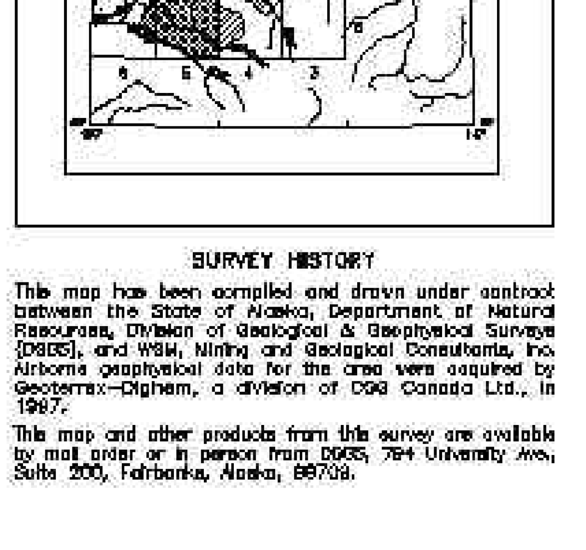
ELECTROMAGNETIC ANOMALIES

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

MAGNETIC CONTOUR INTERVAL

———	250 nT
———	50 nT
———	10 nT
— — —	5 nT
(▼)	magnetic low
(●)	magnetic high

LOCATION INDEX



SURVEY HISTORY

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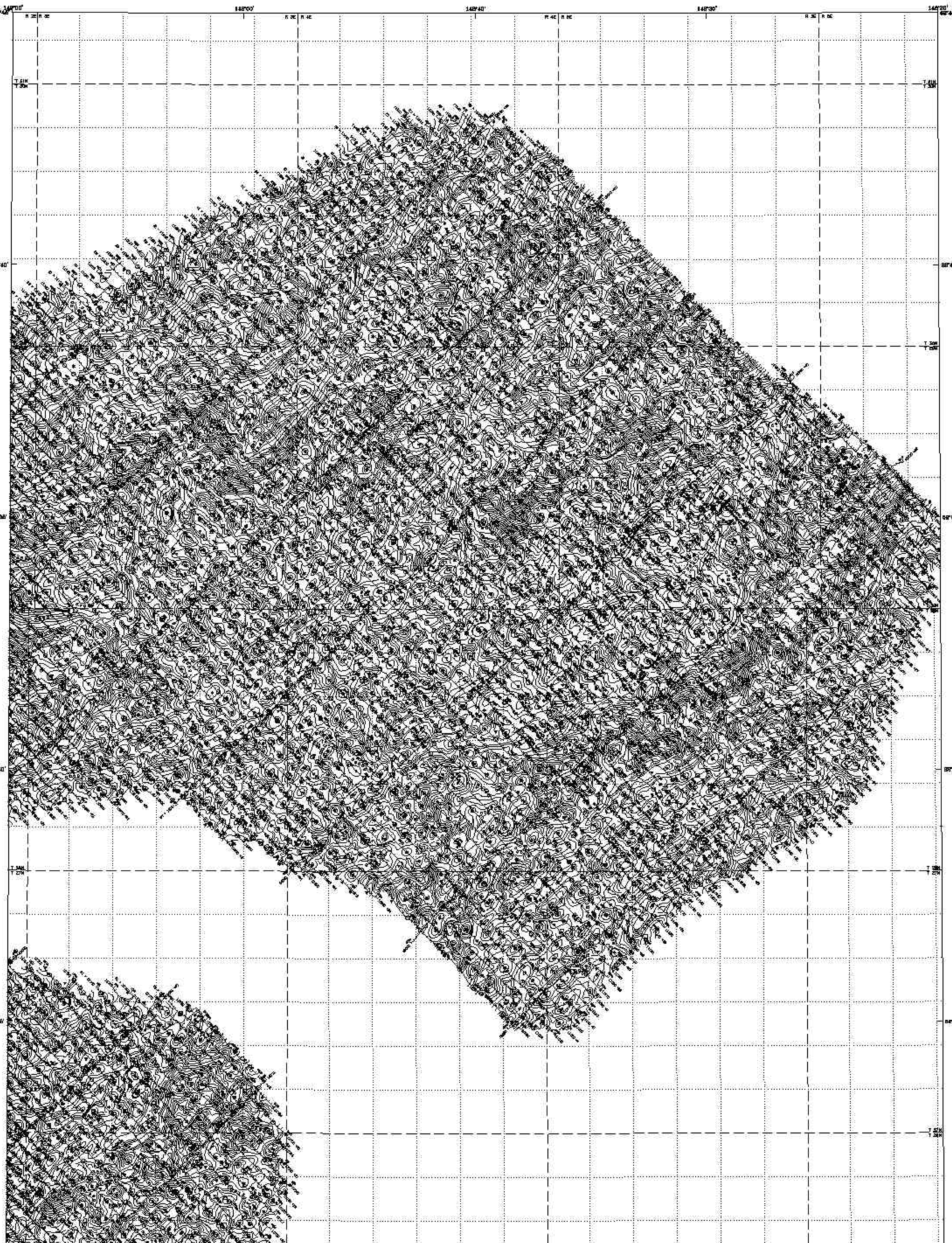
TOTAL FIELD MAGNETICS

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 August 1997) 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.



SCALE 1:63,360

1 0 1 2 3 4 MILES

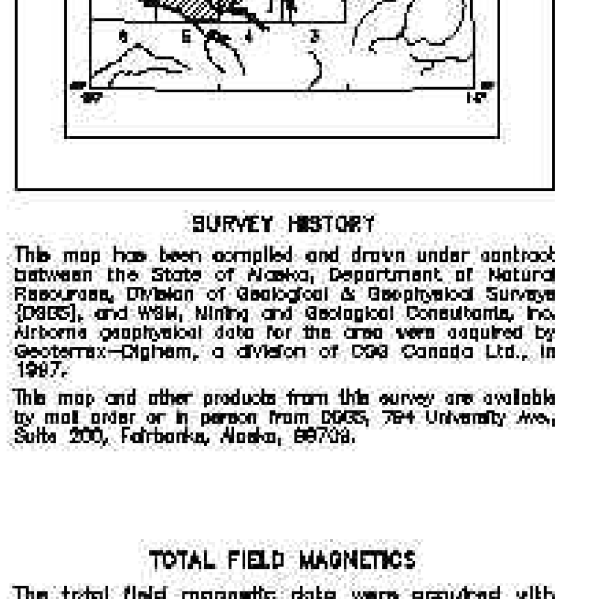
1 0 1 2 3 4 5 KILOMETERS

TOTAL FIELD MAGNETICS AND ELECTROMAGNETIC ANOMALIES OF THE IRON CREEK AREA, SOUTHCENTRAL ALASKA

TALKEETNA MOUNTAINS QUADRANGLE

1998

LOCATION INDEX



DESCRIPTIVE NOTES

The geophysical data were acquired with a DIGHEM[V] Electromagnetic (EM) system, a Scintrex cesium magnetometer, and a Herz VLF system installed in an AS350B-2 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 3 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 real-time differential positioning to a relative accuracy of better than 10 m. Flight path positions were projected onto the Clark 1866 (UTM zone 6) spheroid, 1927 North American datum using a central meridian (CM) of 147, 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[V] 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 power line monitor and the flight track video were examined to locate cultural sources. The EM anomalies that are indicated are classified by conductance.

ELECTROMAGNETIC ANOMALIES

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

MAGNETIC CONTOUR INTERVAL

————	250 nT
————	50 nT
————	10 nT
— — — —	5 nT
(⁻)	magnetic low
(⁺)	magnetic high

SURVEY HISTORY

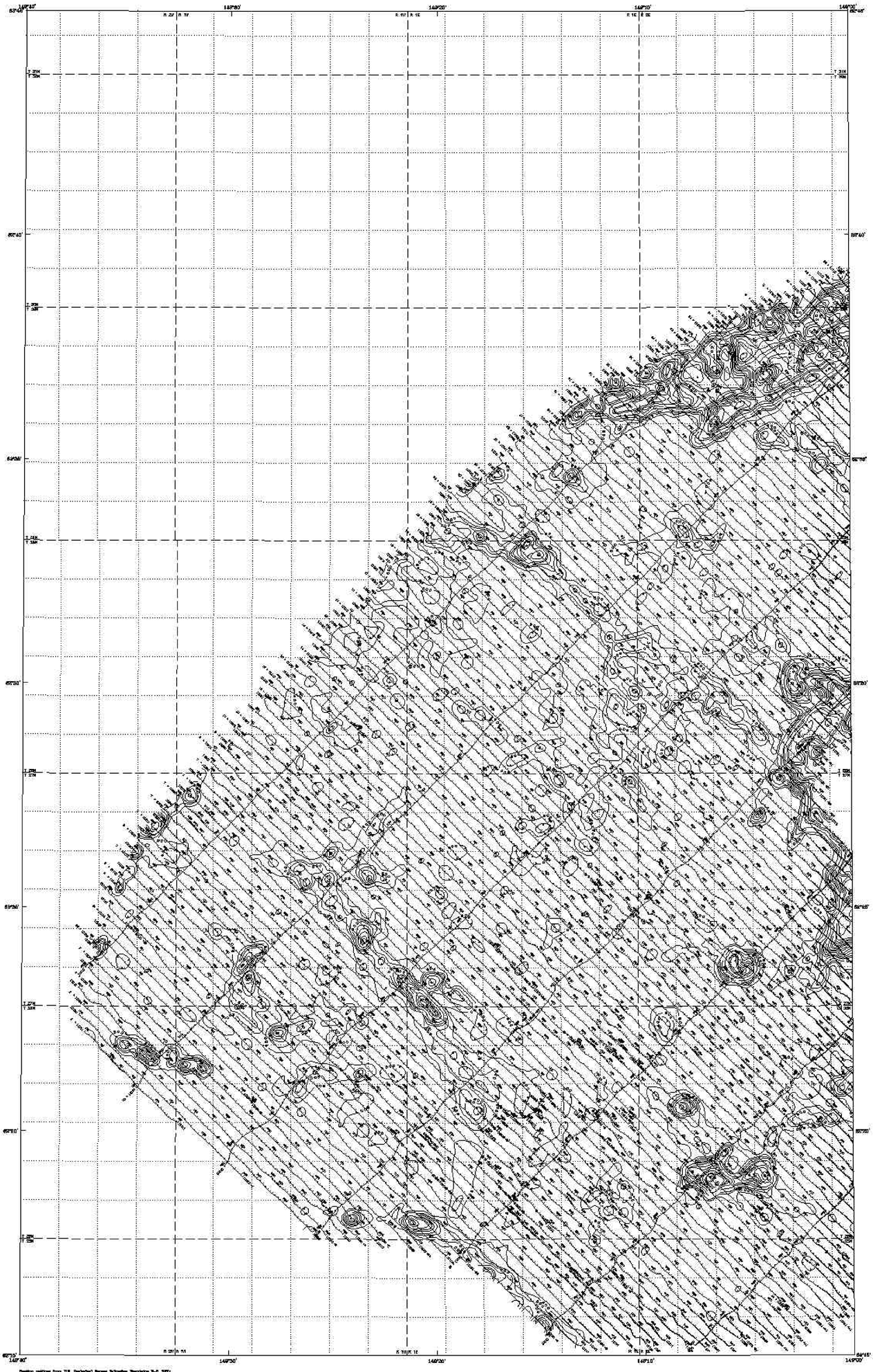
This map has been compiled and drawn under contract between the State of Alaska, Department of Natural Resources, Division of Geological & Geophysical Surveys (DGGS), and WGM, Mining and Geological Consultants, Inc. Airborne geophysical data for the area were acquired by Geoterrex-Dighem, a division of CGG Canada Ltd., in 1997.

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.

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 August 1997) 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.



Base map taken from U.S. Geological Survey Talkeetna Quadrangle 1:63,360 scale, 1956 edition.

SCALE 1:63,360

1 0 1 2 3 4 MILES

1 0 1 2 3 4 5 KILOMETERS

TRUE NORTH

MAGNETIC NORTH

900 Hz COPLANAR RESISTIVITY OF THE IRON CREEK AREA, SOUTHCENTRAL ALASKA

TALKEETNA MOUNTAINS QUADRANGLE

1998

DESCRIPTIVE NOTES

The geophysical data were acquired with a DIGHEM^{V} Electromagnetic (EM) system, a Sonotrax cesium magnetometer, and a Herz VLF system installed in an AS350B-2 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. The lines were flown perpendicular to the flight lines at intervals of approximately 3 miles.

A Sercel Real-Time Differential Dipole Positioning System (RT-DGPS) was used for both navigation and flight path recovery. The helicopter position was derived every 0.2 seconds using real-time differential positioning to a relative accuracy of better than 10 m. Flight path positions were projected onto the Clark 1866 (UTM zone 6) spheroid, 1927 North American datum using a central meridian (CM) of 147°, 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 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 conductance, 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. 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.

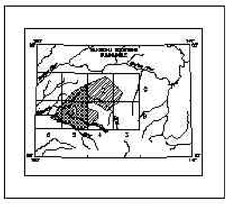
RESISTIVITY CONTOURS

1000
800
600
500
400
300
250
200
150
125
100

Contours in ohm-m at 10 intervals per decade

relatively low

LOCATION INDEX



SURVEY HISTORY

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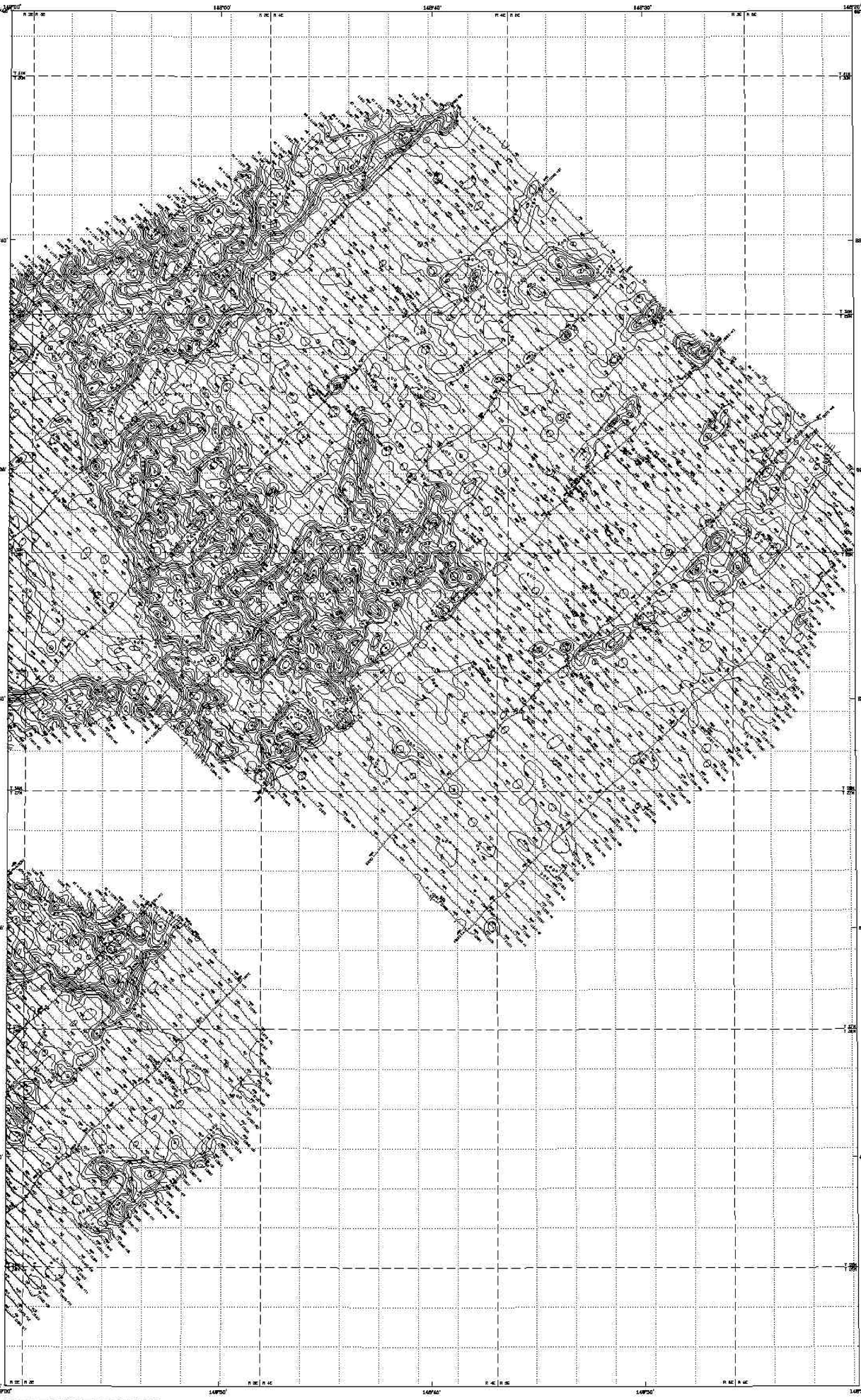


Position outlines from U.S. Geological Survey Bulletin Revisions 2-4, 1961, 2-4, 1963, 2-4, 1964, 2-4, 1965, Washington, D.C.

SCALE 1:63,360

1 0 1 2 3 4 MILES

1 0 1 2 3 4 5 KILOMETERS

TRUE NORTH

MAGNETIC NORTH
APPROXIMATE 1998

900 Hz COPLANAR RESISTIVITY OF THE IRON CREEK AREA, SOUTHCENTRAL ALASKA

TALKEETNA MOUNTAINS QUADRANGLE

1998

DESCRIPTIVE NOTES

The geophysical data were acquired with a DIGHEM^{V} Electromagnetic (EM) system, a Scintrex cesium magnetometer, and a Herz VLF system installed in an AéroSPACE-2 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. The lines were flown perpendicular to the flight lines at intervals of approximately 3 miles.

A Sercel Real-Time Differential Dicbol Positioning System (RT-DGPS) was used for both navigation and flight path recovery. The helicopter position was derived every 0.2 seconds using real-time differential positioning to a relative accuracy of better than 10 m. Flight path positions were projected onto the Clark 1866 (UTM zone 5) spheroid, 1927 North American datum using a central meridian (CM) of 147, 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 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 helicoid 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. 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.

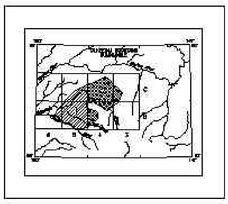
RESISTIVITY CONTOURS

- 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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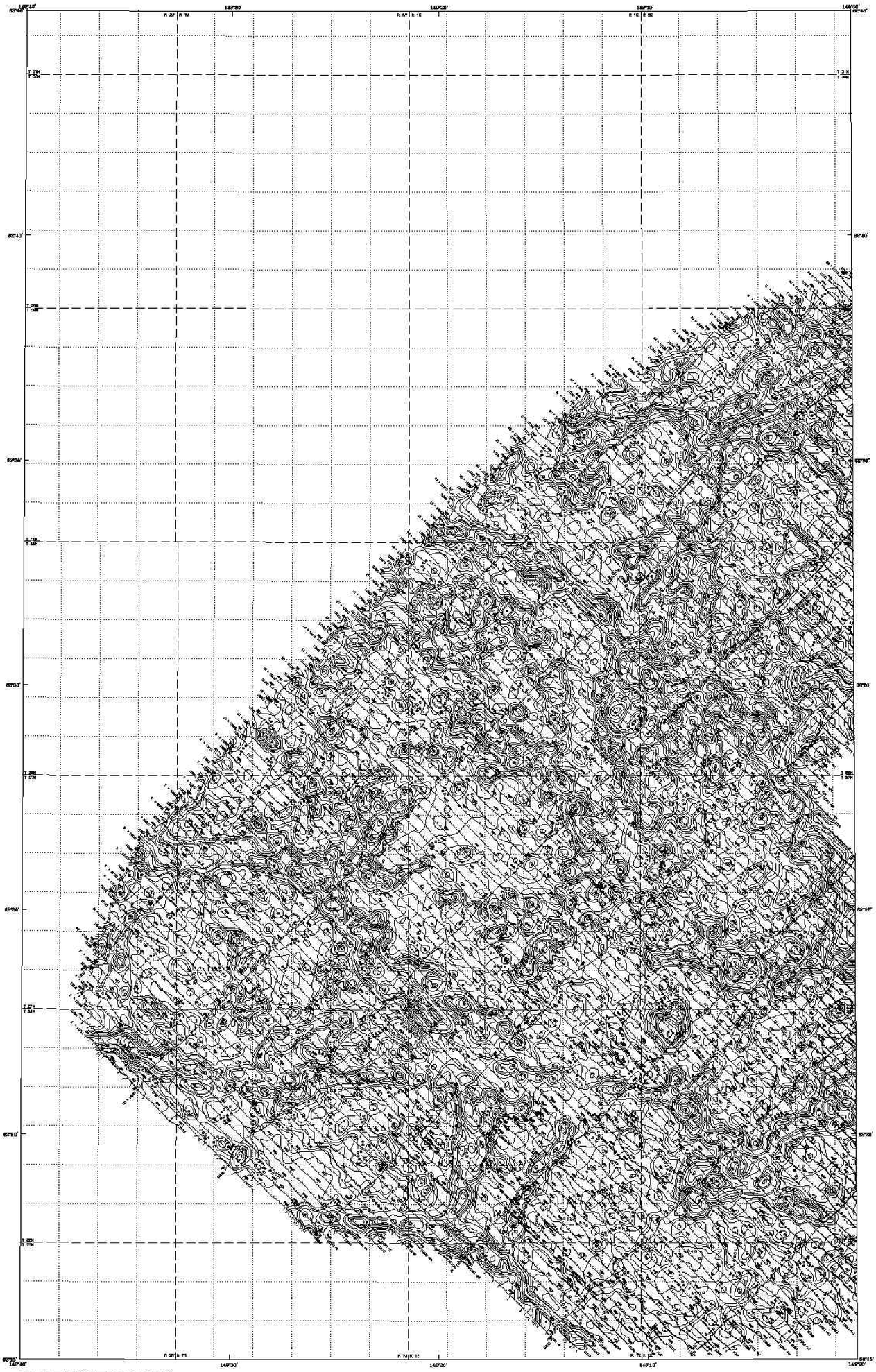


Station coordinates from U.S. Geological Survey Bulletin Revision 3-8, 1201-2-G 2nd O-G 1963 O-L 1948 Gulkana, Alaska

SCALE 1:63,360

1 0 1 2 3 4 MILES

1 0 1 2 3 4 5 KILOMETERS

TRUE NORTH

MAGNETIC NORTH
1997

7200 Hz COPLANAR RESISTIVITY OF THE IRON CREEK AREA, SOUTHCENTRAL ALASKA

TALKEETNA MOUNTAINS QUADRANGLE

1998

DESCRIPTIVE NOTES

The geophysical data were acquired with a DIGHEM^{V} Electromagnetic (EM) system, a Sonotrex cesium magnetometer, and a Herl VLF system installed in an AS350B-2 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. The lines were flown perpendicular to the flight lines at intervals of approximately 3 miles.

A Sercel Real-Time Differential Dipole Positioning System (RT-DGPS) was used for both navigation and flight path recovery. The helicopter position was derived every 0.2 seconds using real-time differential positioning to a relative accuracy of better than 10 m. Flight path positions were projected onto the Clark 1866 (UTM zone 6) spheroid, 1927 North American datum using a central meridian (CM) of 147°, 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 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. Apparent resistivity is generated from the inphase and quadrature component of the coplanar 7200 Hz using the pseudo-layer half space model. 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.

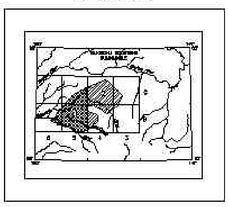
RESISTIVITY CONTOURS

1000
800
600
500
400
300
250
200
150
125
100

Contours in ohm-m at 10 intervals per decade

relatively low

LOCATION INDEX



SURVEY HISTORY

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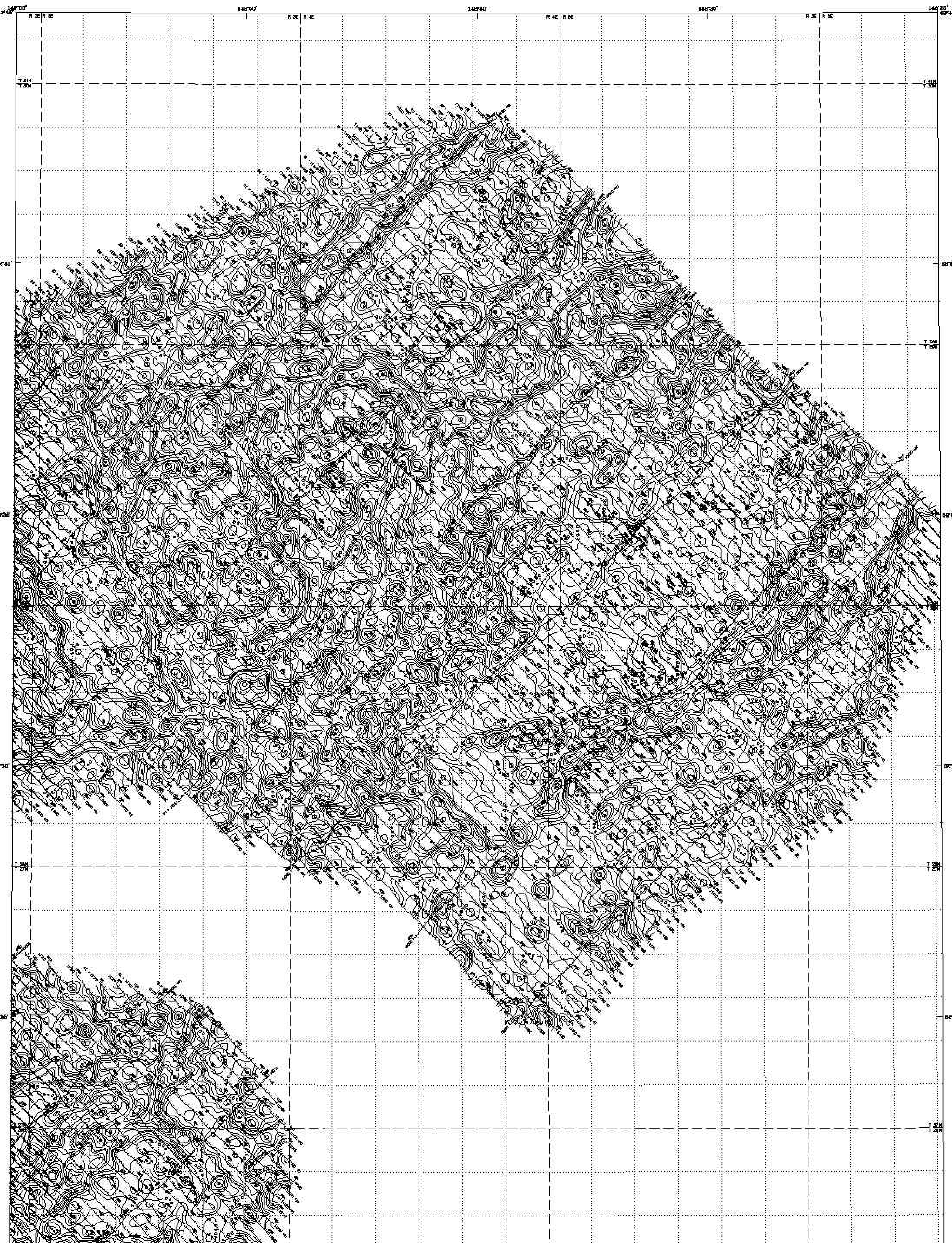


SCALE 1:63,360

1 0 1 2 3 4 MILES

1 0 1 2 3 4 5 KILOMETERS

7200 Hz COPLANAR RESISTIVITY OF THE IRON CREEK AREA, SOUTHCENTRAL ALASKA

TALKEETNA MOUNTAINS QUADRANGLE

1998

DESCRIPTIVE NOTES

The geophysical data were acquired with a DIGHEM^V Electromagnetic (EM) system, a Scintrex cesium magnetometer, and a Herz VLF system installed in an AS350B-2 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 3 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 real-time differential positioning to a relative accuracy of better than 10 m. Flight path positions were projected onto the Clarke 1866 (UTM zone 6) spheroid, 1927 North American datum using a central meridian (CM) of 147, 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 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. Apparent resistivity is generated from the inphase and quadrature component of the coplanar 7200 Hz using the pseudo-layer half space model. 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.

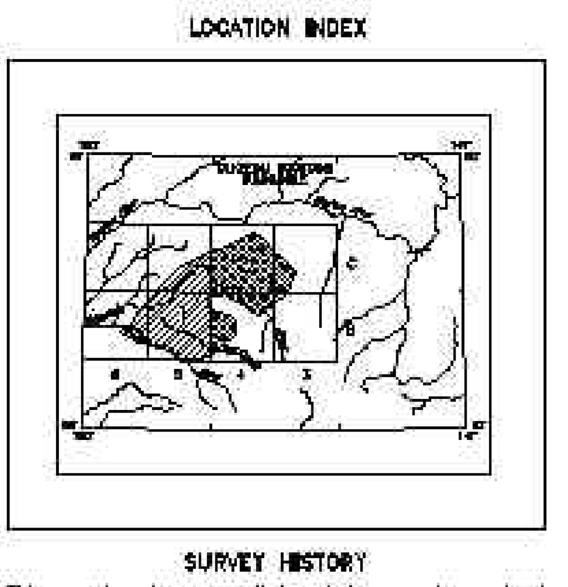
RESISTIVITY CONTOURS

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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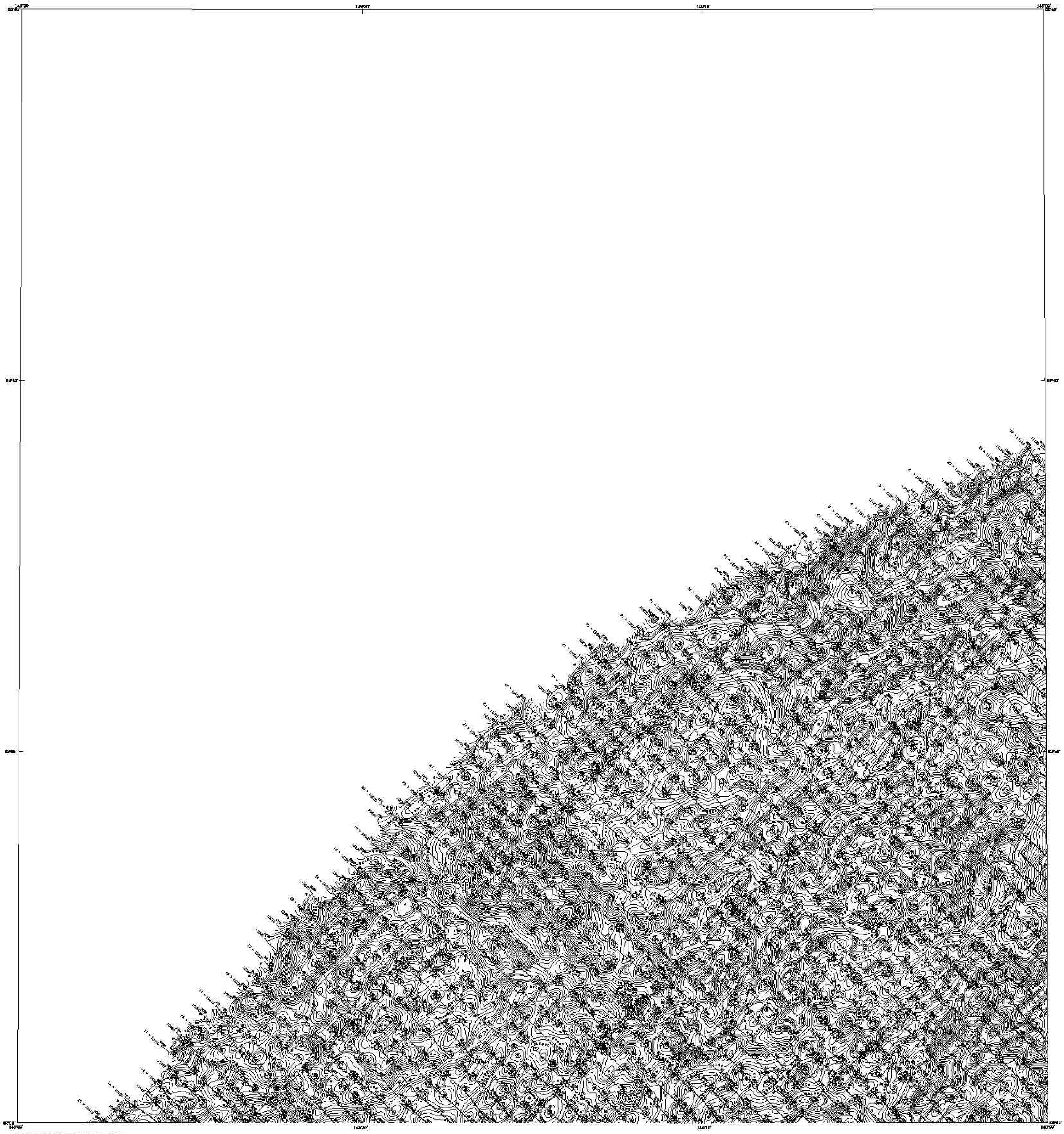

SCALE 1:31,680

0.5 0 0.5 1 1.5 2 MILES

0.5 0 0.5 1 1.5 2 2.5 KILOMETERS

TOTAL FIELD MAGNETICS AND DETAILED ELECTROMAGNETIC ANOMALIES OF THE IRON CREEK AREA, SOUTHCENTRAL ALASKA

TALKEETNA MOUNTAINS QUADRANGLE

MAP A

1996

DESCRIPTIVE NOTES

The geophysical data were acquired with a DIGHEM^{V} Electromagnetic (EM) system, a Scintrex cesium magnetometer, and a Herz VLF system installed in an AS350B-2 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. The lines were flown perpendicular to the flight lines at intervals of approximately 3 miles.

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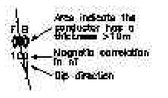
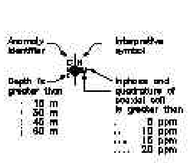
ELECTROMAGNETICS

To determine the location of EM anomalies or their boundaries, the DIGHEM^{V} EM system measured inphase and quadrature components of 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 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



Anomaly	Conductance
●	>100 siemens
●	50–100 siemens
●	20–50 siemens
●	10–20 siemens
●	5–10 siemens
○	1–5 siemens
○	< 1 siemens
✳	Questionable anomaly
Δ^{N}	EM magnetic response

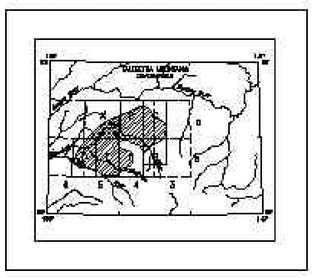


Interpretive symbol	Conductor ("model")
B	Bedrock conductor
D	Narrow bedrock conductor ("thin dike")
S	Conductive cover ("horizontal thin sheet")
H	Broad conductive rock unit, deep conductive weathering, thick conductive cover ("half space")
E	Edge of broad conductor ("edge of half space")
L	Culture, e.g., power line, metal building or fence

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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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, 1985, updated to August 1987) was removed from the leveled magnetic data.

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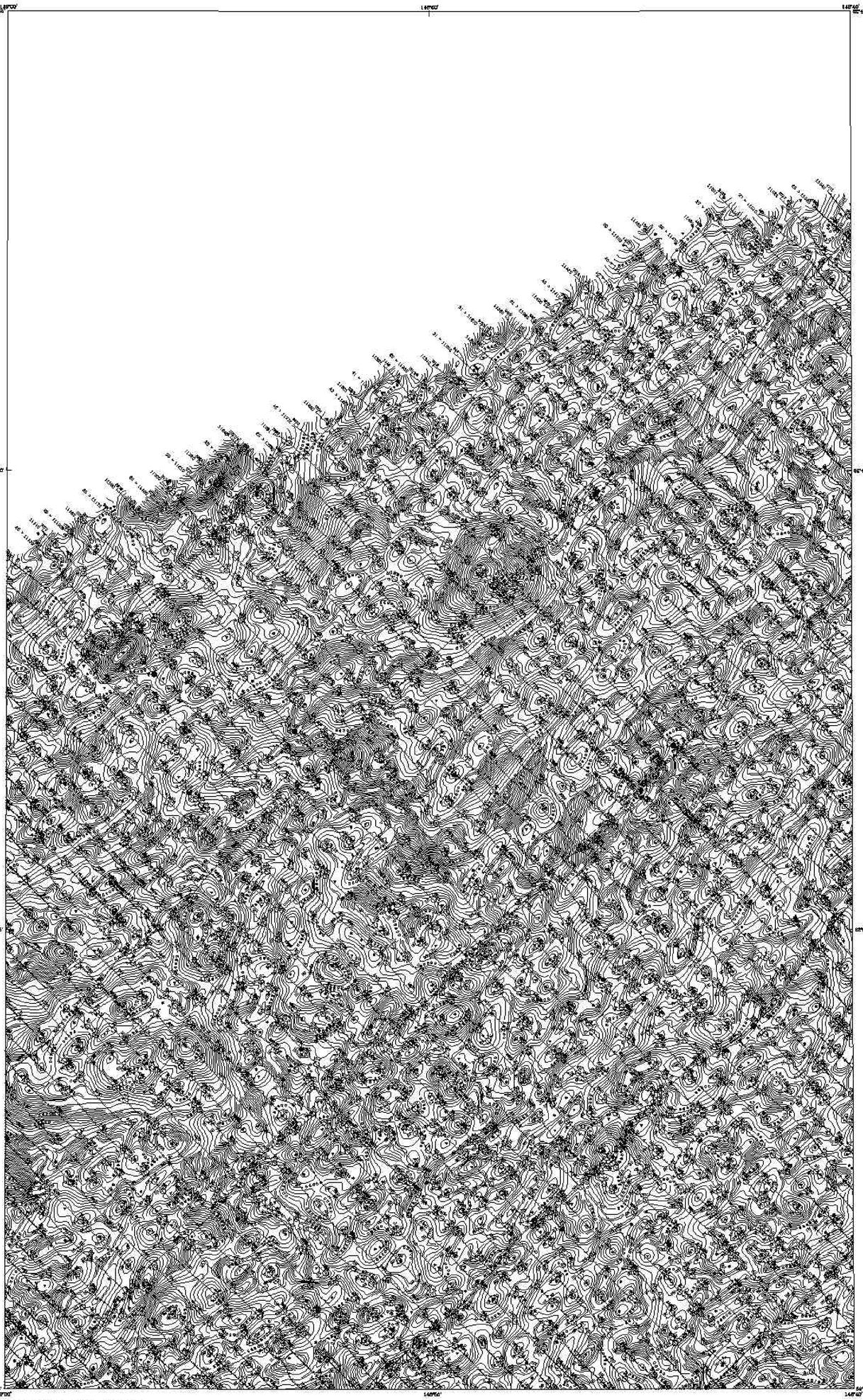

Base from U.S. Geological Survey Talkeetna Mountains D-4, 1951 Geographic Series

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

CONTOUR INTERVAL 20 FEET
DATUM IS MEAN SEA LEVEL

TRUE NORTH

MAGNETIC NORTH
APPROXIMATE MEAN DECLINATION 1998

TOTAL FIELD MAGNETICS AND DETAILED ELECTROMAGNETIC ANOMALIES OF THE IRON CREEK AREA, SOUTHCENTRAL ALASKA

TALKEETNA MOUNTAINS QUADRANGLE

MAP B

1998

DESCRIPTIVE NOTES

The geophysical data were acquired with a DIGHEM^{V} Electromagnetic (EM) system, a Sonotrex cesium magnetometer, and a Herz VLF system installed in an AS350B-2 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. The lines were flown perpendicular to the flight lines at intervals of approximately 3 miles.

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ELECTROMAGNETICS

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ELECTROMAGNETIC ANOMALIES

Area indicate the conductor has a thickness >10m

Magnetic correction 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 to conductor greater than

15 m	
35 m	
45 m	
85 m	

Inphase and quadrature of vertical coil is greater than

5 ppm	
10 ppm	
15 ppm	
20 ppm	

Interpretive symbol	Conductor ("model")
S	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

MAGNETIC CONTOUR INTERVAL

100 nT

20 nT

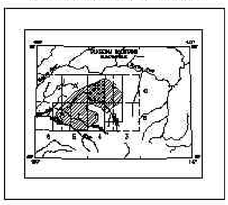
4 nT

2 nT

magnetic low

magnetic high

LOCATION INDEX FOR SCALE 1:31,680



SURVEY HISTORY

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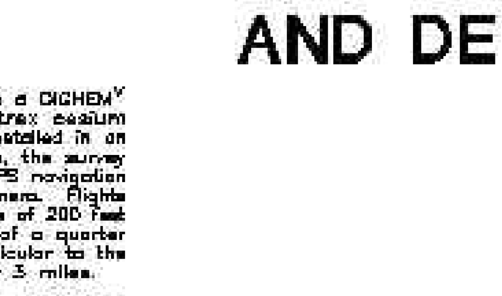
ALASKA DIVISION OF GEOLOGICAL & GEOPHYSICAL SURVEYS

PUBLIC-DATA FILE 98-18C

Base from U.S. Geological Survey Talkeetna Mountains D-3, D-4, 1951; Quadrangles, Alaska.



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 FIELD MAGNETICS AND DETAILED ELECTROMAGNETIC ANOMALIES OF THE IRON CREEK AREA, SOUTHCENTRAL ALASKA

TALKEETNA MOUNTAINS QUADRANGLE

MAP C

1998

DESCRIPTIVE NOTES

The geophysical data were acquired with a DIGHEM[V] Electromagnetic (EM) system, a Scintrex cesium magnetometer, and a Herz VLF system installed in an AS350B-2 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 3 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 real-time differential positioning to a relative accuracy of better than 10 m. Flight path positions were projected onto the Clark 1866 (UTM zone 6) spheroid, 1927 North American datum using a central meridian (CM) of 147, 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[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 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

F B — Arcs indicate the conductor has a thickness >10m
100 — 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 — C H — Interpretive symbol

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

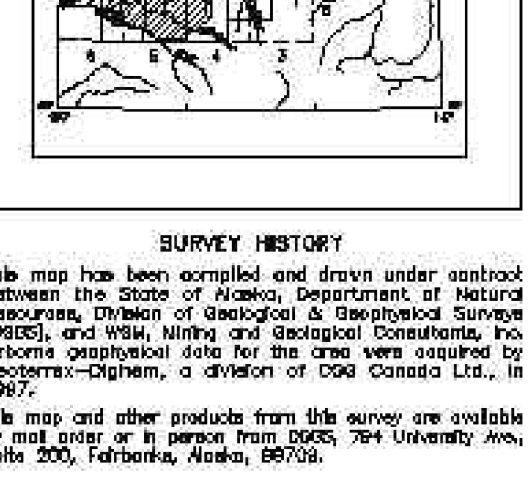
Inphase and quadrature of coaxial coil is greater than: 5 ppm; 10 ppm; 15 ppm; 20 ppm

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

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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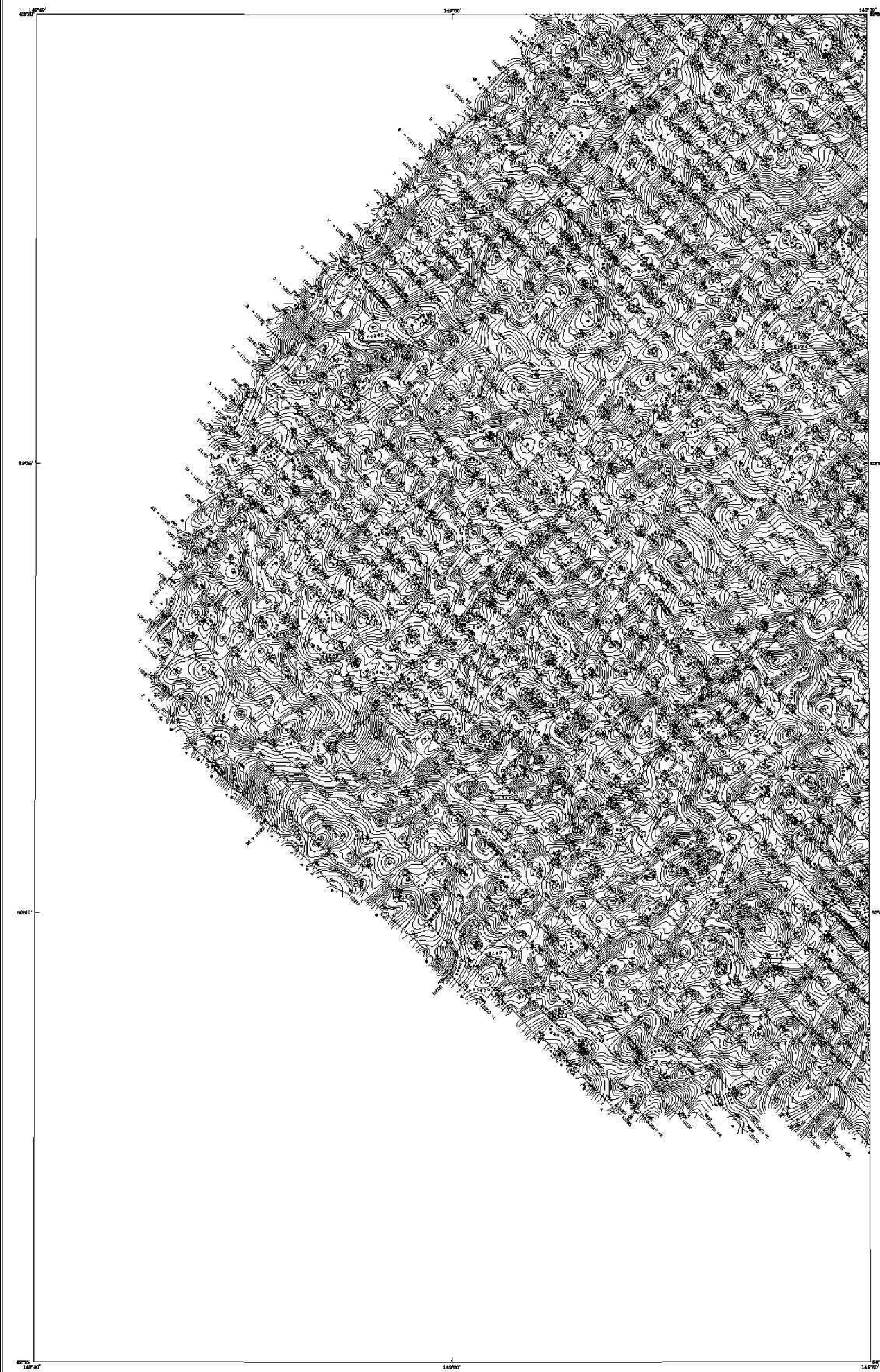
TOTAL FIELD MAGNETICS

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 August 1997) 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.



Base from U.S. Geological Survey Talkeetna, Sewalkaba B-6, 1952
P.O. 2005 Washington, Alaska

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

CONTOUR INTERVAL 20 FEET
DATUM MEAN SEA LEVEL

TRUE NORTH
MAGNETIC NORTH
APPROXIMATE MEAN DECLINATION 1998

TOTAL FIELD MAGNETICS AND DETAILED ELECTROMAGNETIC ANOMALIES OF THE IRON CREEK AREA, SOUTHCENTRAL ALASKA

TALKEETNA MOUNTAINS QUADRANGLE

MAP D

1998

DESCRIPTIVE NOTES

The geophysical data were acquired with a DIGHEM^V Electromagnetic (EM) system, a Sonotrex cesium magnetometer, and a Herz VLF system installed in an AS350B-2 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 3 miles.

A Sercel Real-Time Differential Dipole Positioning System (RT-DGPS) was used for both navigation and flight path recovery. The helicopter position was derived every 0.2 seconds using real-time differential positioning to a relative accuracy of better than 10 m. Flight path positions were projected onto the Clark 1866 (UTM zone 8) spheroid, 1927 North American datum using a central meridian (CM) of 147°, 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^V EM system measured inphase and quadrature components of 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 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

Anomaly Identifier — Interpretive symbol

Depth to conductor greater than
- 15 m
- 35 m
- 46 m
- 85 m

Inphase and quadrature of anomaly peak is greater than
- 5 ppm
- 10 ppm
- 15 ppm
- 20 ppm

Area indicate the conductor has a thickness >10m

Magnetic declination in nT

Dip direction

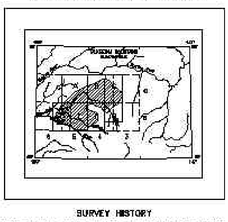
Anomaly	Conductance
	>100 siemens
	50–100 siemens
	20–50 siemens
	10–20 siemens
	5–10 siemens
	1–5 siemens
	<1 siemens
	Questionable anomaly
	EM magnetite response

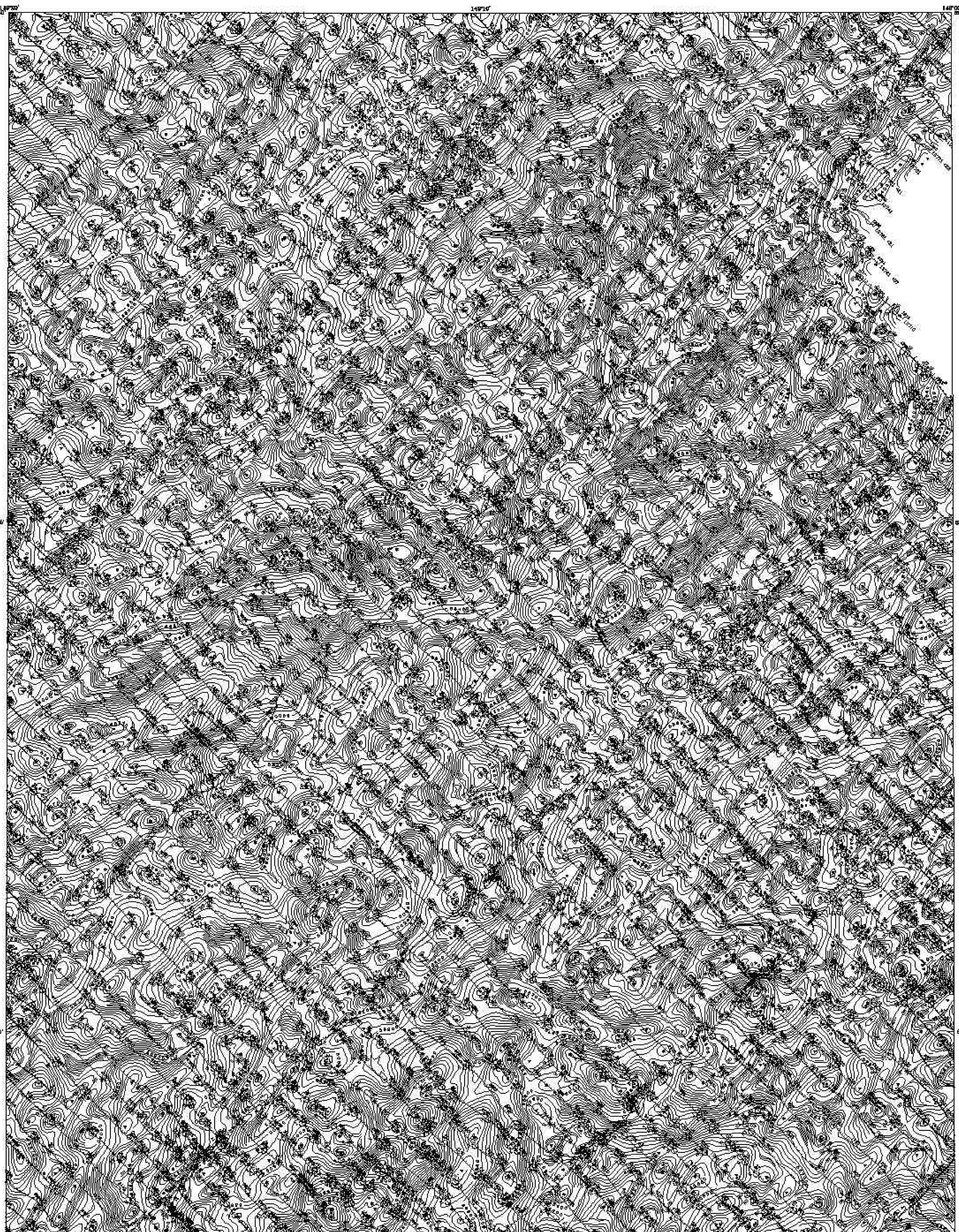
Interpretive symbol	
S	Conductor ("model")
D	Bedrock conductor
	Narrow bedrock conductor ("thin dike")
S	Conductive cover ("horizontal thin sheet")
R	Broad conductive rock unit, deep conductive weathering, thick conductive cover ("half space")
E	Edge of broad conductor ("edge of half space")
L	Culture, e.g., power line, metal building or fence

MAGNETIC CONTOUR INTERVAL

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

LOCATION INDEX FOR SCALE 1:31,680





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 FIELD MAGNETICS AND DETAILED ELECTROMAGNETIC ANOMALIES OF THE IRON CREEK AREA, SOUTHCENTRAL ALASKA

TALKEETNA MOUNTAINS QUADRANGLE

MAP E

1998

DESCRIPTIVE NOTES

The geophysical data were acquired with a DIGHEM[V] Electromagnetic (EM) system, a Scintrex cesium magnetometer, and a Herz VLF system installed in an AS350B-2 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 3 miles.

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ELECTROMAGNETICS

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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

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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TOTAL FIELD MAGNETICS

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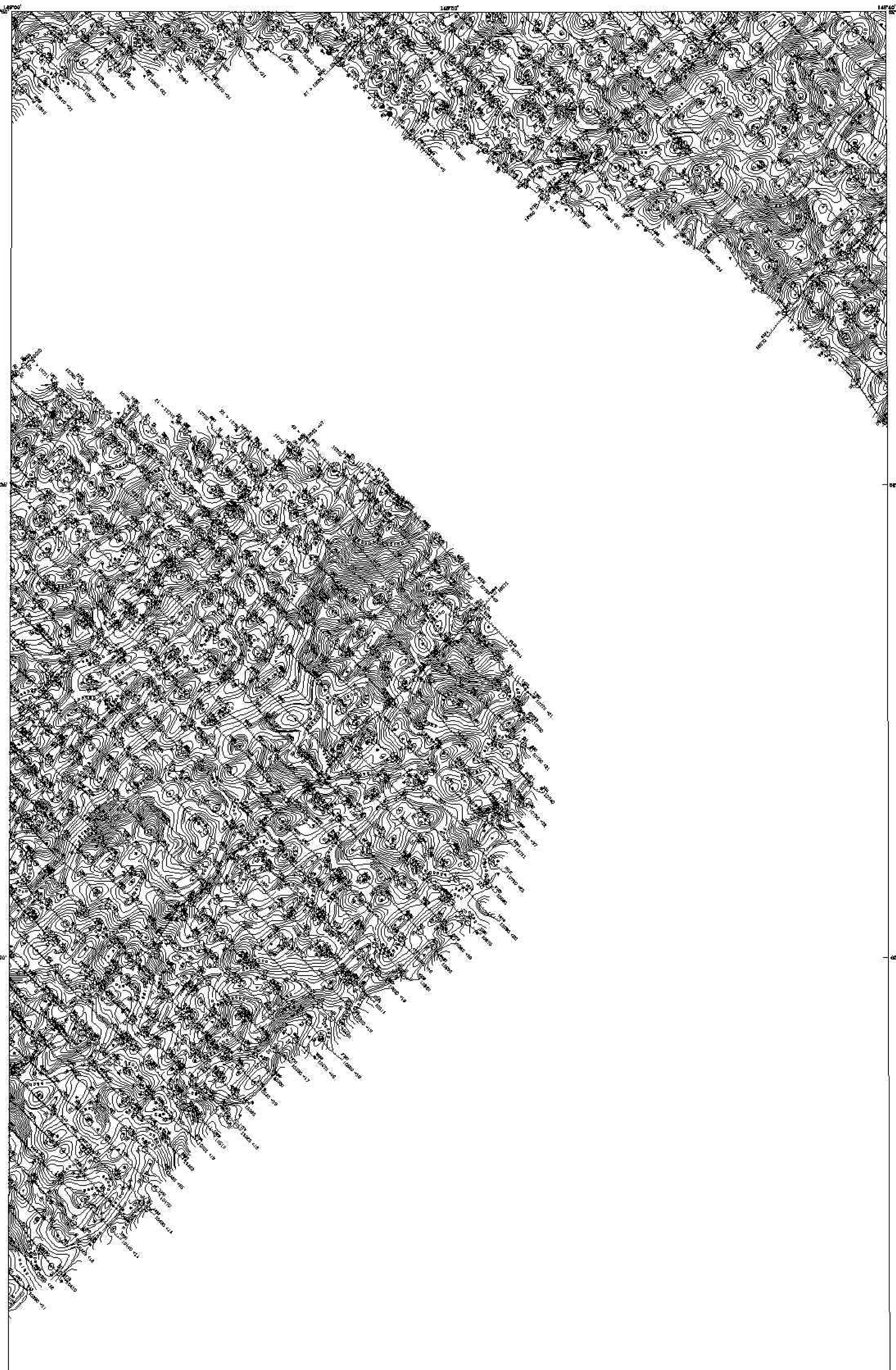
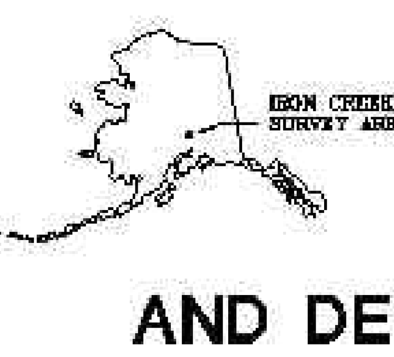


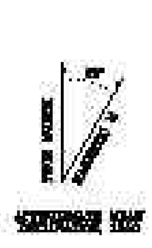
Base from U.S. Geological Survey Talkeetna Mountains B-4, [illegible] Quadrangle, Alaska



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



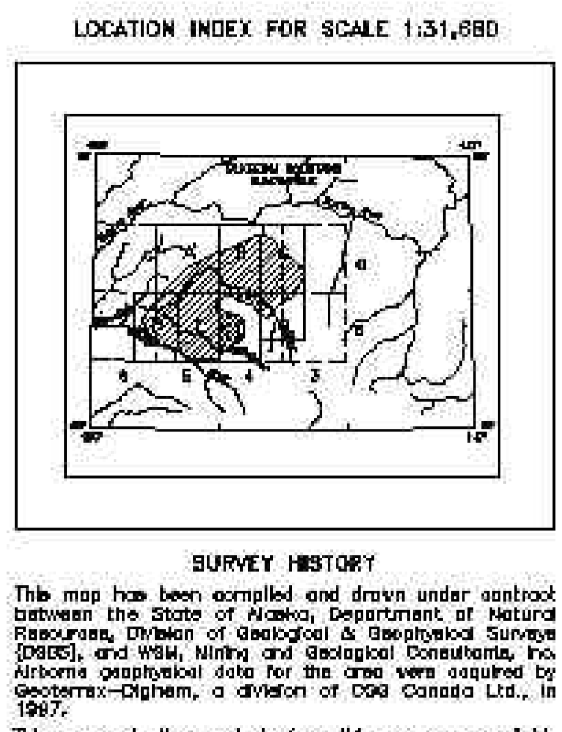
TOTAL FIELD MAGNETICS AND DETAILED ELECTROMAGNETIC ANOMALIES OF THE IRON CREEK AREA, SOUTHCENTRAL ALASKA

TALKEETNA MOUNTAINS QUADRANGLE

MAP F

1998

LOCATION INDEX FOR SCALE 1:31,680



DESCRIPTIVE NOTES

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ELECTROMAGNETICS

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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

MAGNETIC CONTOUR INTERVAL

100 nT

20 nT

4 nT

2 nT

magnetic low

magnetic high

SURVEY HISTORY

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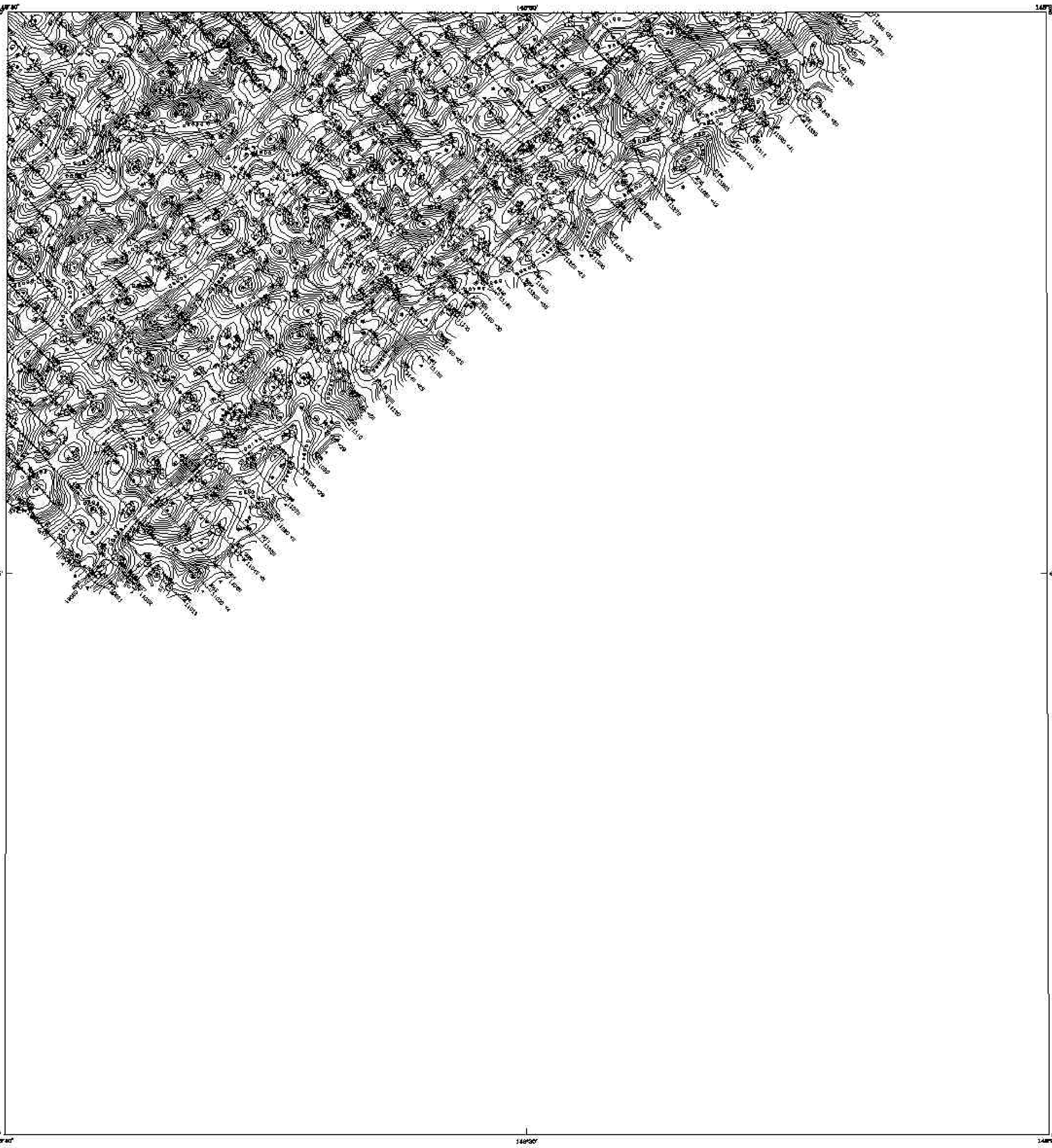

SCALE 1:31,680

0.5 0 0.5 1 1.5 2 MILES

0.5 0 0.5 1 1.5 2 2.5 KILOMETERS

TOTAL FIELD MAGNETICS AND DETAILED ELECTROMAGNETIC ANOMALIES OF THE IRON CREEK AREA, SOUTHCENTRAL ALASKA

TALKEETNA MOUNTAINS QUADRANGLE

MAP G

1996

DESCRIPTIVE NOTES

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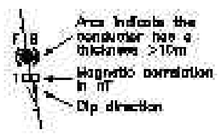
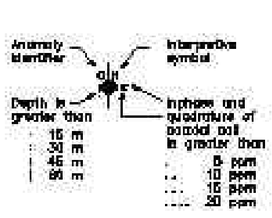
ELECTROMAGNETIC ANOMALIES



Anomaly	Conductance
●	>100 siemens
◐	50–100 siemens
◕	20–50 siemens
⊕	10–20 siemens
⊖	5–10 siemens
○	1–5 siemens
◯	<1 siemens
✳	Questionable anomaly
Δ^{M}	EM magnetite response



Interpretive symbol	Conductor ("model")
B	Bedrock conductor
D	Narrow bedrock conductor ("thin dike")
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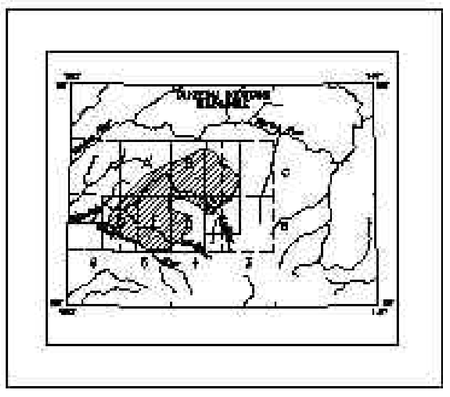
H	Broad conductive rock unit, deep conductive weathering, thick conductive cover ("half space")
E	Edge of broad conductor ("edge of half space")
L	Culture, e.g., power line, metal building or fence

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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