ALASKA HIGHWAY CORRIDOR ELECTROMAGNETIC AND MAGNETIC AIRBORNE GEOPHYSICAL SURVEY DATA COMPILATION

L.E. Burns, G.R.C. Graham, A.M.E. Emond, Stevens Exploration Management Corp., and Fugro Airborne Surveys

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ALASKA HIGHWAY CORRIDOR ELECTROMAGNETIC AND MAGNETIC AIRBORNE GEOPHYSICAL SURVEY DATA

L.E. Burns[1], G.R.C. Graham[1], A.M.E. Emond[1], Stevens Exploration Management Corp., and Fugro Airborne Surveys

ABSTRACT

The Alaska Highway corridor electromagnetic and magnetic airborne geophysical survey is located in interior Alaska along the Alaska Highway corridor, from Delta Junction to the Canadian border. Frequency domain electromagnetic and magnetic data were collected with the RESOLVE system from August 27th, 2005 to January 16th, 2006. A total of 22,948.5 line kilometers were collected covering 8117.5 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 was acquired to gather geologic information to assess the geologic hazards, construction materials, and mineral potential on the Alaska Highway corridor in east-central Alaska. The geophysical information acquired helps provide information on conductive overburden, potential construction materials, permafrost, fractures and faulting, and other information. Prospects within the survey area include Road Metal, Triple Z (ASARCO), and Discovery Zone. In addition, these data are to assist geologic mapping in the region.

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 Alaska State Legislature.

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

AVAILABLE DATA

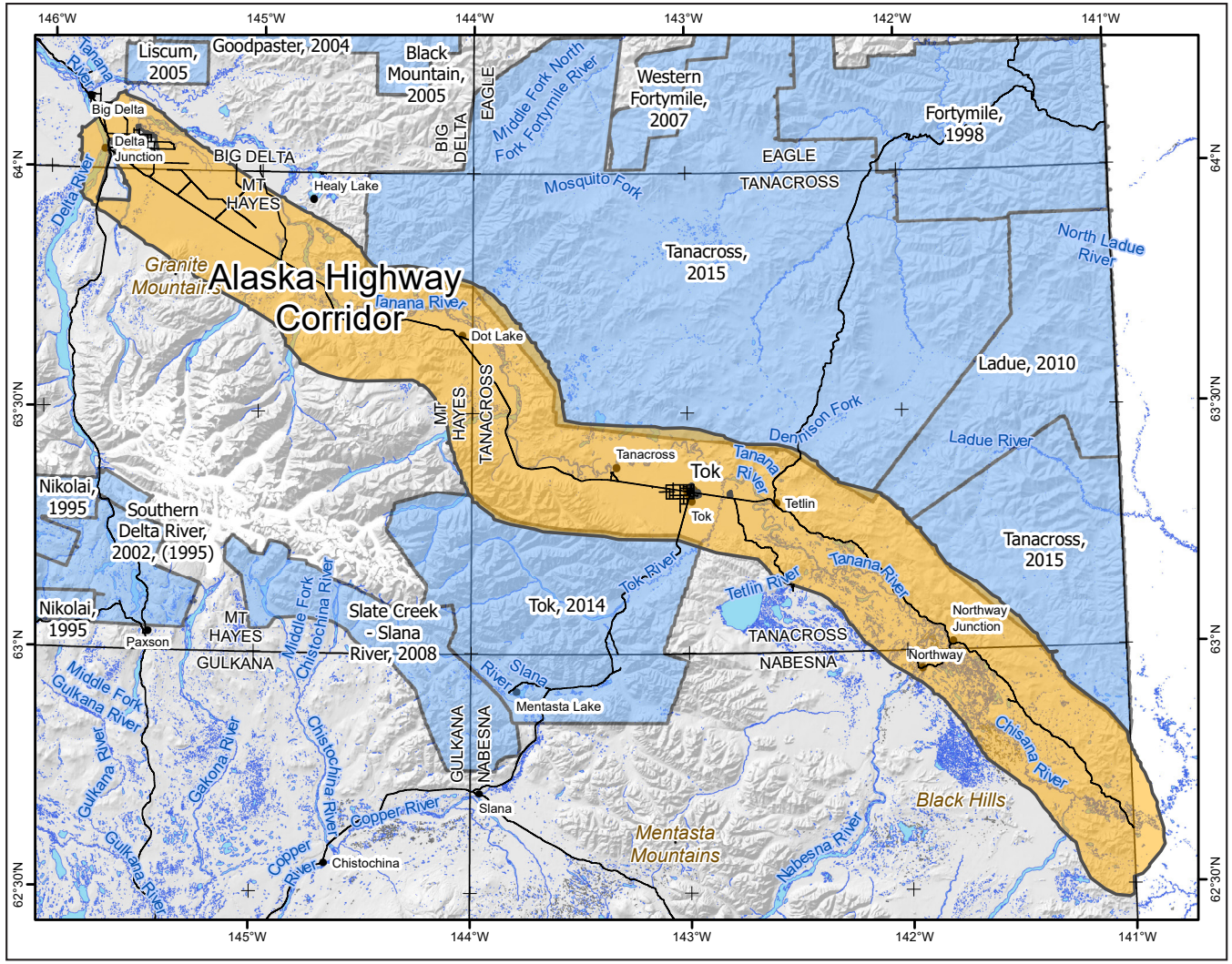
Data Type	Provider	Description
ascii_data	contractor	ASCII format line data, other ASCII data
databases_geosoft	contractor	Geosoft format database of final line data, other Geosoft format databases
documents	contractor and DGGS	Project and field reports, survey background information, gridded data explanations, 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 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
Resistivity_models	contractor and DGGS	ACSII CSV format resistivity models in project coordinates with data field guides, figures and supporting documentation in ASCII text, PDF, KML, and/or other formats
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., Fugro Airborne Surveys Corp., and Stevens Exploration Management Corp., 2006, Line, grid, and vector data, and plot files for the airborne geophysical survey of the Alaska Highway corridor, east-central Alaska: Alaska Division of Geological & Geophysical Surveys Geophysical Report 2006-6, 1 DVD. http://doi.org/10.14509/14864

Burns, L.E., Fugro Airborne Surveys Corp., and Stevens Exploration Management Corp., 2008, Final processed database for the airborne geophysical surveys of the Alaska Highway corridor, east-central Alaska: Alaska Division of Geological & Geophysical Surveys Geophysical Report 2006-8, 1 DVD. http://doi.org/10.14509/17761



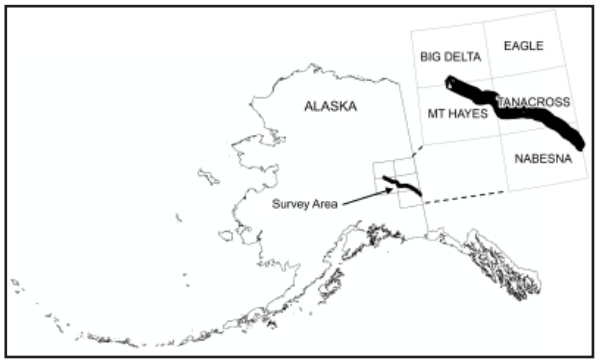


Figure 1. Alaska Highway Corridor magnetic and electromagnetic airborne geophysical survey location shown in eastern interior Alaska (inset). Alaska Highway Corridor survey area shown with landmarks, relevant 1:250,000-scale quadrangle boundaries, mountain ranges, rivers, and elevation hillshade.

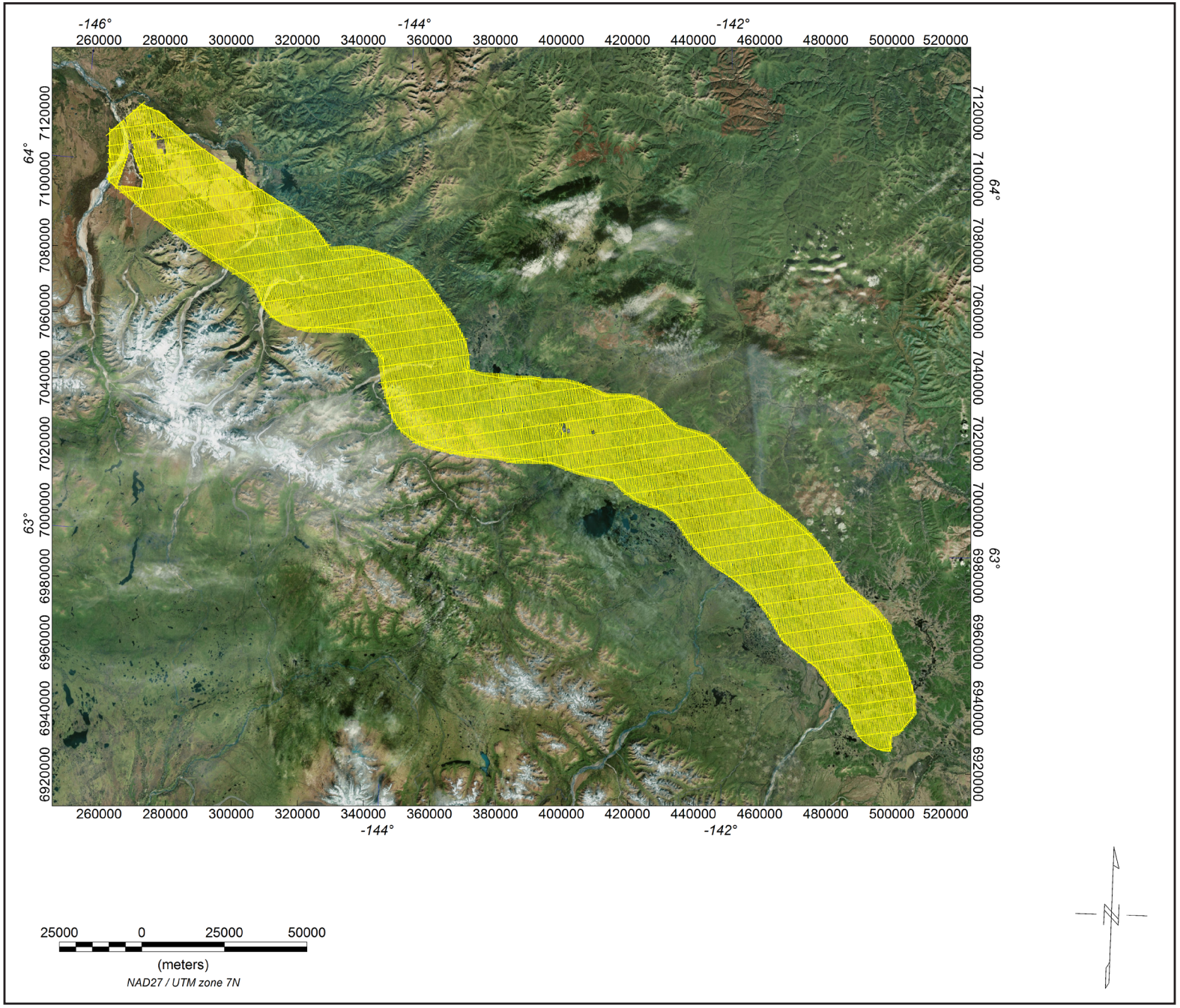


Figure 2. Flight path with orthometric image.

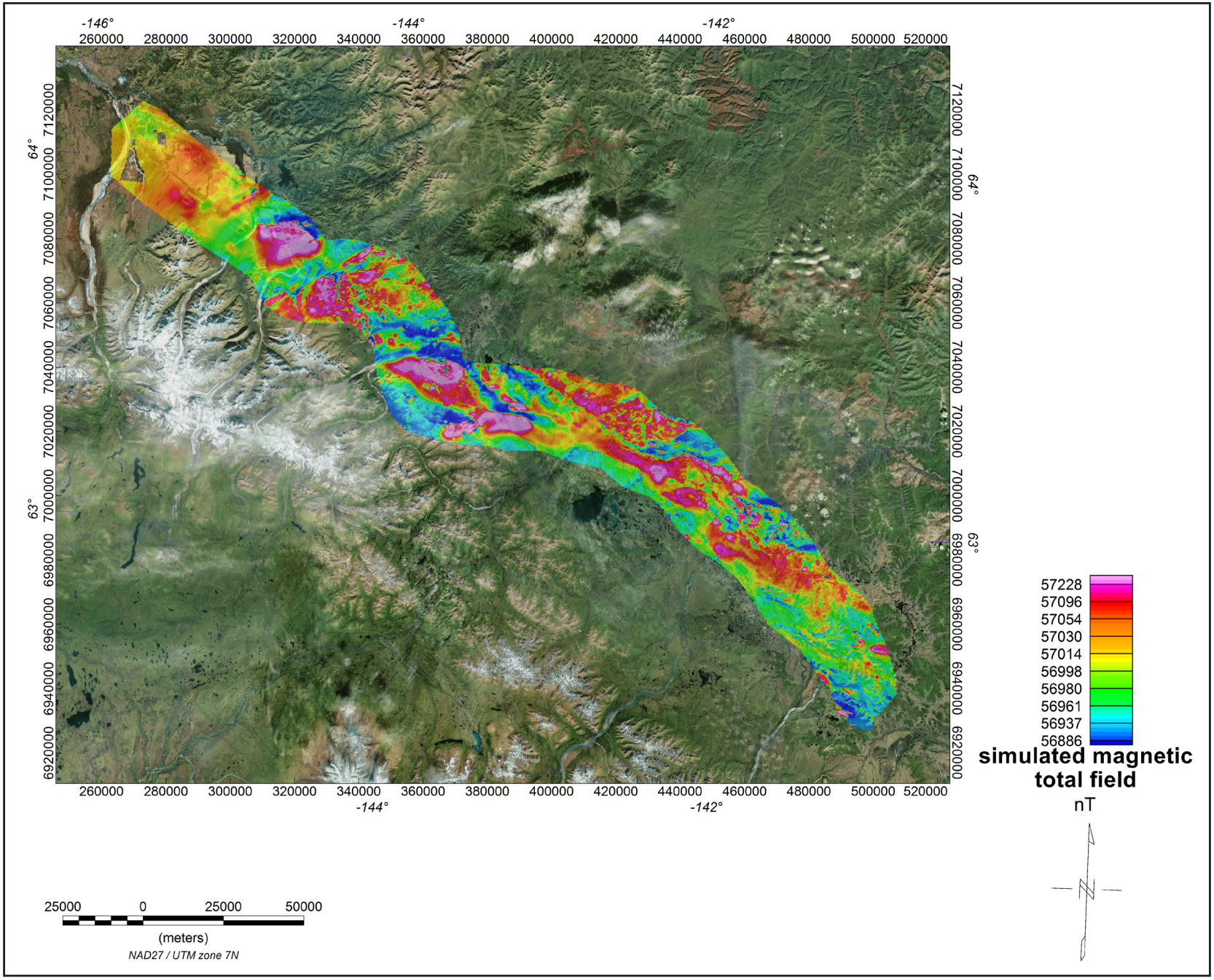


Figure 3. Simulated magnetic total field grid with orthometric image.

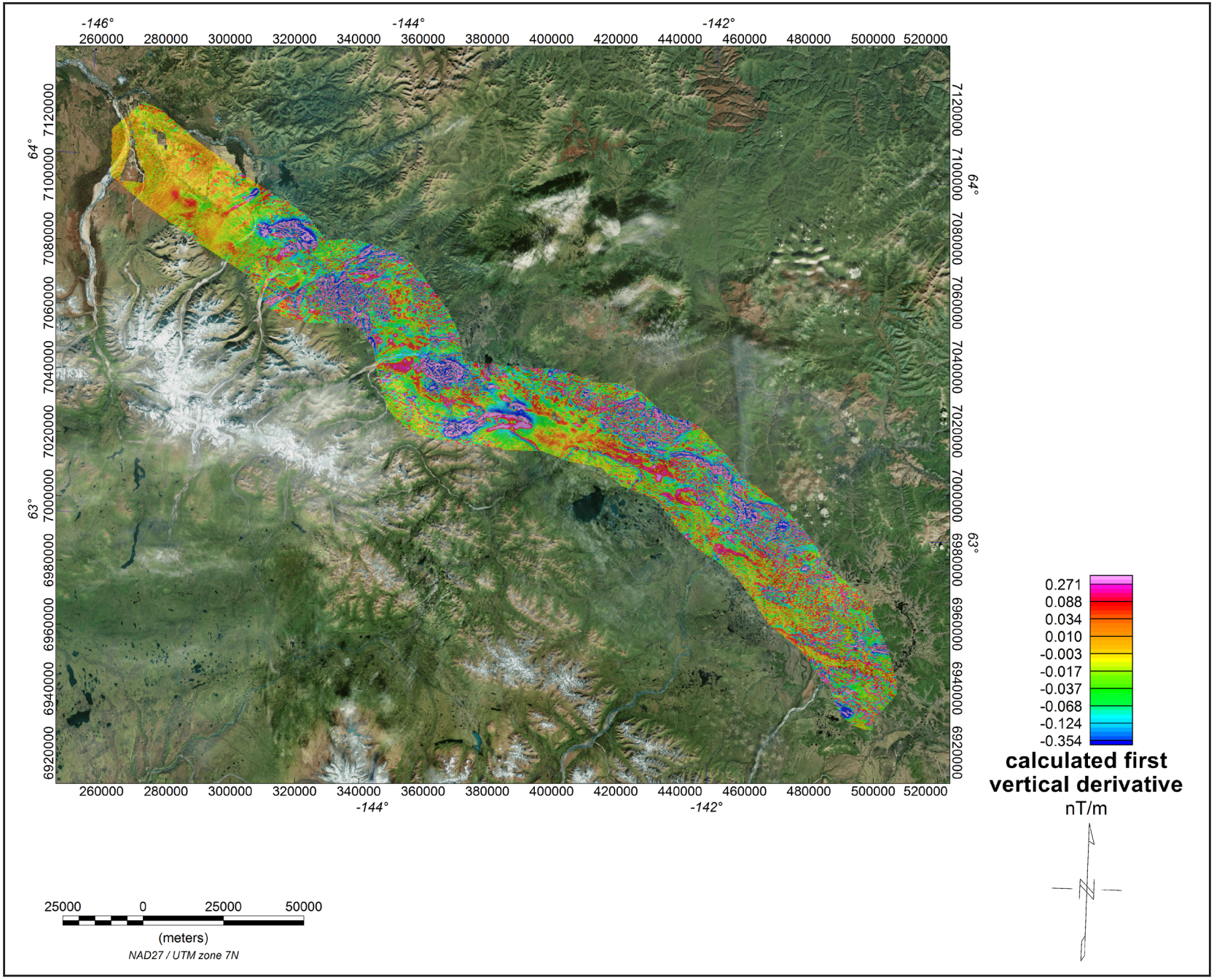


Figure 4. Calculated first vertical derivative grid with orthometric image. The first vertical derivative grid was calculated from the diurnally-corrected, IGRF-corrected total magnetic field grid using a FFT base frequency domain filtering algorithm. The resulting first vertical derivative grid provides 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.

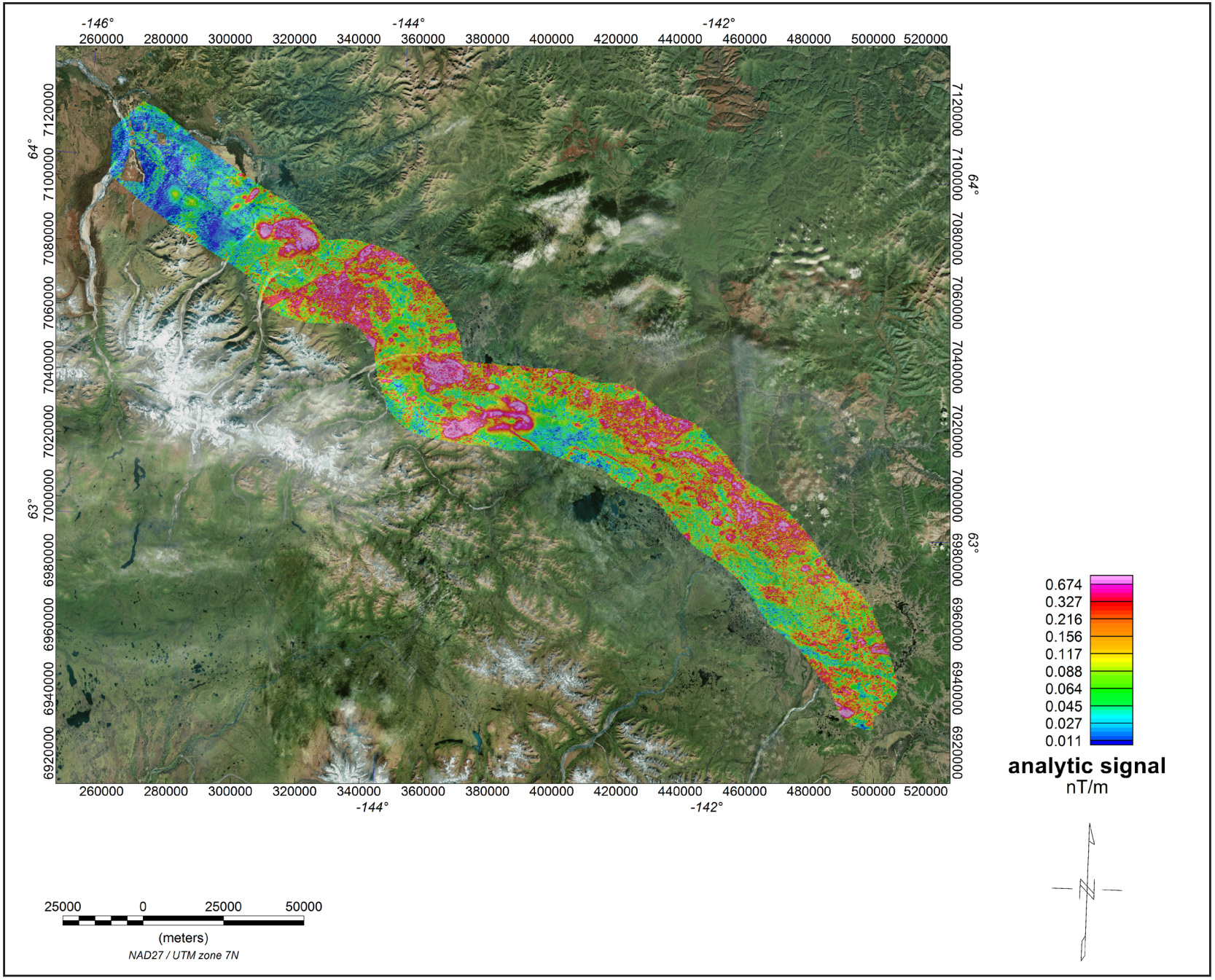


Figure 5. Analytic signal grid with orthometric image. Analytic signal is the total amplitude of all directions of magnetic gradient calculated from the sum of the squares of the three orthogonal gradients. Mapped highs in the calculated analytic signal of magnetic parameter locate the anomalous source 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.

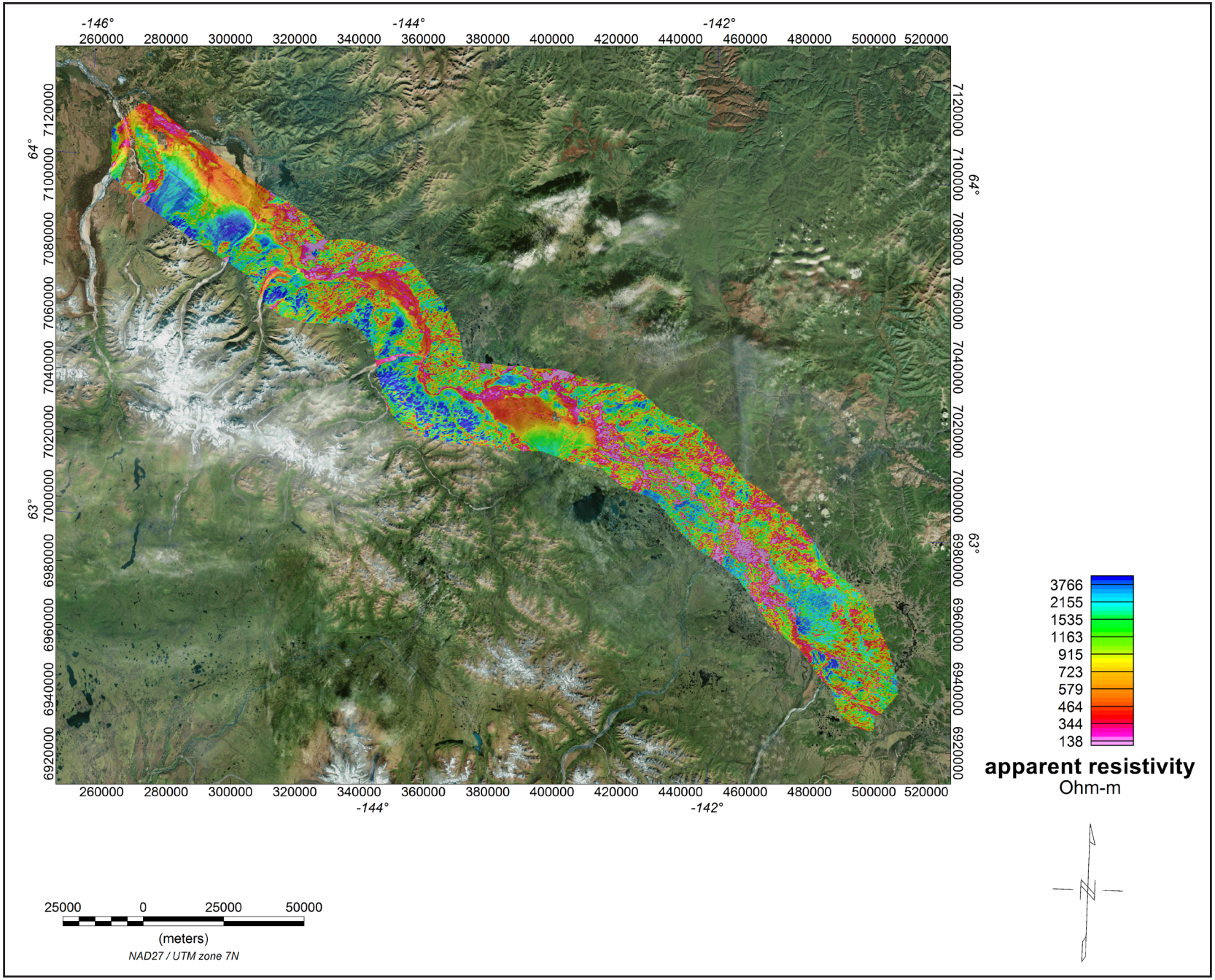


Figure 6. 140,000 Hz apparent resistivity grid with orthometric image.

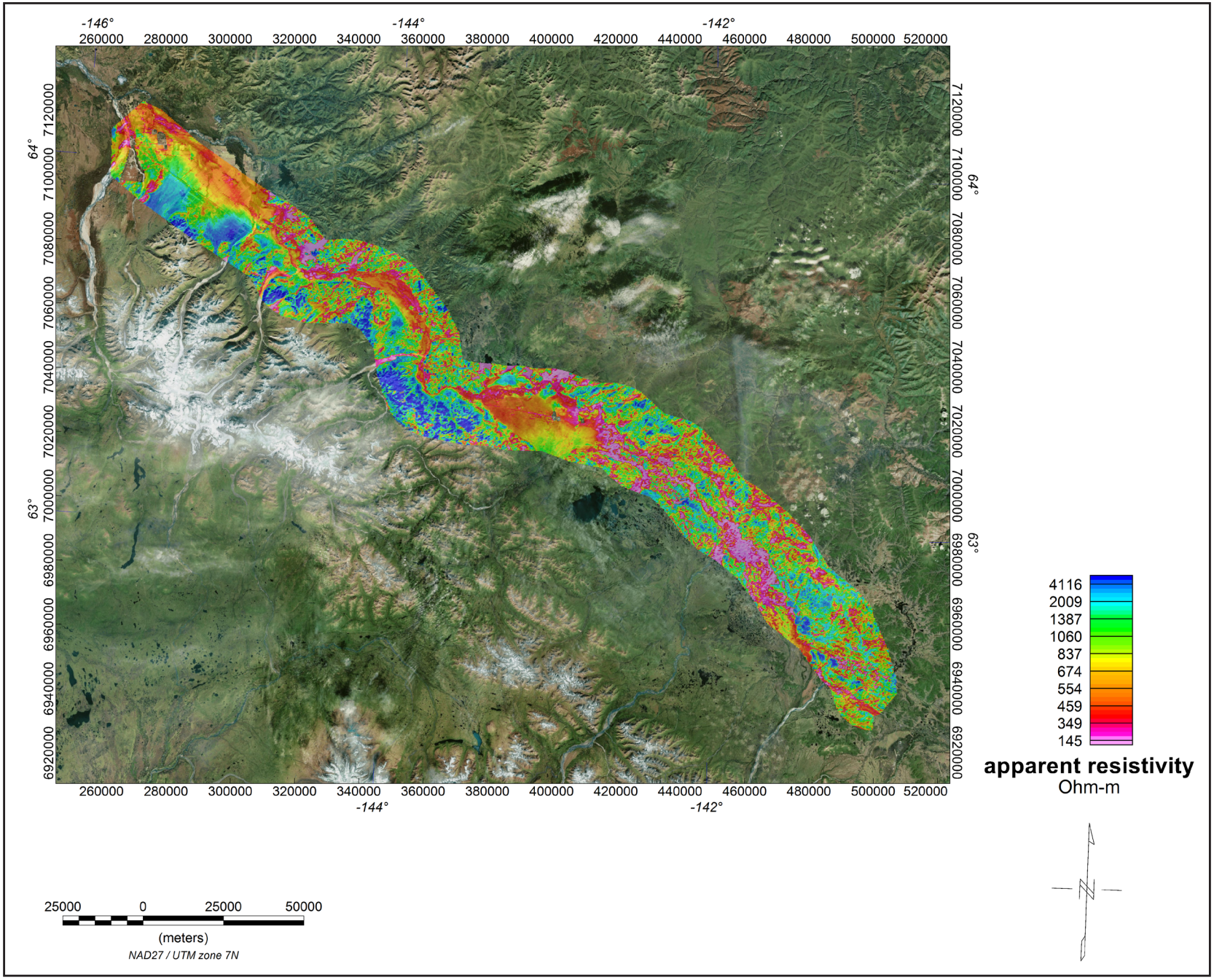


Figure 7. 40,000 Hz apparent resistivity grid with orthometric image.

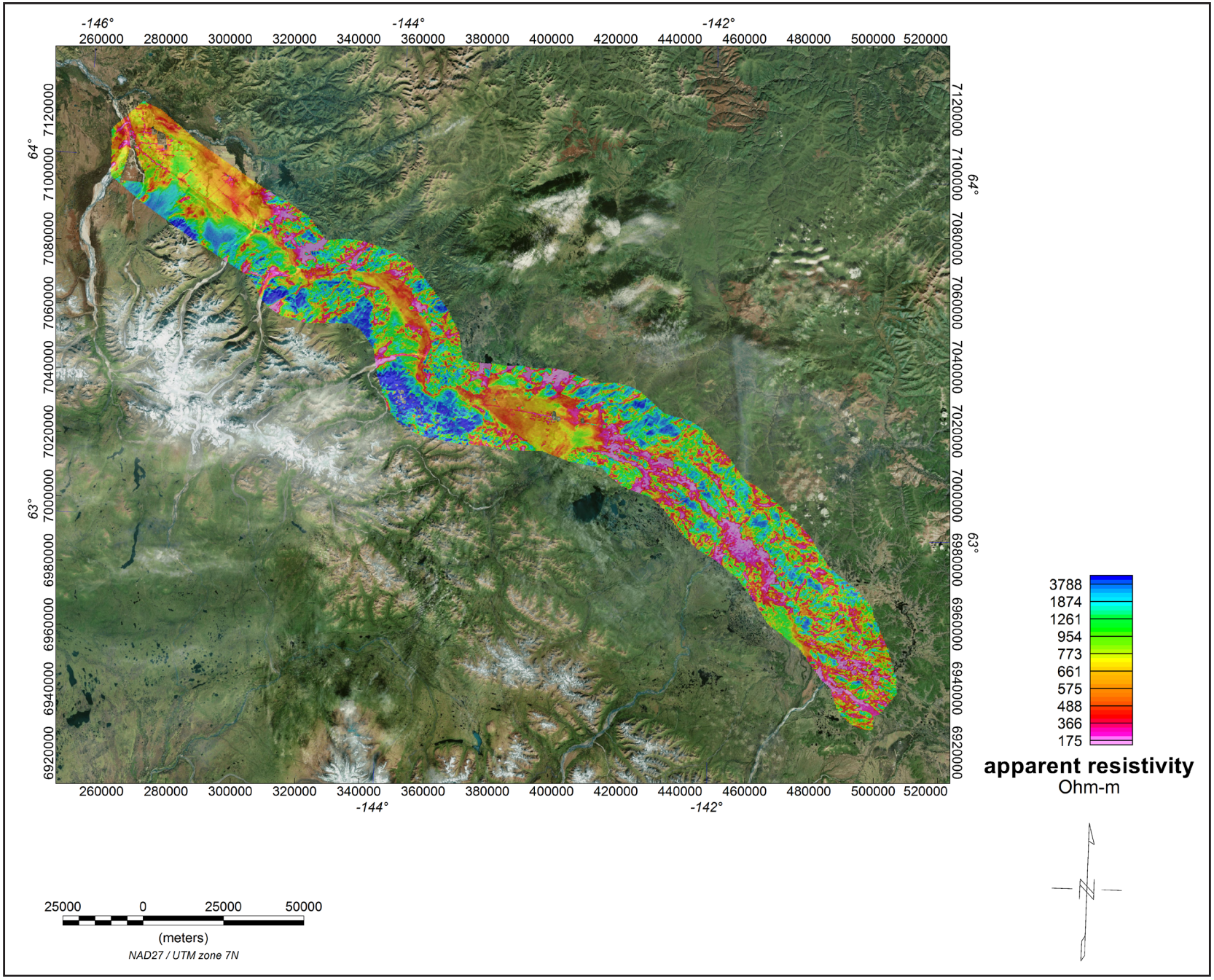


Figure 8. 8,200 Hz apparent resistivity grid with orthometric image.

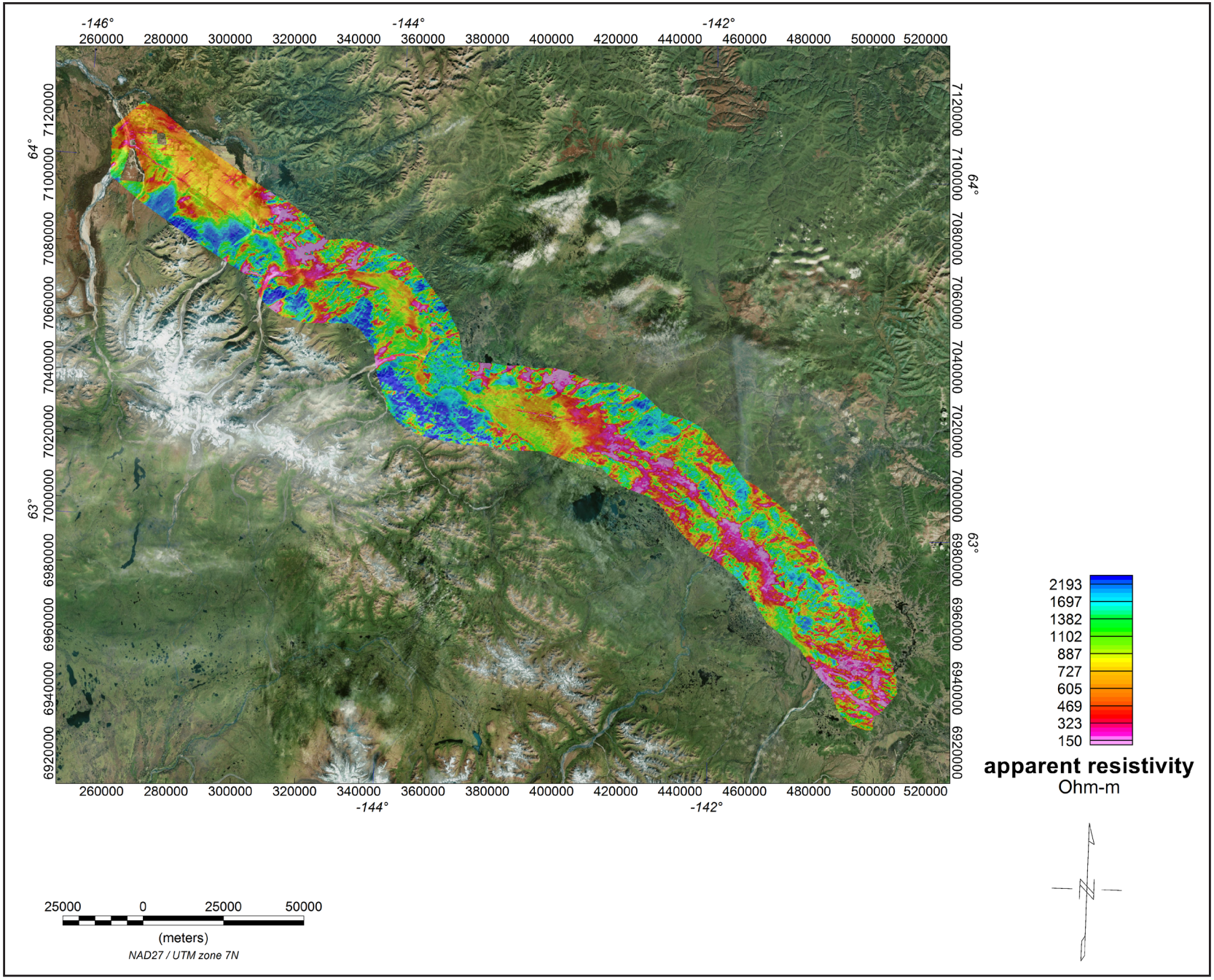


Figure 9. 3,300 Hz apparent resistivity grid with orthometric image.

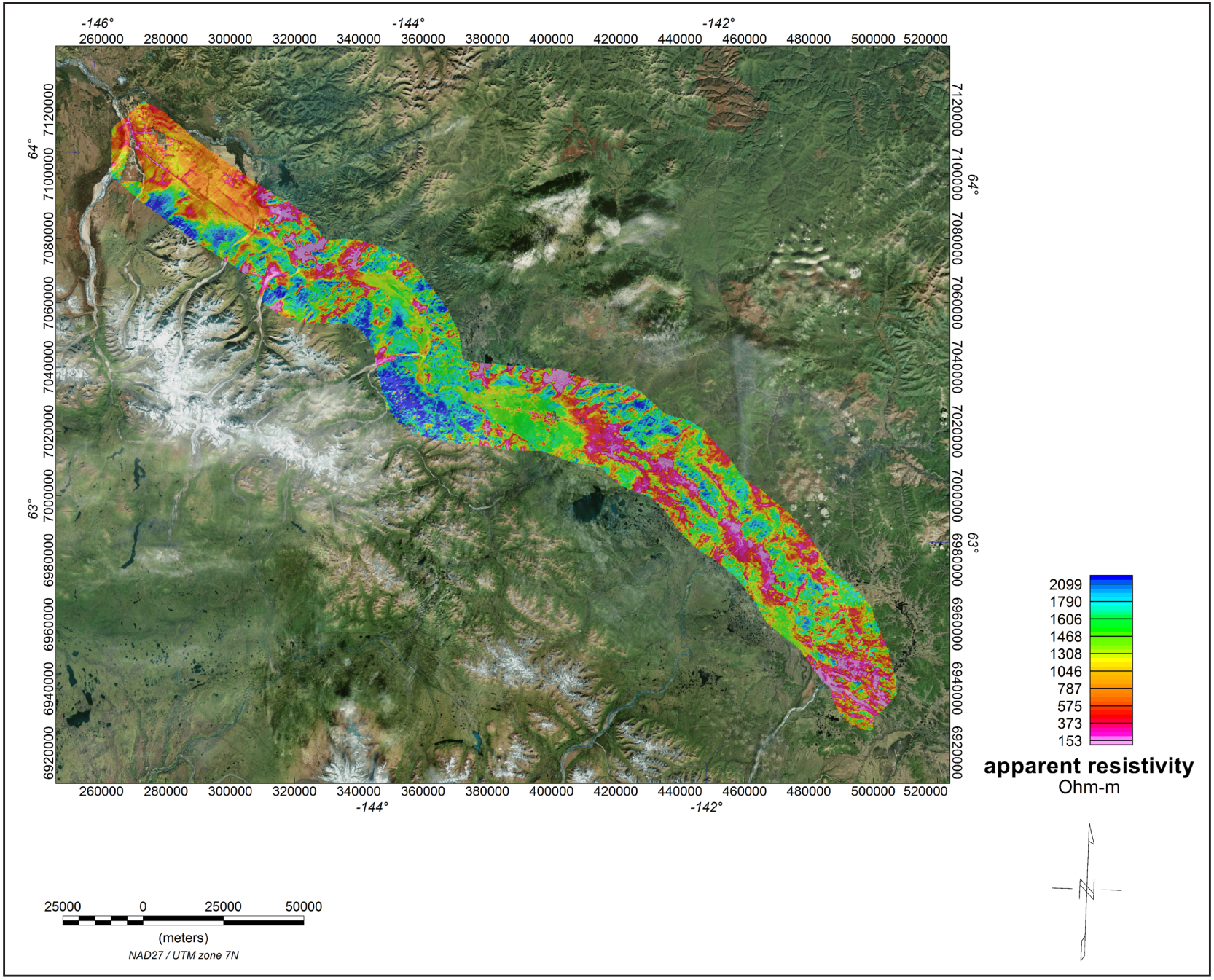


Figure 10. 1,800 Hz apparent resistivity grid with orthometric image.

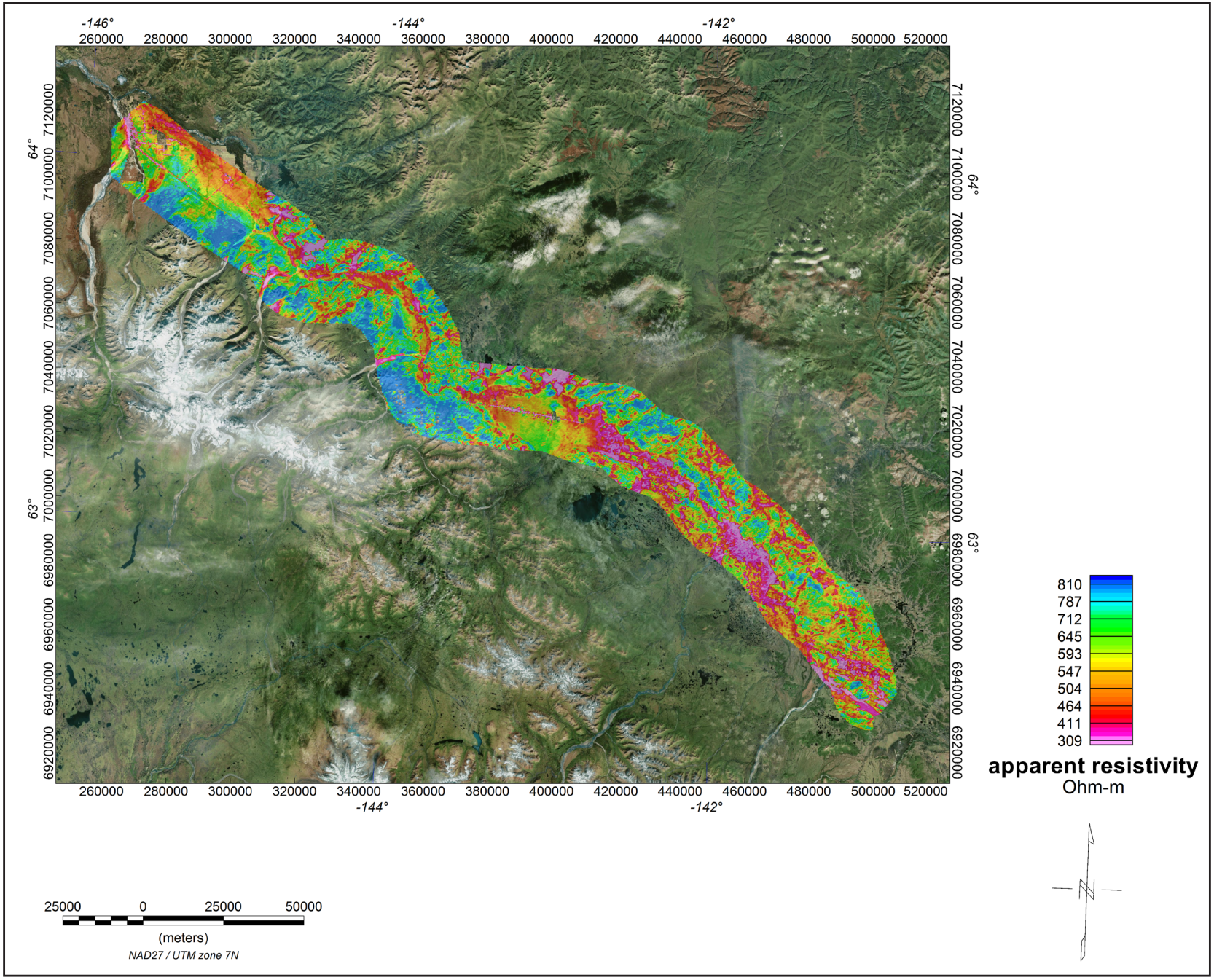


Figure 11. 400 Hz apparent resistivity grid with orthometric image.

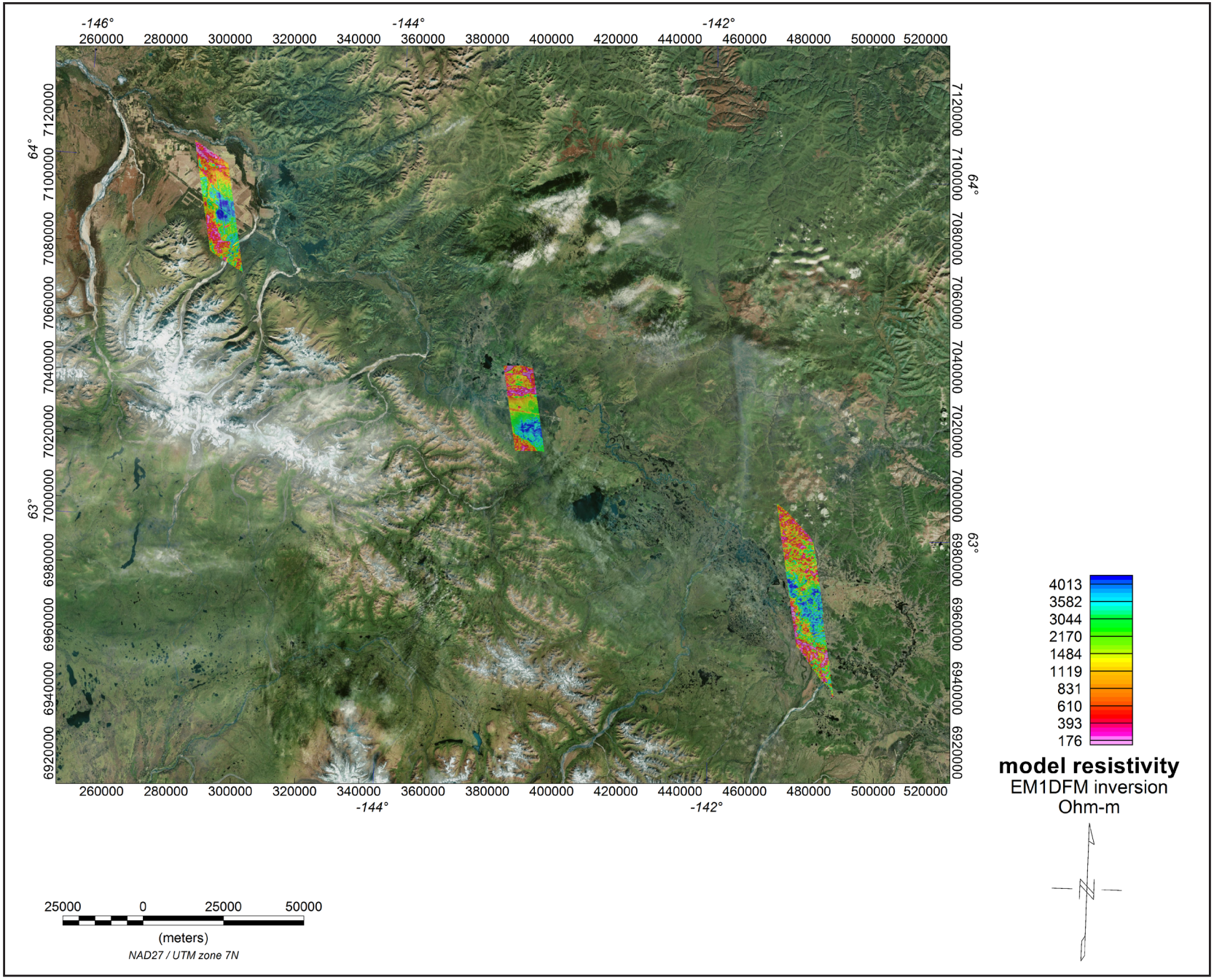


Figure 12. Depth slice grid, EM1DFM inversion model resistivity 4 meters below ground surface with orthometric image. Three resistivity models: Differential, Sengpiel, and EM1DFM were produced for this project.

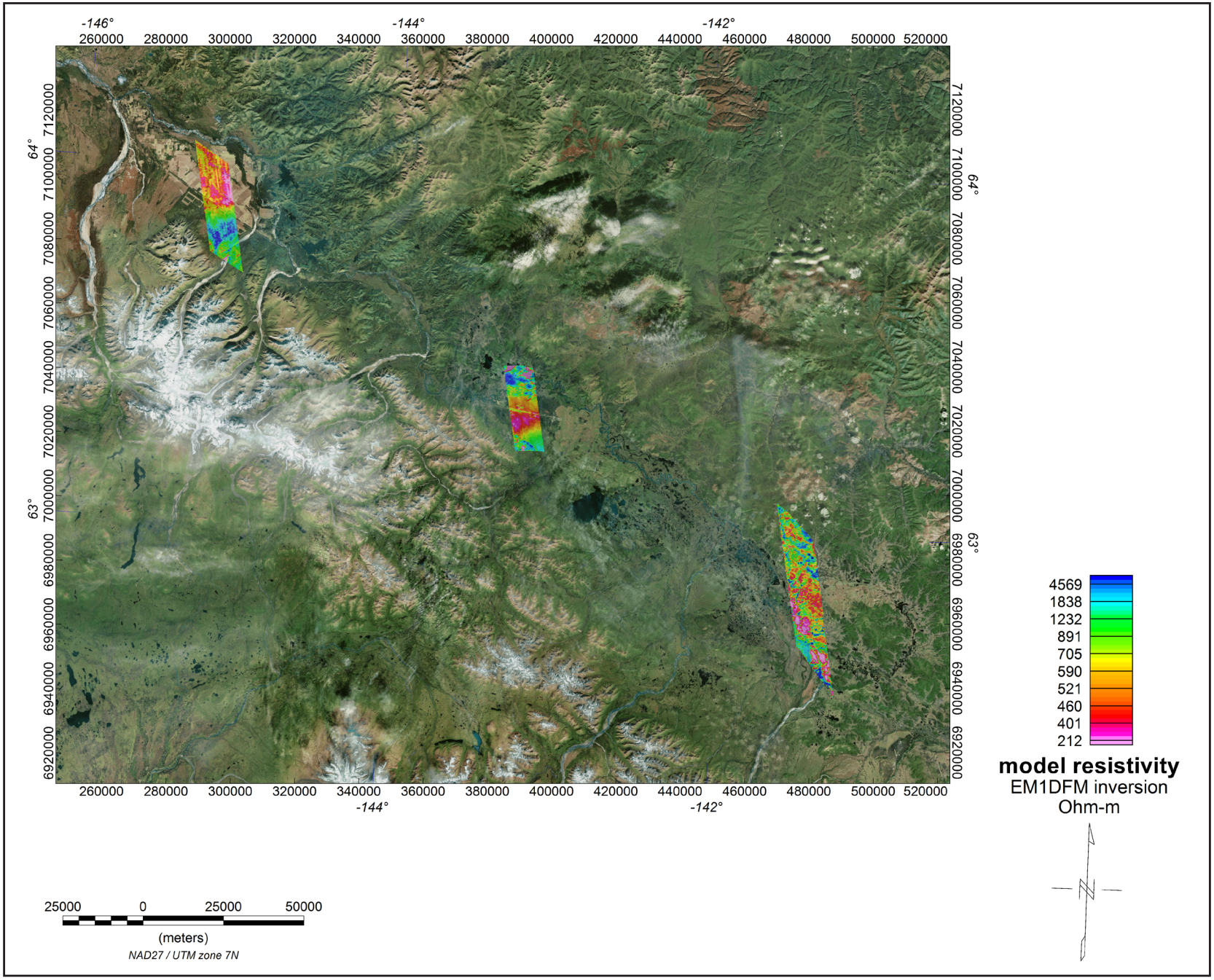
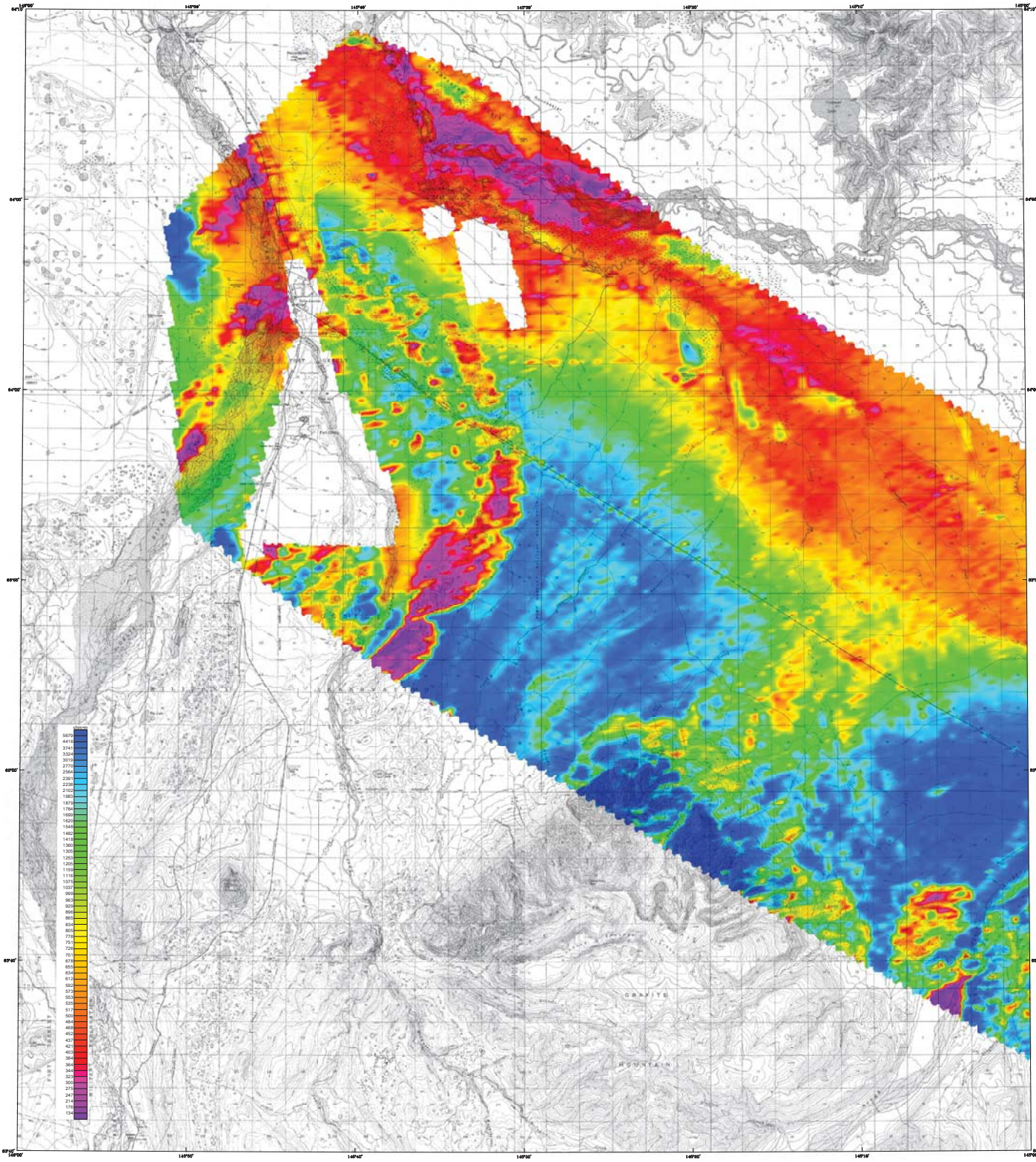


Figure 13. Depth slice grid, EM1DFM inversion model resistivity 40 meters below ground surface with orthometric image. Three resistivity models: Differential, Sengpiel, and EM1DFM were produced for this project.

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/10.14509/30462

Map Title	Description
alaska_highway_corridor_res140khz_topo_map	140,000 Hz apparent resistivity grid with topographic base map
alaska_highway_corridor_res40khz_topo_map	40,000 Hz apparent resistivity grid with topographic base map
alaska_highway_corridor_res8200hz_topo_map	8,200 Hz apparent resistivity grid with topographic base map
alaska_highway_corridor_res3300hz_topo_map	3,300 Hz apparent resistivity grid with topographic base map
alaska_highway_corridor_res1800hz_topo_map	1,800 Hz apparent resistivity grid with topographic base map
alaska_highway_corridor_res400hz_topo_map	400 Hz apparent resistivity grid with topographic base map
alaska_highway_corridor_magtf_topo_map	total magnetic total field grid with topographic base map
alaska_highway_corridor_calculated1vd_topo_map	calculated first vertical derivative of the magnetic field grid with topographic base map
alaska_highway_corridor_interpretation_map	interpretation based on geophysical data



SCALE 1:63,360

1 0 1 2 3 4 MILES

1 0 1 2 3 4 5 KILOMETERS

CONTOUR INTERVAL 40 FEET
DATUM IS MEAN SEA LEVEL

140,000 Hz COPLANAR APPARENT RESISTIVITY OF THE ALASKA HIGHWAY CORRIDOR, EAST-CENTRAL ALASKA

PARTS OF BIG DELTA and MT. HAYES QUADRANGLES

by

Laurel E. Burns, Fugro Airborne Surveys Corp., and Stevens Exploration Management Corp.

2006

DESCRIPTIVE NOTES

The geophysical data were acquired with a RESOLVE Electromagnetic (EM) system and a Scintrex cesium magnetometer. The EM and magnetic sensors 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 barometric pressure. These were performed using AS350-camera AS350B-2 Squirrel helicopters at a mean terrain clearance of 200 feet along NW–SE (350°) survey flight lines with a spacing of a quarter of a mile. Tie lines were flown perpendicular to the flight lines at intervals of approximately 3 miles.

An Ashtech 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 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

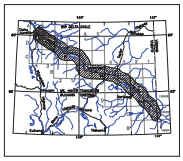
The RESOLVE EM system measured inphase and quadrature components at six frequencies. One vertical coaxial coplanar pair operating at 400 Hz, and five horizontal coplanar coil–pairs operated at 400, 1800, 8200, 40,000 and 140,000 Hz. EM data were sampled at 0.1 second intervals. The EM system responds to bedrock conductors, conductive overburden, and cultural sources. Apparent resistivity is generated from the inphase and quadrature component of the coplanar 140,000 Hz using the pseudo–layer half space model. The data were interpolated onto a regular 80 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 ALTITUDE LIMITS

In areas where the EM bird height exceeded 100 m, and the inphase and quadrature signals were below 3 ppm, the resistivity was not calculated and the grid is blank. This avoids meaningless resistivity calculations due to small signals in areas where the helicopter flew higher to avoid cultural objects or for safety reasons.

LOCATION INDEX



SURVEY HISTORY

This map has been compiled and drawn under contract between the State of Alaska, Department of Natural Resources, Division of Geological & Geophysical Surveys (DGGS), and Stevens Exploration Management Corp. (SEMC). The geophysical data for the new area were acquired and processed under contract by Fugro Airborne Surveys Corp. in late 2005 and early 2006.

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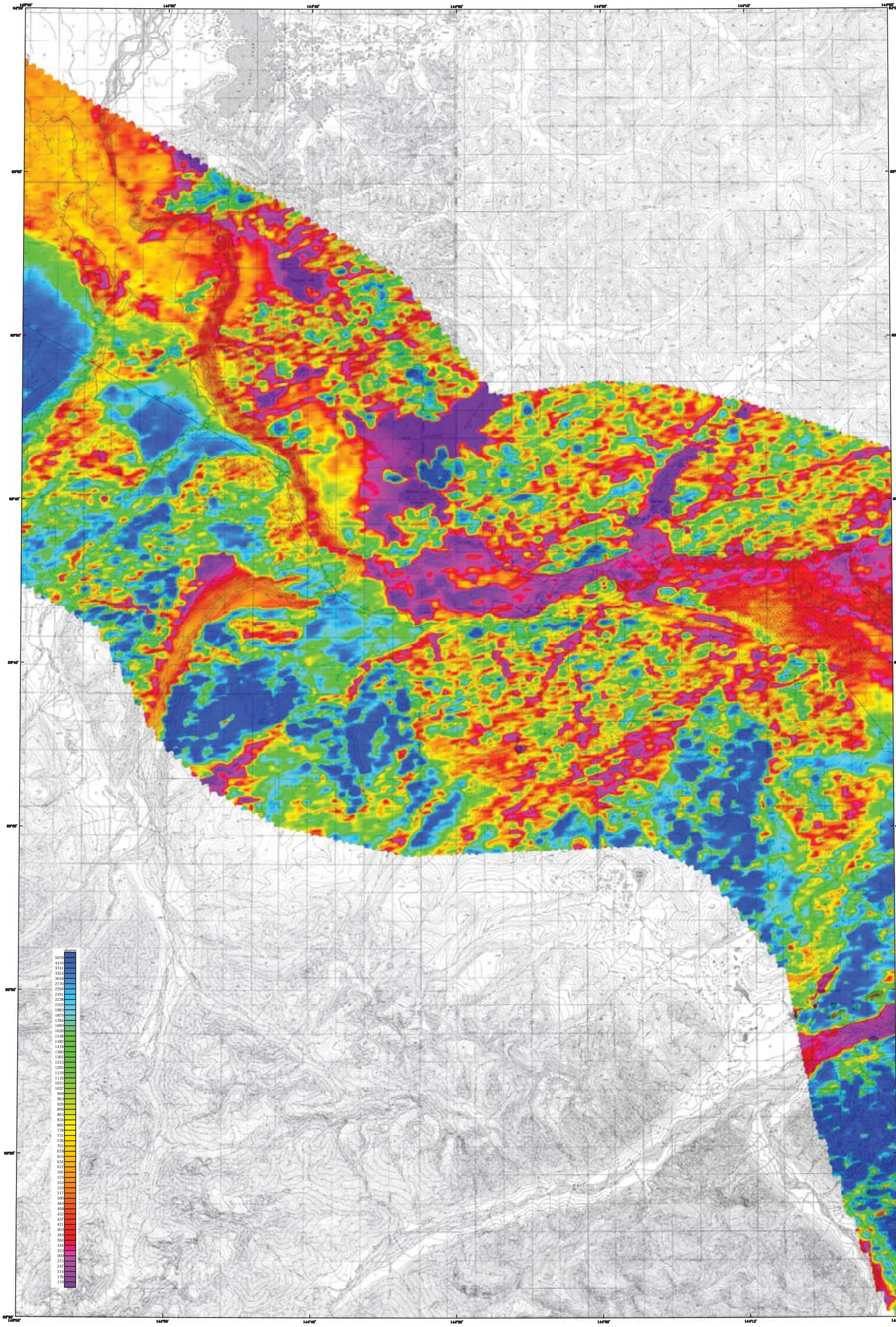


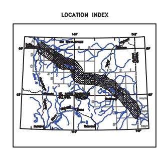
SCALE 1:63,360

140,000 Hz COPLANAR APPARENT RESISTIVITY OF THE ALASKA HIGHWAY CORRIDOR, EAST-CENTRAL ALASKA

PARTS OF MT. HAYES QUADRANGLE

by
Laurel E. Burns, Fugro Airborne Surveys Corp., and Stevens Exploration Management Corp.
2006

LOCATION INDEX



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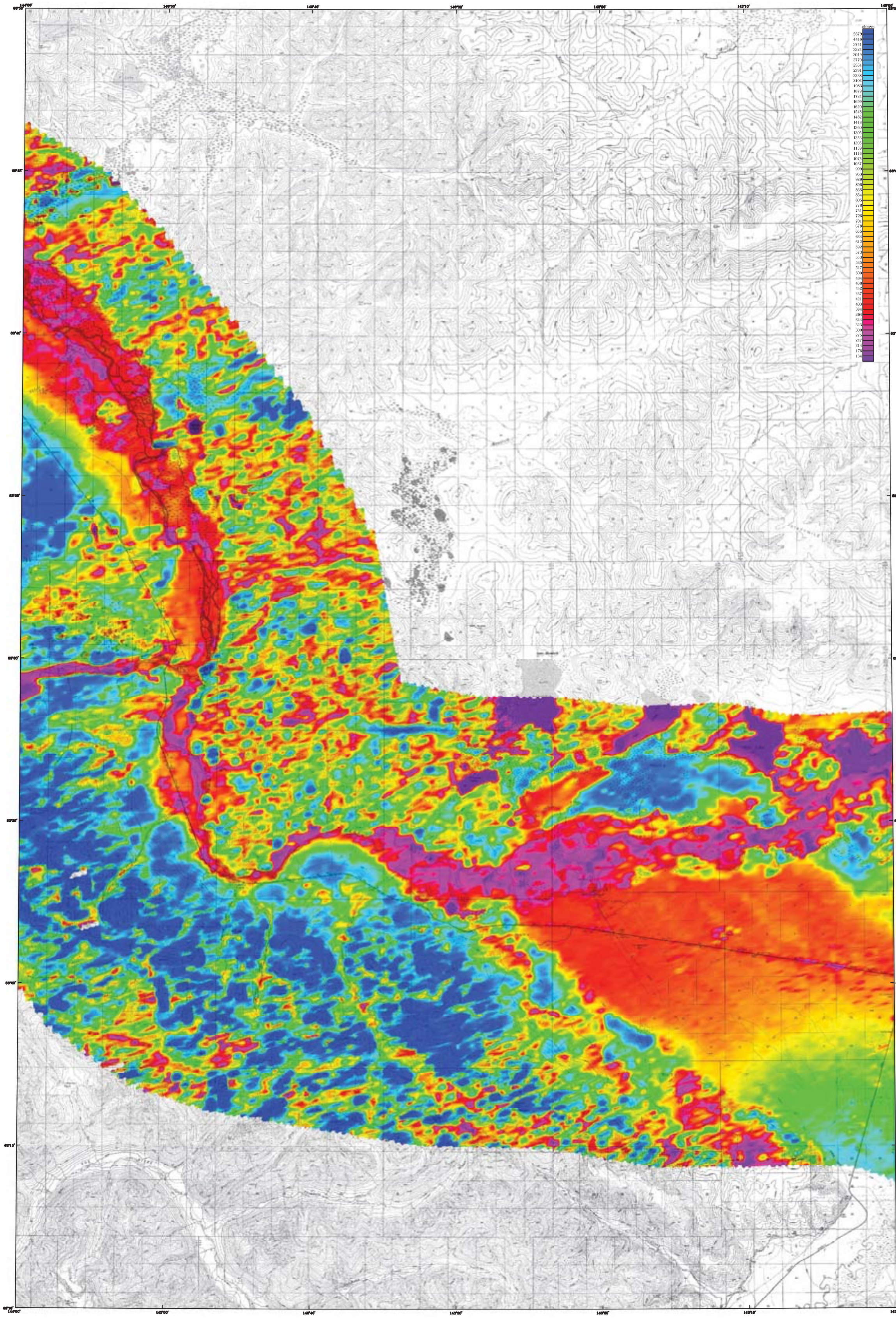

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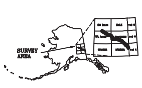
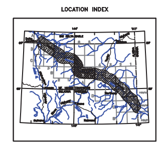


140,000 Hz COPLANAR APPARENT RESISTIVITY OF THE ALASKA HIGHWAY CORRIDOR, EAST-CENTRAL ALASKA

PARTS OF TANACROSS QUADRANGLE

by
Laurel E. Burns, Fugro Airborne Surveys Corp., and Stevens Exploration Management Corp.
2006

LOCATION INDEX



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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 7) spheroid, 1927 North American datum using a central meridian (CM) of 141°, a north constant of 0 and an east constant of 500,000. Positional accuracy of the presented data is better than 10 m. with respect to the UTM grid.

RESISTIVITY

The RESOLVE EM system measured inphase and quadrature components at six frequencies. One vertical coaxial coil–pair operated at 3300 Hz while five horizontal coplanar coil–pairs operated at 400, 1800, 8200, 40,000 and 140,000 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 140,000 Hz using the pseudo–layer half space model. The data were interpolated onto a regular 80 m grid using a modified Akima (1970) technique.

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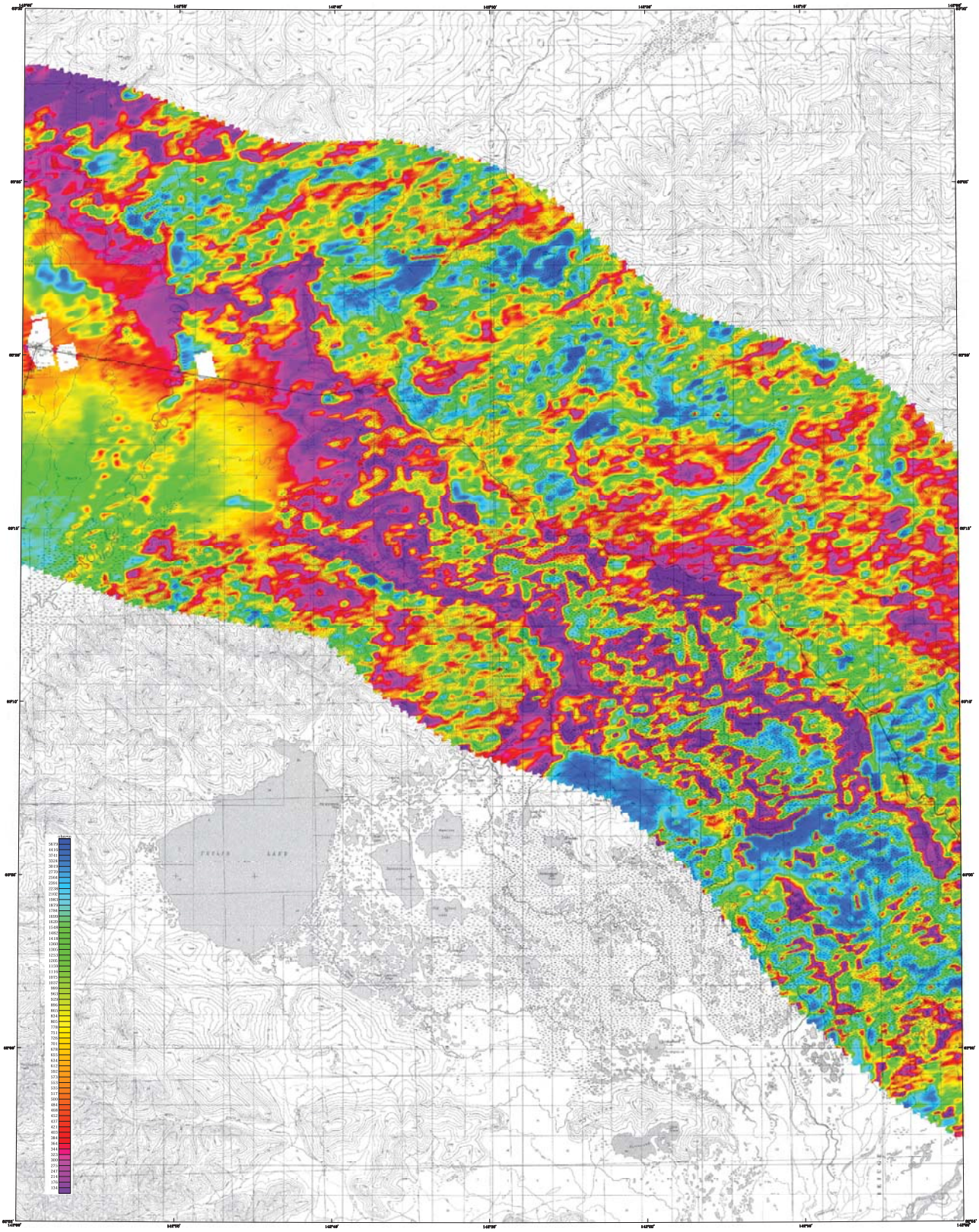

140,000 Hz COPLANAR APPARENT RESISTIVITY OF THE ALASKA HIGHWAY CORRIDOR, EAST-CENTRAL ALASKA

PARTS OF NABESNA and TANACROSS QUADRANGLES

by

Laurel B. Burns, Fugro Airborne Surveys Corp., and Stevens Exploration Management Corp.

2006

SURVEY AREA

DESCRIPTIVE NOTES

The geophysical data were acquired with a RESOLVE helicopter-borne EM and magnetic system, including magnetometer. The EM and magnetic sensors 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 3-axis fluxgate magnetometer. The survey used AS350B-2 and AS350B-3 Squirrel helicopters at a mean terrain clearance of 200 feet along NW–SE (330°) survey flight lines with a spacing of a quarter of a mile. Tie lines were flown perpendicular to the flight lines at intervals of approximately 3 miles.

An Aashtech 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 coordinates are presented in UTM (Universal TM) (UTM zone 7) schedule, 1927 North American datum using a central meridian (CM) of 141°, a norin 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 RESOLVE EM system measured inphase and quadrature components at six frequencies. One vertical coaxial coil–pair operated at 3300 Hz while five horizontal coplanar coil–pairs operated at 400, 1800, 8200, 40,000 and 140,000 Hz. Data were recorded 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 resistor 140,000 Hz coil–pair using a pseudo–layer half–space. The data were interpolated onto a regular 50 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.1, p.589–602.

RESISTIVITY ALTITUDE LIMITS

In areas where the EM bird height exceeded 100 m, and the inphase and quadrature signals were below 3 ppm, the resistivity was not calculated and the grid is blank. This avoids meaningless resistivity calculations due to small signals in areas where the helicopter flew higher to avoid cultural objects or for safety reasons.

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 Stevens Exploration Management Corp. The geophysical data for the Nabesna area were acquired and processed by Fugro Airborne Surveys Corp. in late 2005 and early 2006.

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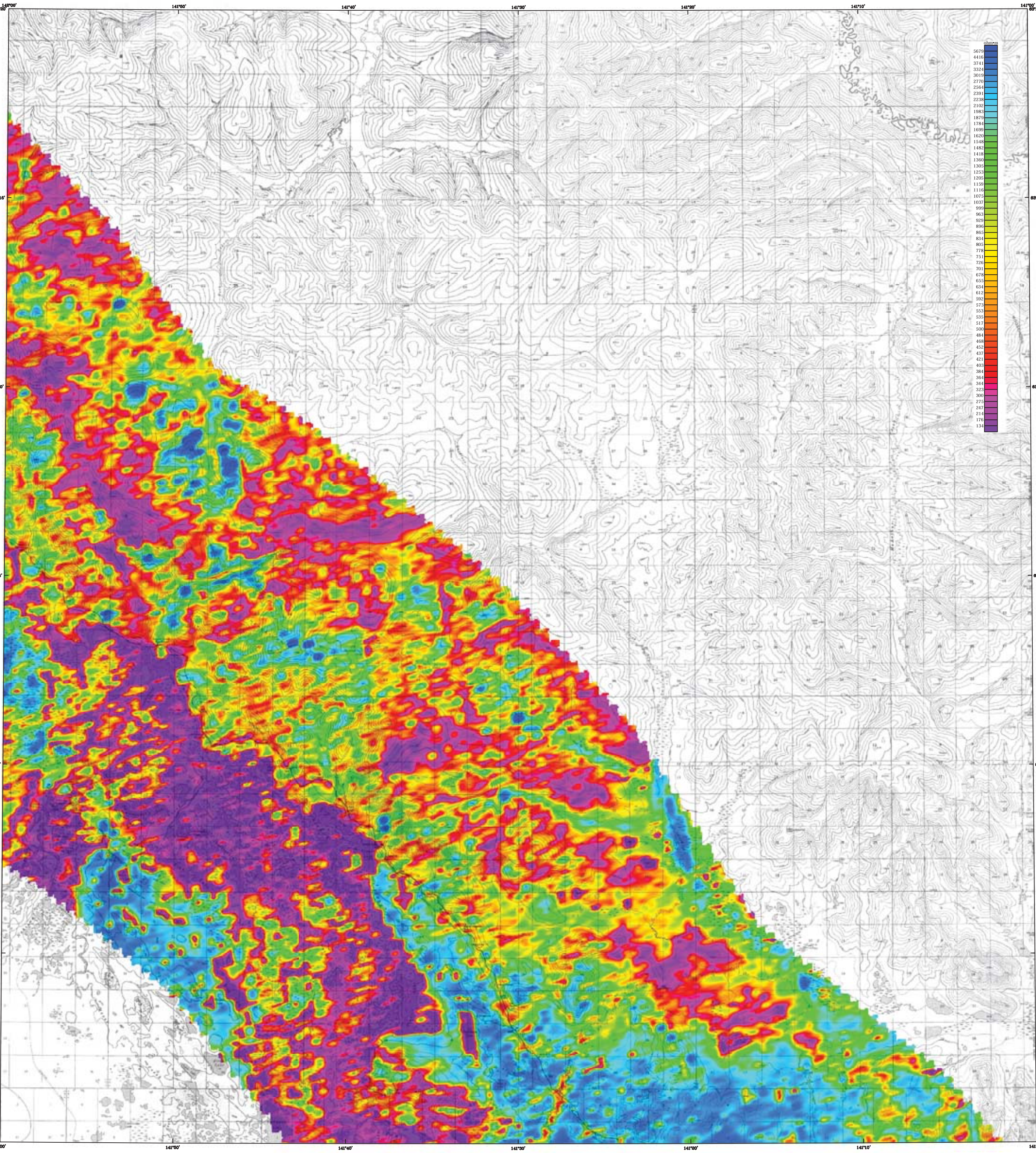
LOCATION INDEX



SCALE 1:63,360

1 0 1 2 3 4 MILES

1 0 1 2 3 4 5 KILOMETERS

140,000 Hz COPLANAR APPARENT RESISTIVITY OF THE ALASKA HIGHWAY CORRIDOR, EAST-CENTRAL ALASKA

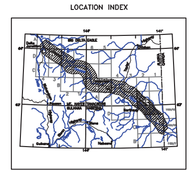
PARTS OF NABESNA and TANACROSS QUADRANGLES

by

Laurel E. Burns, Fugro Airborne Surveys Corp., and Stevens Exploration Management Corp.

2006

LOCATION INDEX



DESCRIPTIVE NOTES

The geophysical data were acquired with a RESOLVE Electromagnetic (EM) system and a Scintrex cesium magnetometer. The EM and magnetic sensors 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 using AS350B-2 and AS350B-3 Squirrel helicopters at a mean terrain clearance of 200 feet along NW-SE (350°) survey flight lines with a spacing of a quarter of a mile. Tie lines were flown perpendicular to the flight lines at intervals of approximately 3 miles.

An Ashtech 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 7) spheroid, 1927 North American datum using a central meridian (CM) of 141°, a north constant of 0 and an east constant of 500,000. Positional accuracy of the presented data is better than 10 m. with respect to the UTM grid.

RESISTIVITY

The RESOLVE EM system measured inphase and quadrature components at six frequencies. One vertical coaxial coil-pair operated at 3300 Hz while five horizontal coplanar coil-pairs operated at 400, 1800, 8200, 40,000 and 140,000 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 140,000 Hz using the pseudo-layer half space model. The data were interpolated onto a regular 80 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 ALTITUDE LIMITS

In areas where the EM bird height exceeded 100 m, and the inphase and quadrature signals were below 3 ppm, the resistivity was not calculated and the grid is blank. This avoids meaningless resistivity calculations due to small signals in areas where the helicopter flew higher to avoid cultural objects or for safety reasons.

SURVEY HISTORY

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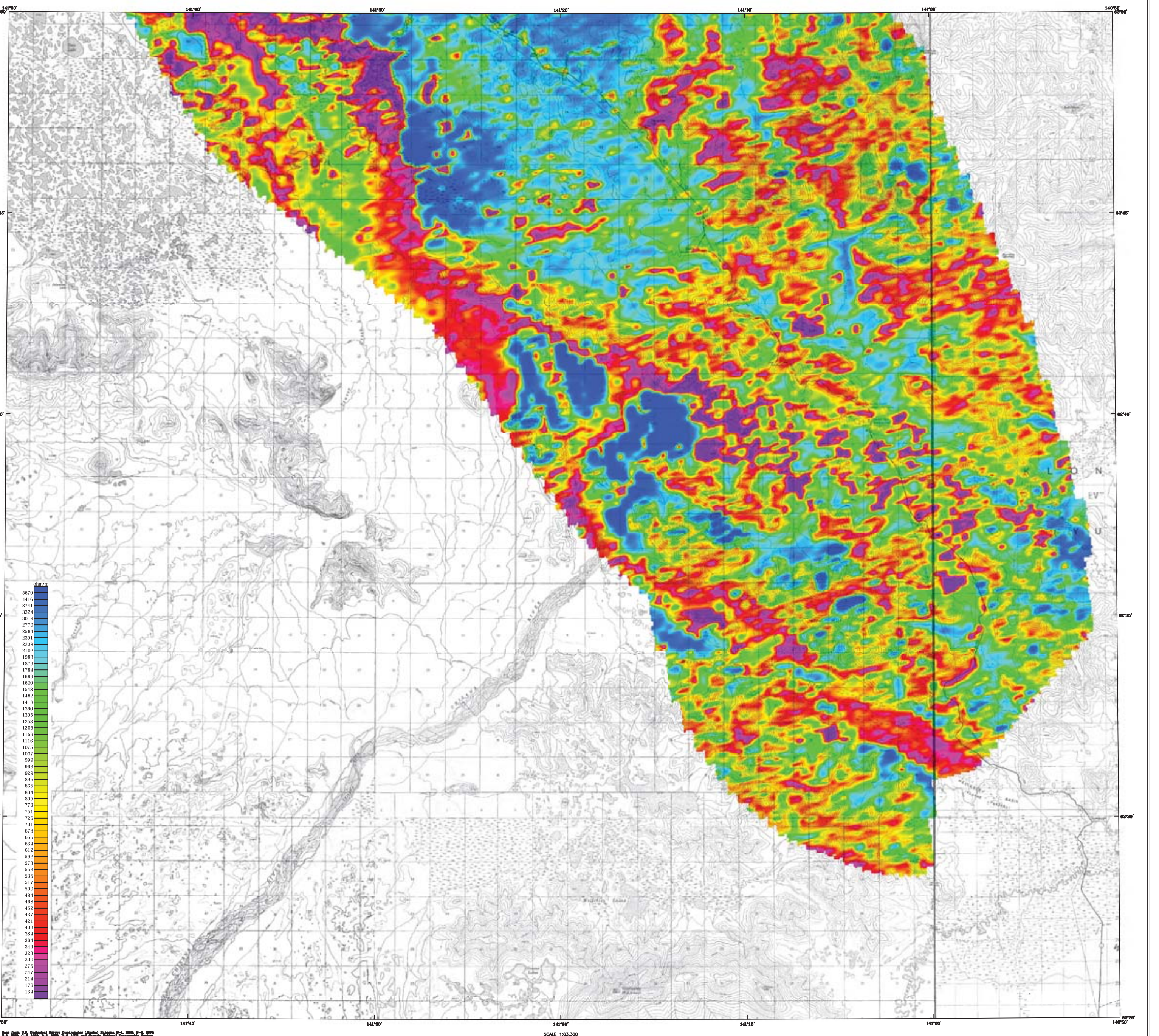
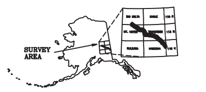


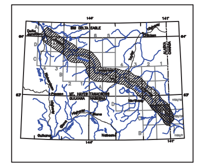
SCALE 1:63,360



140,000 Hz COPLANAR APPARENT RESISTIVITY OF THE ALASKA HIGHWAY CORRIDOR, EAST-CENTRAL ALASKA

PARTS OF NABESNA QUADRANGLE and CANADA 115K

by
Laurel E. Burns, Fugro Airborne Surveys Corp., and Stevens Exploration Management Corp.
2006



DESCRIPTIVE NOTES

The geophysical data were acquired with a RESOLVE Electromagnetic (EM) system and a Scintrex cesium magnetometer. The EM and magnetic sensors 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 using AS350B-2 and AS350B-3 Squirrel helicopters at a mean terrain clearance of 200 feet along NW-SE (350°) survey flight lines with a spacing of a quarter of a mile. Tie lines were flown perpendicular to the flight lines at intervals of approximately 3 miles.

An Ashtech 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 7) spheroid, 1927 North American datum using a central meridian (CM) of 141°, a north constant of 0 and an east constant of 500,000. Positional accuracy of the presented data is better than 10 m. with respect to the UTM grid.

RESISTIVITY

The RESOLVE EM system measured inphase and quadrature components at six frequencies. One vertical coaxial coil-pair operated at 3300 Hz while five horizontal coplanar coil-pairs operated at 400, 1800, 8200, 40,000 and 140,000 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 140,000 Hz using the pseudo-layer half space model. The data were interpolated onto a regular 80 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 ALTITUDE LIMITS

In areas where the EM bird height exceeded 100 m, and the inphase and quadrature signals were below 3 ppm, the resistivity was not calculated and the grid is blank. This avoids meaningless resistivity calculations due to small signals in areas where the helicopter flew higher to avoid cultural objects or for safety reasons.

SURVEY HISTORY

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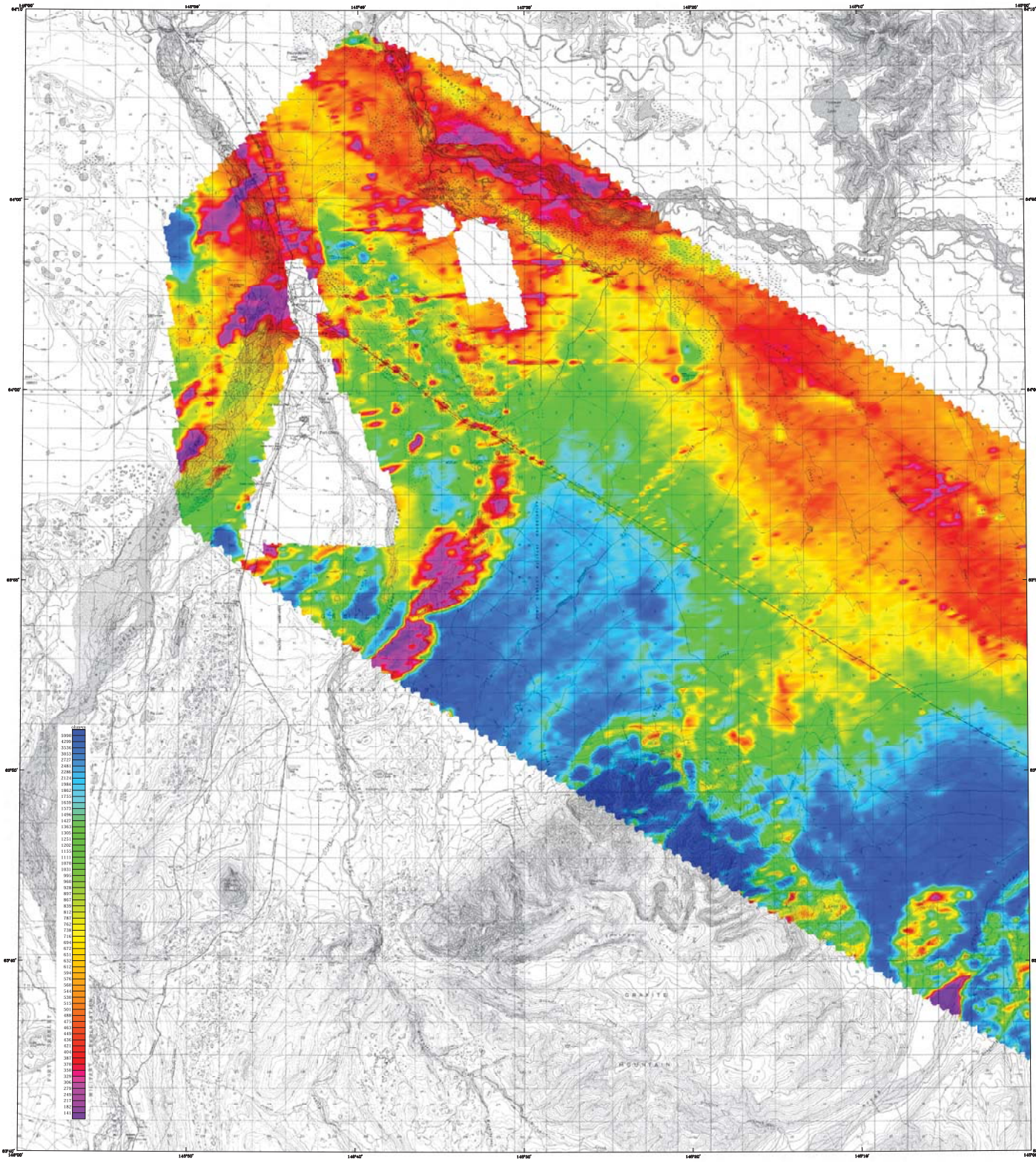


SCALE 1:63,360

1 0 1 2 3 4 MILES

1 0 1 2 3 4 5 KILOMETERS

CONTOUR INTERVAL 50 FEET
DATUM: MEAN SEA LEVEL

40,000 Hz COPLANAR APPARENT RESISTIVITY OF THE ALASKA HIGHWAY CORRIDOR, EAST-CENTRAL ALASKA

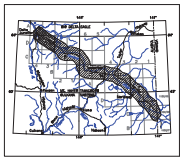
PARTS OF BIG DELTA and MT. HAYES QUADRANGLES

by

Laurel E. Burns, Fugro Airborne Surveys Corp., and Stevens Exploration Management Corp.

2006

LOCATION INDEX



DESCRIPTIVE NOTES

The geophysical data were acquired with a RESOLVE Electromagnetic (EM) system and a Scintrex cesium magnetometer. The EM and magnetic sensors 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 barometric pressure. These were measured using AS350 camera, AS350B-2 Squirrel helicopter at a mean terrain clearance of 200 feet along NW–SE (350°) survey flight lines with a spacing of a quarter of a mile. Tie lines were flown perpendicular to the flight lines at intervals of approximately 3 miles.

An Ashtech 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 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 RESOLVE EM system measured inphase and quadrature components at six frequencies. One vertical coaxial coplanar pair operated at 3,000 Hz and three horizontal coplanar coil–pairs operated at 400, 1800, 8200, 40,000 and 140,000 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 40,000 Hz using the pseudo–layer half space model. The data were interpolated onto a regular 80 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 ALTITUDE LIMITS

In areas where the EM bird height exceeded 100 m, and the inphase and quadrature signals were below 3 ppm, the resistivity was not calculated and the grid is blank. This avoids meaningless resistivity calculations due to small signals in areas where the helicopter flew higher to avoid cultural objects or for safety reasons.

SURVEY HISTORY

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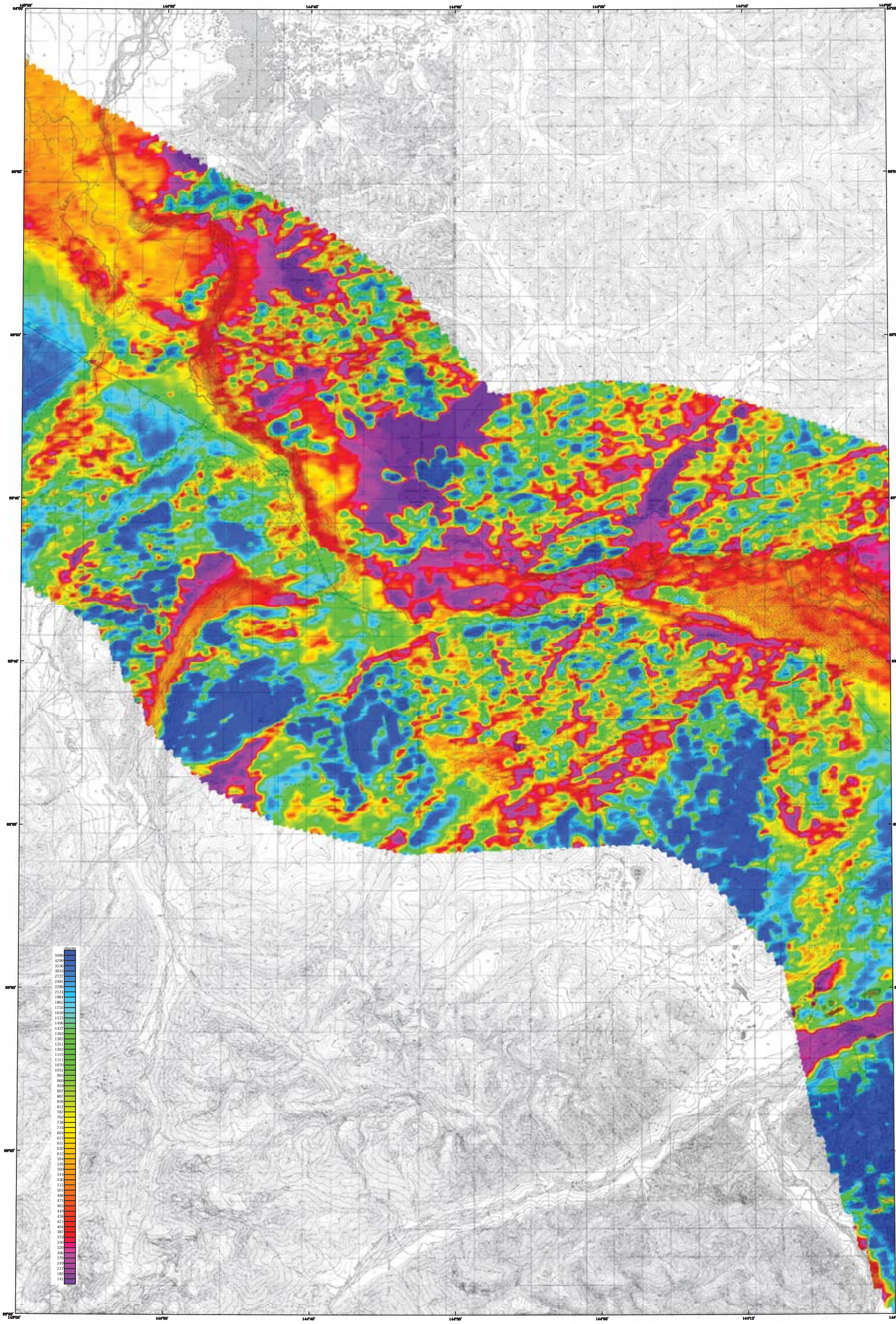
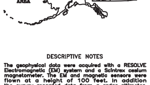


SCALE 1:63,360

1 0 1 2 3 4 MILES

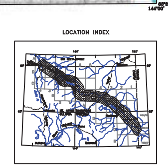
1 0 1 2 3 4 5 KILOMETERS



40,000 Hz COPLANAR APPARENT RESISTIVITY OF THE ALASKA HIGHWAY CORRIDOR, EAST-CENTRAL ALASKA

PARTS OF MT. HAYES QUADRANGLE

by
Laurel E. Burns, Fugro Airborne Surveys Corp., and Stevens Exploration Management Corp.
2006



DESCRIPTIVE NOTES

The geophysical data were acquired with a RESOLVE Electromagnetic (EM) system and a Scintrex cesium magnetometer. The EM and magnetic sensors 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 using AS350B-2 and AS350B-3 Squirrel helicopters at a mean terrain clearance of 200 feet along NW-SE (350°) survey flight lines with a spacing of a quarter of a mile. Tie lines were flown perpendicular to the flight lines at intervals of approximately 3 miles.

An Ashtech 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 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 RESOLVE EM system measured inphase and quadrature components at six frequencies. One vertical coaxial coil-pair operated at 3300 Hz while five horizontal coplanar coil-pairs operated at 400, 1800, 8200, 40,000 and 140,000 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 40,000 Hz using the pseudo-layer half space model. The data were interpolated onto a regular 80 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 ALTITUDE LIMITS

In areas where the EM bird height exceeded 100 m, and the inphase and quadrature signals were below 3 ppm, the resistivity was not calculated and the grid is blank. This avoids meaningless resistivity calculations due to small signals in areas where the helicopter flew higher to avoid cultural objects or for safety reasons.

SURVEY HISTORY

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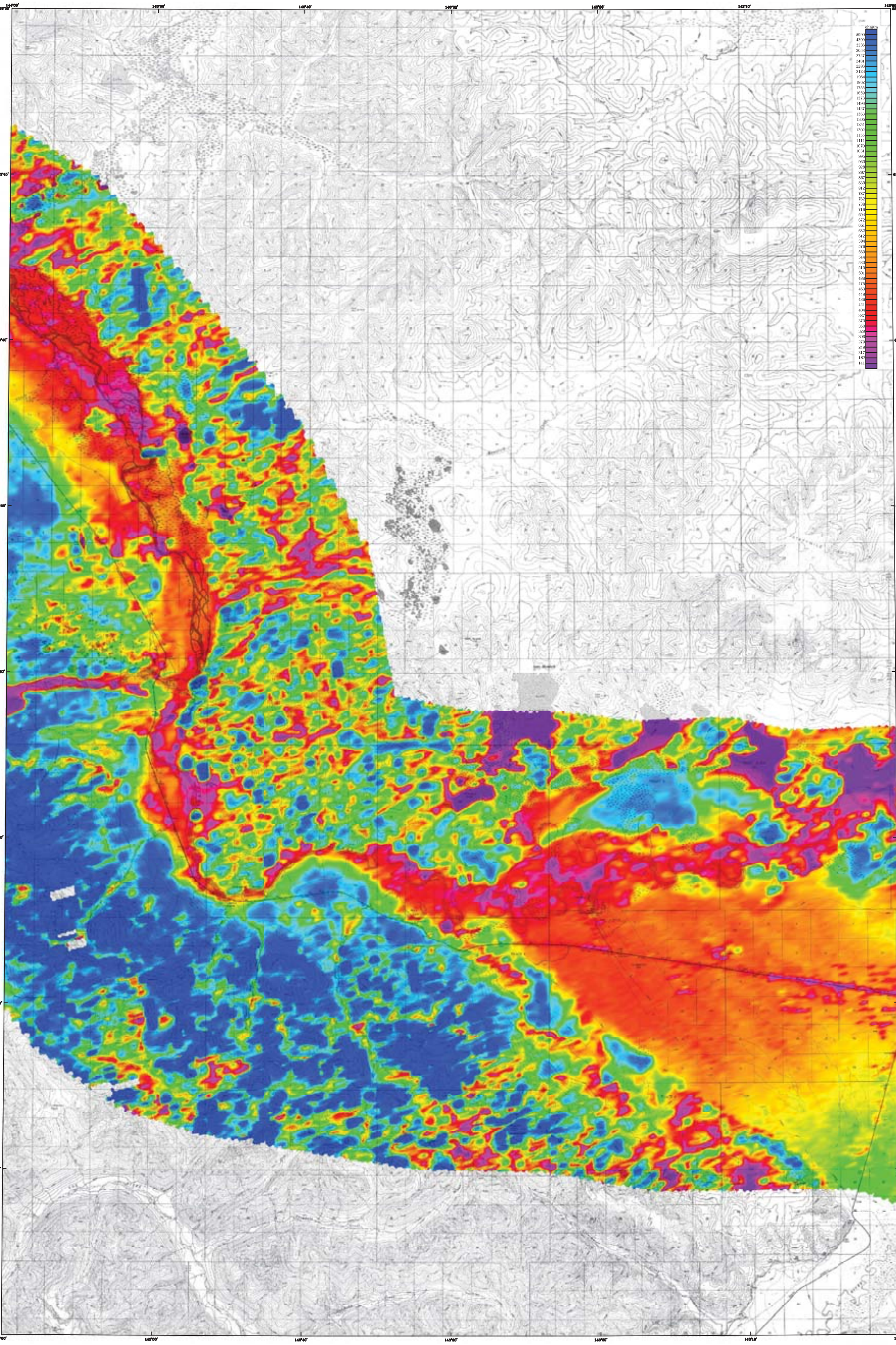
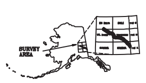


SCALE 1:63,360

1 0 1 2 3 4 MILES

1 0 1 2 3 4 5 KILOMETERS

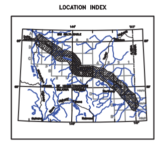


40,000 Hz COPLANAR APPARENT RESISTIVITY OF THE ALASKA HIGHWAY CORRIDOR, EAST-CENTRAL ALASKA

PARTS OF TANACROSS QUADRANGLE

by
Laurel E. Burns, Fugro Airborne Surveys Corp., and Stevens Exploration Management Corp.
2006

LOCATION INDEX



DESCRIPTIVE NOTES

The geophysical data were acquired with a RESOLVE Electromagnetic (EM) system and a Scintrex cesium magnetometer. The EM and magnetic sensors 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 using AS350B-2 and AS350B-3 Squirrel helicopters at a mean terrain clearance of 200 feet along NW-SE (350°) survey flight lines with a spacing of a quarter of a mile. Tie lines were flown perpendicular to the flight lines at intervals of approximately 3 miles.

An Ashtech 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 7) spheroid, 1927 North American datum using a central meridian (CM) of 141°, a north constant of 0 and an east constant of 500,000. Positional accuracy of the presented data is better than 10 m. with respect to the UTM grid.

RESISTIVITY

The RESOLVE EM system measured inphase and quadrature components at six frequencies. One vertical coaxial coil-pair operated at 3300 Hz while five horizontal coplanar coil-pairs operated at 400, 1800, 8200, 40,000 and 140,000 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 40,000 Hz using the pseudo-layer half space model. The data were interpolated onto a regular 80 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 ALTITUDE LIMITS

In areas where the EM bird height exceeded 100 m, and the inphase and quadrature signals were below 3 ppm, the resistivity was not calculated and the grid is blank. This avoids meaningless resistivity calculations due to small signals in areas where the helicopter flew higher to avoid cultural objects or for safety reasons.

SURVEY HISTORY

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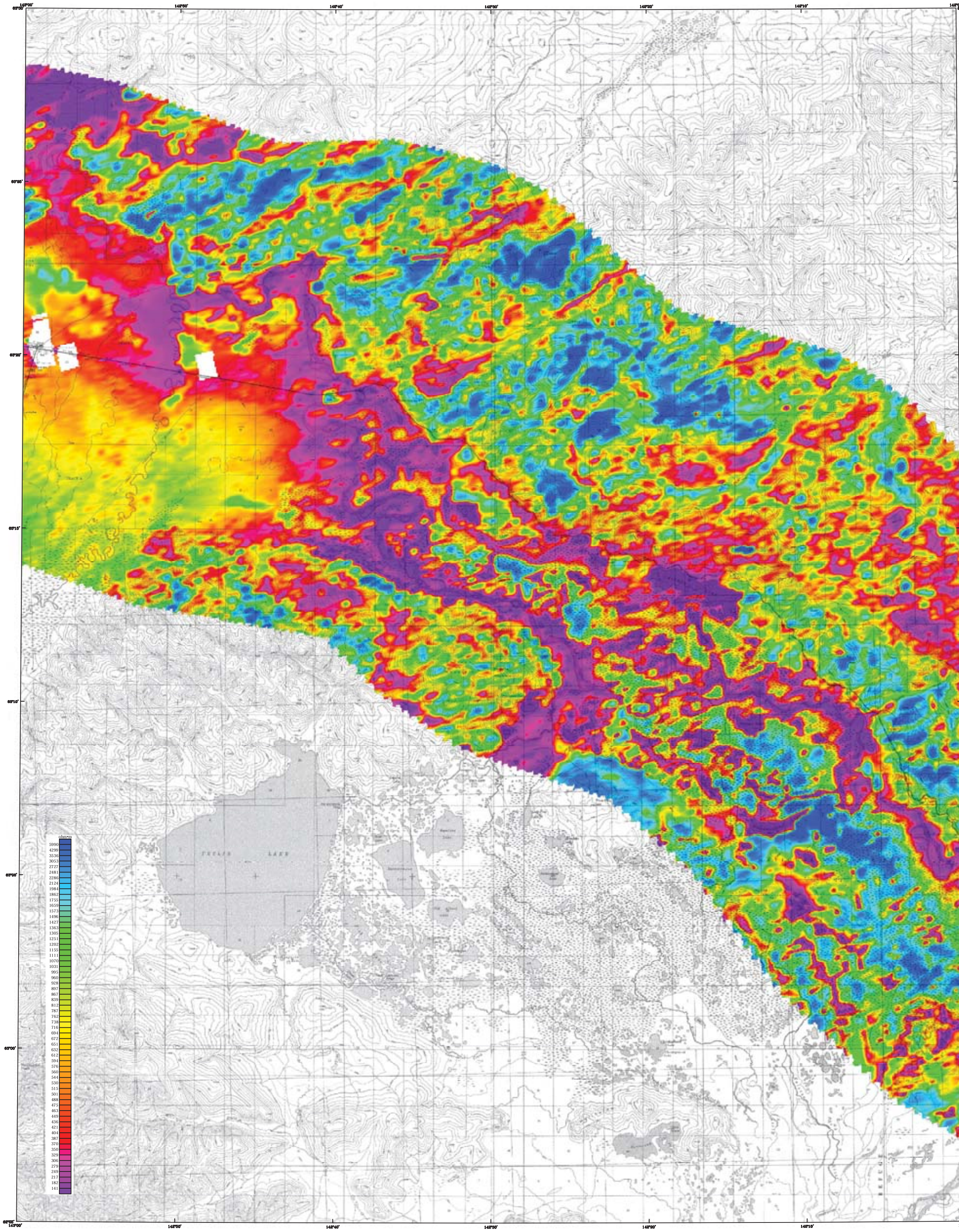
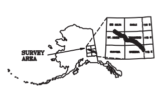


SCALE 1:63,360

1 0 1 2 3 4 MILES

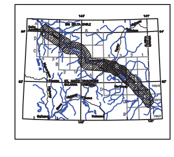
1 0 1 2 3 4 5 KILOMETERS



40,000 Hz COPLANAR APPARENT RESISTIVITY OF THE ALASKA HIGHWAY CORRIDOR, EAST-CENTRAL ALASKA

PARTS OF NABESNA and TANACROSS QUADRANGLES

by
Laurel E. Burns, Fugro Airborne Surveys Corp., and Stevens Exploration Management Corp.
2006



DESCRIPTIVE NOTES

The geophysical data were acquired with a RESOLVE Electromagnetic (EM) system and a Scintrex cesium magnetometer. The EM and magnetic sensors 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 using AS350B-2 and AS350B-3 Squirrel helicopters at a mean terrain clearance of 200 feet along NW-SE (350°) 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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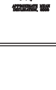

RESISTIVITY

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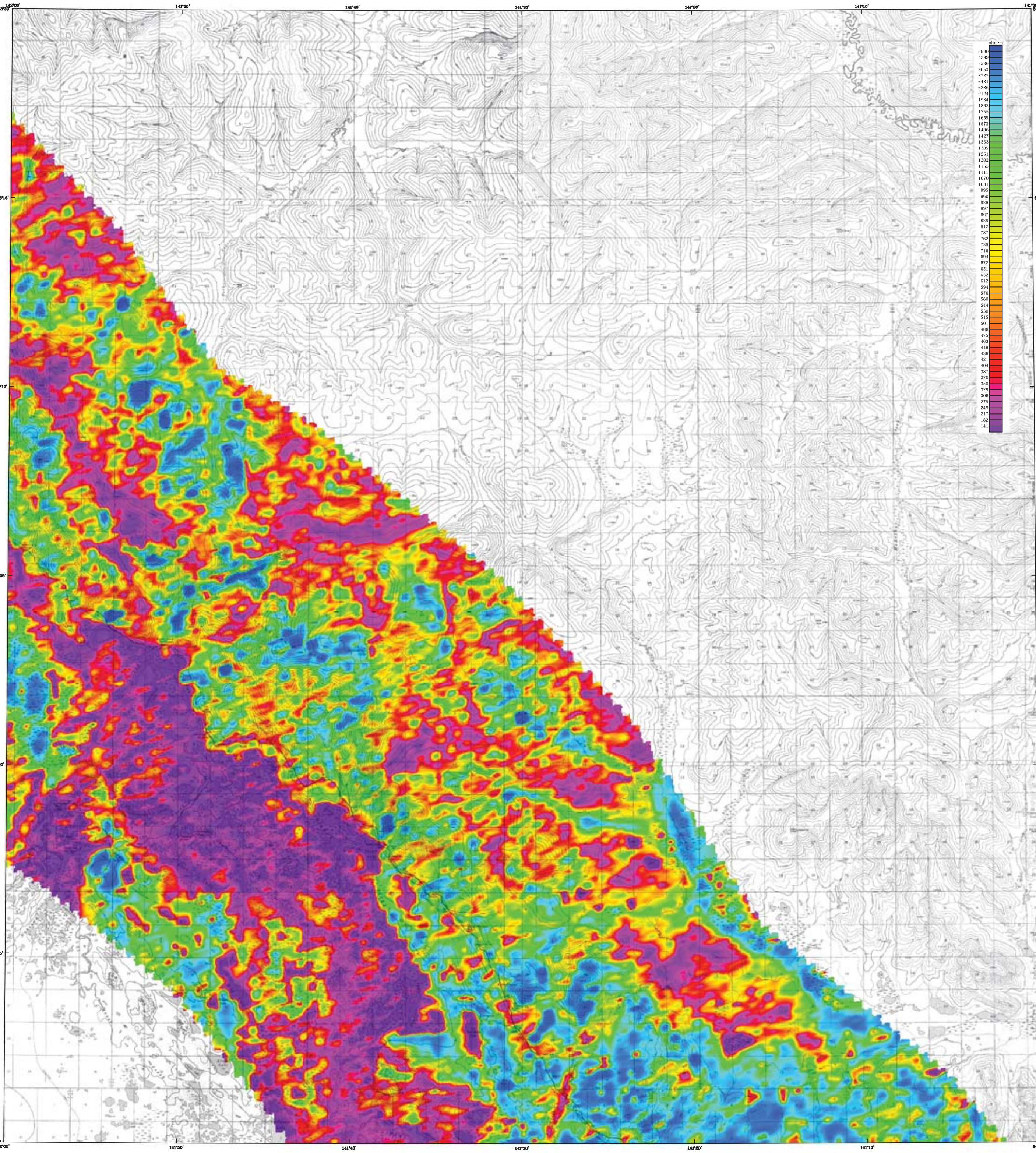


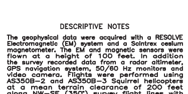
Base from U.S. Geological Survey Quadrangles (Alaska) Nabesna D-1, 1967; D-2, 1970; Tanacross A-1, 1971; A-2, 1972; B-1, 1959; B-2, 1959

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

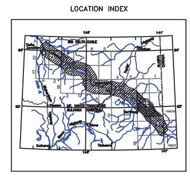


40,000 Hz COPLANAR APPARENT RESISTIVITY OF THE ALASKA HIGHWAY CORRIDOR, EAST-CENTRAL ALASKA

PARTS OF NABESNA and TANACROSS QUADRANGLES

by
Laurel E. Burns, Fugro Airborne Surveys Corp., and Stevens Exploration Management Corp.
2006

LOCATION INDEX



DESCRIPTIVE NOTES

The geophysical data were acquired with a RESOLVE Electromagnetic (EM) system and a Scintrex cesium magnetometer. The EM and magnetic sensors 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 using AS350B-2 and AS350B-3 Squirrel helicopters at a mean terrain clearance of 200 feet along NW-SE (350°) 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

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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.589-602.

RESISTIVITY ALTITUDE LIMITS

In areas where the EM bird height exceeded 100 m, and the inphase and quadrature signals were below 3 ppm, the resistivity was not calculated and the grid is blank. This avoids meaningless resistivity calculations due to small signals in areas where the helicopter flew higher to avoid cultural objects or for safety reasons.

SURVEY HISTORY

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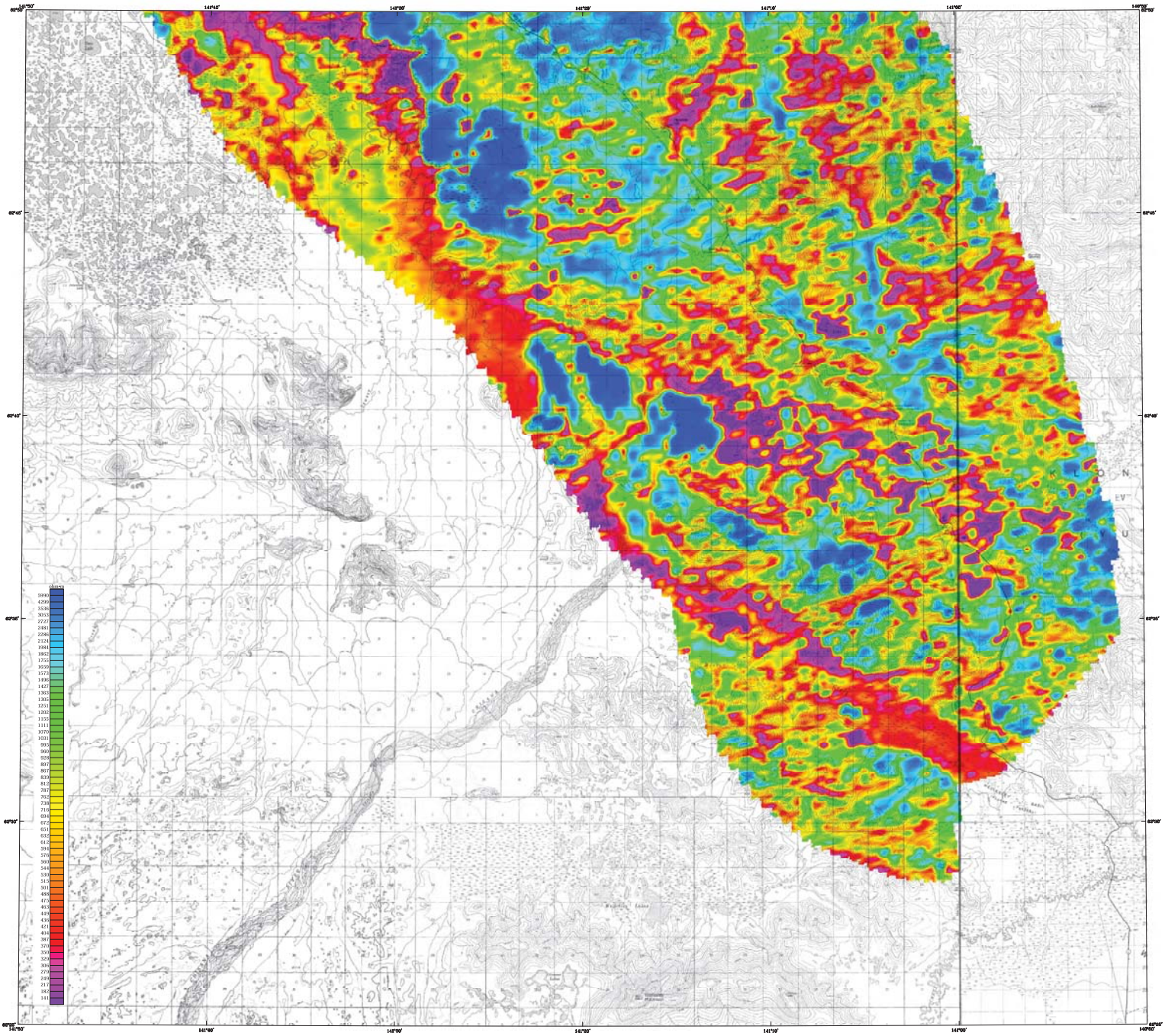


SCALE 1:63,360

1 0 1 2 3 4 MILES

1 0 1 2 3 4 5 KILOMETERS

CONTOUR INTERVAL 100 FEET
DATUM: NAD 83, GRS80

40,000 Hz COPLANAR APPARENT RESISTIVITY OF THE ALASKA HIGHWAY CORRIDOR, EAST-CENTRAL ALASKA

PARTS OF NABESNA QUADRANGLE and CANADA 115K

by

Laurel E. Burns, Fugro Airborne Surveys Corp., and Stevens Exploration Management Corp.
2006

DESCRIPTIVE NOTES

The geophysical data were acquired with a RESOLVE Electromagnetic (EM) system and a Scintrex cesium magnetometer. The EM and magnetic sensors were flown at a height of 100 feet, in addition the survey recorded data from a radar altimeter, GPS navigation system, 56/60 channel spectral gamma-ray spectrometer, system performance video. AS350B-2 and AS350B-3 Squirrel helicopters at a mean terrain clearance of 200 feet along NW–SE (350°) survey flight lines with a spacing of a quarter of a mile. Tie lines were flown perpendicular to the flight lines at intervals of approximately 3 miles.

An Ashtech GG24 NAVSTAR / GLONASS Global Positioning System was used for navigation. The Positional position of surveyed ground control using post-flight differential postioning to a relative accuracy of better than 5 m. Flight path positions were projected onto the Clarke 1866 (UTM zone 7) spheroid, 1927 North American datum using a central meridian (CM) of 141°, a north constant of 0 and an east constant of 500,000. Positional accuracy of the presented data is better than 10 m. with respect to the UTM grid.

RESISTIVITY

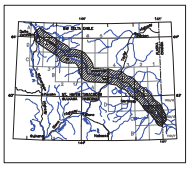
The RESOLVE EM system measured inphase and quadrature components at six frequencies. One vertical coaxial coil-pair operated at 3300 Hz while five horizontal coplanar coil-pairs operated at 900 Hz, 4,000 Hz, 40,000 and 140,000 Hz. EM data were sampled at 0.1 second intervals. The EM system responds to bedrock conductors, conductive overburden, and cultural sources. Apparent resistivity is generated from the inphase and quadrature component of the coplanar 40,000 Hz using the pseudo-layer half space model. The data were interpolated onto a regular 80 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 ALTITUDE LIMITS

In areas where the EM bird height exceeded 100 m, and the inphase and quadrature signals were below 3 ppm, the resistivity was not calculated and the grid is blank. This avoids meaningless resistivity calculations due to small signals in areas where the helicopter flew higher to avoid cultural objects or for safety reasons.

LOCATION INDEX



SURVEY HISTORY

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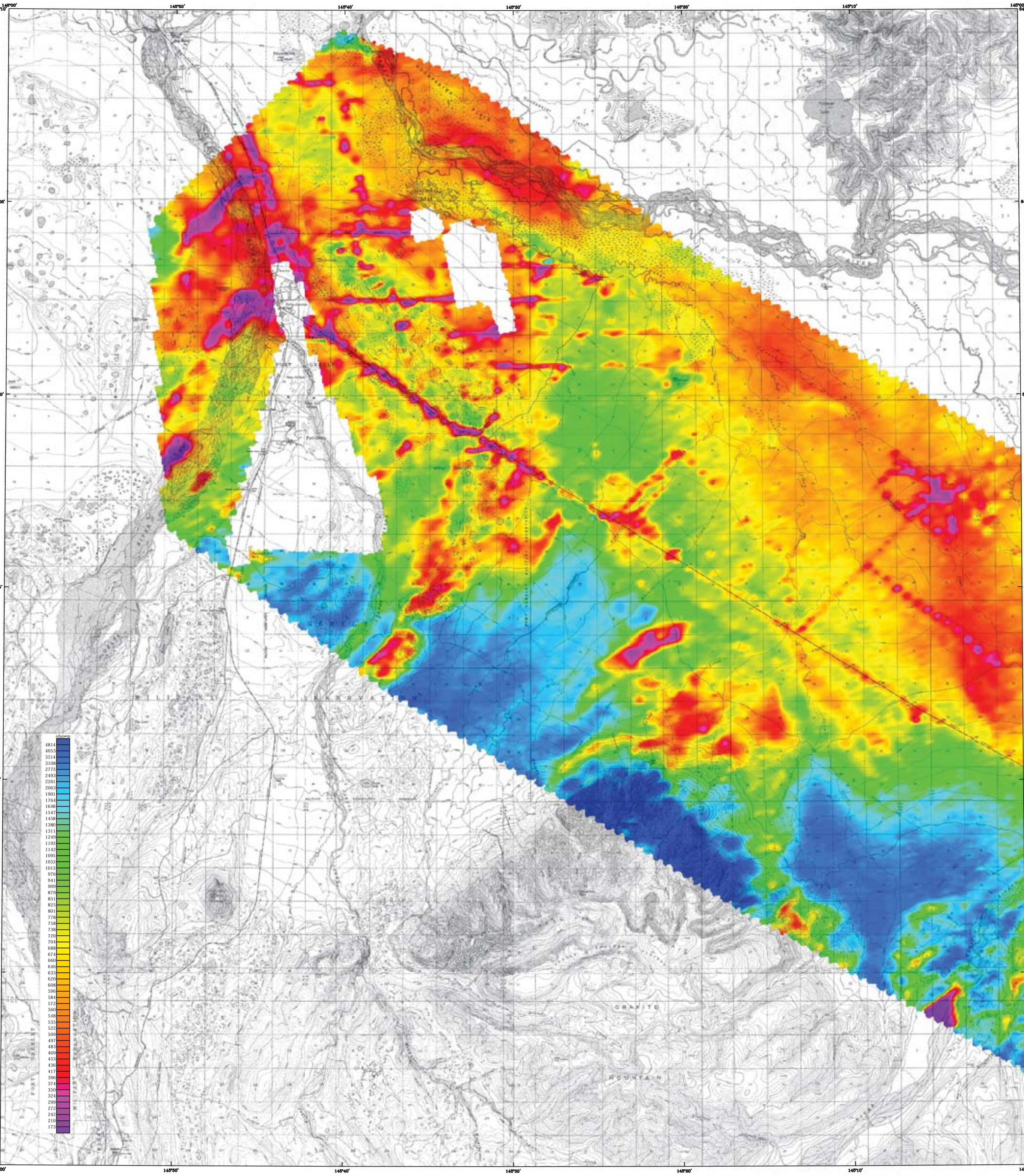


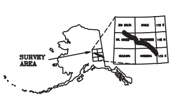
Base from U.S. Geological Survey Quadrangles (Alaska) Big Delta A-3, 1970; A-4, 1981; Mt. Hayes C-3, 1964; C-4, 1967; D-3, 1962; D-4, 1966

SCALE 1:63,360

1 0 1 2 3 4 MILES

1 0 1 2 3 4 5 KILOMETERS

CONTOUR INTERVAL 50 FEET
DATUM MEAN SEA LEVEL

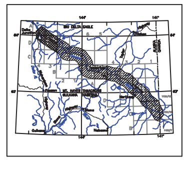


8200 Hz COPLANAR APPARENT RESISTIVITY OF THE ALASKA HIGHWAY CORRIDOR, EAST-CENTRAL ALASKA

PARTS OF BIG DELTA and MT. HAYES QUADRANGLES

by
Laurel E. Burns, Fugro Airborne Surveys Corp., and Stevens Exploration Management Corp.
2006

LOCATION INDEX



DESCRIPTIVE NOTES

The geophysical data were acquired with a RESOLVE Electromagnetic (EM) system and a Scintrex cesium magnetometer. The EM and magnetic sensors 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 using AS350B-2 and AS350B-3 Squirrel helicopters at a mean terrain clearance of 200 feet along NW-SE (350°) survey flight lines with a spacing of a quarter of a mile. Tie lines were flown perpendicular to the flight lines at intervals of approximately 3 miles.

An Ashtech 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 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 RESOLVE EM system measured inphase and quadrature components at six frequencies. One vertical coaxial coil-pair operated at 3300 Hz while five horizontal coplanar coil-pairs operated at 400, 1800, 8200, 40,000 and 140,000 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 8200 Hz using the pseudo-layer half space model. The data were interpolated onto a regular 80 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 ALTITUDE LIMITS

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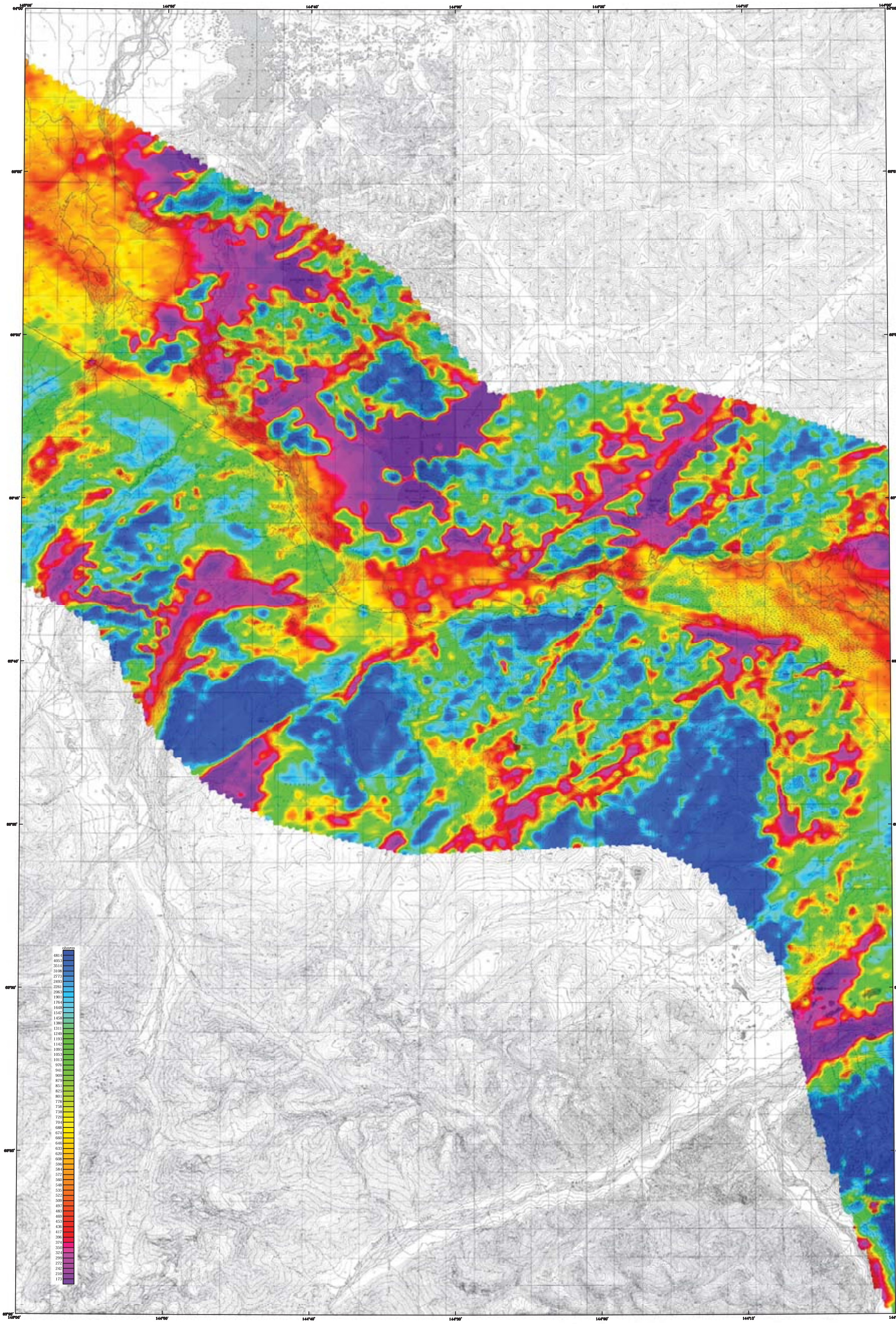
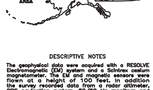


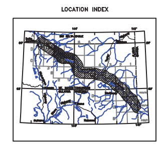


8200 Hz COPLANAR APPARENT RESISTIVITY OF THE ALASKA HIGHWAY CORRIDOR, EAST-CENTRAL ALASKA

PARTS OF MT. HAYES QUADRANGLE

by
Laurel E. Burns, Fugro Airborne Surveys Corp., and Stevens Exploration Management Corp.
2006

LOCATION INDEX



DESCRIPTIVE NOTES

The geophysical data were acquired with a RESOLVE Electromagnetic (EM) system and a Scintrex cesium magnetometer. The EM and magnetic sensors 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 using AS350B–2 and AS350B–3 Squirrel helicopters at a mean terrain clearance of 200 feet along NW–SE (350°) 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 RESOLVE EM system measured inphase and quadrature components at six frequencies. One vertical coaxial coil–pair operated at 3300 Hz while five horizontal coplanar coil–pairs operated at 400, 1800, 8200, 40,000 and 140,000 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 8200 Hz using the pseudo–layer half space model. The data were interpolated onto a regular 80 m grid using a modified Akima (1970) technique.

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SURVEY HISTORY

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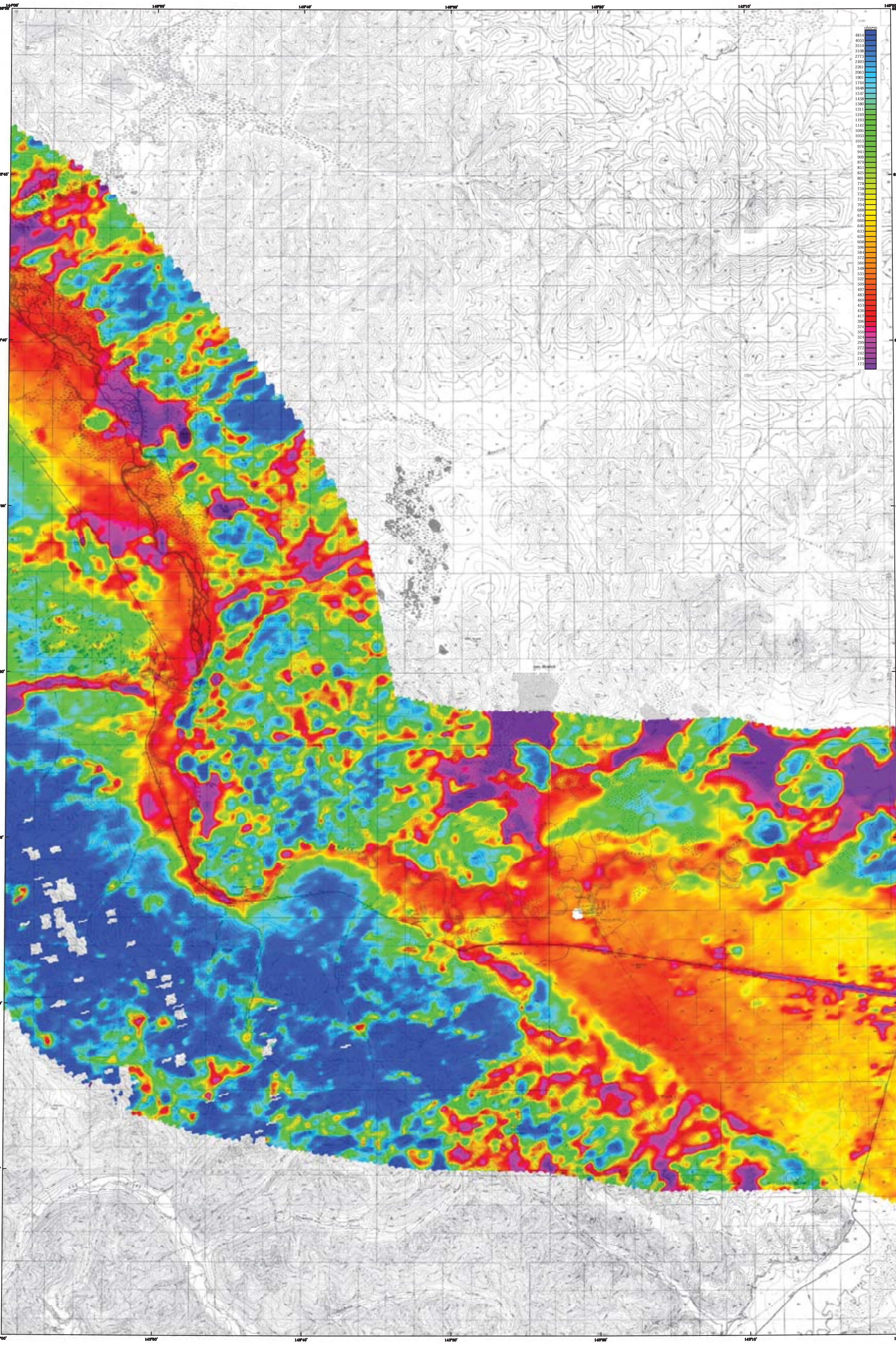
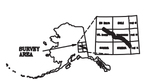


SCALE 1:63,360

1 0 1 2 3 4 MILES

1 0 1 2 3 4 5 KILOMETERS

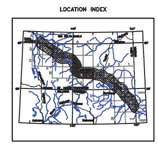


8200 Hz COPLANAR APPARENT RESISTIVITY OF THE ALASKA HIGHWAY CORRIDOR, EAST-CENTRAL ALASKA

PARTS OF TANACROSS QUADRANGLE

by
Laurel E. Burns, Fugro Airborne Surveys Corp., and Stevens Exploration Management Corp.
2006

LOCATION INDEX



DESCRIPTIVE NOTES

The geophysical data were acquired with a RESOLVE Electromagnetic (EM) system and a Scintrex cesium magnetometer. The EM and magnetic sensors 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 using AS350B-2 and AS350B-3 Squirrel helicopters at a mean terrain clearance of 200 feet along NW-SE (350°) survey flight lines with a spacing of a quarter of a mile. Tie lines were flown perpendicular to the flight lines at intervals of approximately 3 miles.

An Ashtech 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 7) spheroid, 1927 North American datum using a central meridian (CM) of 141°, a north constant of 0 and an east constant of 500,000. Positional accuracy of the presented data is better than 10 m. with respect to the UTM grid.

RESISTIVITY

The RESOLVE EM system measured inphase and quadrature components at six frequencies. One vertical coaxial coil-pair operated at 3300 Hz while five horizontal coplanar coil-pairs operated at 400, 1800, 8200, 40,000 and 140,000 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 8200 Hz using the pseudo-layer half space model. The data were interpolated onto a regular 80 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 ALTITUDE LIMITS

In areas where the EM bird height exceeded 100 m, and the inphase and quadrature signals were below 3 ppm, the resistivity was not calculated and the grid is blank. This avoids meaningless resistivity calculations due to small signals in areas where the helicopter flew higher to avoid cultural objects or for safety reasons.

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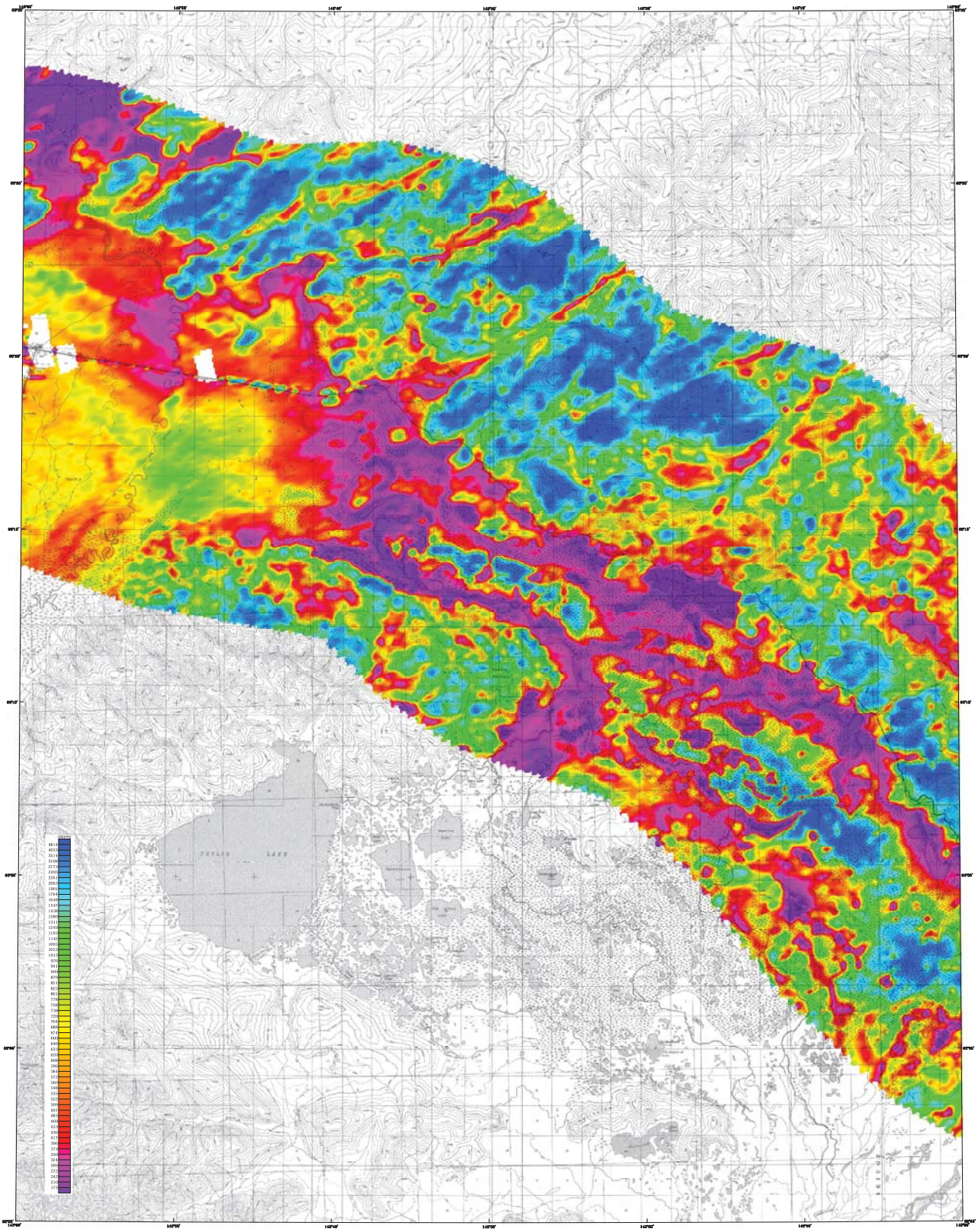


SCALE 1:63,360

1 0 1 2 3 4 MILES

1 0 1 2 3 4 5 KILOMETERS

CONTOUR INTERVAL 10 m

8200 Hz COPLANAR APPARENT RESISTIVITY OF THE ALASKA HIGHWAY CORRIDOR, EAST-CENTRAL ALASKA

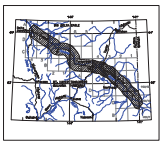
PARTS OF NABESNA and TANACROSS QUADRANGLES

by

Laurel B. Burns, Fugro Airborne Surveys Corp., and Stevens Exploration Management Corp.

2006

LOCATION INDEX



DESCRIPTIVE NOTES

The geophysical data were acquired with a RESOLVE frequency-domain EM system and cesium vapor magnetometer. The EM and magnetic sensors 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 a barometric altimeter. The survey was flown with AS350B-2 and AS350B-3 Squirrel helicopters at a mean terrain clearance of 200 feet along NW–SE (350°) survey flight lines with a spacing of a quarter of a mile. Tie lines were flown perpendicular to the flight lines at intervals of approximately 3 miles.

An Aashtech GG24 NAVSTAR / GLONASS Global Positioning System was used for navigation. The helicopter position was derived every .05 seconds using post-flight differential positioning to a relative accuracy of better than 5 m. Flight path coordinates are presented in the UTM projection (UTM zone 7) schedule, 1927 North American datum using a central meridian (CM) of 141°, a norin 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 RESOLVE EM system measured inphase and quadrature components at six frequencies. One vertical coaxial coil–pair operated at 3300 Hz while five horizontal coplanar coil–pairs operated at 400, 1800, 8200, 40,000 and 140,000 Hz. Data were recorded 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 8200 Hz coil–pair using a pseudo-layer half space. The data were interpolated onto a regular 80 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.1, p.589–602.

RESISTIVITY ALTITUDE LIMITS

In areas where the EM bird height exceeded 100 m, and the inphase and quadrature signals were below 3 ppm, the resistivity was not calculated and the grid is blank. This avoids meaningless resistivity calculations due to small signals in areas where the helicopter flew higher to avoid cultural objects or for safety reasons.

SURVEY HISTORY

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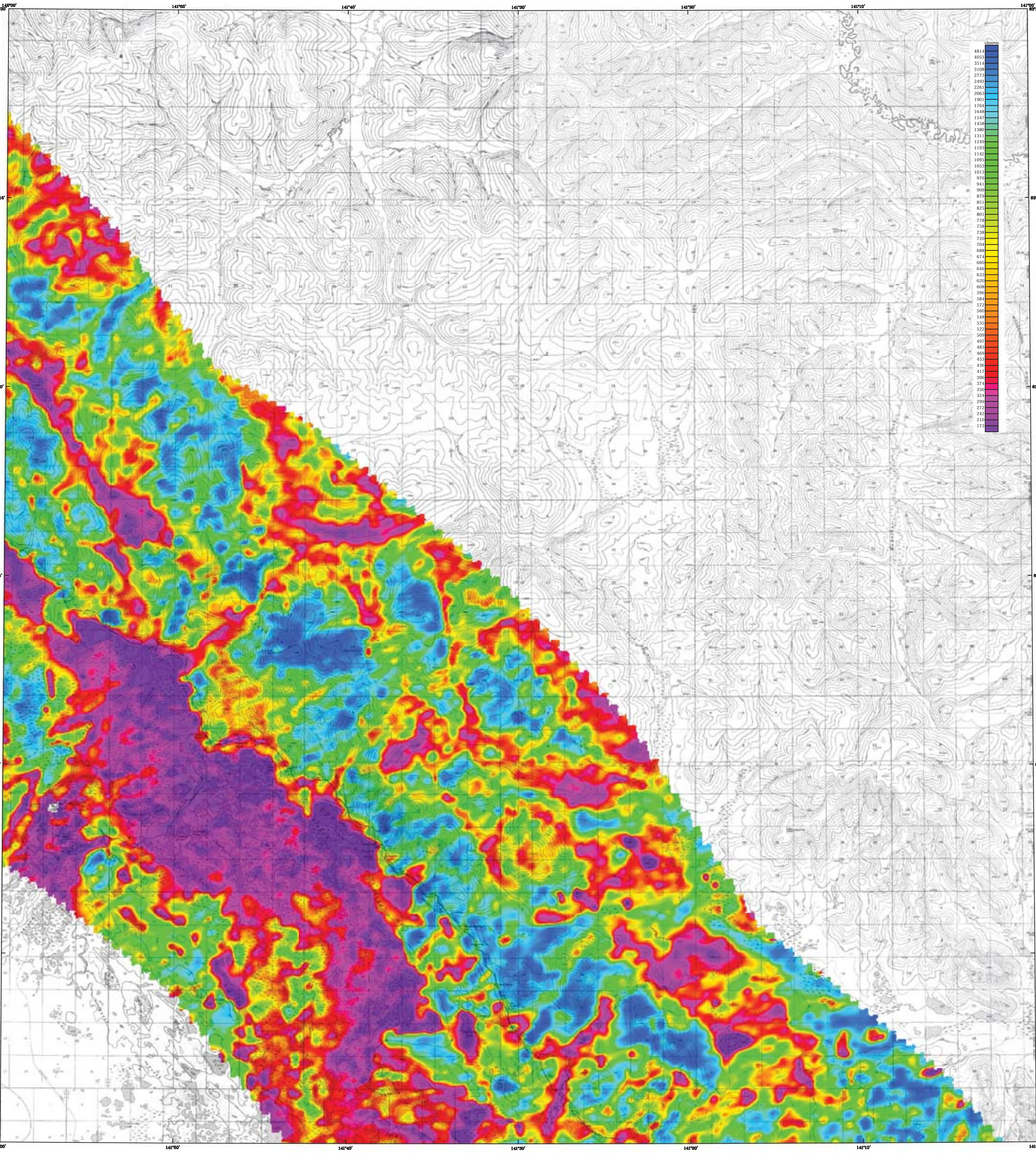
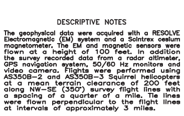


SCALE 1:63,360

1 0 1 2 3 4 MILES

1 0 1 2 3 4 5 KILOMETERS

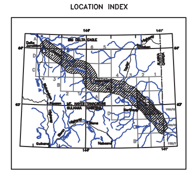


8200 Hz COPLANAR APPARENT RESISTIVITY OF THE ALASKA HIGHWAY CORRIDOR, EAST-CENTRAL ALASKA

PARTS OF NABESNA and TANACROSS QUADRANGLES

by
Laurel E. Burns, Fugro Airborne Surveys Corp., and Stevens Exploration Management Corp.
2006

LOCATION INDEX



DESCRIPTIVE NOTES

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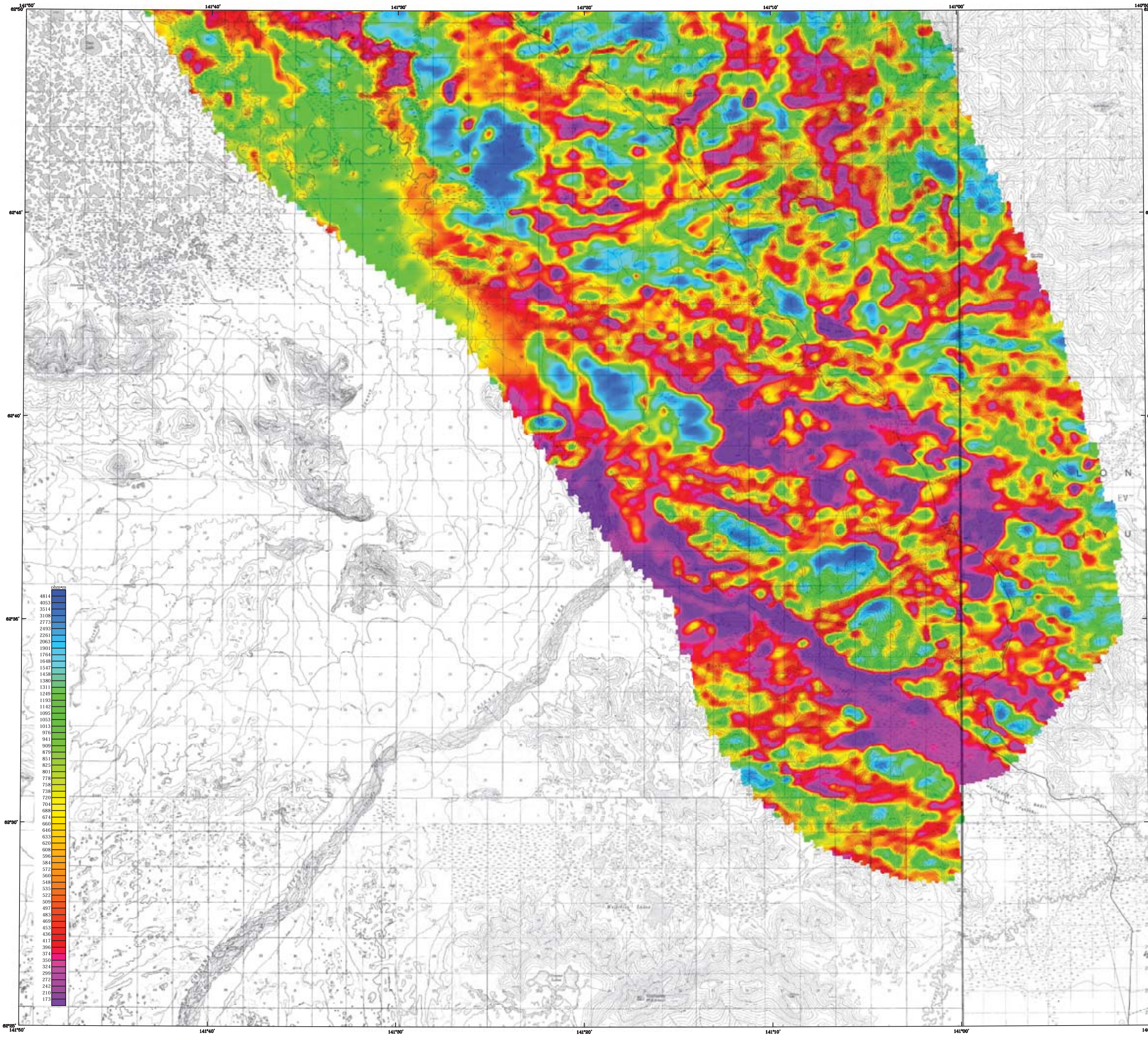


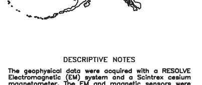
Base from U.S. Geological Survey Quadrangles (Alaska) Nabesna B-1, 1960; B-2, 1960; C-1, 1963; C-2, 1963; D-1, 1967; D-2, 1978 and Canada National Topographic System (NTS) 1:50,000; 115K/7, 115K/10, 115K/15

SCALE 1:63,360

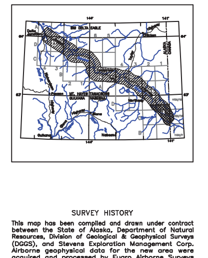
1 0 1 2 3 4 MILES

1 0 1 2 3 4 5 KILOMETERS

CONTOUR INTERVAL 100 FEET
DATUM MEAN SEA LEVEL



LOCATION INDEX



8200 Hz COPLANAR APPARENT RESISTIVITY OF THE ALASKA HIGHWAY CORRIDOR, EAST-CENTRAL ALASKA

PARTS OF NABESNA QUADRANGLE and CANADA 115K

by
Laurel E. Burns, Fugro Airborne Surveys Corp., and Stevens Exploration Management Corp.
2006

DESCRIPTIVE NOTES

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In areas where the EM bird height exceeded 100 m, and the inphase and quadrature signals were below 3 ppm, the resistivity was not calculated and the grid is blank. This avoids meaningless resistivity calculations due to small signals in areas where the helicopter flew higher to avoid cultural objects or for safety reasons.

SURVEY HISTORY

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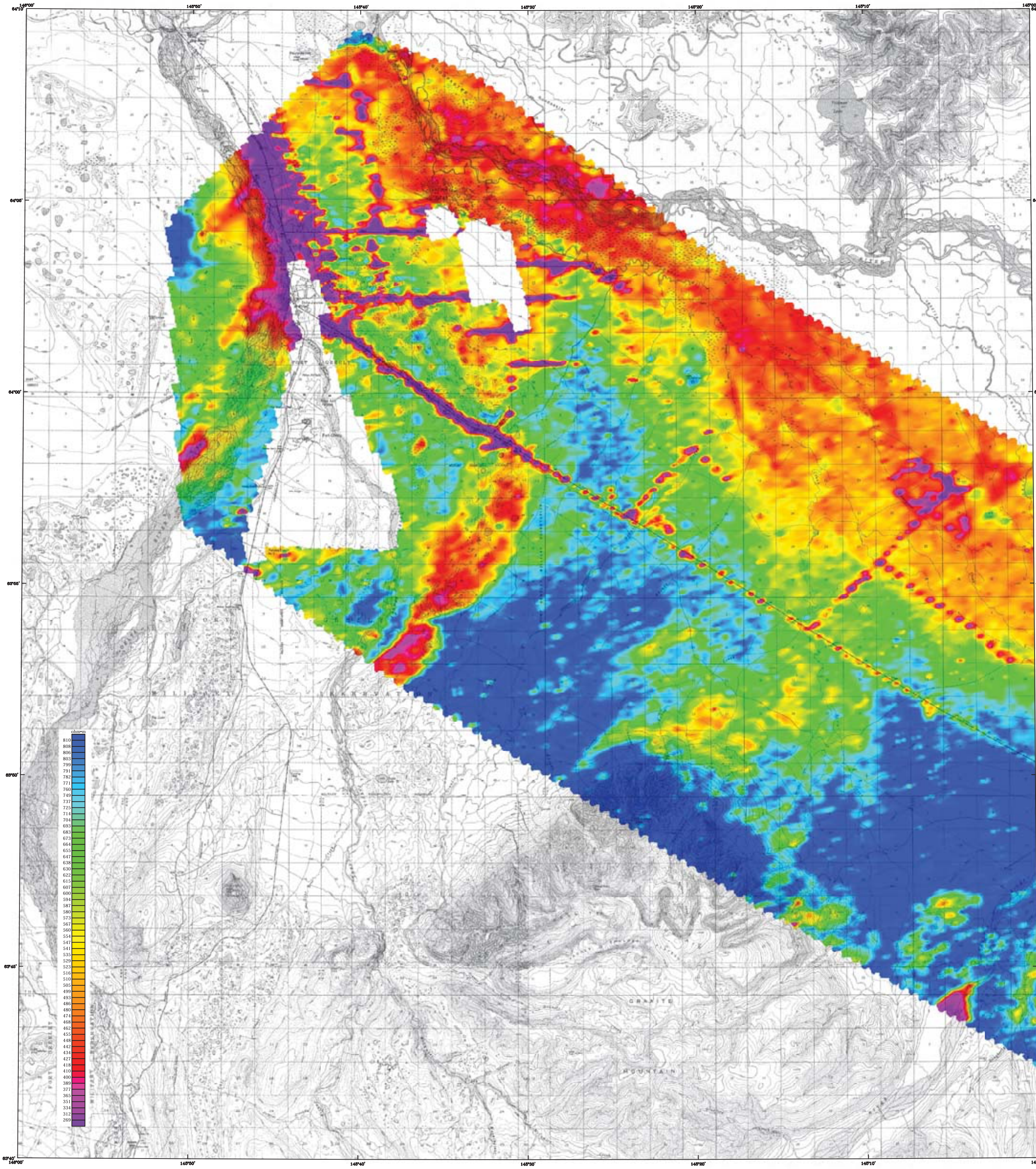


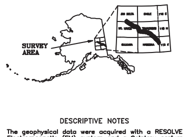
Base from U.S. Geological Survey Quadrangles (Alaska) Big Delta A-3, 1976; A-4, 1981; Mt. Hayes C-3, 1954; C-4, 1957; D-3, 1982; D-4, 1986

SCALE 1:63,360

1 0 1 2 3 4 MILES

1 0 1 2 3 4 5 KILOMETERS

CONTOUR INTERVAL 50 FEET
DATUM MEAN SEA LEVEL

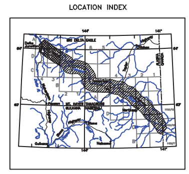


400 Hz COPLANAR APPARENT RESISTIVITY OF THE ALASKA HIGHWAY CORRIDOR, EAST-CENTRAL ALASKA

PARTS OF BIG DELTA and MT. HAYES QUADRANGLES

by
Laurel E. Burns, Fugro Airborne Surveys Corp., and Stevens Exploration Management Corp.
2006

LOCATION INDEX



DESCRIPTIVE NOTES

The geophysical data were acquired with a RESOLVE Electromagnetic (EM) system and a Scintrex cesium magnetometer. The EM and magnetic sensors 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 using AS350B-2 and AS350B-3 Squirrel helicopters at a mean terrain clearance of 200 feet along NW-SE (350°) survey flight lines with a spacing of a quarter of a mile. Tie lines were flown perpendicular to the flight lines at intervals of approximately 3 miles.

An Ashtech 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 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 RESOLVE EM system measured inphase and quadrature components at six frequencies. One vertical coaxial coil-pair operated at 3300 Hz while five horizontal coplanar coil-pairs operated at 400, 1800, 8200, 40,000 and 140,000 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 400 Hz using the pseudo-layer half space model. The data were interpolated onto a regular 80 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 ALTITUDE LIMITS

In areas where the EM bird height exceeded 100 m, and the inphase and quadrature signals were below 3 ppm, the resistivity was not calculated and the grid is blank. This avoids meaningless resistivity calculations due to small signals in areas where the helicopter flew higher to avoid cultural objects or for safety reasons.

SURVEY HISTORY

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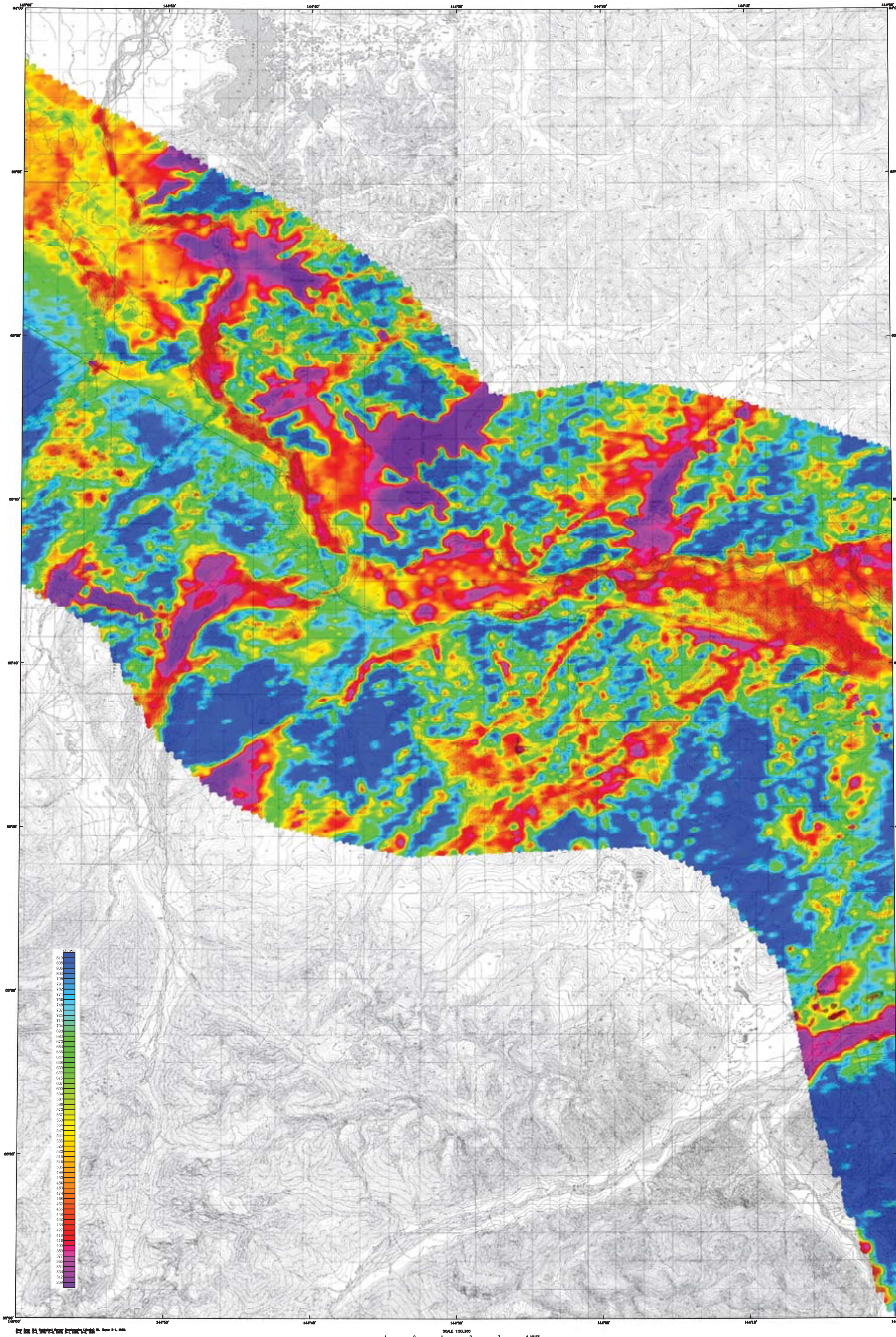
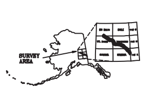


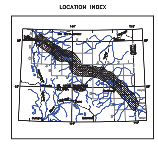


400 Hz COPLANAR APPARENT RESISTIVITY OF THE ALASKA HIGHWAY CORRIDOR, EAST-CENTRAL ALASKA

PARTS OF MT. HAYES QUADRANGLE

by
Laurel E. Burns, Fugro Airborne Surveys Corp., and Stevens Exploration Management Corp.
2006

LOCATION INDEX



DESCRIPTIVE NOTES

The geophysical data were acquired with a RESOLVE Electromagnetic (EM) system and a Scintrex cesium magnetometer. The EM and magnetic sensors 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 using AS350B-2 and AS350B-3 Squirrel helicopters at a mean terrain clearance of 200 feet along NW–SE (350°) survey flight lines with a spacing of a quarter of a mile. Tie lines were flown perpendicular to the flight lines at intervals of approximately 3 miles.

An Ashtech 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 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 RESOLVE EM system measured inphase and quadrature components at six frequencies. One vertical coaxial coil–pair operated at 3300 Hz while five horizontal coplanar coil–pairs operated at 400, 1800, 8200, 40,000 and 140,000 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 400 Hz using the pseudo–layer half space model. The data were interpolated onto a regular 80 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 ALTITUDE LIMITS

In areas where the EM bird height exceeded 100 m, and the inphase and quadrature signals were below 3 ppm, the resistivity was not calculated and the grid is blank. This avoids meaningless resistivity calculations due to small signals in areas where the helicopter flew higher to avoid cultural objects or for safety reasons.

SURVEY HISTORY

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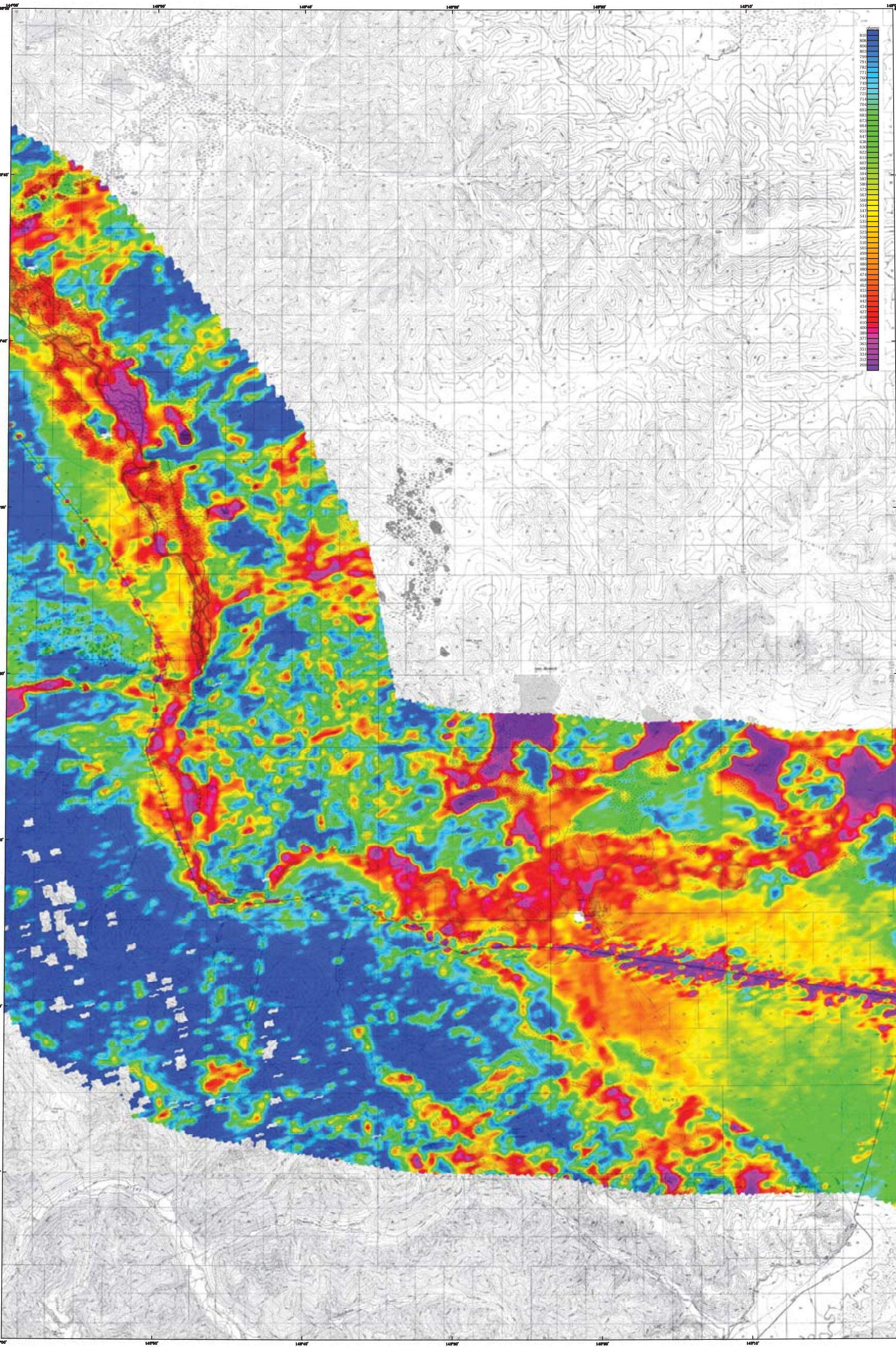


SCALE 1:63,360

1 0 1 2 3 4 MILES

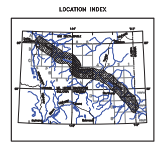
1 0 1 2 3 4 5 KILOMETERS

400 Hz COPLANAR APPARENT RESISTIVITY OF THE ALASKA HIGHWAY CORRIDOR, EAST-CENTRAL ALASKA

PARTS OF TANACROSS QUADRANGLE

by
Laurel E. Burns, Fugro Airborne Surveys Corp., and Stevens Exploration Management Corp.
2006

LOCATION INDEX



DESCRIPTIVE NOTES

The geophysical data were acquired with a RESOLVE Electromagnetic (EM) system and a Scintrex cesium magnetometer. The EM and magnetic sensors 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 using AS350B-2 and AS350B-3 Squirrel helicopters at a mean terrain clearance of 200 feet along NW-SE (350°) survey flight lines with a spacing of a quarter of a mile. Tie lines were flown perpendicular to the flight lines at intervals of approximately 3 miles.

An Ashtech 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 7) spheroid, 1927 North American datum using a central meridian (CM) of 141°, a north constant of 0 and an east constant of 500,000. Positional accuracy of the presented data is better than 10 m. with respect to the UTM grid.

RESISTIVITY

The RESOLVE EM system measured inphase and quadrature components at six frequencies. One vertical coaxial coil-pair operated at 3300 Hz while five horizontal coplanar coil-pairs operated at 400, 1800, 8200, 40,000 and 140,000 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 400 Hz using the pseudo-layer half space model. The data were interpolated onto a regular 80 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 ALTITUDE LIMITS

In areas where the EM bird height exceeded 100 m, and the inphase and quadrature signals were below 3 ppm, the resistivity was not calculated and the grid is blank. This avoids meaningless resistivity calculations due to small signals in areas where the helicopter flew higher to avoid cultural objects or for safety reasons.

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 Stevens Exploration Management Corp. Airborne geophysical data for the new area were acquired and processed by Fugro Airborne Surveys Corp. in late 2005 and early 2006.

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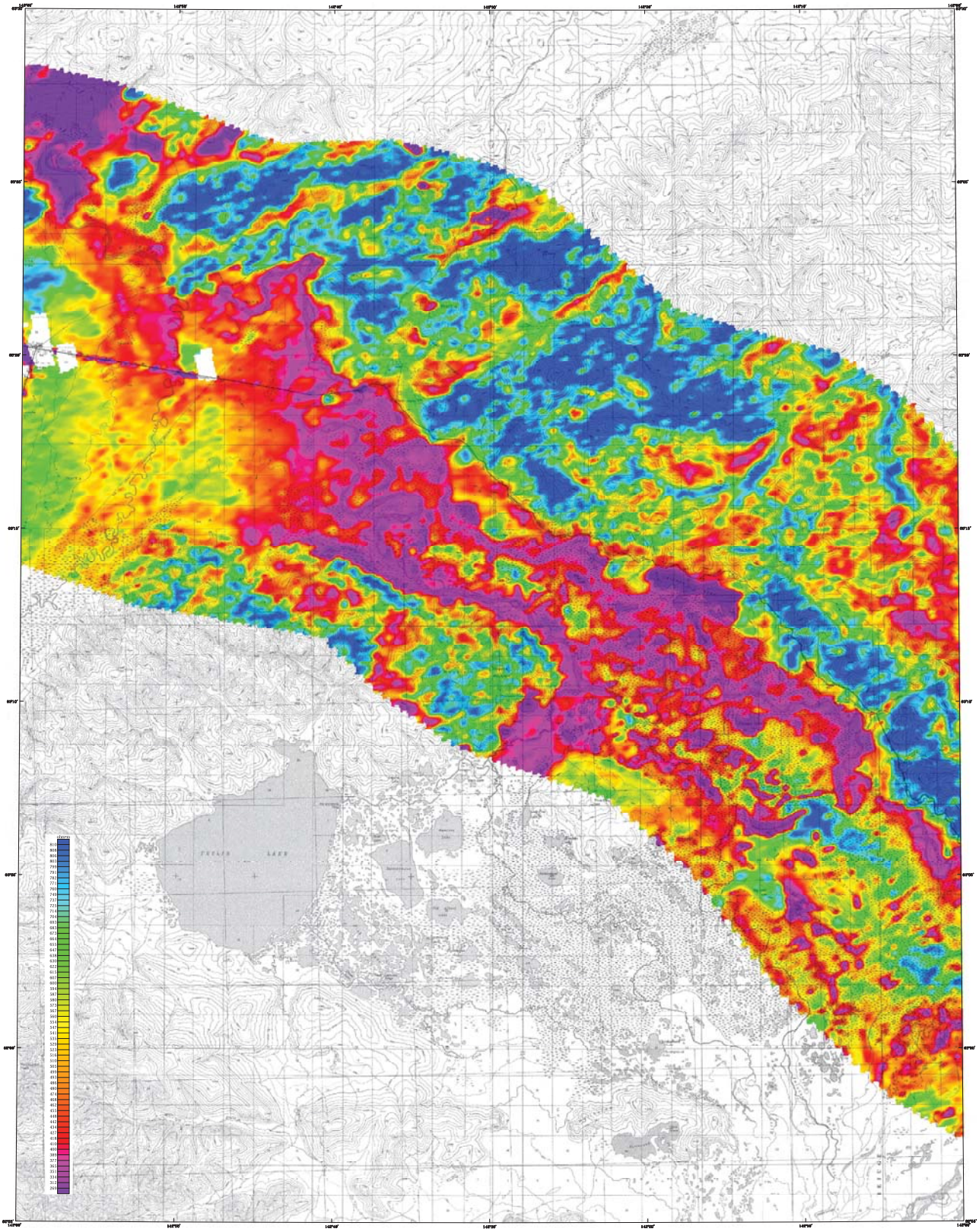


SCALE 1:63,360

1 0 1 2 3 4 MILES

1 0 1 2 3 4 5 KILOMETERS

CONTOUR INTERVAL 10 FEET

400 Hz COPLANAR APPARENT RESISTIVITY OF THE ALASKA HIGHWAY CORRIDOR, EAST-CENTRAL ALASKA

PARTS OF NABESNA and TANACROSS QUADRANGLES

by

Leonid N. Burns, Fugro Airborne Surveys Corp., and Stevens Exploration Management Corp.

2006

DESCRIPTIVE NOTES

The geophysical data were acquired with a RESOLVE frequency-domain EM system and cesium vapor magnetometer. The EM and magnetic sensors 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 a barometric altimeter. The survey used Eurocopter AS350B-2 and AS350B-3 Squirrel helicopters at a mean terrain clearance of 200 feet along NW–SE (330°) survey flight lines with a spacing of a quarter of a mile. Tie lines were flown perpendicular to the flight lines at intervals of approximately 3 miles.

An Aashtech 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 coordinates are recorded in WGS 84 UTM zone 7N (UTM zone 7) schedule, 1927 North American datum using a central meridian (CM) of 141°, a north constant of 0 and an east constant of 500,000. Positional accuracy of the presented data is better than 10 m, with respect to the UTM grid.

RESISTIVITY

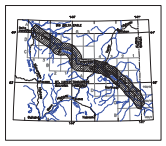
The RESOLVE EM system measured inphase and quadrature components at six frequencies. One vertical coaxial coil–pair operated at 3300 Hz while five horizontal coplanar coil–pairs operated at 400, 1800, 8200, 40,000 and 140,000 Hz. Data were recorded at 0.1 second intervals. The EM system responds to bedrock conductors, conductive overburden, and cultural sources. Apparent resistivity is generated from the inphase and quadrature components of the response. The data were corrected for system drift and lag. The data were interpolated onto a regular 50 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.1, p.589–602.

RESISTIVITY ALTITUDE LIMITS

In areas where the EM bird height exceeded 100 m, and the inphase and quadrature signals were below 3 ppm, the resistivity was not calculated and the grid is blank. This avoids meaningless resistivity calculations due to small signals in areas where the helicopter flew higher to avoid cultural objects or for safety reasons.

LOCATION INDEX



SURVEY HISTORY

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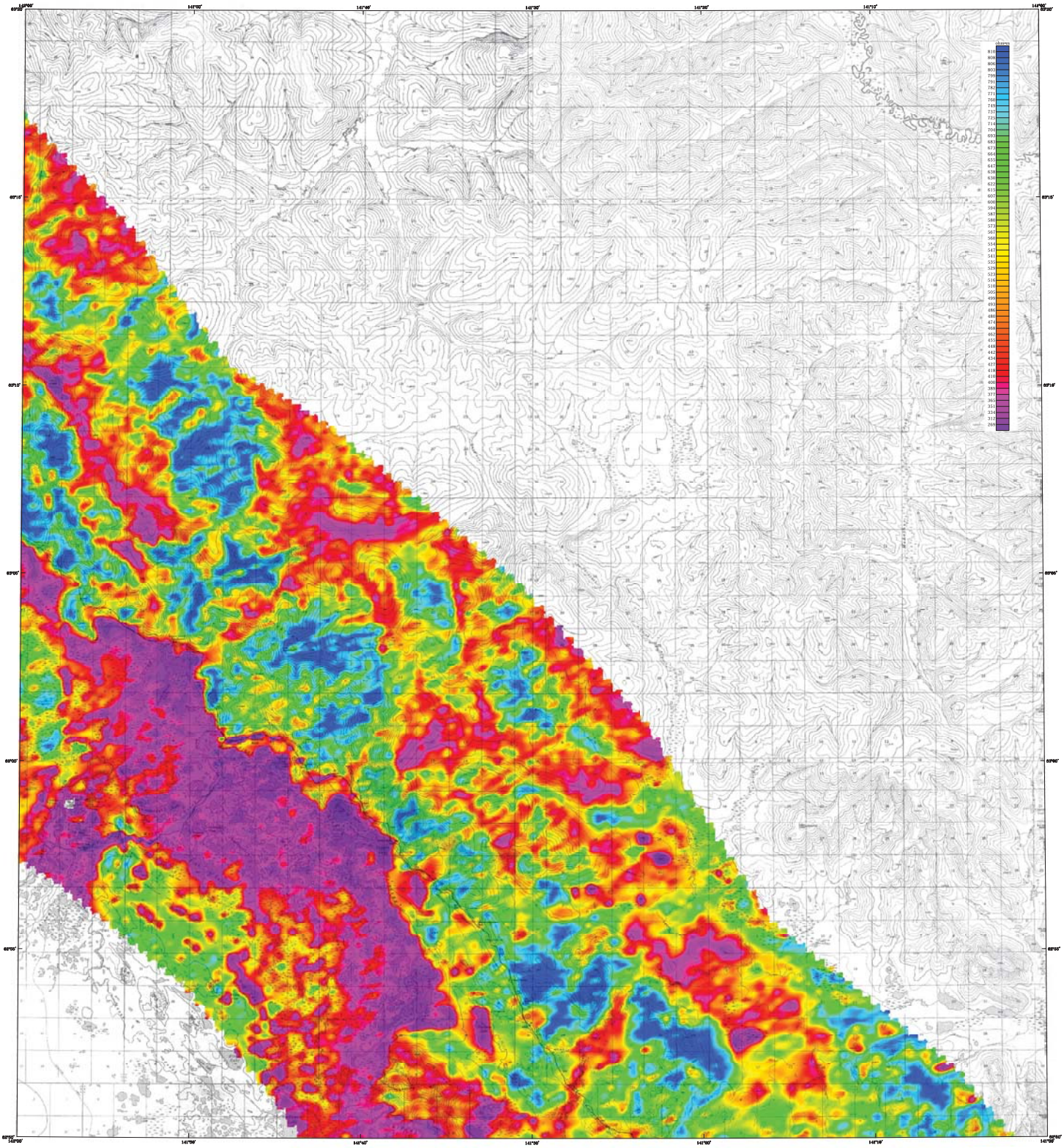


SCALE 1:63,360

1 0 1 2 3 4 MILES

1 0 1 2 3 4 5 KILOMETERS

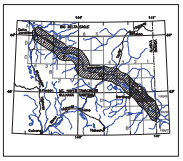
400 Hz COPLANAR APPARENT RESISTIVITY OF THE ALASKA HIGHWAY CORRIDOR, EAST-CENTRAL ALASKA

PARTS OF NABESNA and TANACROSS QUADRANGLES

by

Laurel E. Burns, Fugro Airborne Surveys Corp., and Stevens Exploration Management Corp.

2008



DESCRIPTIVE NOTES

The geophysical data were acquired with a RESOLVE Electromagnetic (EM) system and a Scintrex cesium magnetometer. The EM and magnetic sensors 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 barometric pressure. The survey was performed using AS350-B-series AStar Squirrel helicopters at a mean terrain clearance of 200 feet along NW–SE (350°) survey flight lines with a spacing of a quarter of a mile. Tie lines were flown perpendicular to the flight lines at intervals of approximately 3 miles.

An Ashtech 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 7) spheroid, 1927 North American datum using a central meridian (CM) of 141°, a north constant of 0 and an east constant of 500,000. Positional accuracy of the presented data is better than 10 m. with respect to the UTM grid.

RESISTIVITY

The RESOLVE EM system measured inphase and quadrature components at six frequencies. One vertical coaxial coplanar pair–coils operated at 400, 1800, 8200, 40,000 and 140,000 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 400 Hz using the pseudo–layer half space model. The data were interpolated onto a regular 80 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 ALTITUDE LIMITS

In areas where the EM bird height exceeded 100 m, and the inphase and quadrature signals were below 3 ppm, the resistivity was not calculated and the grid is blanks. This avoids meaningless resistivity calculations due to small signals in areas where the helicopter flew higher to avoid cultural objects or for safety reasons.

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 Stevens Exploration Management Corp. The geophysical data collected over these areas were acquired and processed by Fugro Airborne Surveys Corp. in late 2005 and early 2006.

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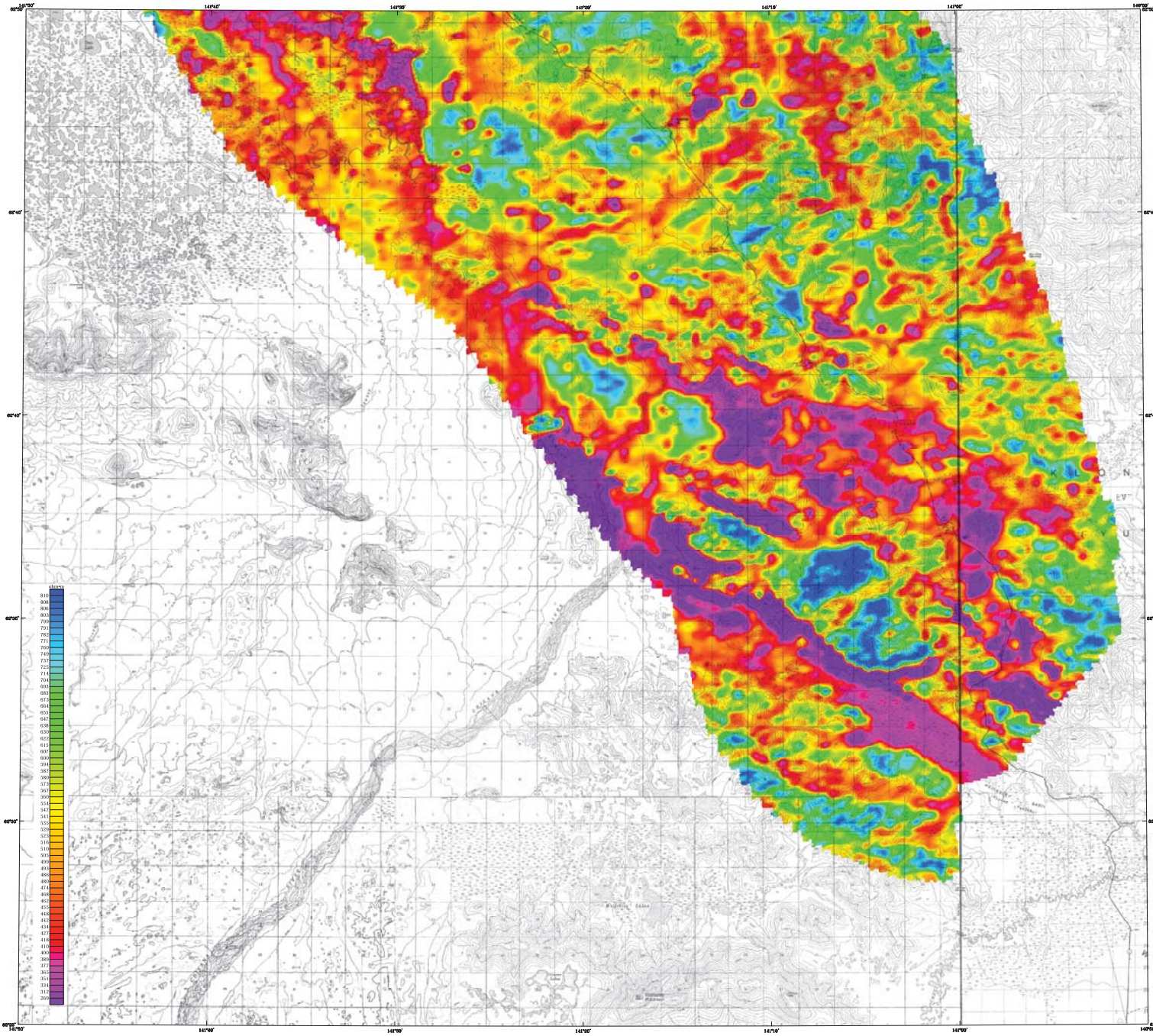


SCALE 1:63,360

1 0 1 2 3 4 MILES

1 0 1 2 3 4 5 KILOMETERS

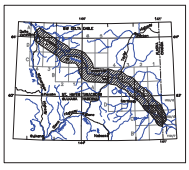
400 Hz COPLANAR APPARENT RESISTIVITY OF THE ALASKA HIGHWAY CORRIDOR, EAST-CENTRAL ALASKA

PARTS OF NABESNA QUADRANGLE and CANADA 115K

by

Laurel E. Burns, Fugro Airborne Surveys Corp., and Stevens Exploration Management Corp.
2006

LOCATION INDEX



DESCRIPTIVE NOTES

The geophysical data were acquired with a RESOLVE Electromagnetic (EM) system and a Scintrex cesium magnetometer. The EM and magnetic sensors were flown at a height of 100 feet, in addition the survey recorded data from a radar altimeter, GPS navigation system, barometric and digital temperature sensors. The survey was performed using AS350B-2 and AS350B-3 Squirrel helicopters at a mean terrain clearance of 200 feet along NW–SE (350°) survey flight lines with a spacing of a quarter of a mile. Tie lines were flown perpendicular to the flight lines at intervals of approximately 3 miles.

An Ashtech GG24 NAVSTAR / GLONASS Global Positioning System was used for navigation. The Positional position was derived every second using post-flight differential processing to a relative accuracy of better than 5 m. Flight path positions were projected onto the Clarke 1866 (UTM zone 7) spheroid, 1927 North American datum using a central meridian (CM) of 141°, a north constant of 0 and an east constant of 500,000. Positional accuracy of the presented data is better than 10 m. with respect to the UTM grid.

RESISTIVITY

The RESOLVE EM system measured inphase and quadrature components at six frequencies. One vertical coaxial coil-pair operated at 3300 Hz while five horizontal coplanar coil-pairs operated at 400 Hz, 1800 Hz, 8200 Hz, 40,000 and 140,000 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 400 Hz using the pseudo-layer half space model. The data were interpolated onto a regular 80 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 ALTITUDE LIMITS

In areas where the EM bird height exceeded 100 m, and the inphase and quadrature signals were below 3 ppm, the resistivity was not calculated and the grid is blank. This avoids meaningless resistivity calculations due to small signals in areas where the helicopter flew higher to avoid cultural objects or for safety reasons.

SURVEY HISTORY

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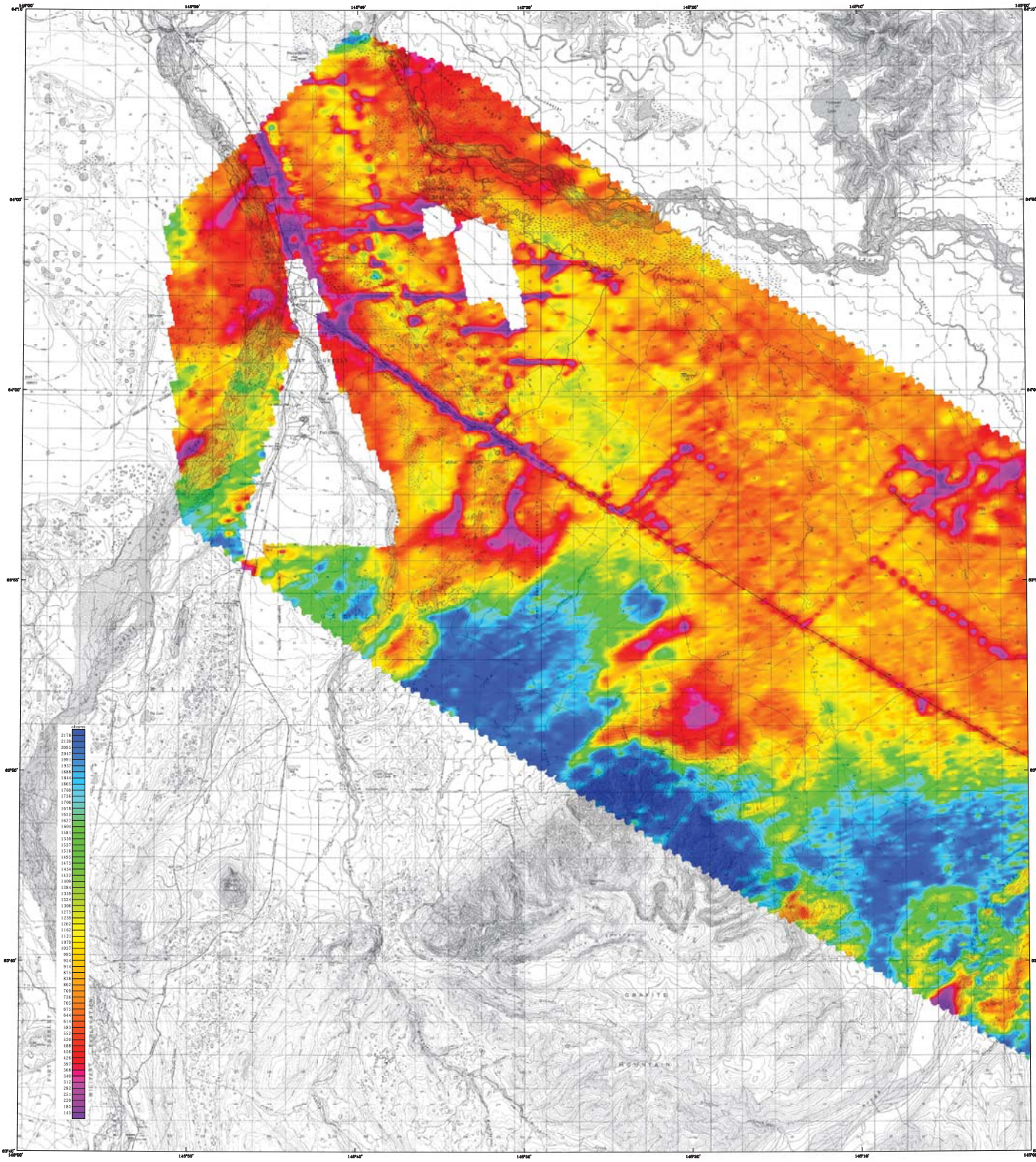


SCALE 1:63,360

1 0 1 2 3 4 MILES

1 0 1 2 3 4 5 KILOMETERS

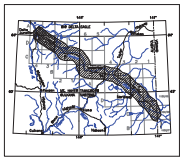
CONTOUR INTERVAL 40 FEET
DATUM: MEAN SEA LEVEL

1800 Hz COPLANAR APPARENT RESISTIVITY OF THE ALASKA HIGHWAY CORRIDOR, EAST-CENTRAL ALASKA

PARTS OF BIG DELTA and MT. HAYES QUADRANGLES

by

Laurel E. Burns, Fugro Airborne Surveys Corp., and Stevens Exploration Management Corp.
2006



DESCRIPTIVE NOTES

The geophysical data were acquired with a RESOLVE Electromagnetic (EM) system and a Scintrex cesium magnetometer. The EM and magnetic sensors 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 barometric pressure. Data were simultaneously recorded on two AS350B Squirrel helicopters at a mean terrain clearance of 200 feet along NW–SE (350°) survey flight lines with a spacing of a quarter of a mile. Tie lines were flown perpendicular to the flight lines at intervals of approximately 3 miles.

An Ashtech 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 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 RESOLVE EM system measured inphase and quadrature components at six frequencies. One vertical coaxial coil–pair operated at 3,000 Hz and four horizontal coplanar coil–pairs operated at 400, 1800, 8200, 40,000 and 140,000 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 1800 Hz using the pseudo–layer half space model. The data were interpolated onto a regular 80 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 ALTITUDE LIMITS

In areas where the EM bird height exceeded 100 m, and the inphase and quadrature signals were below 3 ppm, the resistivity was not calculated and the grid is blank. This avoids meaningless resistivity calculations due to small signals in areas where the helicopter flew higher to avoid cultural objects or for safety reasons.

SURVEY HISTORY

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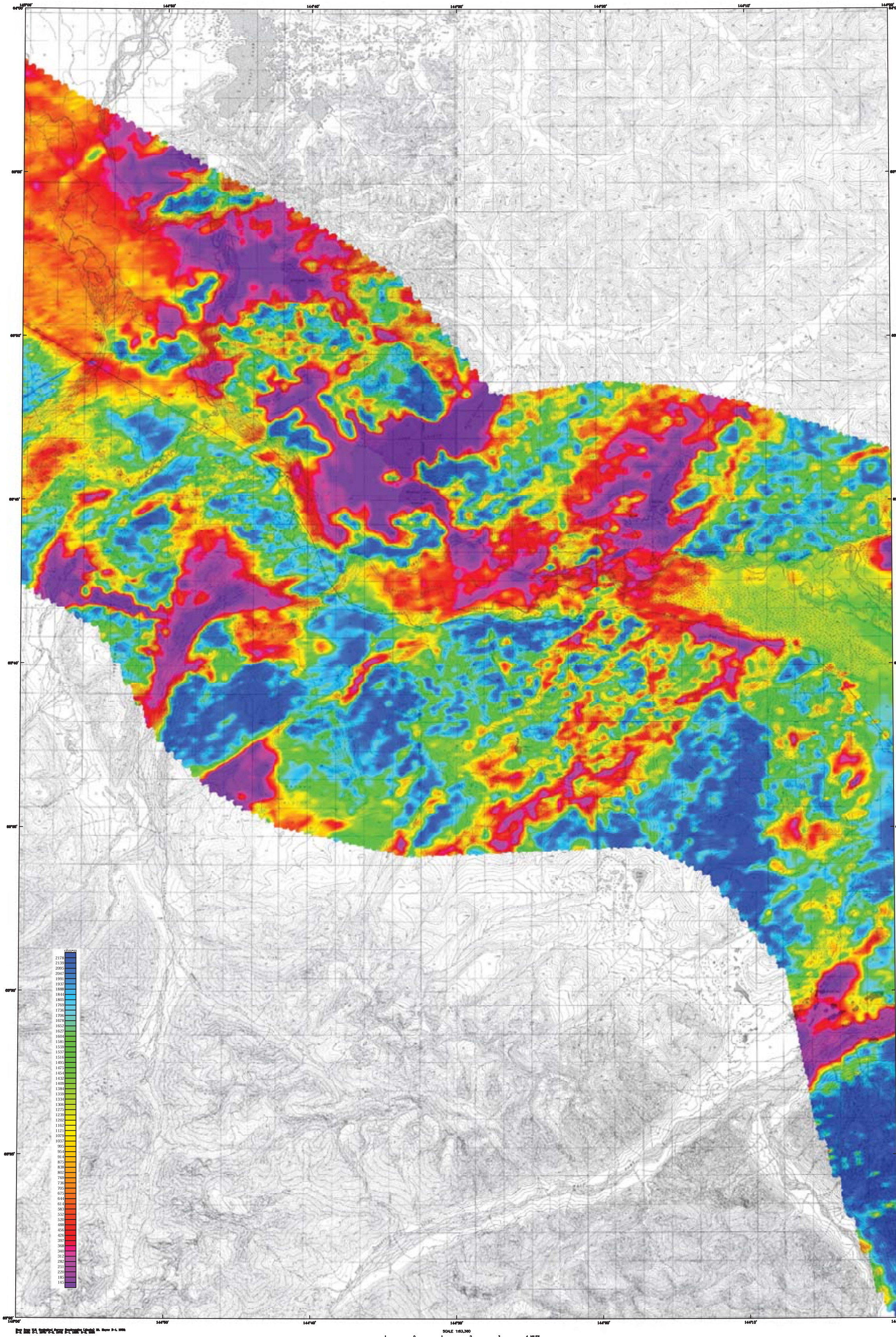

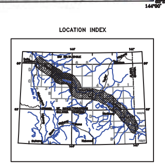

1800 Hz COPLANAR APPARENT RESISTIVITY OF THE ALASKA HIGHWAY CORRIDOR, EAST-CENTRAL ALASKA

PARTS OF MT. HAYES QUADRANGLE

by
Laurel E. Burns, Fugro Airborne Surveys Corp., and Stevens Exploration Management Corp.
2006

DESCRIPTIVE NOTES

The geophysical data were acquired with a RESOLVE Electromagnetic (EM) system and a Scintrex cesium magnetometer. The EM and magnetic sensors 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 using AS350B-2 and AS350B-3 Squirrel helicopters at a mean terrain clearance of 200 feet along NW-SE (350°) 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 RESOLVE EM system measured inphase and quadrature components at six frequencies. One vertical coaxial coil-pair operated at 3300 Hz while five horizontal coplanar coil-pairs operated at 400, 1800, 8200, 40,000 and 140,000 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 1800 Hz using the pseudo-layer half space model. The data were interpolated onto a regular 80 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 ALTITUDE LIMITS

In areas where the EM bird height exceeded 100 m, and the inphase and quadrature signals were below 3 ppm, the resistivity was not calculated and the grid is blank. This avoids meaningless resistivity calculations due to small signals in areas where the helicopter flew higher to avoid cultural objects or for safety reasons.

SURVEY HISTORY

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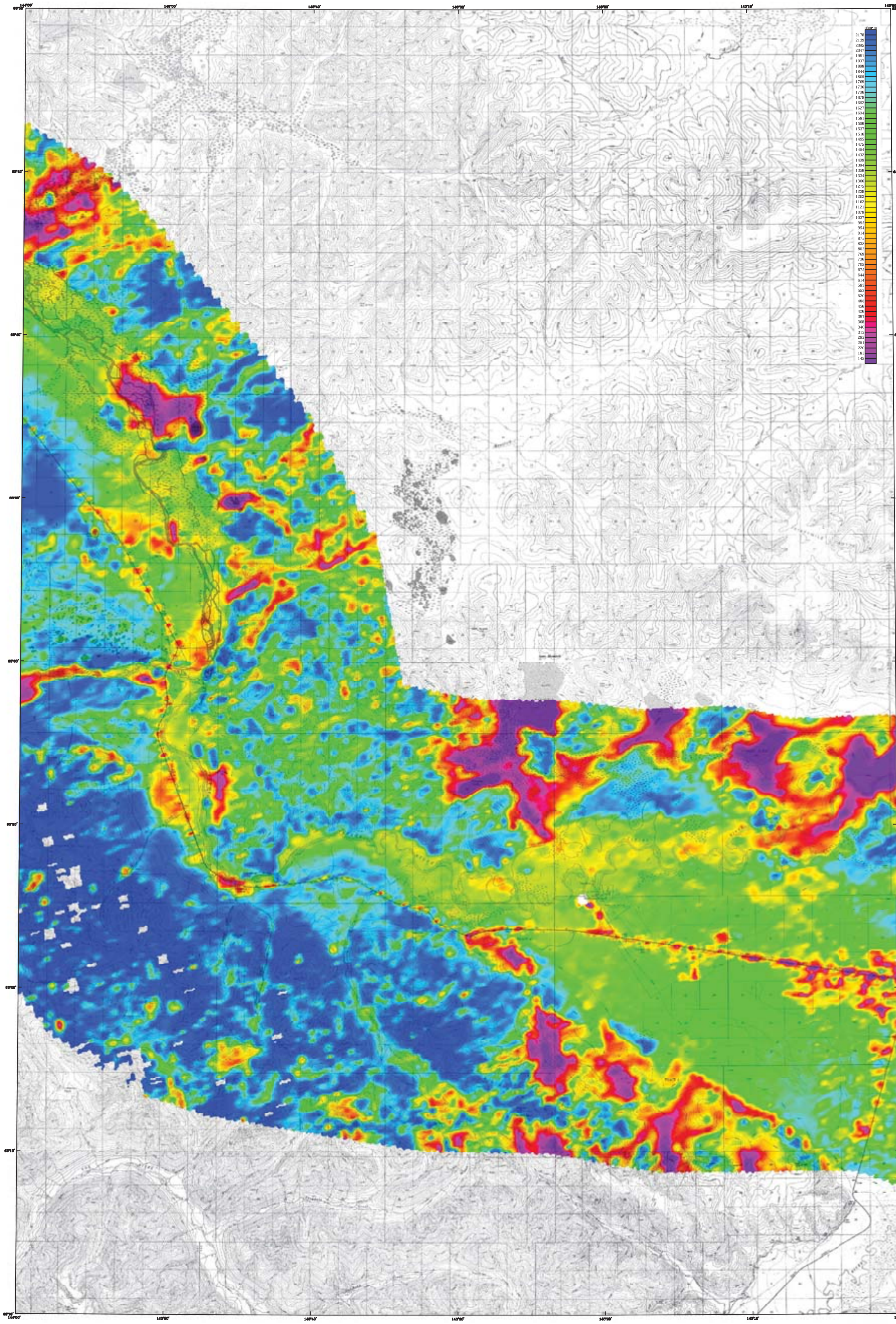
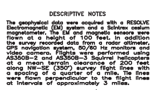


SCALE 1:63,360

1 0 1 2 3 4 MILES

1 0 1 2 3 4 5 KILOMETERS

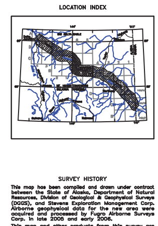


1800 Hz COPLANAR APPARENT RESISTIVITY OF THE ALASKA HIGHWAY CORRIDOR, EAST-CENTRAL ALASKA

PARTS OF TANACROSS QUADRANGLE

by
Laurel E. Burns, Fugro Airborne Surveys Corp., and Stevens Exploration Management Corp.
2006

LOCATION INDEX



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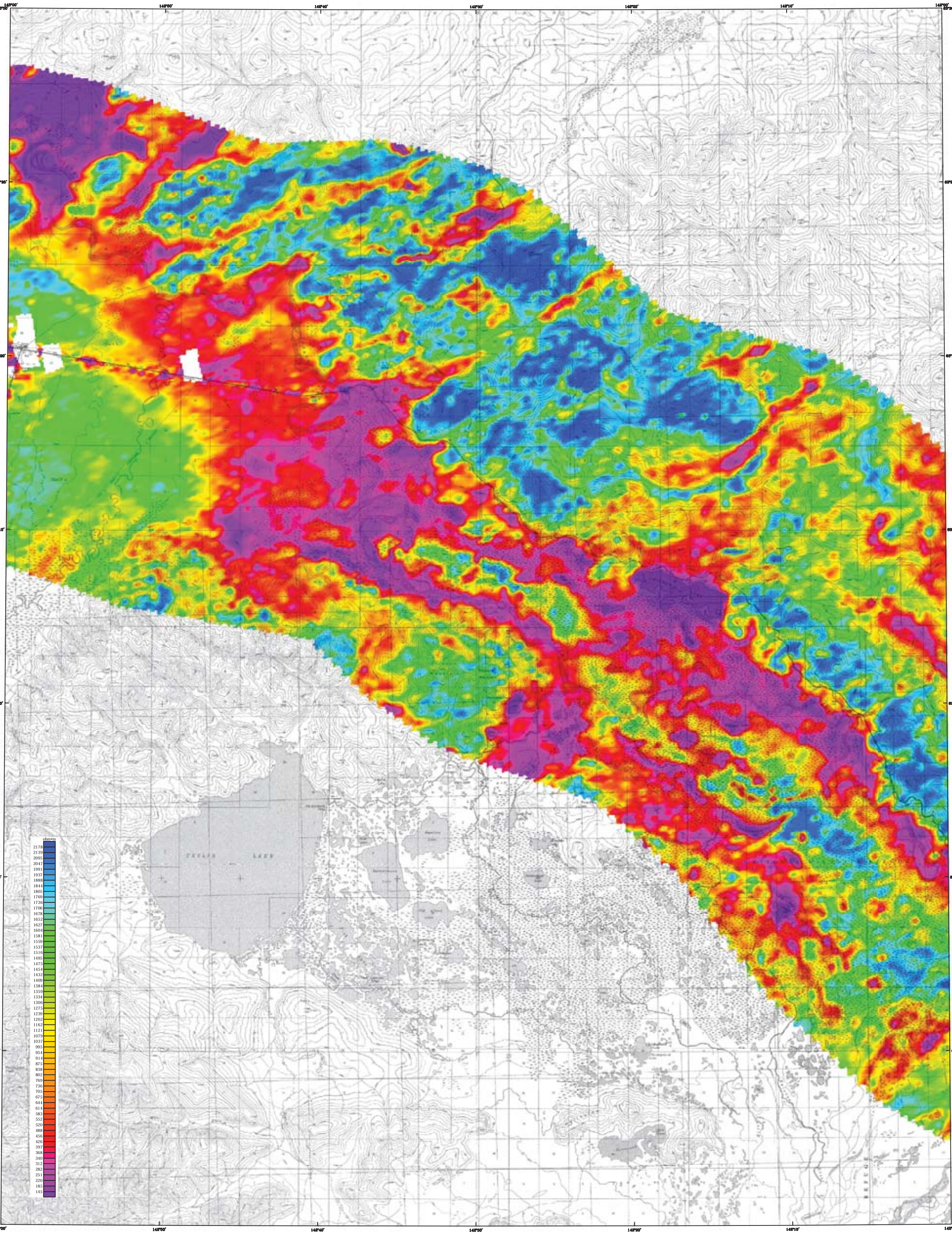


Base from U.S. Geological Survey Quadrangles (Alaska) Nabesna B-6, 1954; B-4, 1954; Tanacross A-3, 1948; A-4, 1948; B-3, 1948; B-4, 1954

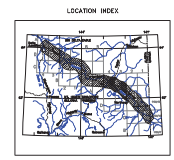
SCALE 1:63,360

1800 Hz COPLANAR APPARENT RESISTIVITY OF THE ALASKA HIGHWAY CORRIDOR, EAST-CENTRAL ALASKA

PARTS OF NABESNA and TANACROSS QUADRANGLES

by
Laurel E. Burns, Fugro Airborne Surveys Corp., and Stevens Exploration Management Corp.
2006

LOCATION INDEX



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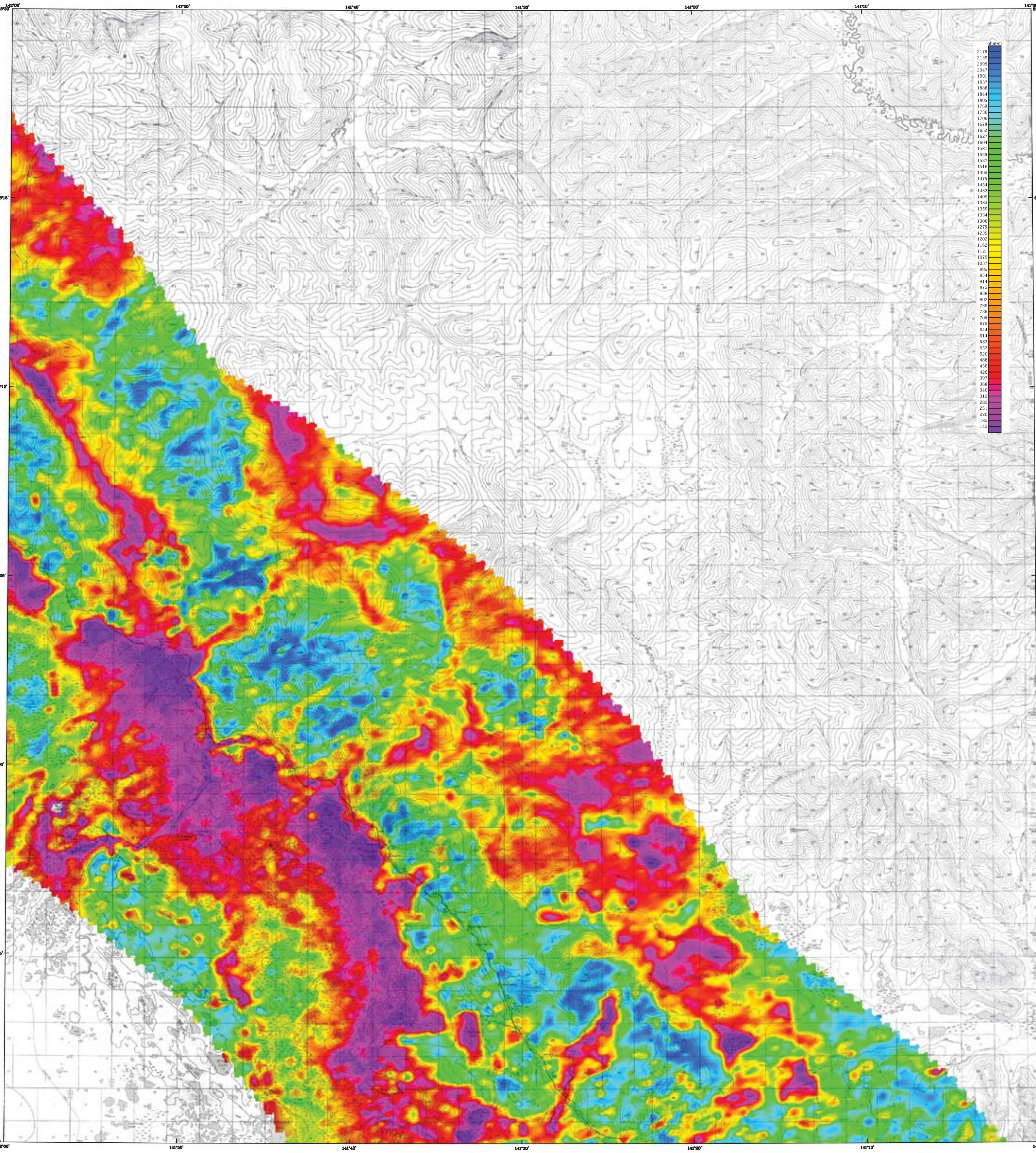
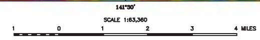
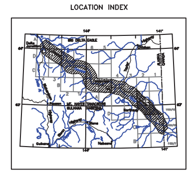




1800 Hz COPLANAR APPARENT RESISTIVITY OF THE ALASKA HIGHWAY CORRIDOR, EAST-CENTRAL ALASKA

PARTS OF NABESNA and TANACROSS QUADRANGLES

by
Laurel E. Burns, Fugro Airborne Surveys Corp., and Stevens Exploration Management Corp.
2006



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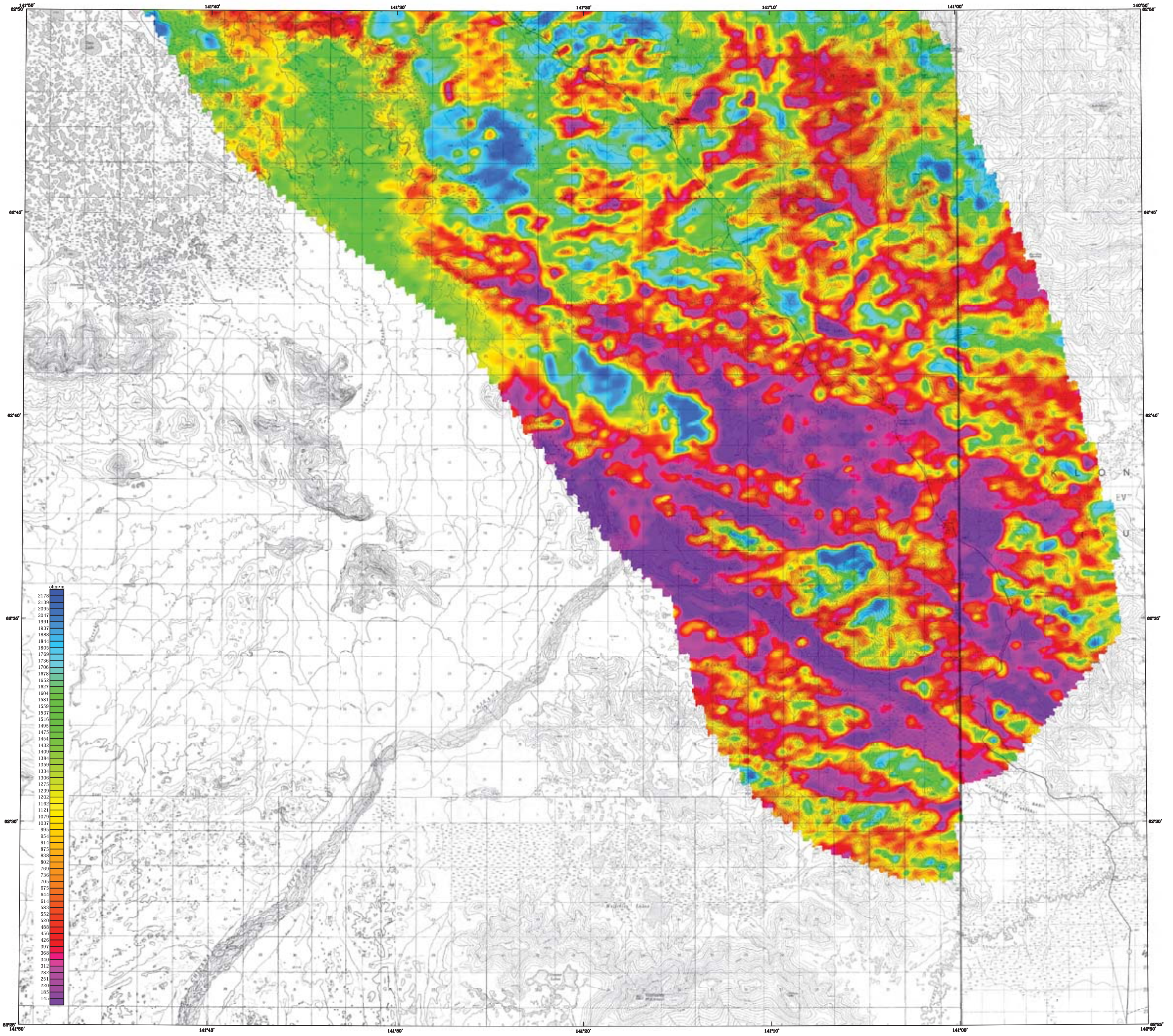
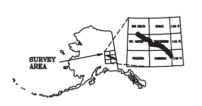
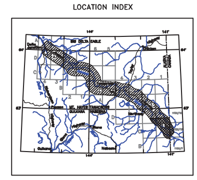


SCALE 1:63,360

CONTOUR INTERVAL 200 FEET
DATUM MEAN SEA LEVEL



LOCATION INDEX



1800 Hz COPLANAR APPARENT RESISTIVITY OF THE ALASKA HIGHWAY CORRIDOR, EAST-CENTRAL ALASKA

PARTS OF NABESNA QUADRANGLE and CANADA 115K

by
Laurel E. Burns, Fugro Airborne Surveys Corp., and Stevens Exploration Management Corp.
2006

DESCRIPTIVE NOTES

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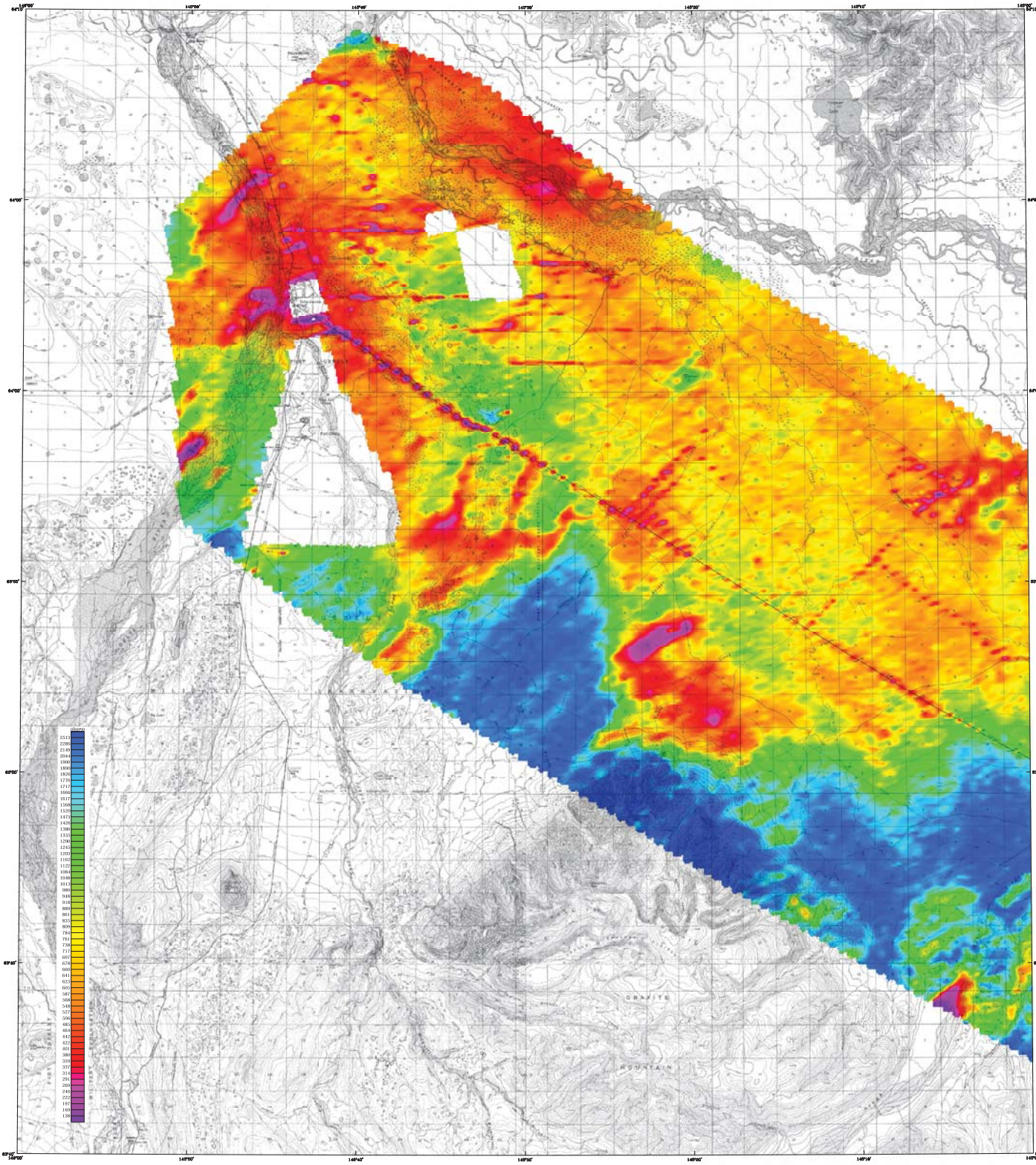

SCALE 1:63,360

1 0 1 2 3 4 MILES

1 0 1 2 3 4 5 KILOMETERS

CONTOUR INTERVAL 10 FEET
DATUM: MEAN SEA LEVEL

SURVEY AREA

LOCATION INDEX

3300 Hz COAXIAL APPARENT RESISTIVITY OF THE ALASKA HIGHWAY CORRIDOR, EAST-CENTRAL ALASKA

PARTS OF BIG DELTA and MT. HAYES QUADRANGLES

by

Laurel E. Burns, Fugro Airborne Surveys Corp., and Stevens Exploration Management Corp.
2006

DESCRIPTIVE NOTES

The geophysical data were acquired with a RESOLVE Electromagnetic (EM) system and a Scintrex cesium magnetometer. The EM and magnetic sensors 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 ambient barometric pressure and temperature using AS350 and AS350B-2 Squirrel helicopters at a mean terrain clearance of 200 feet along NW–SE (350°) survey flight lines with a spacing of a quarter of a mile. Tie lines were flown perpendicular to the flight lines at intervals of approximately 3 miles.

An Ashtech 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 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 RESOLVE EM system measured inphase and quadrature components at six frequencies. One vertical coaxial coplanar pair operated at 3300 Hz and four horizontal coplanar coil–pairs operated at 400, 1800, 8200, 40,000 and 140,000 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 coaxial 3300 Hz using the pseudo–layer half space model. The data were interpolated onto a regular 80 m grid using a modified Akima (1970) technique.

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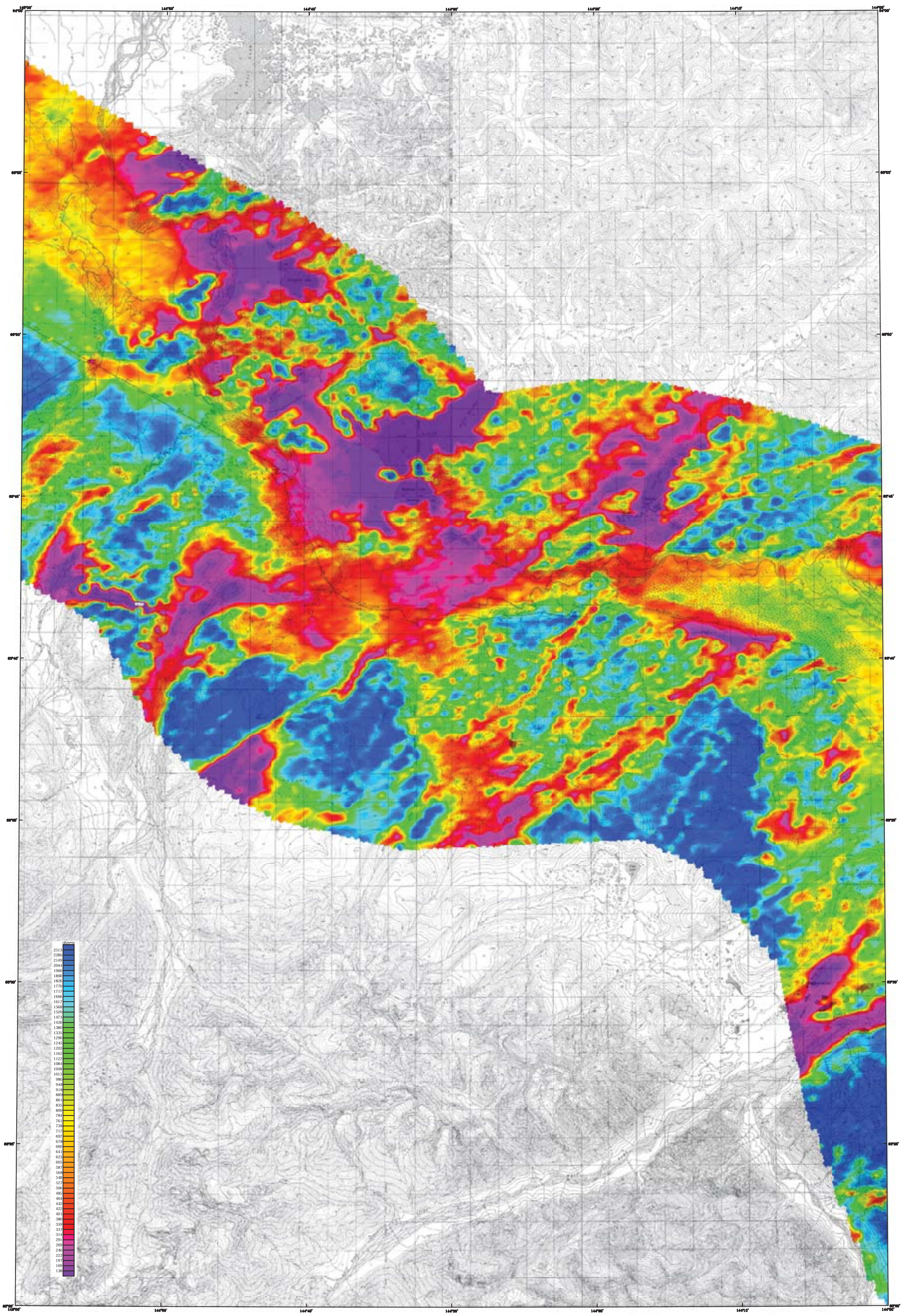
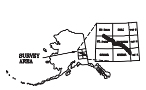


SCALE 1:63,360

1 0 1 2 3 4 MILES

1 0 1 2 3 4 5 KILOMETERS

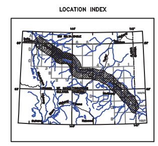


3300 Hz COAXIAL APPARENT RESISTIVITY OF THE ALASKA HIGHWAY CORRIDOR, EAST-CENTRAL ALASKA

PARTS OF MT. HAYES QUADRANGLE

by
Laurel E. Burns, Fugro Airborne Surveys Corp., and Stevens Exploration Management Corp.
2006

LOCATION INDEX



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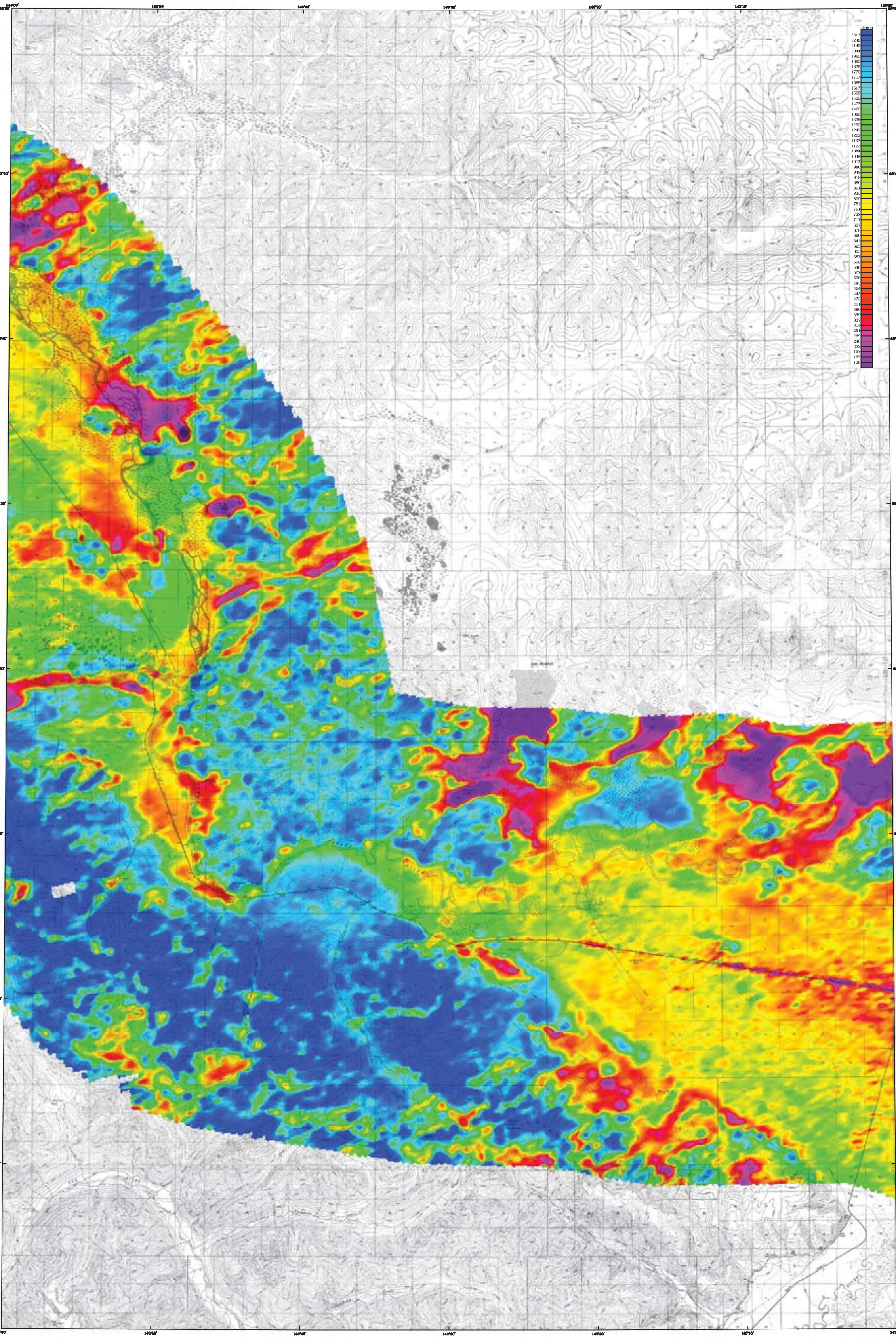

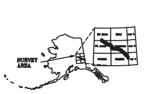

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PARTS OF TANACROSS QUADRANGLE

by
Laurel E. Burns, Fugro Airborne Surveys Corp., and Stevens Exploration Management Corp.
2006

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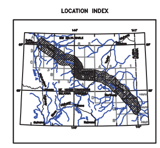

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SURVEY HISTORY

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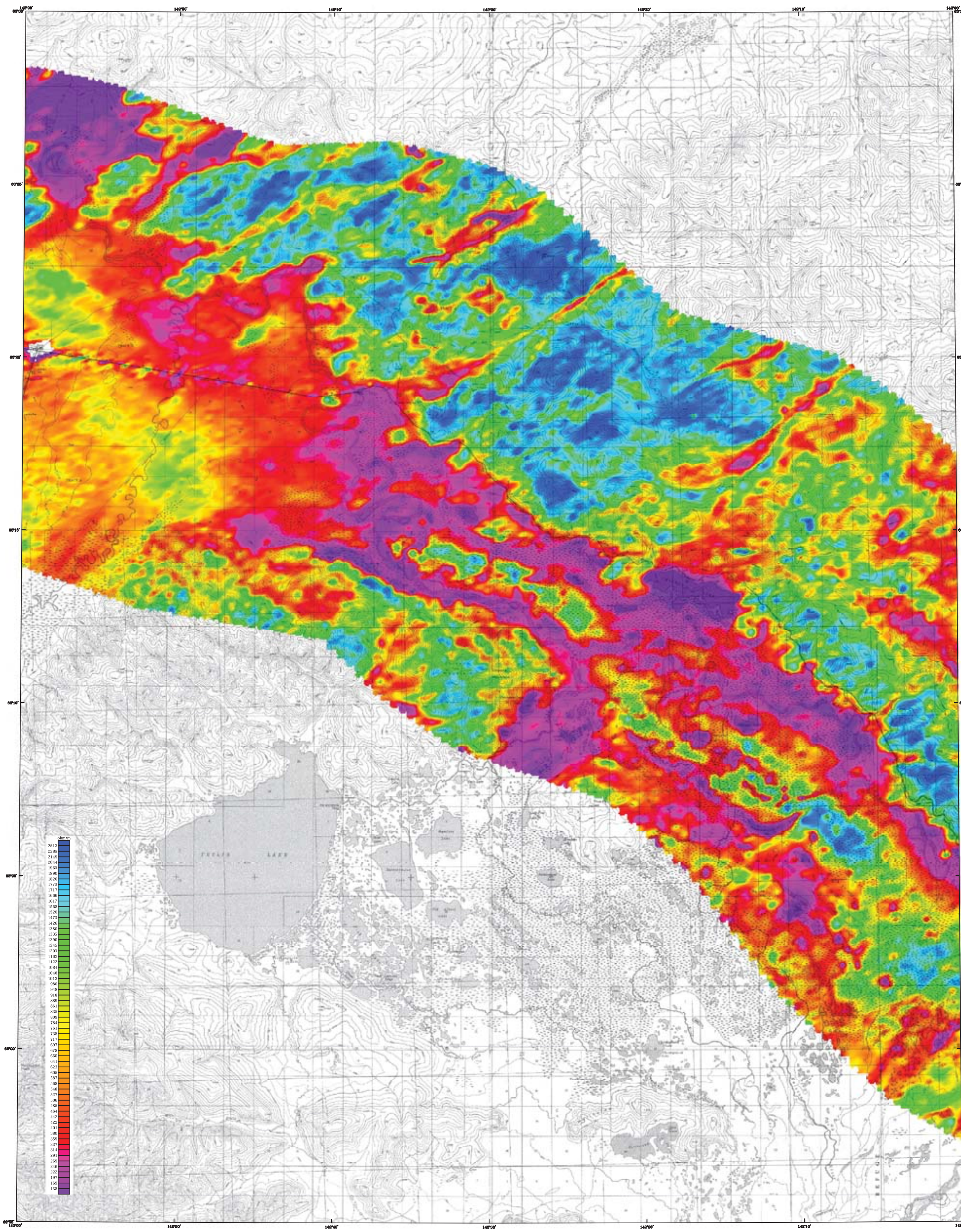


Base from U.S. Geological Survey Quadrangles (Alaska) Nabesna B-6, 1954; B-4, 1954; Tanacross A-3, 1948; A-4, 1948; B-3, 1948; B-4, 1954

SCALE 1:63,360

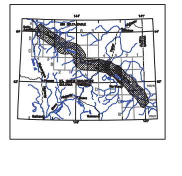
3300 Hz COAXIAL APPARENT RESISTIVITY OF THE ALASKA HIGHWAY CORRIDOR, EAST-CENTRAL ALASKA

PARTS OF NABESNA and TANACROSS QUADRANGLES

by

Laurel E. Burns, Fugro Airborne Surveys Corp., and Stevens Exploration Management Corp.

2006



LOCATION INDEX

DESCRIPTIVE NOTES

The geophysical data were acquired with a RESOLVE Electromagnetic (EM) system and a Scintrex cesium magnetometer. The EM and magnetic sensors 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 using AS350B-2 and AS350B-3 Squirrel helicopters at a mean terrain clearance of 200 feet along NW-SE (350°) survey flight lines with a spacing of a quarter of a mile. Tie lines were flown perpendicular to the flight lines at intervals of approximately 3 miles.

An Ashtech 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 7) spheroid, 1927 North American datum using a central meridian (CM) of 141°, a north constant of 0 and an east constant of 500,000. Positional accuracy of the presented data is better than 10 m. with respect to the UTM grid.

RESISTIVITY

The RESOLVE EM system measured inphase and quadrature components at six frequencies. One vertical coaxial coil-pair operated at 3300 Hz while five horizontal coplanar coil-pairs operated at 400, 1800, 8200, 40,000 and 140,000 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 coaxial 3300 Hz using the pseudo-layer half space model. The data were interpolated onto a regular 80 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 ALTITUDE LIMITS

In areas where the EM bird height exceeded 100 m, and the inphase and quadrature signals were below 3 ppm, the resistivity was not calculated and the grid is blank. This avoids meaningless resistivity calculations due to small signals in areas where the helicopter flew higher to avoid cultural objects or for safety reasons.

SURVEY HISTORY

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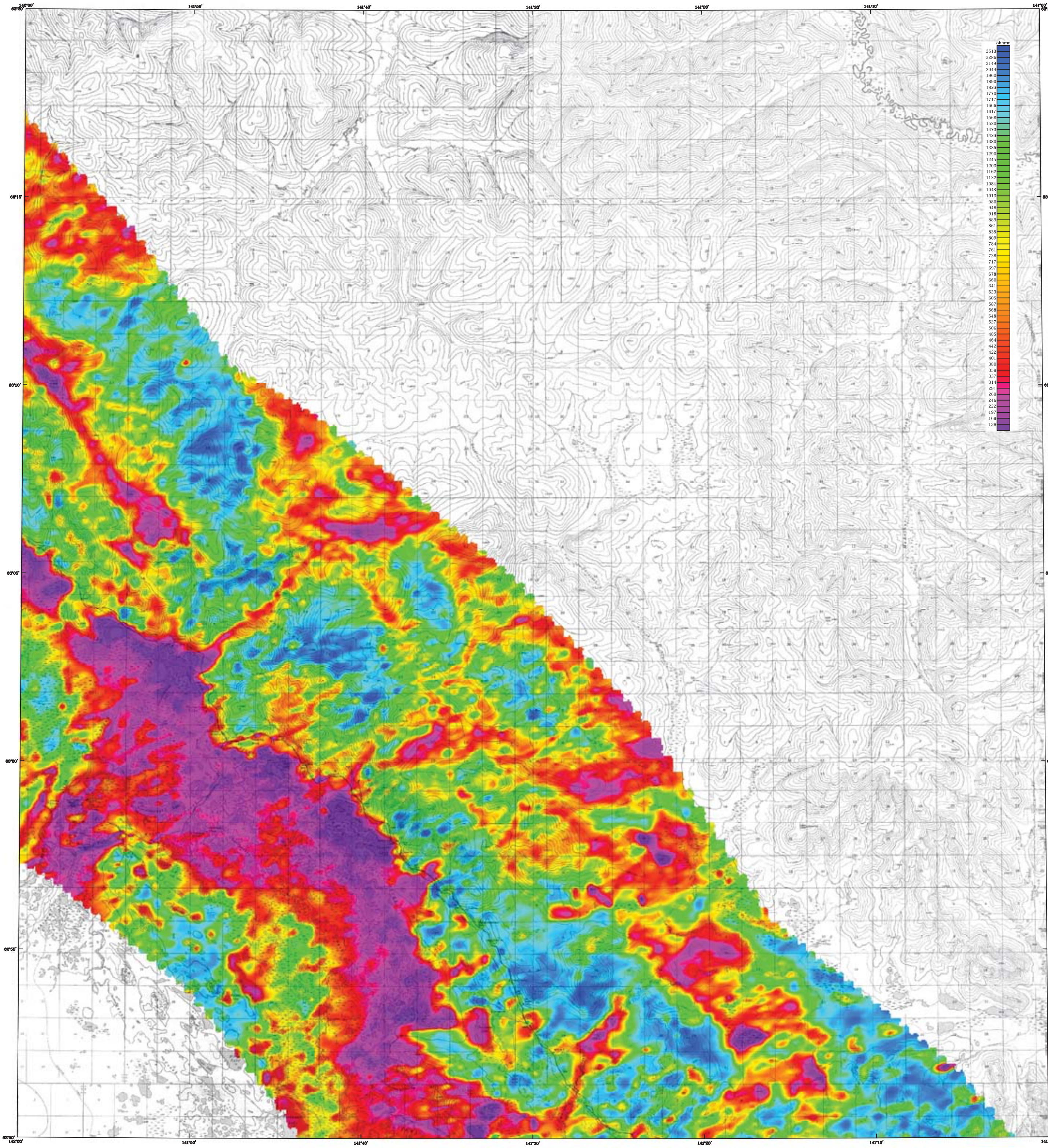
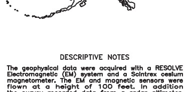


SCALE 1:63,360

1 0 1 2 3 4 MILES

1 0 1 2 3 4 5 KILOMETERS

CONTOUR INTERVAL 100 FEET
DATUM MEAN SEA LEVEL

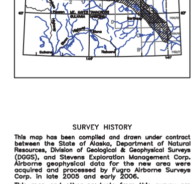


3300 Hz COAXIAL APPARENT RESISTIVITY OF THE ALASKA HIGHWAY CORRIDOR, EAST-CENTRAL ALASKA

PARTS OF NABESNA and TANACROSS QUADRANGLES

by
Laurel E. Burns, Fugro Airborne Surveys Corp., and Stevens Exploration Management Corp.
2006

LOCATION INDEX



DESCRIPTIVE NOTES

The geophysical data were acquired with a RESOLVE Electromagnetic (EM) system and a Scintrex cesium magnetometer. The EM and magnetic sensors 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 using AS350B–2 and AS350B–3 Squirrel helicopters at a mean terrain clearance of 200 feet along NW–SE (350°) survey flight lines with a spacing of a quarter of a mile. Tie lines were flown perpendicular to the flight lines at intervals of approximately 3 miles.

An Ashtech 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 7) spheroid, 1927 North American datum using a central meridian (CM) of 141°, a north constant of 0 and an east constant of 500,000. Positional accuracy of the presented data is better than 10 m. with respect to the UTM grid.

RESISTIVITY

The RESOLVE EM system measured inphase and quadrature components at six frequencies. One vertical coaxial coil–pair operated at 3300 Hz while five horizontal coplanar coil–pairs operated at 400, 1800, 8200, 40,000 and 140,000 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 coaxial 3300 Hz using the pseudo–layer half space model. The data were interpolated onto a regular 80 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 ALTITUDE LIMITS

In areas where the EM bird height exceeded 100 m, and the inphase and quadrature signals were below 3 ppm, the resistivity was not calculated and the grid is blank. This avoids meaningless resistivity calculations due to small signals in areas where the helicopter flew higher to avoid cultural objects or for safety reasons.

SURVEY HISTORY

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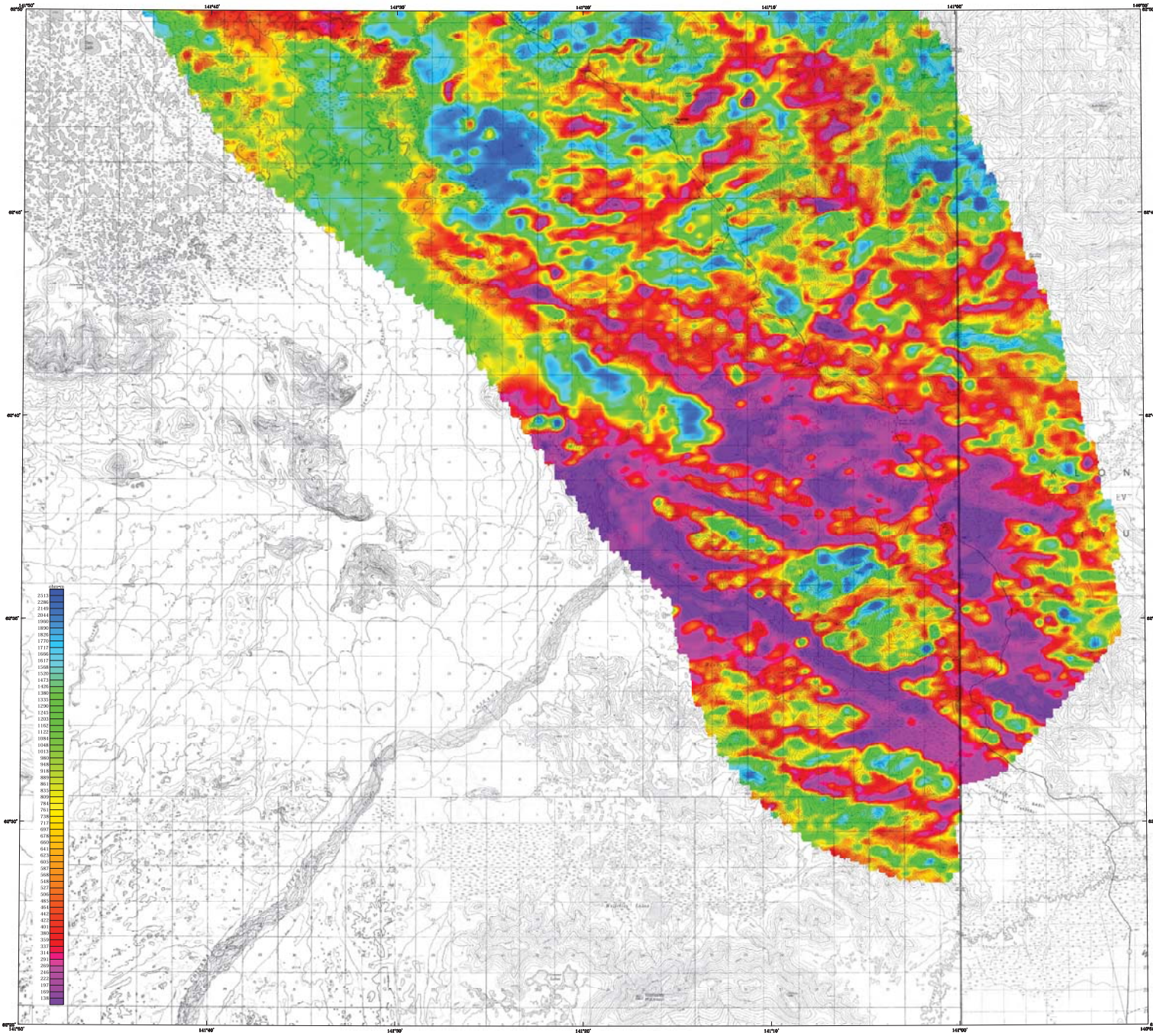

SCALE 1:63,360

1 0 1 2 3 4 MILES

1 0 1 2 3 4 5 KILOMETERS

3300 Hz COAXIAL APPARENT RESISTIVITY OF THE ALASKA HIGHWAY CORRIDOR, EAST-CENTRAL ALASKA

PARTS OF NABESNA QUADRANGLE and CANADA 115K

by

Laurel E. Burns, Fugro Airborne Surveys Corp., and Stevens Exploration Management Corp.
2006

SURVEY AREA

DESCRIPTIVE NOTES

The geophysical data were acquired with a RESOLVE Electromagnetic (EM) system and a Scintrex cesium magnetometer. The EM and magnetic sensors were flown at a height of 100 feet, in addition the survey recorded data from a radar altimeter, GPS navigation system, 56/60 channel spectral gamma-ray system, and barometric pressure and radio. AS350B-2 and AS350B-3 Squirrel helicopters at a mean terrain clearance of 200 feet along NW–SE (350°) survey flight lines with a spacing of a quarter of a mile. Tie lines were flown perpendicular to the flight lines at intervals of approximately 3 miles.

An Ashtech GG24 NAVSTAR / GLONASS Global Positioning System was used for navigation. The Positional position is derived errors are removed using post-flight differential postprocessing to a relative accuracy of better than 5 m. Flight path positions were projected onto the Clarke 1866 (UTM zone 7) spheroid, 1927 North American datum using a central meridian (CM) of 141°, a north constant of 0 and an east constant of 500,000. Positional accuracy of the presented data is better than 10 m. with respect to the UTM grid.

RESISTIVITY

The RESOLVE EM system measured inphase and quadrature components at six frequencies. One vertical coaxial coil-pair operated at 3300 Hz while five horizontal coplanar coil-pairs operated at 900 Hz, 7200 Hz, 40,000 and 140,000 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 coaxial 3300 Hz using the pseudo-layer half space model. The data were interpolated onto a regular 80 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 ALTITUDE LIMITS

In areas where the EM bird height exceeded 100 m, and the inphase and quadrature signals were below 3 ppm, the resistivity was not calculated and the grid is blank. This avoids meaningless resistivity calculations due to small signals in areas where the helicopter flew higher to avoid cultural objects or for safety reasons.

LOCATION INDEX

SURVEY HISTORY

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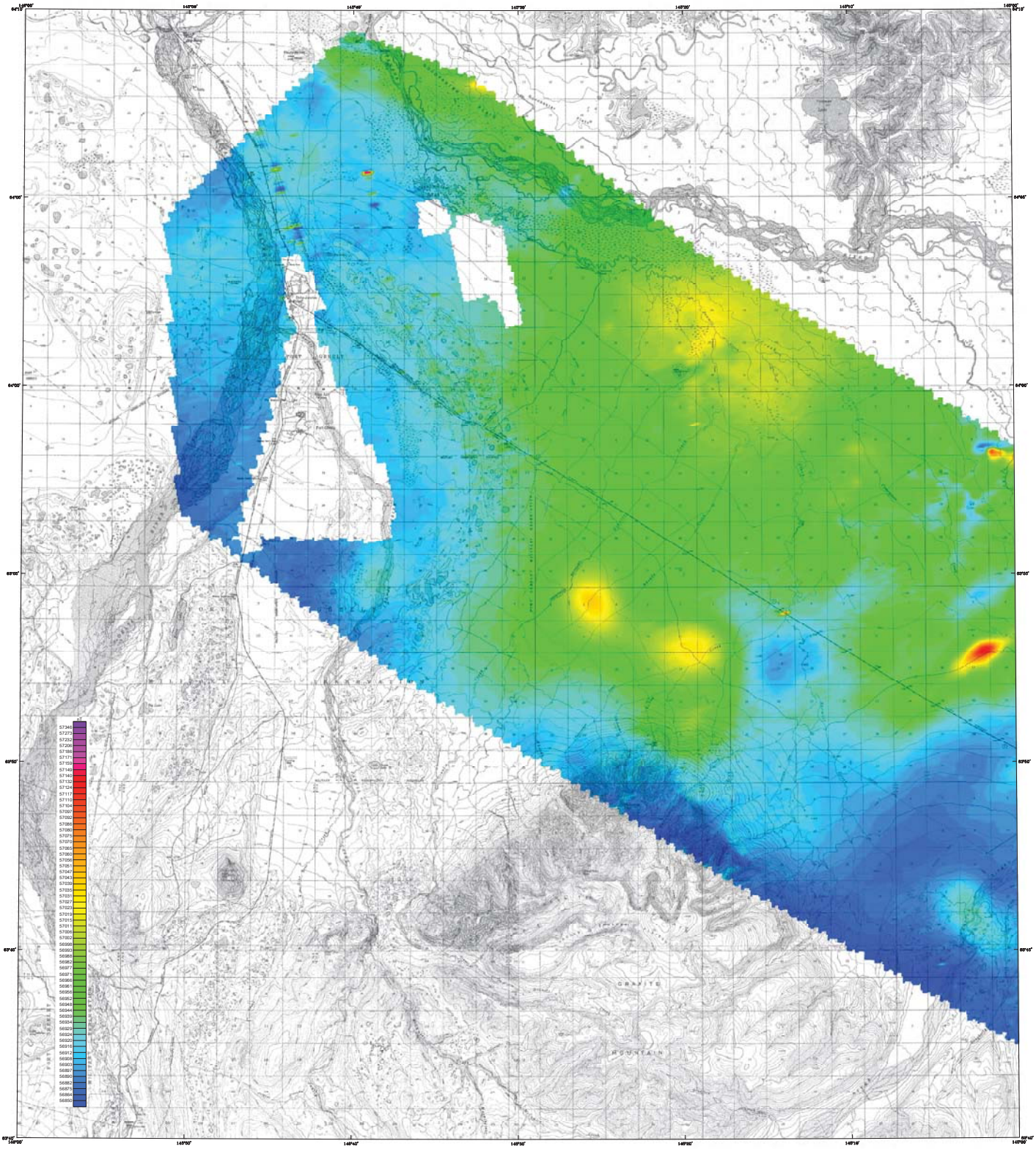


SCALE 1:63,360

1 0 1 2 3 4 MILES

1 0 1 2 3 4 5 KILOMETERS

CONTOUR INTERVAL IS 10 NT
EARTH MAGNETIC FIELD

TOTAL MAGNETIC FIELD OF THE ALASKA HIGHWAY CORRIDOR, EAST-CENTRAL ALASKA

PARTS OF BIG DELTA and MT. HAYES QUADRANGLES

by

Laurel E. Burns, Fugro Airborne Surveys Corp., and Stevens Exploration Management Corp.
2006

DESCRIPTIVE NOTES

The geophysical data were acquired with a RESOLVE Electromagnetic (EM) system and a Scintrex cesium magnetometer. The EM and magnetic sensors 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. Data were recorded digitally on a AS350 camera. AS350B Squirrel helicopters at a mean terrain clearance of 200 feet along NW–SE (350°) survey flight lines with a spacing of a quarter of a mile. Tie lines were flown perpendicular to the flight lines at intervals of approximately 3 miles.

An Ashtech 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 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.

TOTAL MAGNETIC FIELD

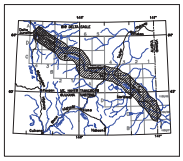
The magnetic total field contours were produced using digitally recorded data from a Scintrex cesium CS2 magnetometer, with a sampling interval of 0.1 seconds. The magnetic data were (1) corrected for diurnal variations by subtraction of the digitally recorded base station magnetic data, (2) adjusted for regional variations (or IGRF gradient, 2005, updated to November 2005) using altimeter adjusted IGRF, (3) leveled to the tie line data, and 4) interpolated onto a regular 80 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.

COLOR BAR HISTOGRAM

Approximately 95% of the entire Alaska Highway Corridor aeromagnetic data set's total range is displayed on the color bar. Data values actually range from 56108 nT (dark blue) to about 60180 nT (magenta). Actual values can be seen on digital publication GPR 2006–6.

LOCATION INDEX



SURVEY HISTORY

This map has been compiled and drawn under contract between the State of Alaska, Department of Natural Resources, Division of Geological & Geophysical Surveys (DGGS), and Stevens Exploration Management Corp. (SEMC). The geophysical data for the Delta area were acquired and processed by Fugro Airborne Surveys Corp. in late 2005 and early 2006.

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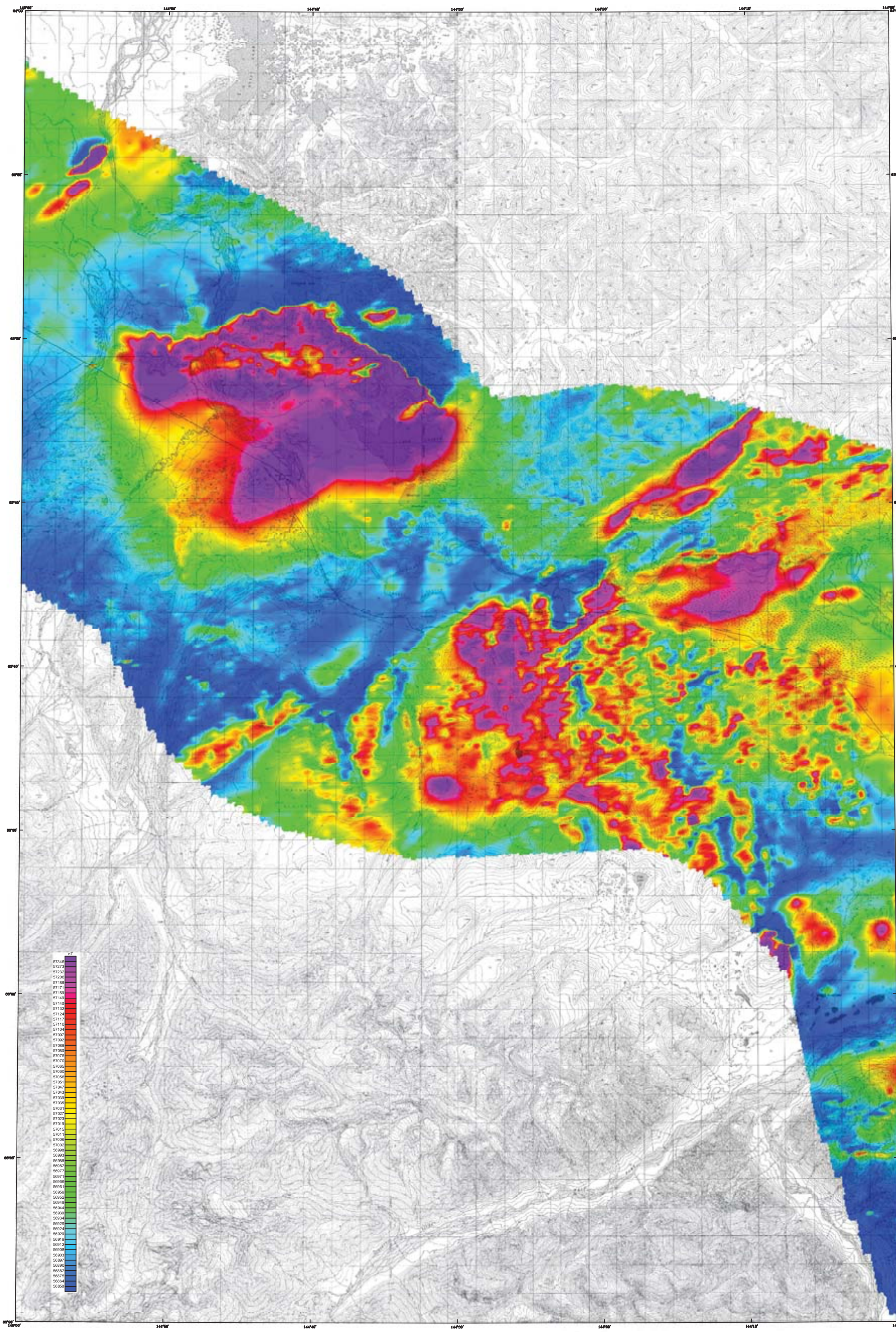
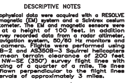


SCALE 1:63,360

1 0 1 2 3 4 MILES

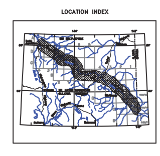
1 0 1 2 3 4 5 KILOMETERS



TOTAL MAGNETIC FIELD OF THE ALASKA HIGHWAY CORRIDOR, EAST-CENTRAL ALASKA

PARTS OF MT. HAYES QUADRANGLE

by
Laurel E. Burns, Fugro Airborne Surveys Corp., and Stevens Exploration Management Corp.
2006



DESCRIPTIVE NOTES

The geophysical data were acquired with a RESOLVE Electromagnetic (EM) system and a Scintrex cesium magnetometer. The EM and magnetic sensors 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 using AS350B-2 and AS350B-3 Squirrel helicopters at a mean terrain clearance of 200 feet along NW-SE (350°) survey flight lines with a spacing of a quarter of a mile. Tie lines were flown perpendicular to the flight lines at intervals of approximately 3 miles.

An Ashtech 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 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.

TOTAL MAGNETIC FIELD

The magnetic total field contours were produced using digitally recorded data from a Scintrex cesium CS2 magnetometer, with a sampling interval of 0.1 seconds. The magnetic data were (1) corrected for diurnal variations by subtraction of the digitally recorded base station magnetic data, (2) adjusted for regional variations (or IGRF gradient, 2005, updated to November 2005) using altimeter adjusted IGRF, (3) leveled to the tie line data, and 4) interpolated onto a regular 80 m grid using a modified Akima (1970) technique.

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COLOR BAR HISTOGRAM

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SURVEY HISTORY

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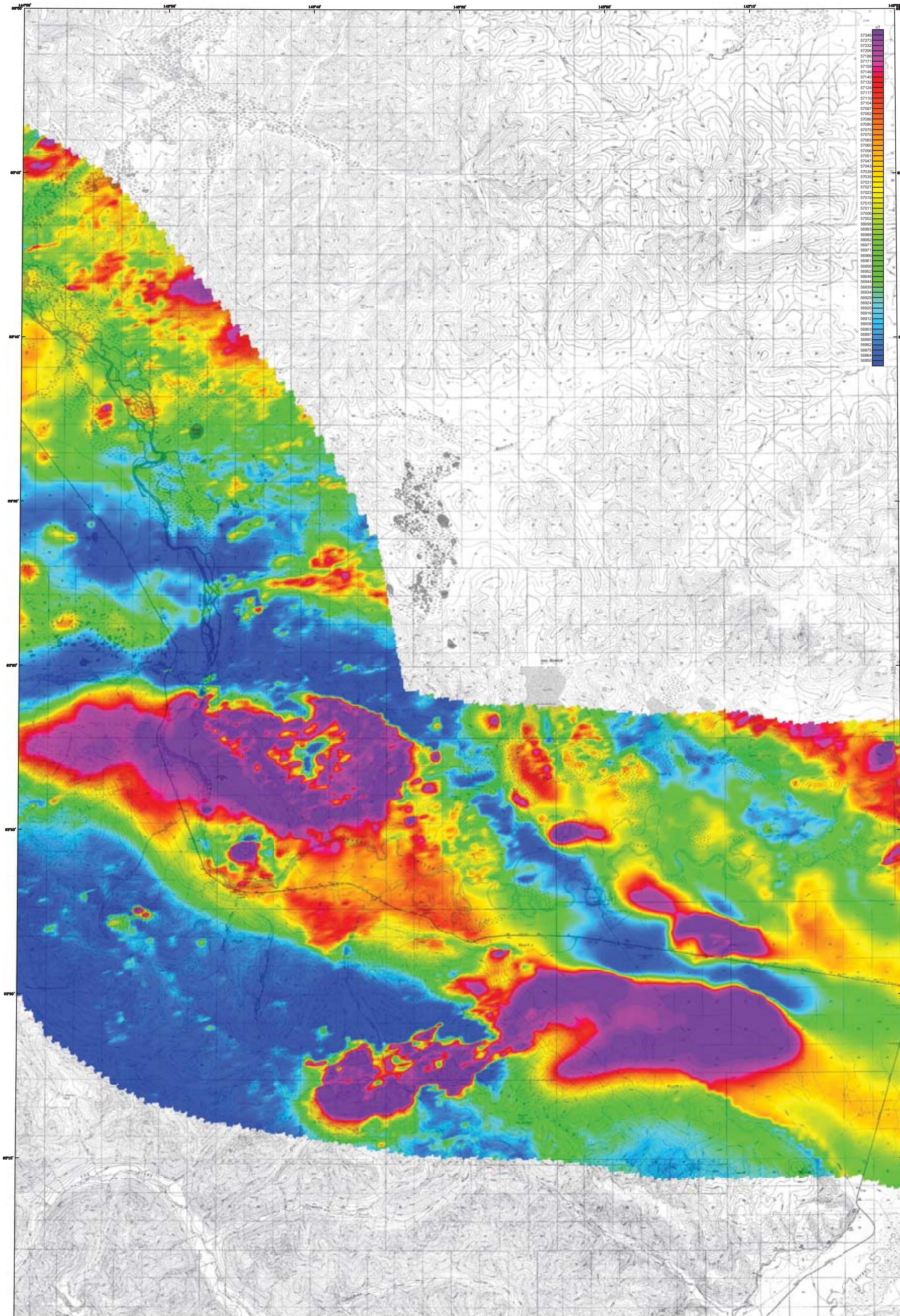
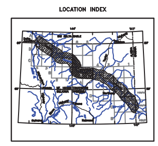


SCALE 1:63,360

TOTAL MAGNETIC FIELD OF THE ALASKA HIGHWAY CORRIDOR, EAST-CENTRAL ALASKA

PARTS OF TANACROSS QUADRANGLE

by
Laurel E. Burns, Fugro Airborne Surveys Corp., and Stevens Exploration Management Corp.
2006



LOCATION INDEX

DESCRIPTIVE NOTES

The geophysical data were acquired with a RESOLVE Electromagnetic (EM) system and a Scintrex cesium magnetometer. The EM and magnetic sensors 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 using AS350B-2 and AS350B-3 Squirrel helicopters at a mean terrain clearance of 200 feet along NW-SE (350°) survey flight lines with a spacing of a quarter of a mile. Tie lines were flown perpendicular to the flight lines at intervals of approximately 3 miles.

An Ashtech 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 7) spheroid, 1927 North American datum using a central meridian (CM) of 141°, a north constant of 0 and an east constant of 500,000. Positional accuracy of the presented data is better than 10 m. with respect to the UTM grid.

TOTAL MAGNETIC FIELD

The magnetic total field contours were produced using digitally recorded data from a Scintrex cesium CS2 magnetometer, with a sampling interval of 0.1 seconds. The magnetic data were (1) corrected for diurnal variations by subtraction of the digitally recorded base station magnetic data, (2) adjusted for regional variations (or IGRF gradient, 2005, updated to November 2005) using altimeter adjusted IGRF, (3) leveled to the tie line data, and 4) interpolated onto a regular 80 m grid using a modified Akima (1970) technique.

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COLOR BAR HISTOGRAM

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SURVEY HISTORY

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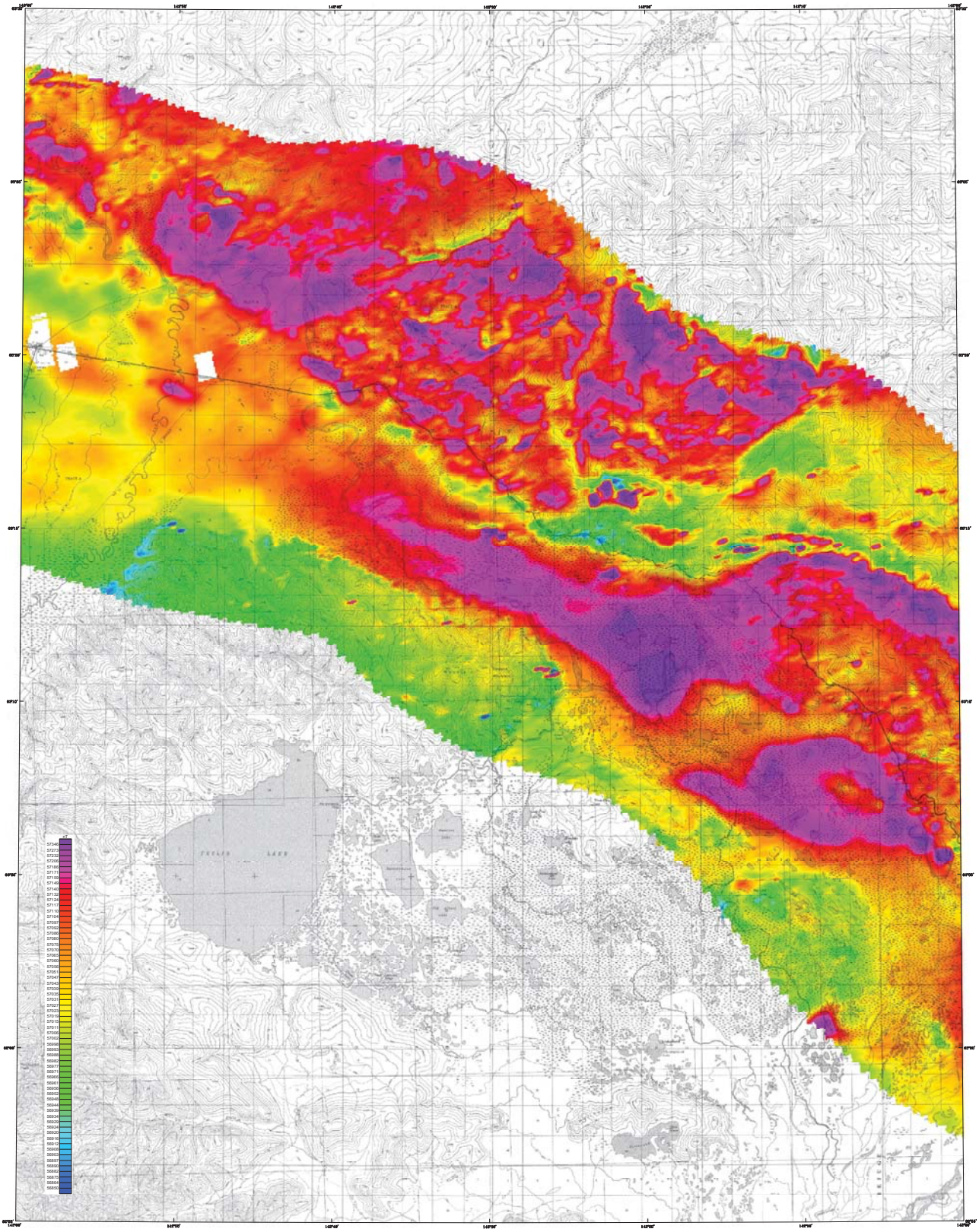

SCALE 1:63,360

1 0 1 2 3 4 MILES

1 0 1 2 3 4 5 KILOMETERS

CONTOUR INTERVAL 10 nT

TOTAL MAGNETIC FIELD OF THE ALASKA HIGHWAY CORRIDOR, EAST-CENTRAL ALASKA

PARTS OF NABESNA and TANACROSS QUADRANGLES

by

Leonid N. Burns, Fugro Airborne Surveys Corp., and Stevens Exploration Management Corp.

2006

DESCRIPTIVE NOTES

The geophysical data were acquired with a RESOLVE helicopter-borne VLF and magnetic gradiometer magnetometer. The EM and magnetic sensors 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 barometric pressure. The survey was flown with AS350B-2 and AS350B-3 Squirrel helicopters at a mean terrain clearance of 200 feet along NW–SE (330°) survey flight lines with a spacing of a quarter of a mile. Tie lines were flown perpendicular to the flight lines at intervals of approximately 3 miles.

An Aashtech GG24 NAVSTAR / GLONASS Global Positioning System was used for navigation. The helicopter position was derived every .05 seconds using post–flight differential positioning to a relative accuracy of better than 5 m. Flight path coordinates are presented in the UTM projection (UTM zone 7) spheroid, 1927 North American datum using a central meridian (CM) of 141°, a norin 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 magnetic total field contours were produced using digitally recorded data from a Scintrex cesium CS3 magnetometer, with a sampling interval of 0.1 seconds. The magnetic data were (1) corrected for diurnal variations by subtraction of the digitally recorded base station magnetic data, (2) adjusted for regional variations (or IGRF gradient, 2005, updated to November 2005) using altimeter adjusted IGRF, (3) leveled to the tie line data, and 4) interpolated onto a regular 80 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.

COLOR BAR HISTOGRAM

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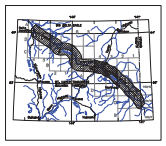
LOCATION INDEX



SURVEY HISTORY

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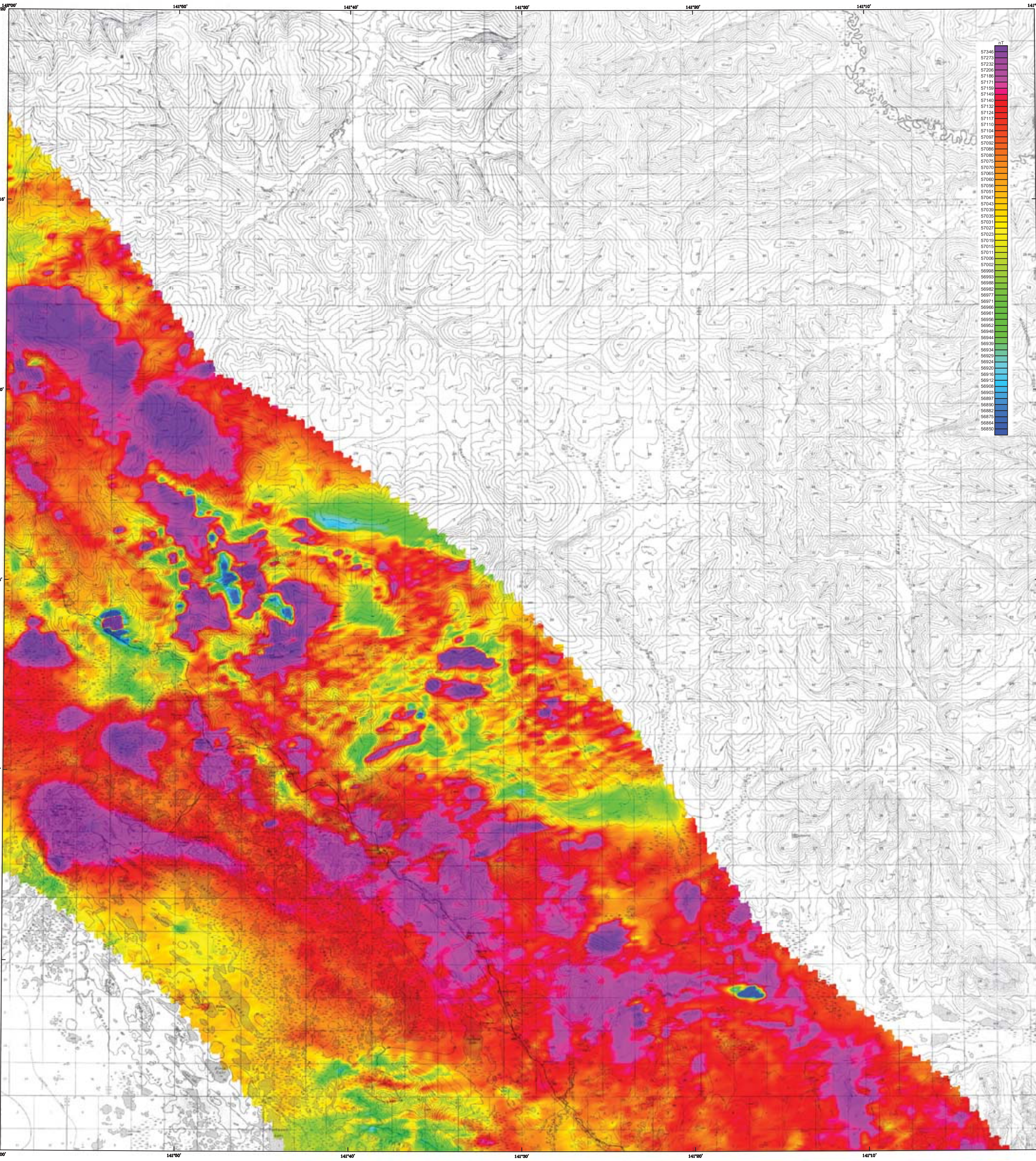


Base from U.S. Geological Survey Quadrangles (Alaska) Nabesna D-1, 1967; D-2, 1970; Tanacross A-1, 1971; A-2, 1972; B-1, 1966; B-2, 1968

SCALE 1:63,360

1 0 1 2 3 4 MILES

1 0 1 2 3 4 5 KILOMETERS

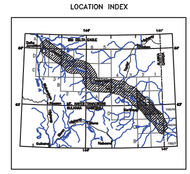
CONTOUR INTERVAL 100 FEET
DATUM MEAN SEA LEVEL

TOTAL MAGNETIC FIELD OF THE ALASKA HIGHWAY CORRIDOR, EAST-CENTRAL ALASKA

PARTS OF NABESNA and TANACROSS QUADRANGLES

by
Laurel E. Burns, Fugro Airborne Surveys Corp., and Stevens Exploration Management Corp.
2006

LOCATION INDEX



DESCRIPTIVE NOTES

The geophysical data were acquired with a RESOLVE Electromagnetic (EM) system and a Scintrex cesium magnetometer. The EM and magnetic sensors 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 using AS350B-2 and AS350B-3 Squirrel helicopters at a mean terrain clearance of 200 feet along NW-SE (350°) survey flight lines with a spacing of a quarter of a mile. Tie lines were flown perpendicular to the flight lines at intervals of approximately 3 miles.

An Ashtech 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 7) spheroid, 1927 North American datum using a central meridian (CM) of 141°, a north constant of 0 and an east constant of 500,000. Positional accuracy of the presented data is better than 10 m. with respect to the UTM grid.

APPROXIMATE MEAN DECLINATION, 2006

TOTAL MAGNETIC FIELD

The magnetic total field contours were produced using digitally recorded data from a Scintrex cesium CS2 magnetometer, with a sampling interval of 0.1 seconds. The magnetic data were (1) corrected for diurnal variations by subtraction of the digitally recorded base station magnetic data, (2) adjusted for regional variations (or IGRF gradient, 2005, updated to November 2005) using altimeter adjusted IGRF, (3) leveled to the tie line data, and 4) interpolated onto a regular 80 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.

COLOR BAR HISTOGRAM

Approximately 98% of the entire Alaska Highway Corridor aeromagnetic data lie within the range displayed on the color bar. Data values actually range from 56106 nT (dark blue) to about 60189 nT (magenta). Actual values can be seen on digital publication GPR 2006-6.

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 Stevens Exploration Management Corp. Airborne geophysical data for the new area were acquired and processed by Fugro Airborne Surveys Corp. in late 2005 and early 2006.

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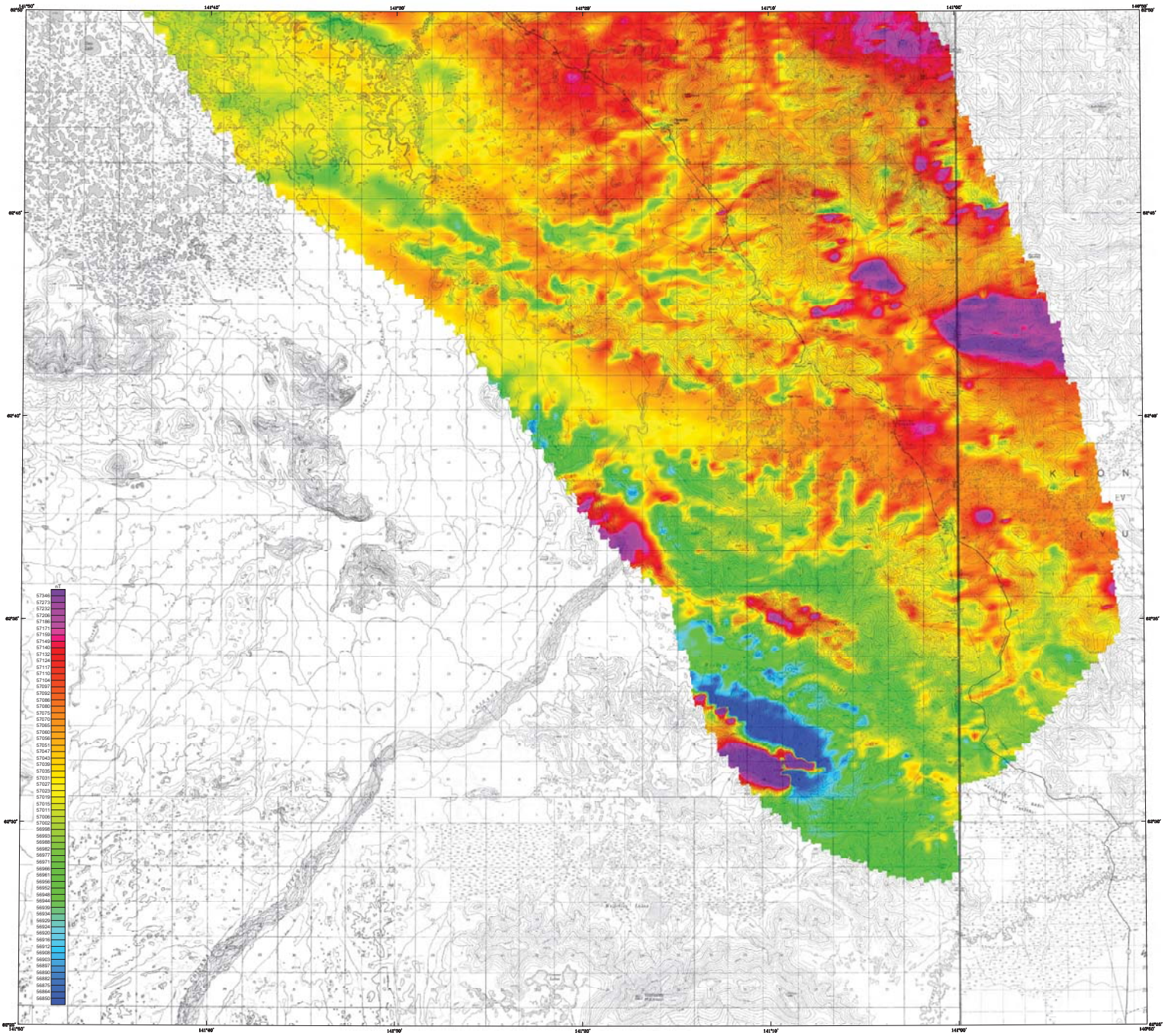

Base from U.S. Geological Survey Geographics (Alaska), Nabesna B-1, 1955, B-2, 1955
B-3, 1955, C-3, 1955, D-1, 1957, D-2, 1957 and Canada National Topographic System
(NTS) 115J/SW, 115J/S, 115J/SE, 115K/SE

SCALE 1:63,360

1 0 1 2 3 4 MILES

1 0 1 2 3 4 5 KILOMETERS

CONTOUR INTERVAL 100 FEET
DATUM IS MSL

SURVEY AREA

TOTAL MAGNETIC FIELD OF THE ALASKA HIGHWAY CORRIDOR, EAST-CENTRAL ALASKA

PARTS OF NABESNA QUADRANGLE and CANADA 115K

by

Laurel E. Burns, Fugro Airborne Surveys Corp., and Stevens Exploration Management Corp.
2006

DESCRIPTIVE NOTES

The geophysical data were acquired with a RESOLVE Electromagnetic (EM) system and a Scintrex cesium magnetometer. The EM and magnetic sensors were flown at a height of 100 feet, in addition the survey recorded data from a radar altimeter, GPS navigation system, 50/60 cycle noise and digital video camera. The survey was performed using AS350B-2 and AS350B-3 Squirrel helicopters at a mean terrain clearance of 200 feet along NW–SE (350°) survey flight lines with a spacing of a quarter of a mile. Tie lines were flown perpendicular to the flight lines at intervals of approximately 3 miles.

An Ashtech GG24 NAVSTAR / GLONASS Global Positioning System was used for navigation. The Precise Positioning Service was achieved on board using post-flight differential processing to a relative accuracy of better than 5 m. Flight path positions were projected onto the Clarke 1866 (UTM zone 7) spheroid, 1927 North American datum using a central meridian (CM) of 141°, a north constant of 0 and an east constant of 500,000. Positional accuracy of the presented data is better than 10 m. with respect to the UTM grid.

TRUE NORTH

APPROXIMATE MEAN DECLINATION, 2006

TOTAL MAGNETIC FIELD

The magnetic total field contours were produced using digitally recorded data from a Scintrex cesium CS2 magnetometer, with a sampling interval of 0.1 seconds. The magnetic data were (1) corrected for diurnal variations by subtraction of the digitally recorded base station magnetic data, (2) adjusted for regional variations (or IGRF gradient, 2005, updated to November 2005) using altimeter adjusted IGRF, (3) leveled to the tie line data, and 4) interpolated onto a regular 80 m grid using a modified Akima (1970) technique.

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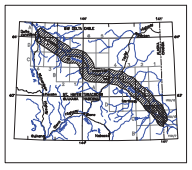
LOCATION INDEX



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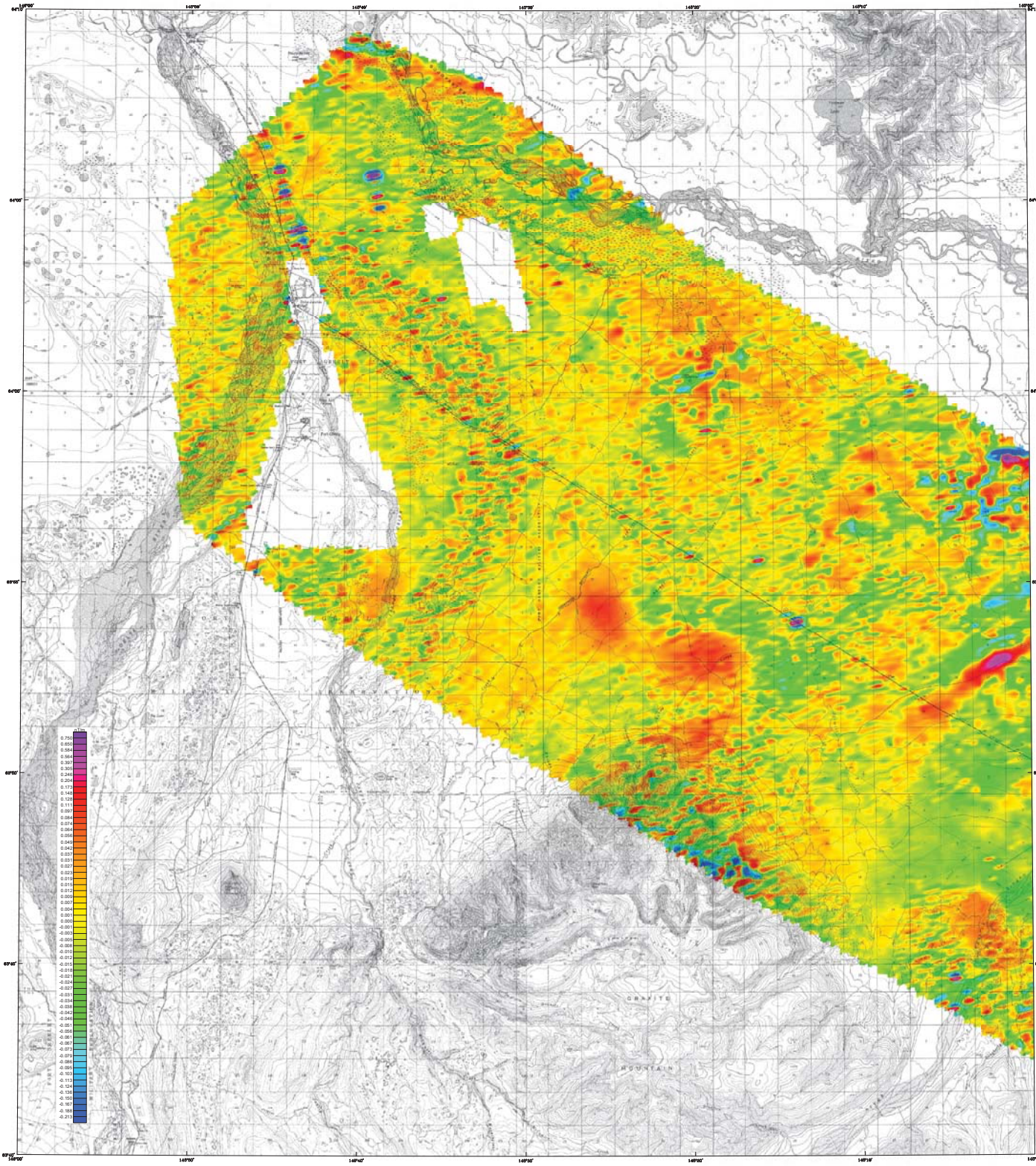


SCALE 1:63,360

1 0 1 2 3 4 MILES

1 0 1 2 3 4 5 KILOMETERS

CONTOUR INTERVAL 40 FEET
DATUM: NORTH AMERICAN 1927

FIRST VERTICAL DERIVATIVE OF THE MAGNETIC FIELD OF THE ALASKA HIGHWAY CORRIDOR, EAST-CENTRAL ALASKA

PARTS OF BIG DELTA and MT. HAYES QUADRANGLES

by

Laurel E. Burns, Fugro Airborne Surveys Corp., and Stevens Exploration Management Corp.

2006

DESCRIPTIVE NOTES

The geophysical data were acquired with a RESOLVE Electromagnetic (EM) system and a Scintrex cesium magnetometer. The EM and magnetic sensors 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 barometric pressure. Data were recorded using AS350 equipment. AS350B-2 Squirrel helicopters at a mean terrain clearance of 200 feet along NW–SE (350°) survey flight lines with a spacing of a quarter of a mile. Tie lines were flown perpendicular to the flight lines at intervals of approximately 3 miles.

An Ashtech 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 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.

COLOR BAR HISTOGRAM

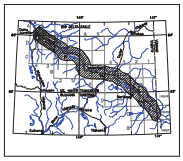
Approximately 98% of the first vertical derivative of the magnetic field for the entire Alaska Highway corridor dataset lie within the range displayed on the color bar. Data values actually range from –8,469 nT/m (dark blue) to about 18,335 nT/m (magenta). Actual values can be seen in digital publication GPR 2006–6.

FIRST VERTICAL DERIVATIVE OF THE MAGNETIC FIELD

The magnetic total field contours were produced using digitally recorded data from a Scintrex cesium CS2 magnetometer, with a sampling interval of 0.1 seconds. The magnetic data were (1) corrected for diurnal variations by subtraction of the digitally recorded base station magnetic data, (2) adjusted for regional variations (or IGRF gradient, 2005, updated to November 2005) using altimeter adjusted IGRF, (3) leveled to the tie line data, and 4) interpolated onto a regular 80 m grid using a modified Akima (1970) technique. The first vertical derivative grid was calculated from the processed 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.

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

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 Stevens Exploration Management Corp. (SEMC). The geophysical data for the entire area were acquired and processed in 2005 by Fugro Airborne Surveys Corp. in late 2005 and early 2006.

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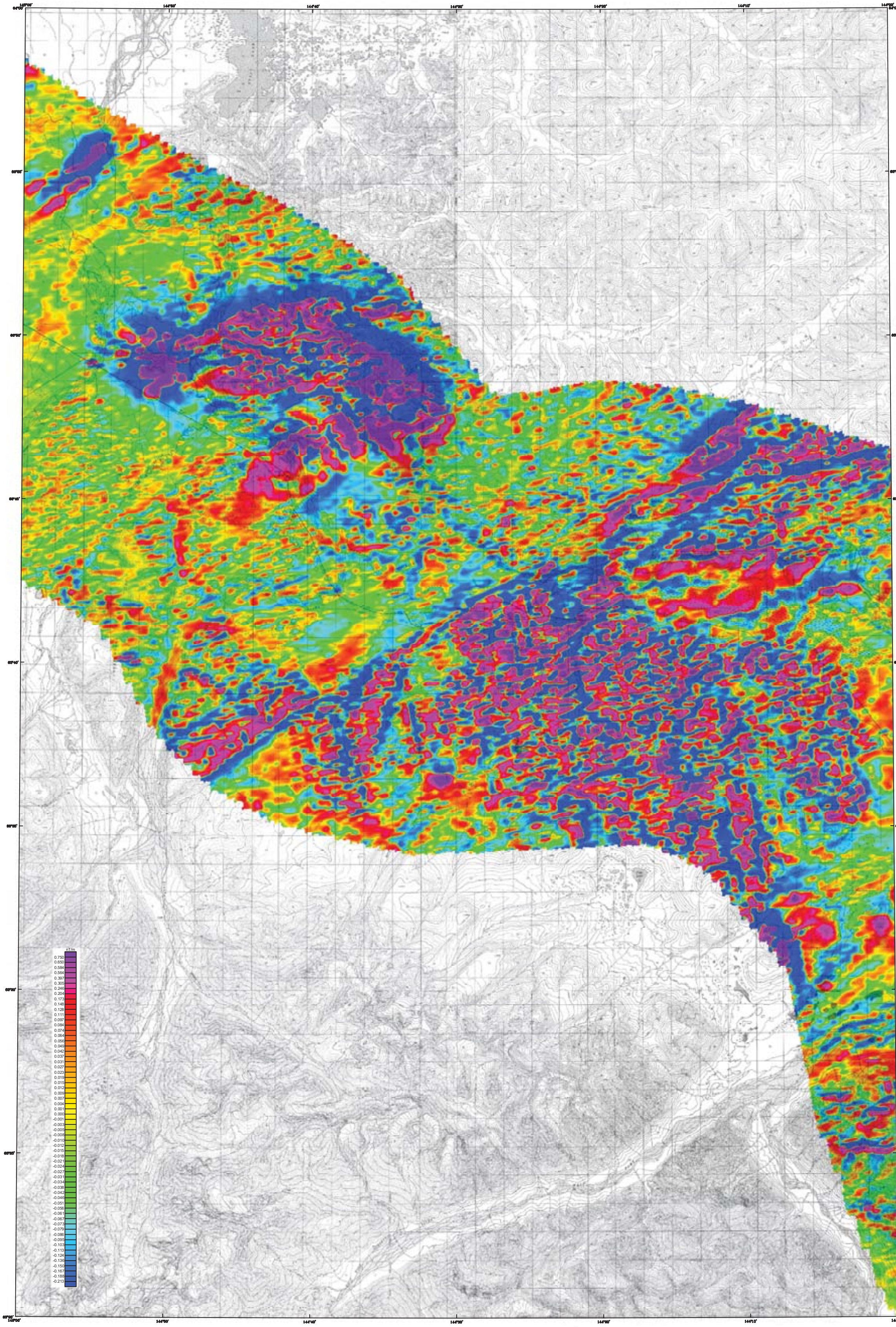
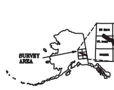


SCALE 1:63,360



FIRST VERTICAL DERIVATIVE OF THE MAGNETIC FIELD OF THE ALASKA HIGHWAY CORRIDOR, EAST-CENTRAL ALASKA

PARTS OF MT. HAYES QUADRANGLE

by
Laurel E. Burns, Fugro Airborne Surveys Corp., and Stevens Exploration Management Corp.
2006

DESCRIPTIVE NOTES

The geophysical data were acquired with a RESOLVE Electromagnetic (EM) system and a Scintrex cesium magnetometer. The EM and magnetic sensors 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 using AS350B-2 and AS350B-3 Squirrel helicopters at a mean terrain clearance of 200 feet along NW-SE (350°) survey flight lines with a spacing of a quarter of a mile. Tie lines were flown perpendicular to the flight lines at intervals of approximately 3 miles.

An Ashtech 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 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.

COLOR BAR HISTOGRAM

Approximately 98% of the first vertical derivative of the magnetic field for the entire Alaska Highway corridor dataset lie within the range displayed on the color bar. Data values actually range from −8.699 nT/m (dark blue) to about 18.935 nT/m (magenta). Actual values can be seen in digital publication GPR 2006-6.

FIRST VERTICAL DERIVATIVE OF THE MAGNETIC FIELD

The magnetic total field contours were produced using digitally recorded data from a Scintrex cesium CS2 magnetometer, with a sampling interval of 0.1 seconds. The magnetic data were (1) corrected for diurnal variations by subtraction of the digitally recorded base station magnetic data, (2) adjusted for regional variations (or IGRF gradient, 2005, updated to November 2005) using altimeter adjusted IGRF, (3) leveled to the tie line data, and 4) interpolated onto a regular 80 m grid using a modified Akima (1970) technique. The first vertical derivative grid was calculated from the processed total magnetic field grid using a FFT base frequency domain filtering algorithm. The resulting first veritical 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.

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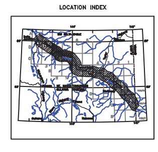

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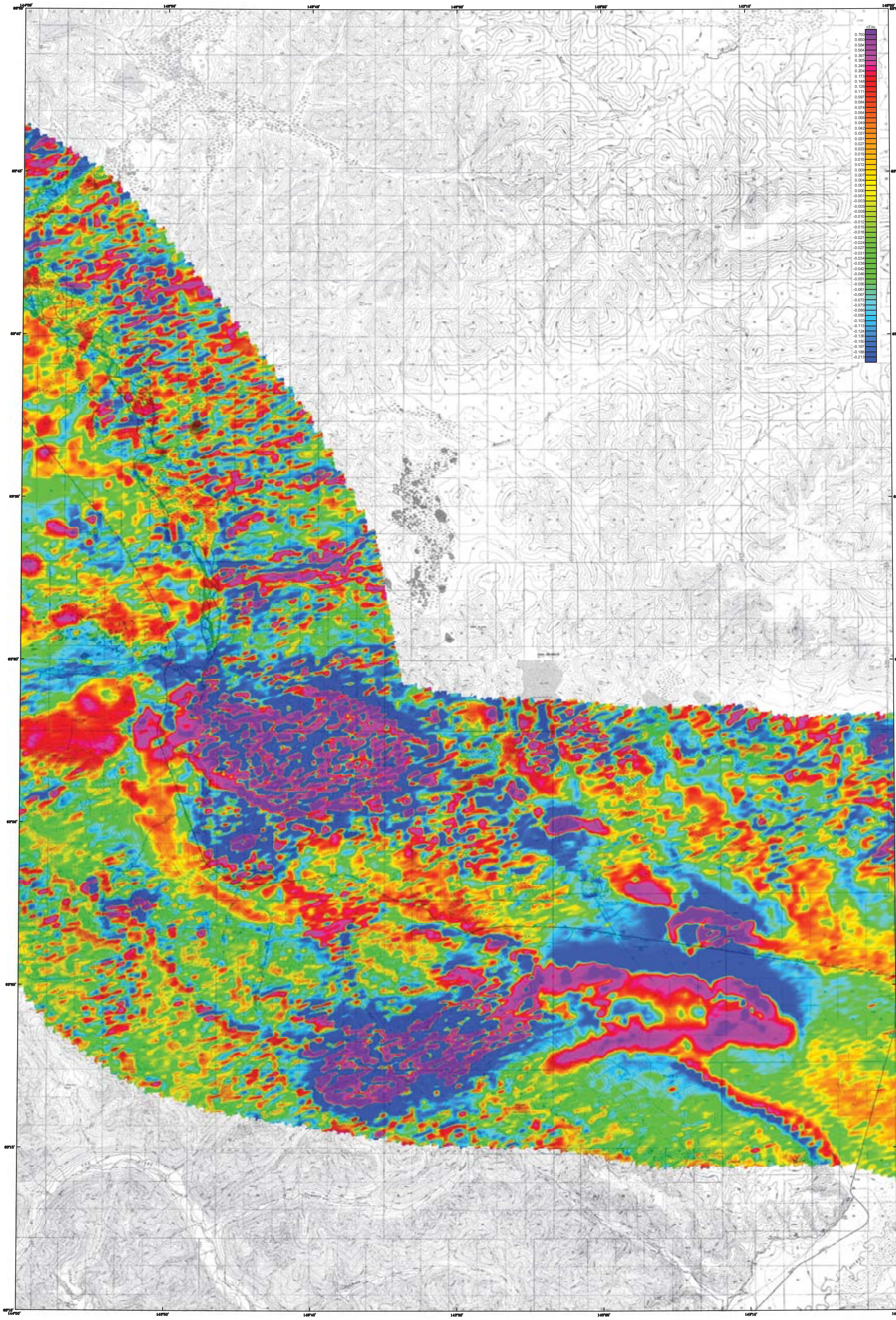

SCALE 1:63,360

1 0 1 2 3 4 MILES

1 0 1 2 3 4 5 KILOMETERS

FIRST VERTICAL DERIVATIVE OF THE MAGNETIC FIELD OF THE ALASKA HIGHWAY CORRIDOR, EAST-CENTRAL ALASKA

PARTS OF TANACROSS QUADRANGLE

by
Laurel E. Burns, Fugro Airborne Surveys Corp., and Stevens Exploration Management Corp.
2006

DESCRIPTIVE NOTES

The geophysical data were acquired with a RESOLVE Electromagnetic (EM) system and a Scintrex cesium magnetometer. The EM and magnetic sensors 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 using AS350B-2 and AS350B-3 Squirrel helicopters at a mean terrain clearance of 200 feet along NW-SE (350°) survey flight lines with a spacing of a quarter of a mile. Tie lines were flown perpendicular to the flight lines at intervals of approximately 3 miles.

An Ashtech 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 7) spheroid, 1927 North American datum using a central meridian (CM) of 141°, a north constant of 0 and an east constant of 500,000. Positional accuracy of the presented data is better than 10 m. with respect to the UTM grid.

COLOR BAR HISTOGRAM

Approximately 98% of the first vertical derivative of the magnetic field for the entire Alaska Highway corridor dataset lie within the range displayed on the color bar. Data values actually range from −6.699 nT/m (dark blue) to about 18.935 nT/m (magenta). Actual values can be seen in digital publication GPR 2006-6.

FIRST VERTICAL DERIVATIVE OF THE MAGNETIC FIELD

The magnetic total field contours were produced using digitally recorded data from a Scintrex cesium CS2 magnetometer, with a sampling interval of 0.1 seconds. The magnetic data were (1) corrected for diurnal variations by subtraction of the digitally recorded base station magnetic data, (2) adjusted for regional variations (or IGRF gradient, 2005, updated to November 2005) using altimeter adjusted IGRF, (3) leveled to the tie line data, and 4) interpolated onto a regular 80 m grid using a modified Akima (1970) technique. The first vertical derivative grid was calculated from the processed total magnetic field grid using a FFT base frequency domain filtering algorithm. The resulting first veritical 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.

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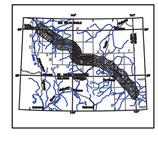
LOCATION INDEX



SURVEY HISTORY

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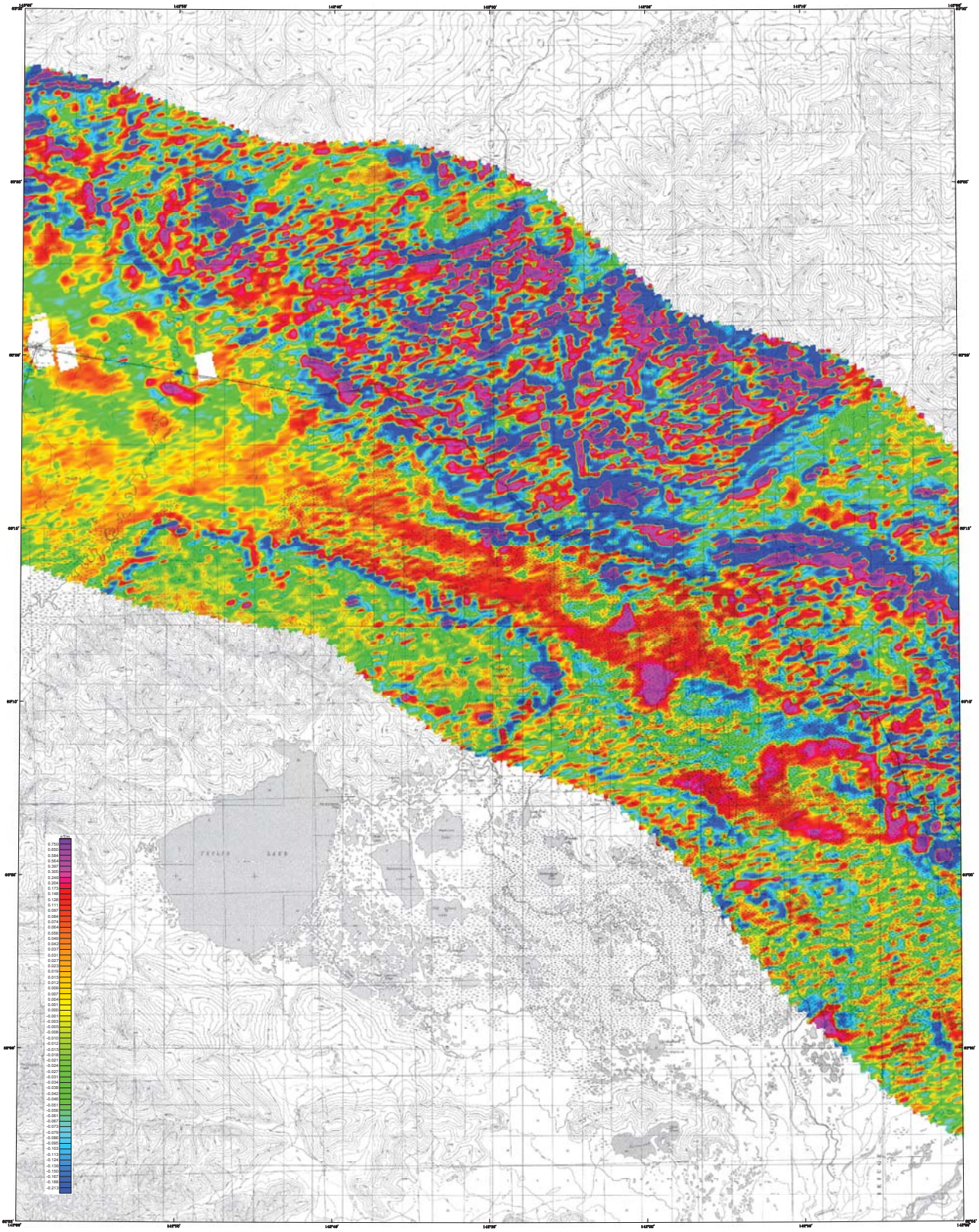

SCALE 1:63,360

1 0 1 2 3 4 MILES

1 0 1 2 3 4 5 KILOMETERS

CONTOUR INTERVAL 10 nT

FIRST VERTICAL DERIVATIVE OF THE MAGNETIC FIELD OF THE ALASKA HIGHWAY CORRIDOR, EAST-CENTRAL ALASKA

PARTS OF NABESNA and TANACROSS QUADRANGLES

by

Laurel B. Burns, Fugro Airborne Surveys Corp., and Stevens Exploration Management Corp.

2008

DESCRIPTIVE NOTES

The geophysical data were acquired with a RESOLVE helicopter-borne VLF-EM system and cesium vapor magnetometer. The EM and magnetic sensors 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 a barometric altimeter. The survey was flown using AS350B-2 and AS350B-3 Squirrel helicopters at a mean terrain clearance of 200 feet along NW–SE (330°) survey flight lines with a spacing of a quarter of a mile. Tie lines were flown perpendicular to the flight lines at intervals of approximately 3 miles.

An Aashtech 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 coordinates are presented in the UTM projection (UTM zone 7) schedule, 1927 North American datum using a central meridian (CM) of 141°, a norin 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.

COLOR BAR HISTOGRAM

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FIRST VERTICAL DERIVATIVE OF THE MAGNETIC FIELD

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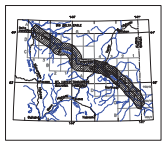

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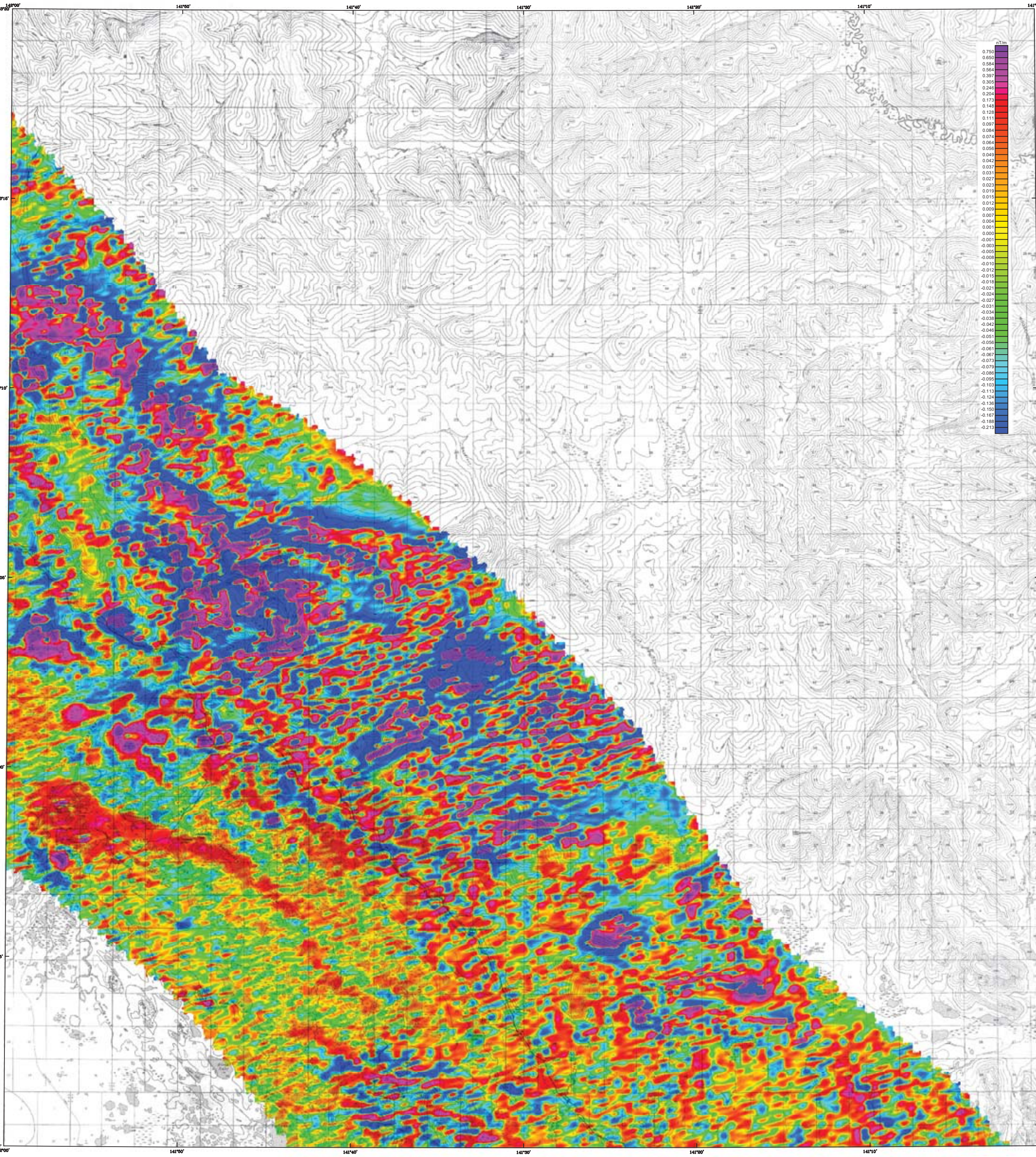
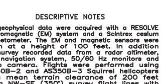


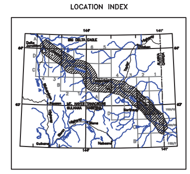


FIRST VERTICAL DERIVATIVE OF THE MAGNETIC FIELD OF THE ALASKA HIGHWAY CORRIDOR, EAST-CENTRAL ALASKA

PARTS OF NABESNA and TANACROSS QUADRANGLES

by
Laurel E. Burns, Fugro Airborne Surveys Corp., and Stevens Exploration Management Corp.
2006

LOCATION INDEX



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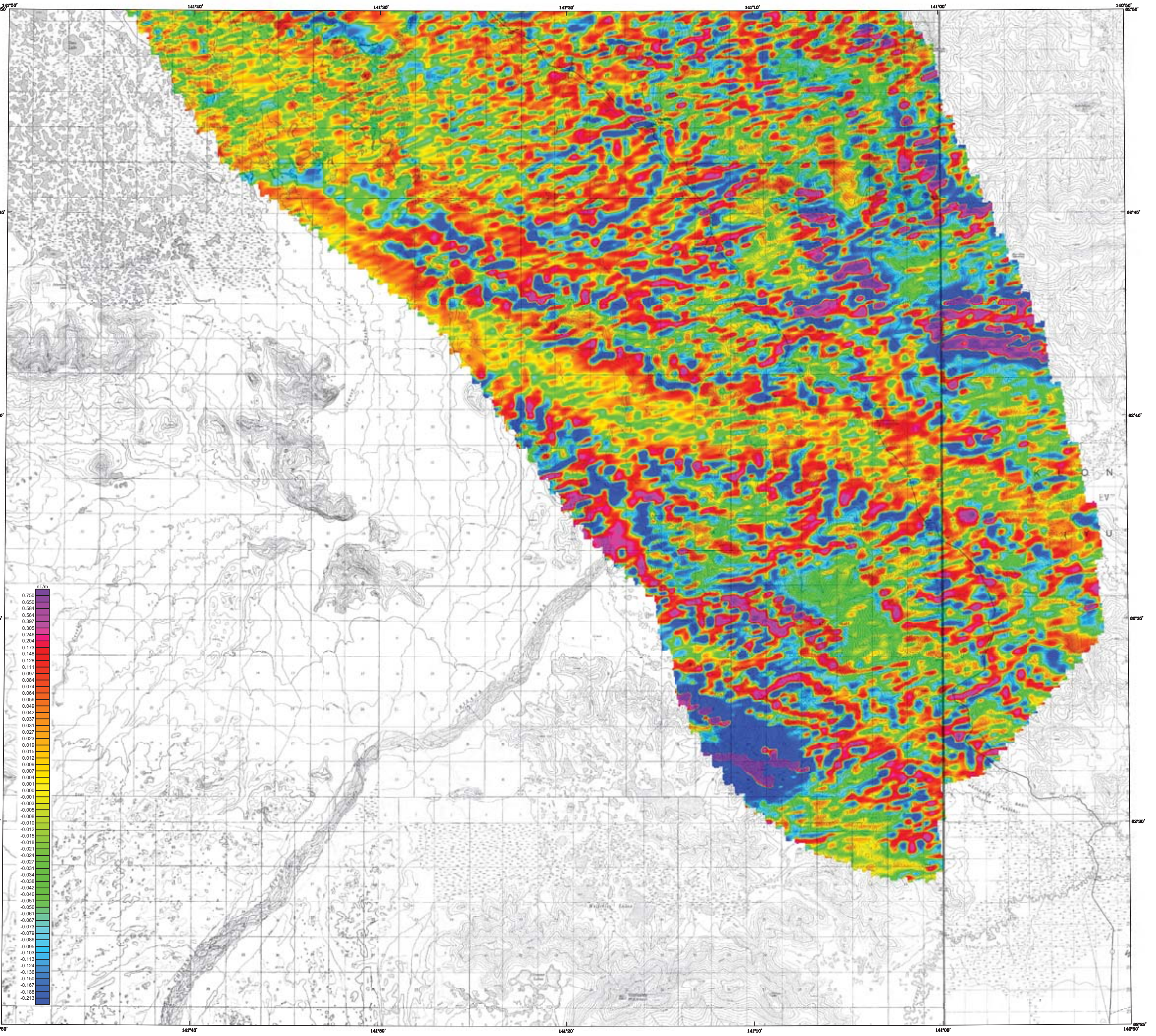
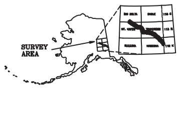


SCALE 1:63,360

1 0 1 2 3 4 MILES

1 0 1 2 3 4 5 KILOMETERS

CONTOUR INTERVAL 100 FEET
DATUM MEAN SEA LEVEL



FIRST VERTICAL DERIVATIVE OF THE MAGNETIC FIELD OF THE ALASKA HIGHWAY CORRIDOR, EAST-CENTRAL ALASKA

PARTS OF NABESNA QUADRANGLE and CANADA 115K

by
Laurel E. Burns, Fugro Airborne Surveys Corp., and Stevens Exploration Management Corp.
2006

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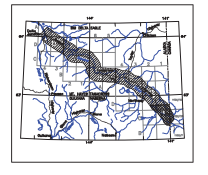


DESCRIPTIVE NOTES

The geophysical data were acquired with a RESOLVE Electromagnetic (EM) system and a Scintrex cesium magnetometer. The EM and magnetic sensors 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 using AS350B–2 and AS350B–3 Squirrel helicopters at a mean terrain clearance of 200 feet along NW–SE (350°) survey flight lines with a spacing of a quarter of a mile. Tie lines were flown perpendicular to the flight lines at intervals of approximately 3 miles.

An Ashtech 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 7) spheroid, 1927 North American datum using a central meridian (CM) of 141°, a north constant of 0 and an east constant of 500,000. Positional accuracy of the presented data is better than 10 m. with respect to the UTM grid.

COLOR BAR HISTOGRAM

Approximately 98% of the first vertical derivative of the magnetic field for the entire Alaska Highway corridor dataset lie within the range displayed on the color bar. Data values actually range from −8.699 nT/m (dark blue) to about 18.935 nT/m (magenta). Actual values can be seen in digital publication GPR 2006–6.

FIRST VERTICAL DERIVATIVE OF THE MAGNETIC FIELD

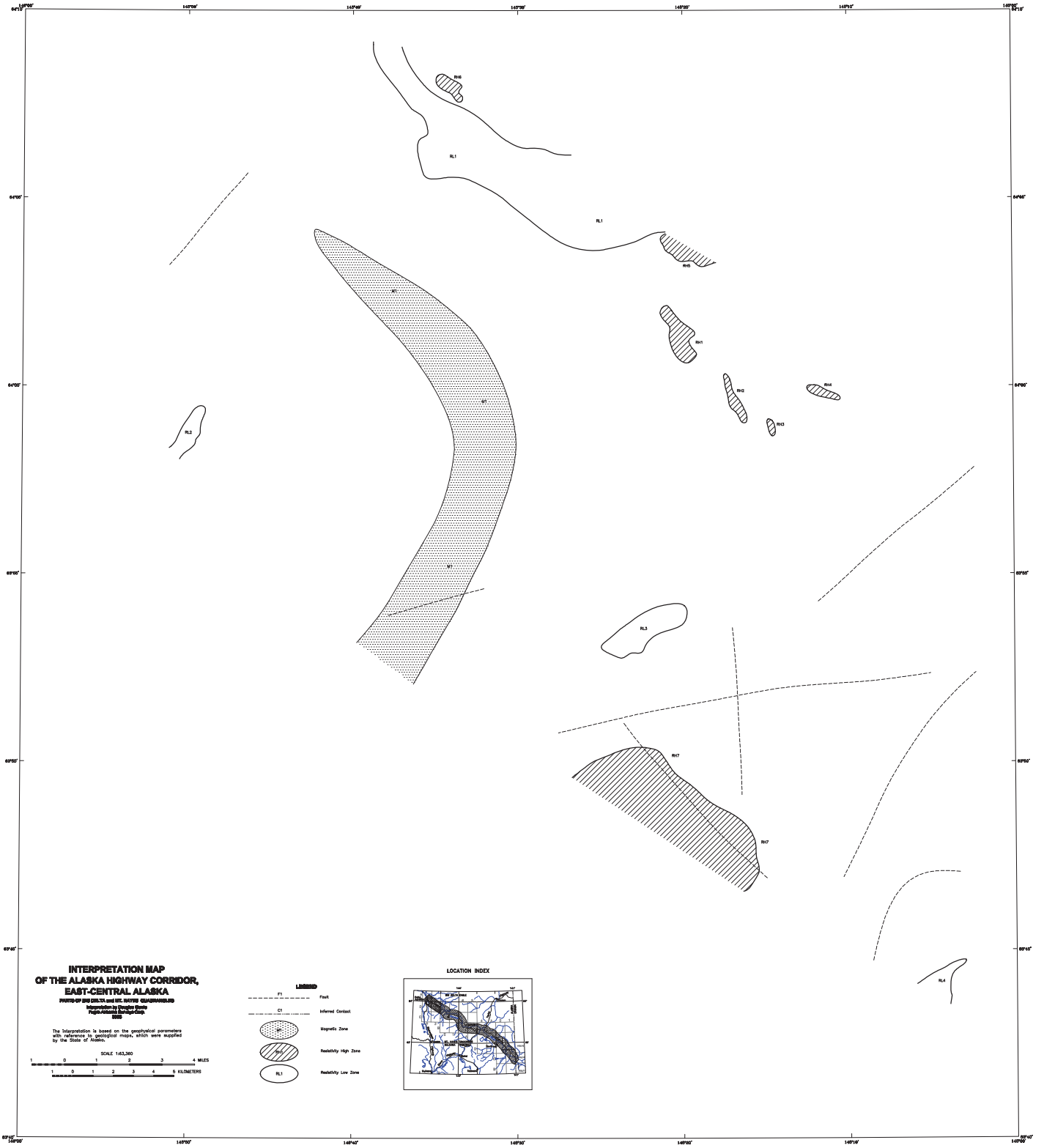
The magnetic total field contours were produced using digitally recorded data from a Scintrex cesium CS2 magnetometer, with a sampling interval of 0.1 seconds. The magnetic data were (1) corrected for diurnal variations by subtraction of the digitally recorded base station magnetic data, (2) adjusted for regional variations (or IGRF gradient, 2005, updated to November 2005) using altimeter adjusted IGRF, (3) leveled to the tie line data, and 4) interpolated onto a regular 80 m grid using a modified Akima (1970) technique. The first vertical derivative grid was calculated from the processed total magnetic field grid using a FFT base frequency domain filtering algorithm. The resulting first veritical 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.

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.

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 Stevens Exploration Management Corp. Airborne geophysical data for the new area were acquired and processed by Fugro Airborne Surveys Corp. in late 2005 and early 2006.

This map and other products from this survey are available by mail order or in person from DGGS, 3354 College Road, Fairbanks, Alaska, 99709–3707. Published maps are also available for viewing or downloading as Adobe Acrobat Files (*.pdf) on our Web site (http://www.dggs.dnr.state.ak.us/pubs/).



INTERPRETATION MAP OF THE ALASKA HIGHWAY CORRIDOR, EAST-CENTRAL ALASKA

PARTS OF BIG DELTA and MT. HAYES QUADRANGLES

Interpretation by Dwight Rorke
Fugro-Airborne Surveys Corp.
2005

The interpretation is based on the geophysical parameters with reference to geological maps, which were supplied by the State of Alaska.

SCALE 1:63,360

1 0 1 2 3 4 MILES

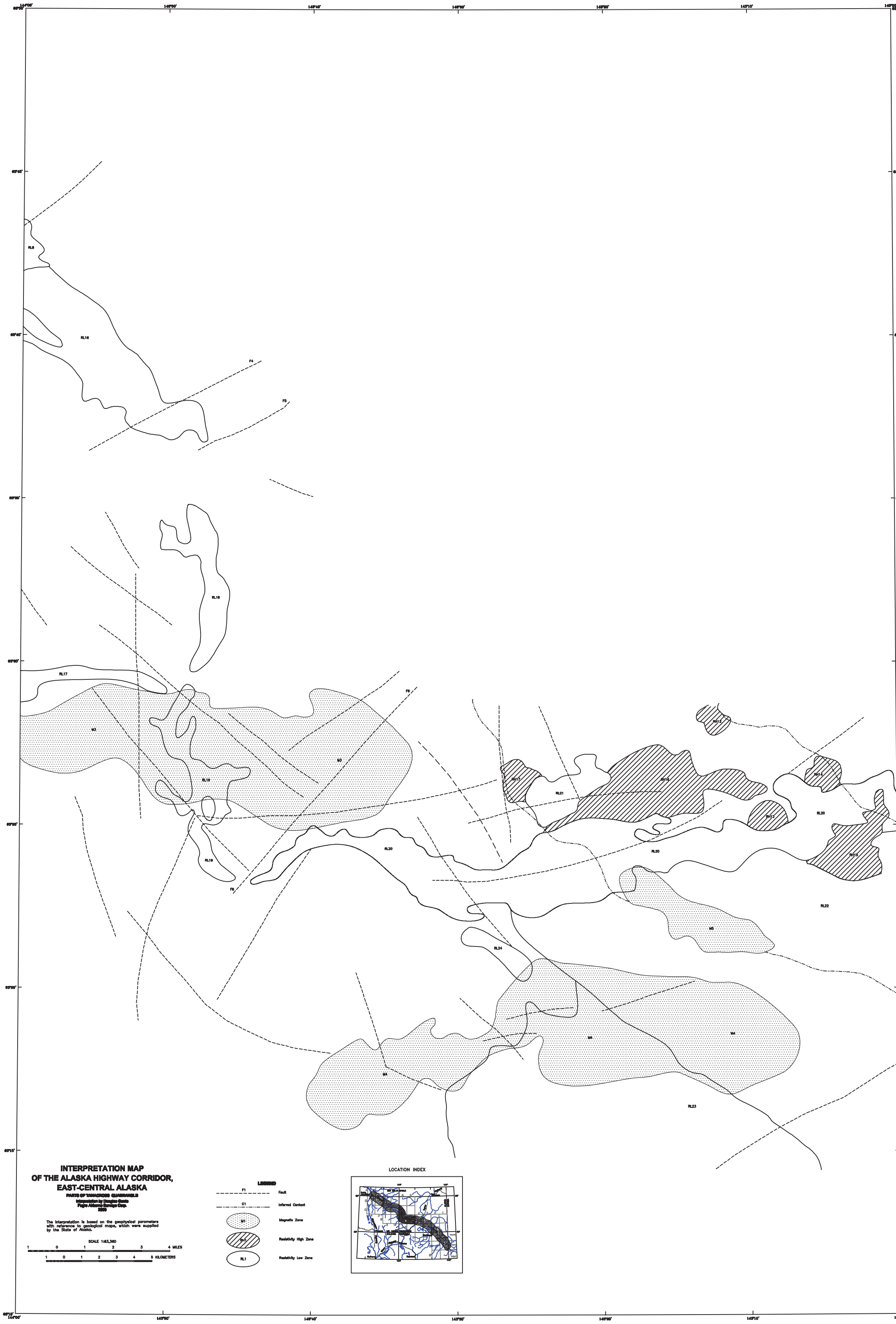
1 0 1 2 3 4 5 KILOMETERS

LEGEND

F1	Fault
C1	Inferred Contact
M1	Magnetic Zone
RH1	Resistivity High Zone
RL1	Resistivity Low Zone

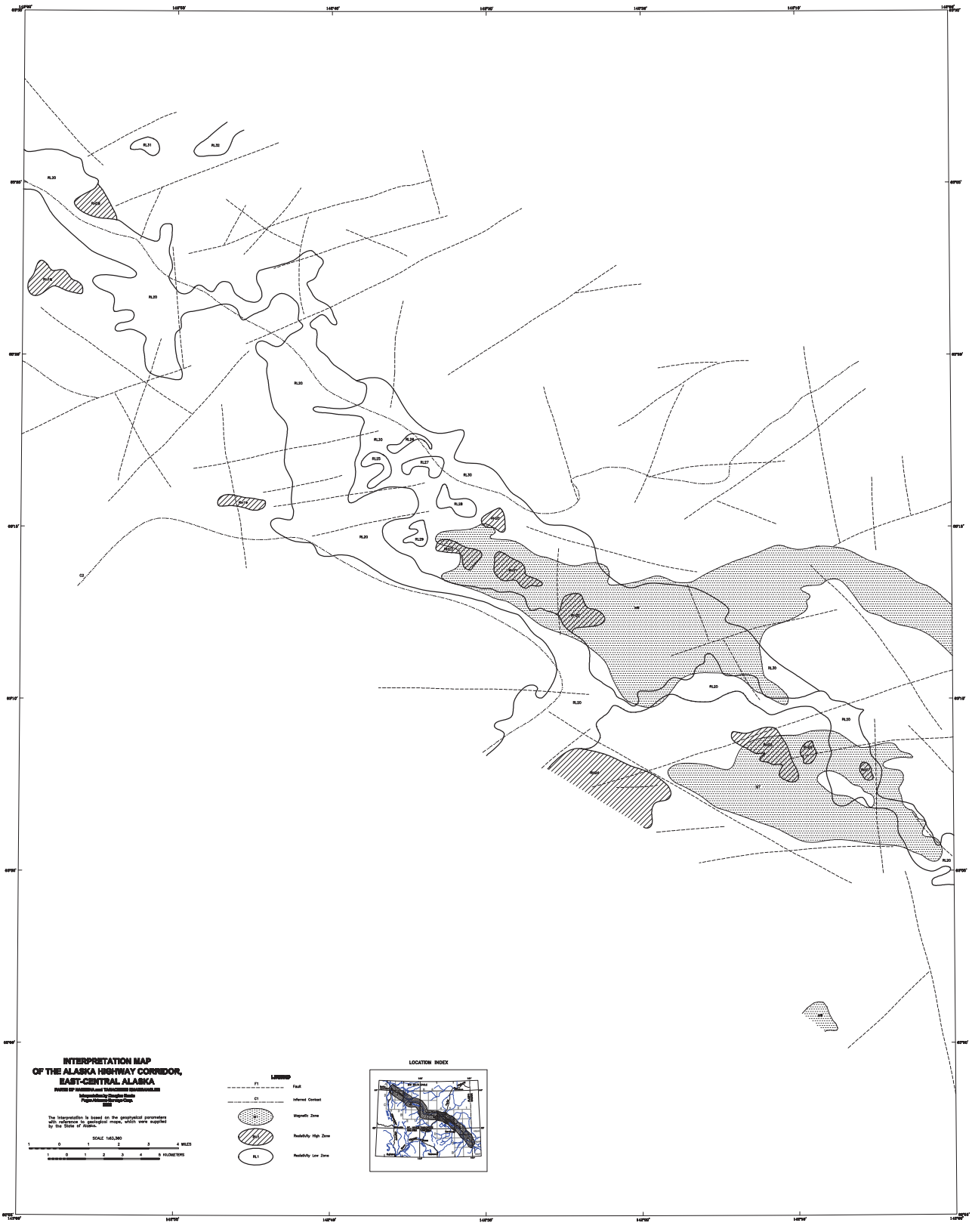
LOCATION INDEX


INTERPRETATION MAP
OF THE ALASKA HIGHWAY CORRIDOR,
EAST-CENTRAL ALASKA
The interpretation is based on the geophysical parameters with reference to geological maps, which were supplied by the State of Alaska.
SCALE 1:63,360
1 0 1 2 3 4 MILES
1 0 1 2 3 4 5 KILOMETERS
F1
Fault
C1
Inferred Contact
M1
Magnetic Zone
RH1
Resistivity High Zone
RL1
Resistivity Low Zone
LOCATION INDEX
145°00'
144°50'
144°40'
144°30'



INTERPRETATION MAP OF THE ALASKA HIGHWAY CORRIDOR, EAST-CENTRAL ALASKA

The interpretation is based on the geophysical parameters with reference to geological maps, which were supplied by the State of Alaska.



INTERPRETATION MAP OF THE ALASKA HIGHWAY CORRIDOR, EAST-CENTRAL ALASKA

PAPER BY MAGENTA and TRANSITION BOUNDARIES

Interpretation by Douglas Boade
Fugro Airborne Surveys Corp.
2006

The interpretation is based on the geophysical parameters with reference to geological maps, which were supplied by the State of Alaska.

SCALE 1:63,360

1 0 1 2 3 4 MILES

1 0 1 2 3 4 5 KILOMETERS

LEGEND

F1 — Fault

C1 — Inferred Contact

Magnetic Zone

Radiativity High Zone

RL1 — Radiativity Low Zone

LOCATION INDEX

INTERPRETATION MAP OF THE ALASKA HIGHWAY CORRIDOR, EAST-CENTRAL ALASKA

POINTS OF TANGENCY AND TANGENCIES QUADRANGLES

Interpretation by Douglas Eberle
Pegor Mickelsen Services Corp.
2006

The interpretation is based on the geophysical parameters with reference to geological maps, which were supplied by the State of Alaska.

SCALE 1:63,360

1 0 1 2 3 4 MILES

1 0 1 2 3 4 5 KILOMETERS

LEGEND

F1 — Fault

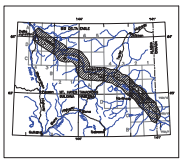
C1 — Inferred Contact

M1 — Magnetic Zone

RH1 — Resistivity High Zone

RL1 — Resistivity Low Zone

LOCATION INDEX



INTERPRETATION MAP OF THE ALASKA HIGHWAY CORRIDOR, EAST-CENTRAL ALASKA

PARTS OF NABESNA QUADRANGLE and CANADA 115K

Interpretation by Douglas Garrie
Fugro Airborne Surveys Corp.
2006

The interpretation is based on the geophysical parameters with reference to geological maps, which were supplied by the State of Alaska.

SCALE 1:63,360

1 0 1 2 3 4 MILES

1 0 1 2 3 4 5 KILOMETERS

LEGEND

F1	Fault
C1	Inferred Contact
M1	Magnetic Zone
RH1	Resistivity High Zone
RL1	Resistivity Low Zone

LOCATION INDEX