

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

Geophysical Report 2020-15

2020
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Suggested citation:

Burns, L.E., Graham, G.E., Emond, A.M., Stevens Exploration Management Corp., and Fugro Airborne Surveys, 2020, Alaska Highway corridor electromagnetic and magnetic airborne geophysical survey data compilation: Alaska Division of Geological & Geophysical Surveys Geophysical Report 2020-15. <http://doi.org/10.14509/30462>



ALASKA HIGHWAY CORRIDOR ELECTROMAGNETIC AND MAGNETIC AIRBORNE GEOPHYSICAL SURVEY DATA

L.E. Burns¹, G.R.C. Graham¹, A.M.E. Emond¹, 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	ASCII 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>

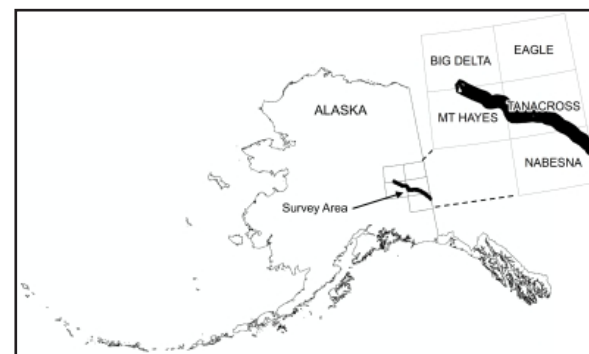


Figure 1. Alaska Highway Corridor magnetic and electromagnetic airborne geophysical survey location shown in eastern interior Alaska (inset). Alaska Highway Corridor survey area shown with landmarks, relevant 1:250,000-scale quadrangle boundaries, mountain ranges, rivers, and elevation hillshade.

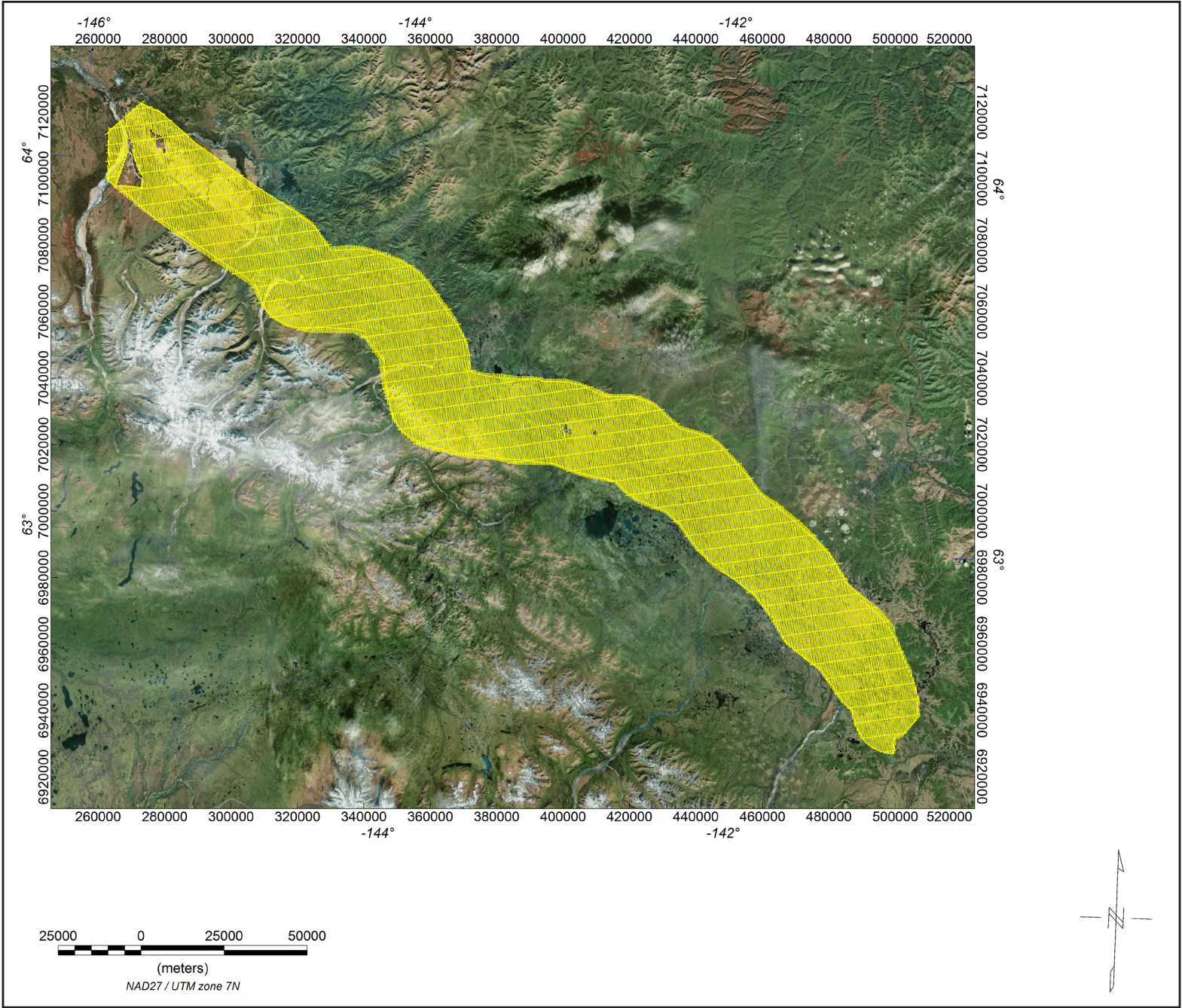


Figure 2. Flight path with orthometric image.

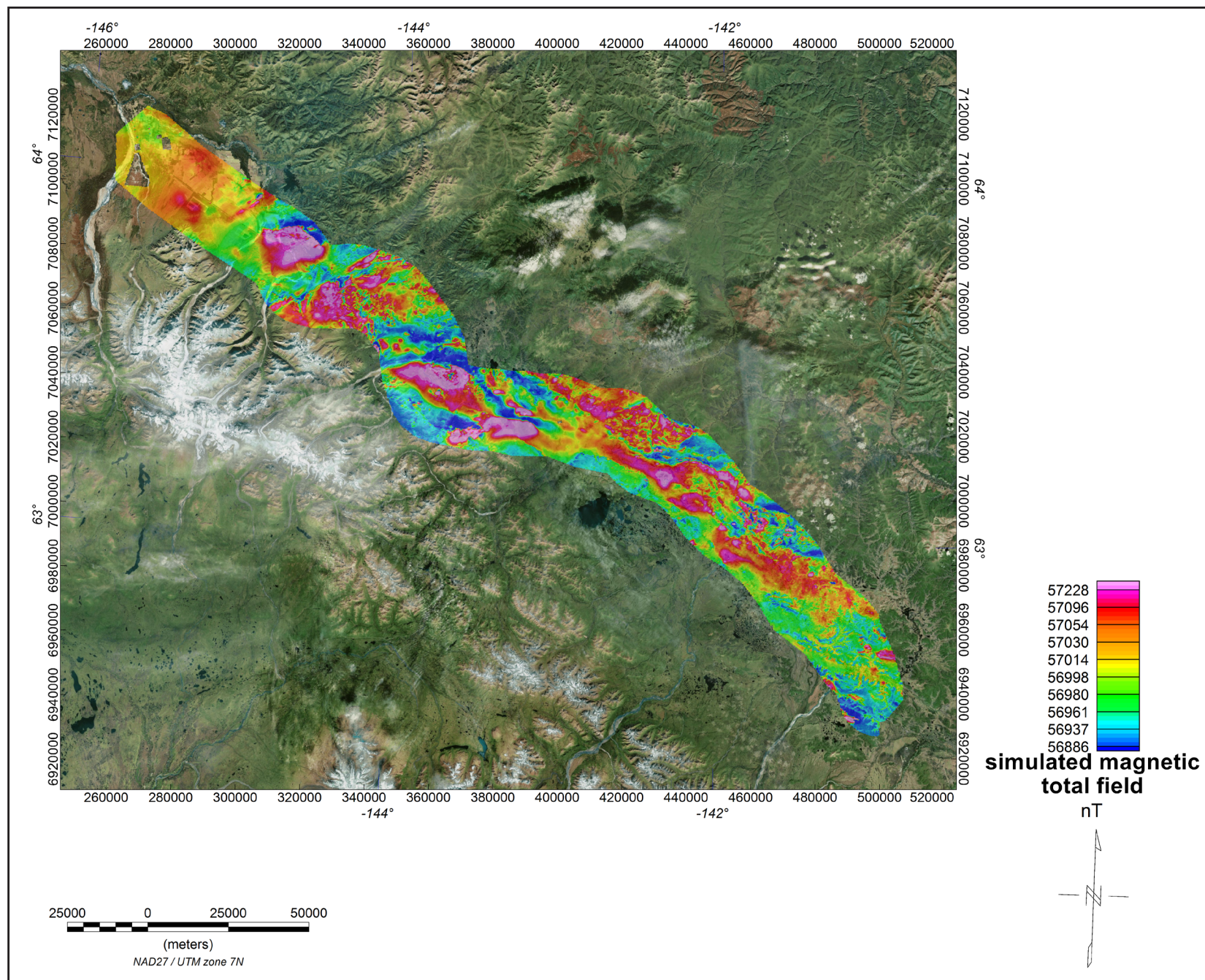


Figure 3. Simulated magnetic total field grid with orthometric image.

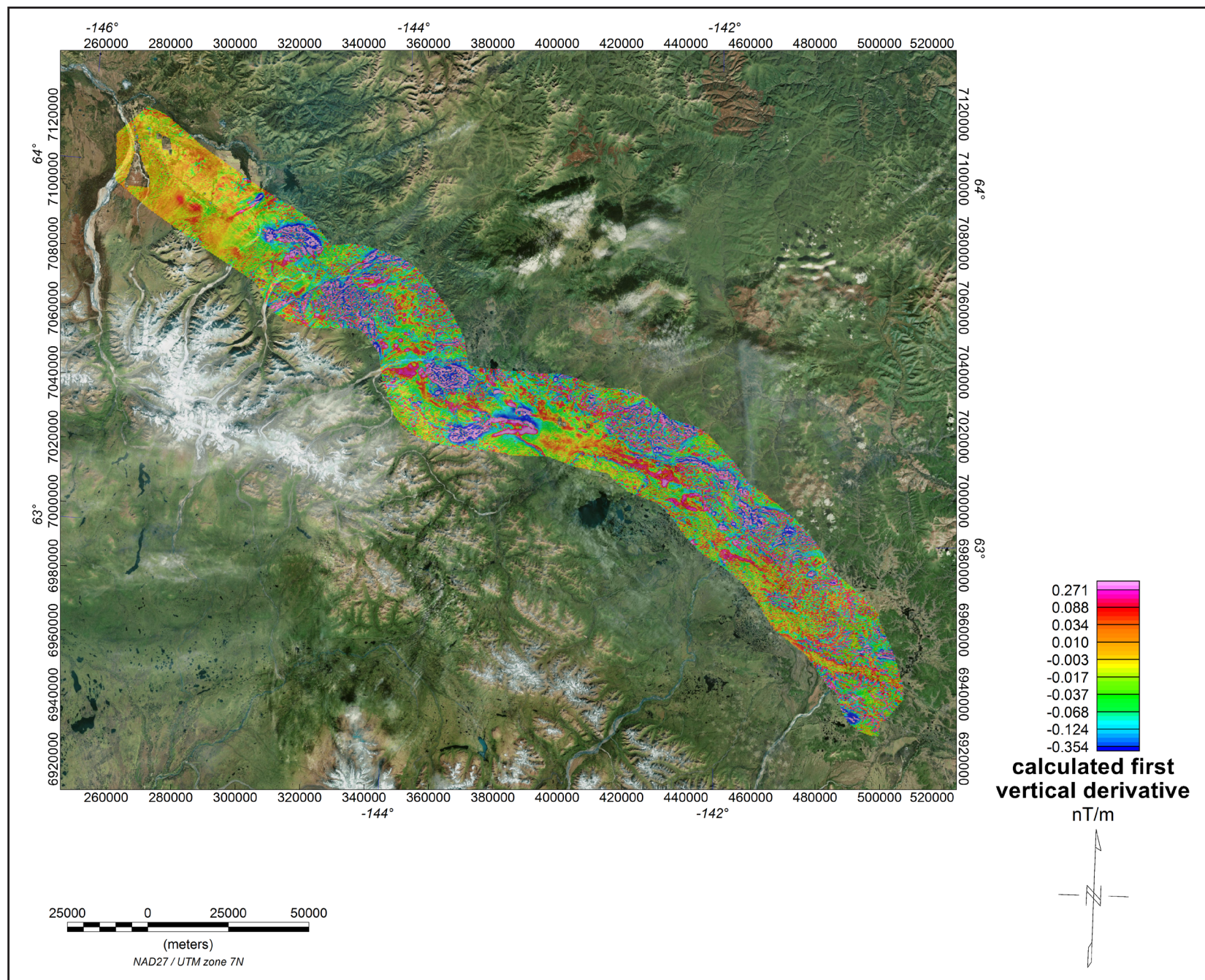


Figure 4. Calculated first vertical derivative grid with orthometric image. The first vertical derivative grid was calculated from the diurnally-corrected, IGRF-corrected total magnetic field grid using a FFT base frequency domain filtering algorithm. The resulting first vertical derivative grid provides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

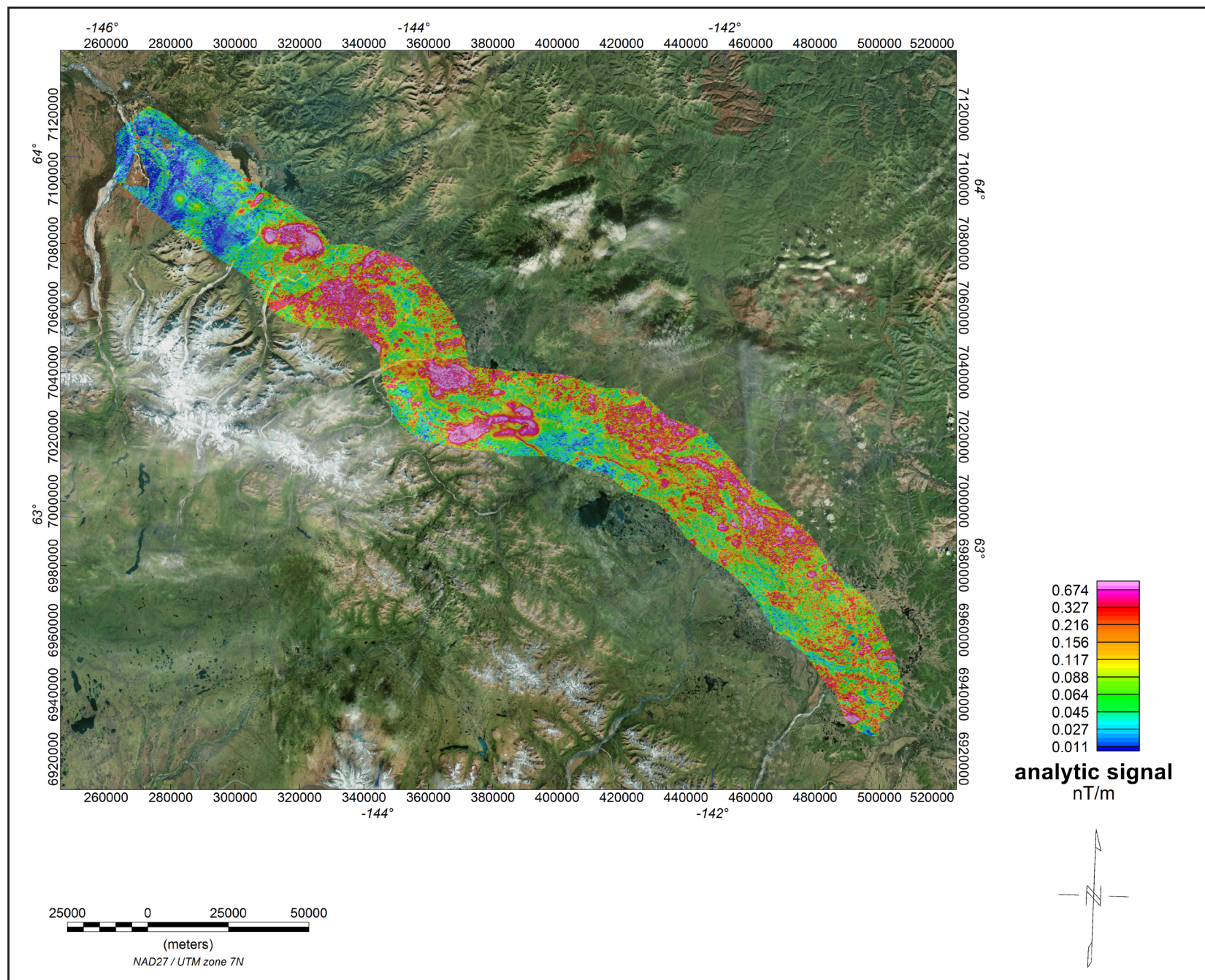


Figure 5. Analytic signal grid with orthometric image. Analytic signal is the total amplitude of all directions of magnetic gradient calculated from the sum of the squares of the three orthogonal gradients. Mapped highs in the calculated analytic signal of magnetic parameter locate the anomalous source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

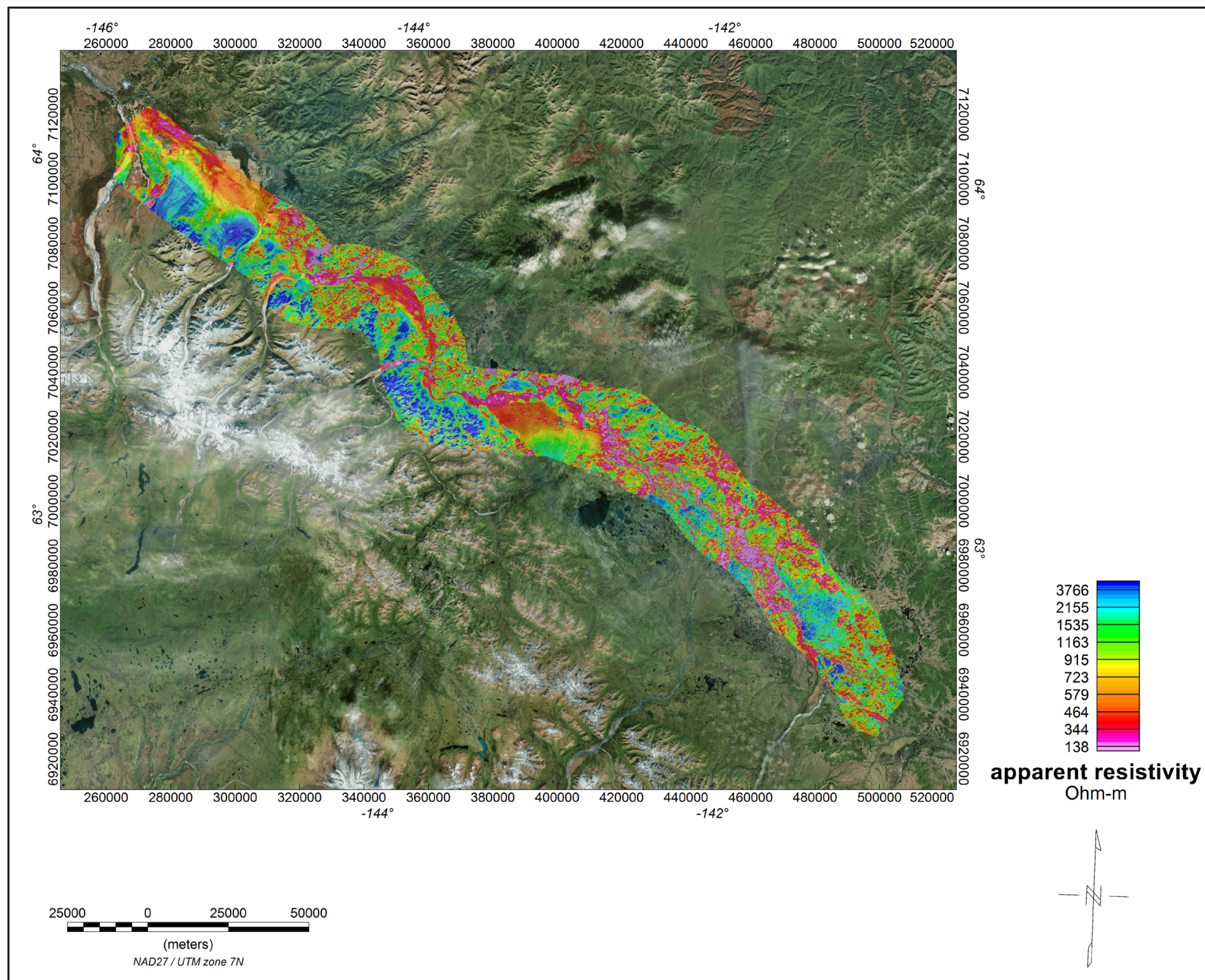


Figure 6. 140,000 Hz apparent resistivity grid with orthometric image.

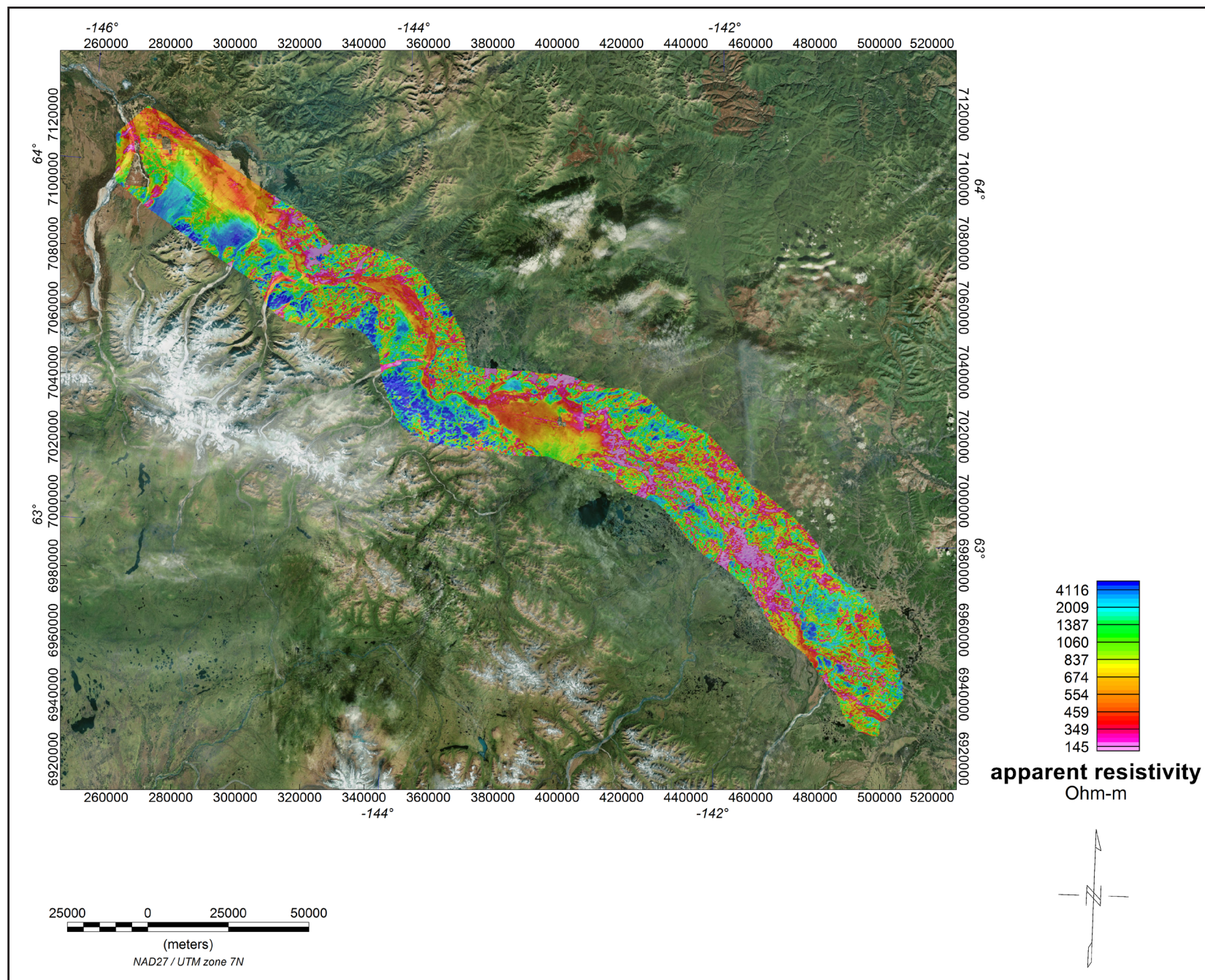


Figure 7. 40,000 Hz apparent resistivity grid with orthometric image.

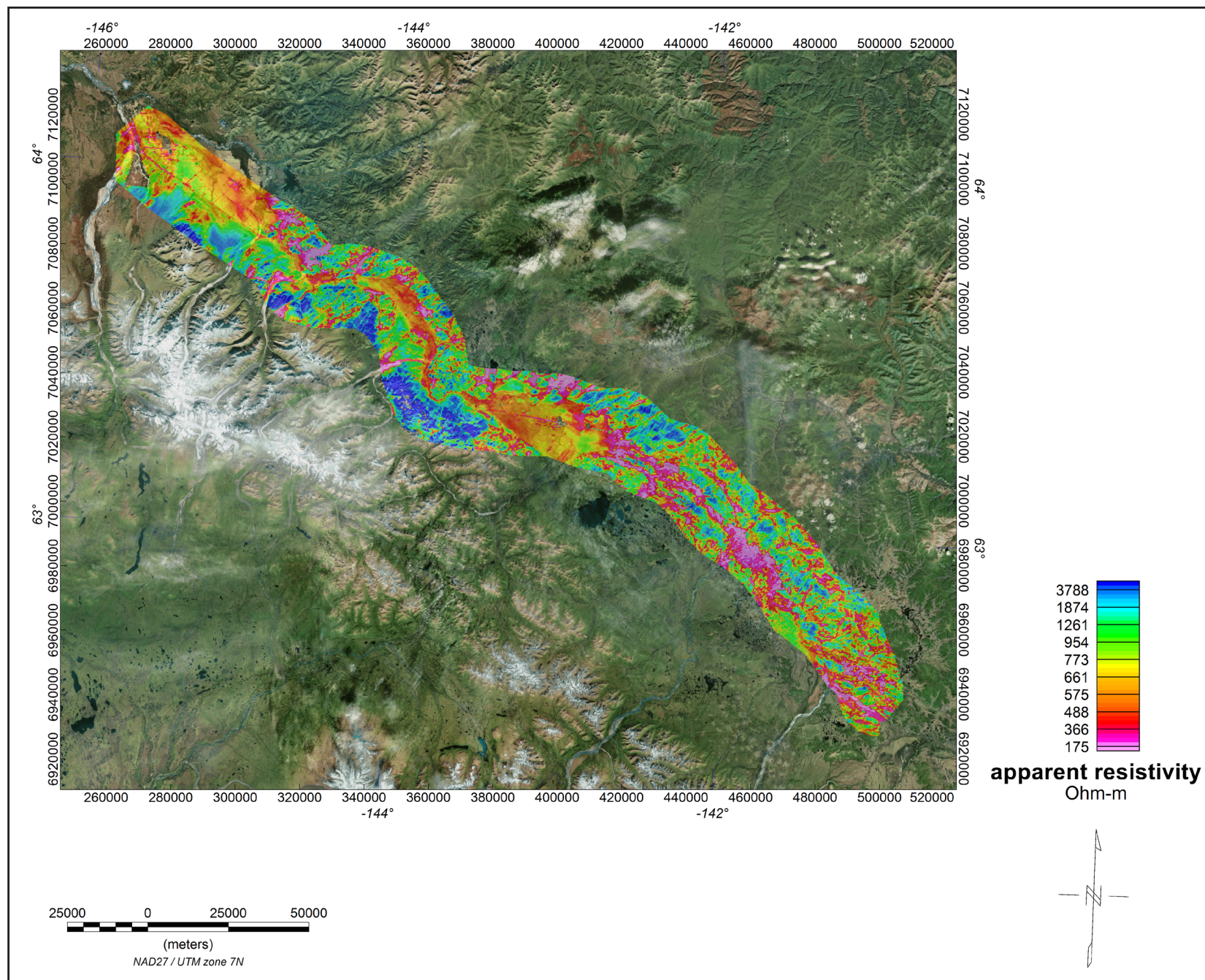


Figure 8. 8,200 Hz apparent resistivity grid with orthometric image.

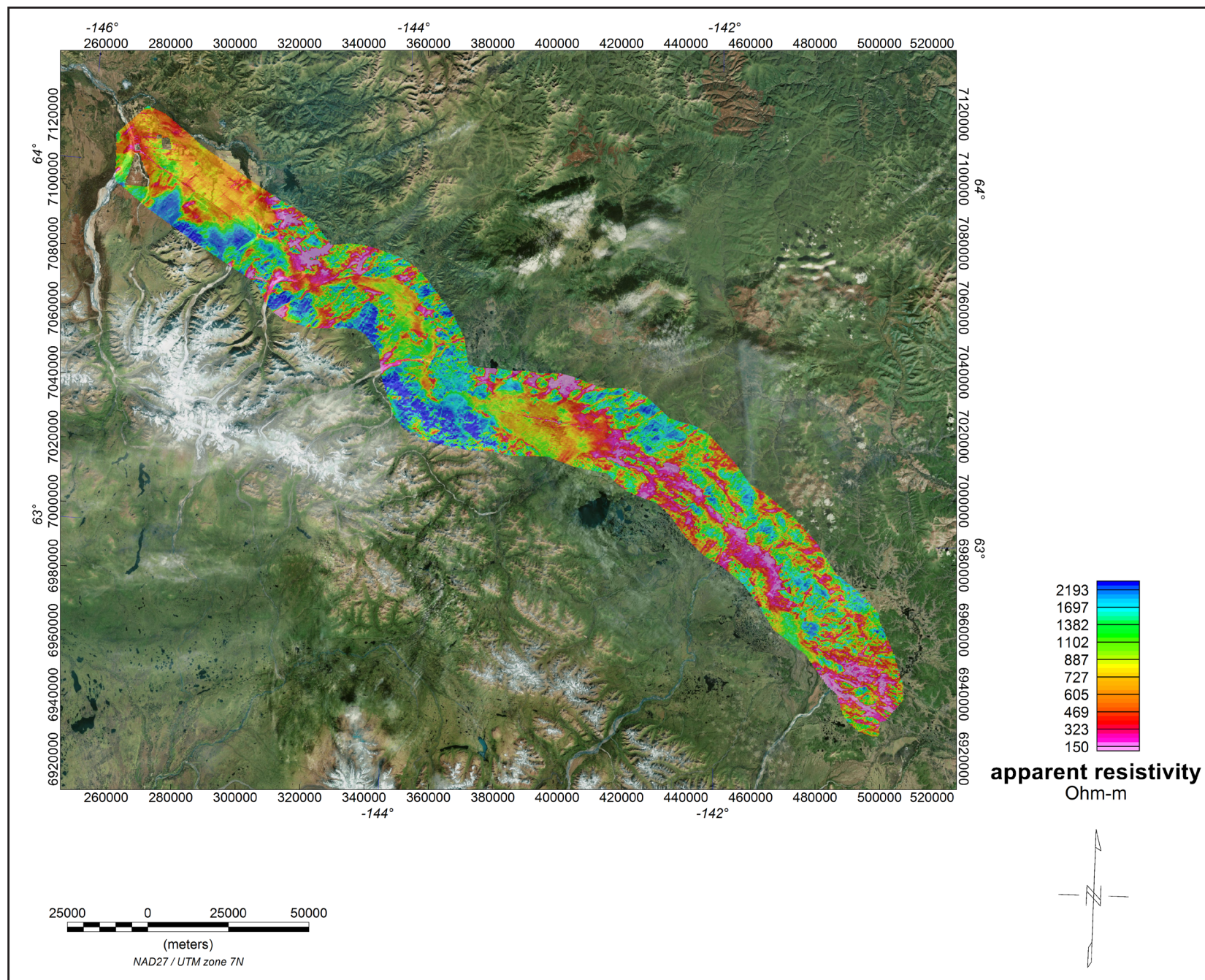


Figure 9. 3,300 Hz apparent resistivity grid with orthometric image.

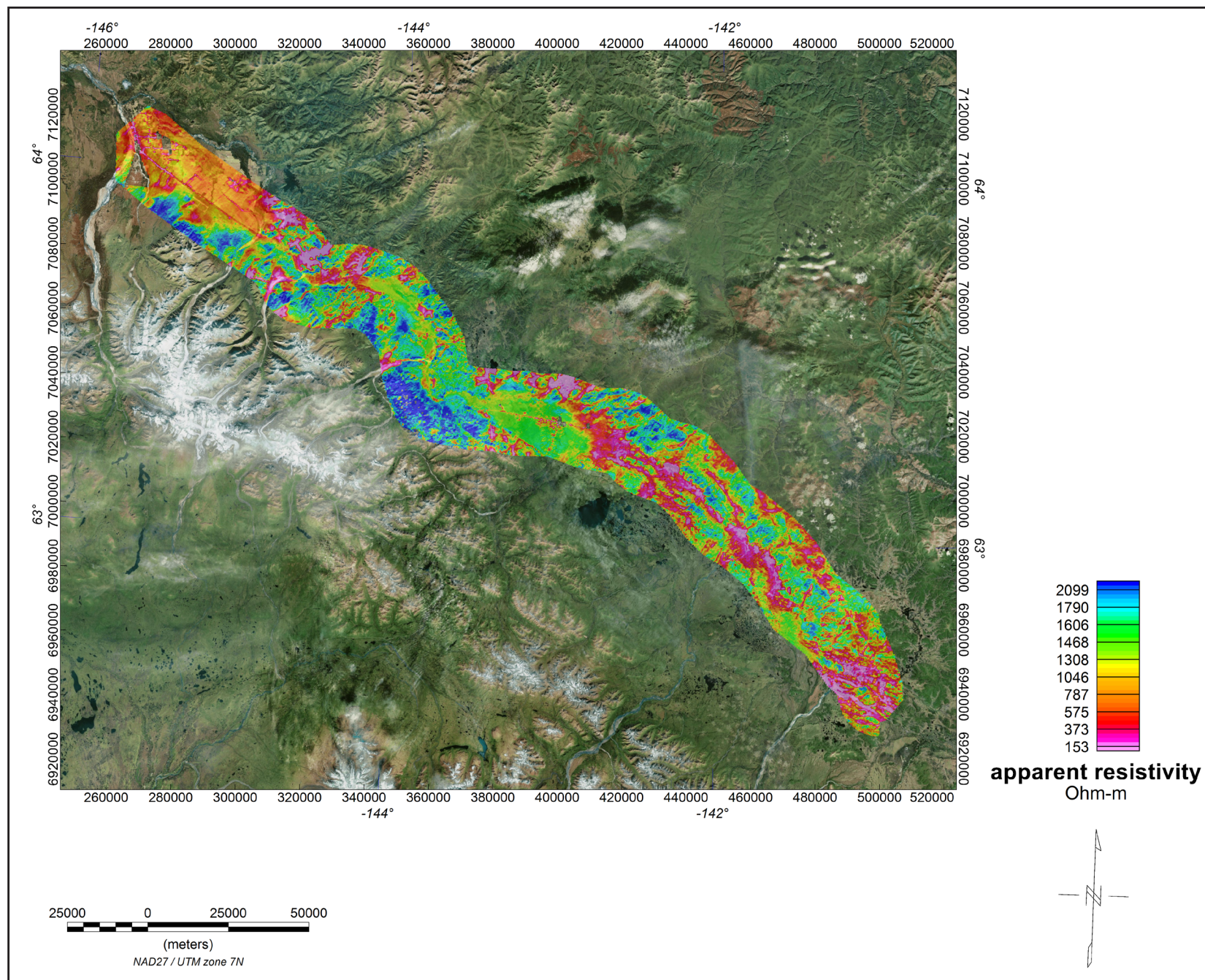


Figure 10. 1,800 Hz apparent resistivity grid with orthometric image.

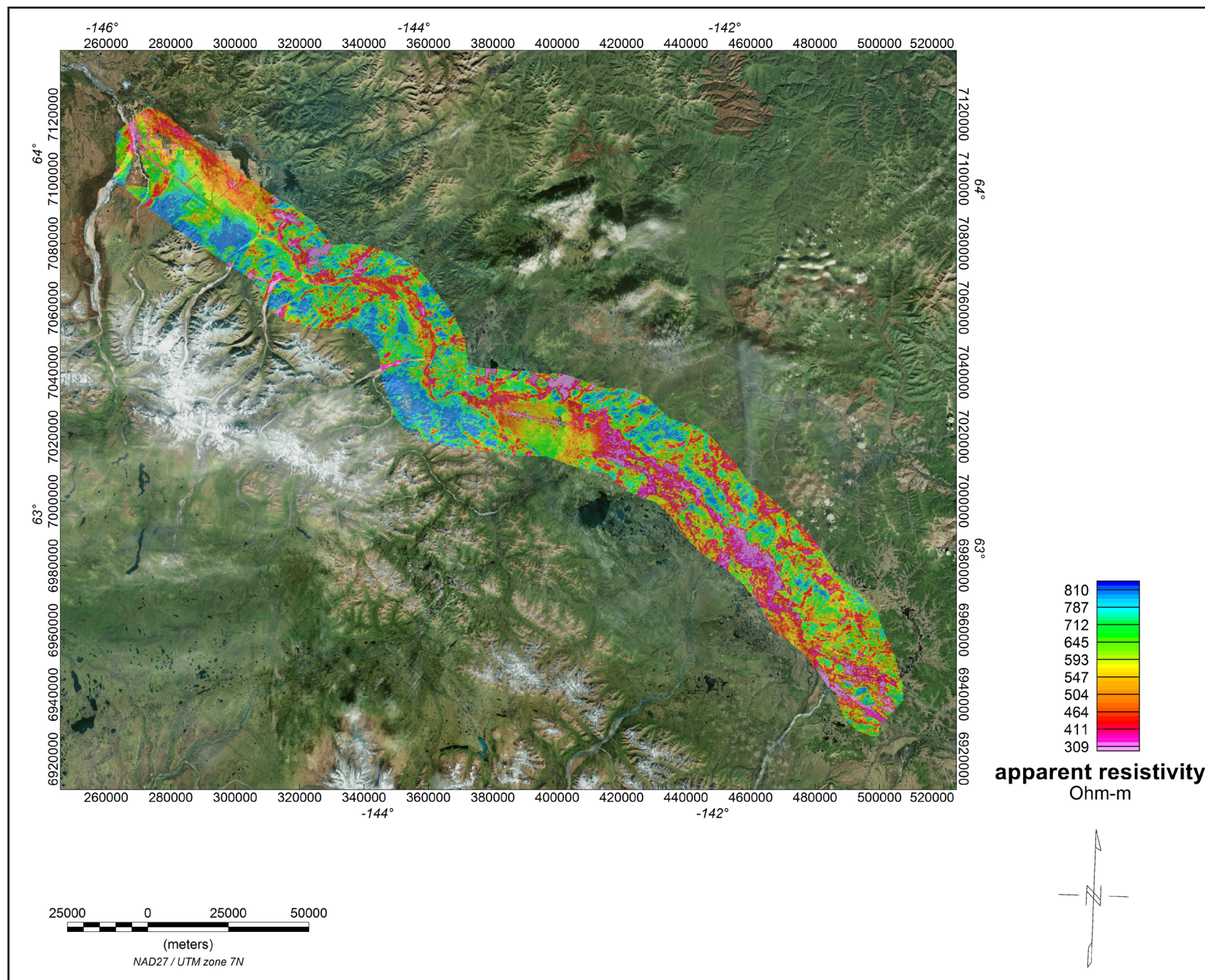


Figure 11. 400 Hz apparent resistivity grid with orthometric image.

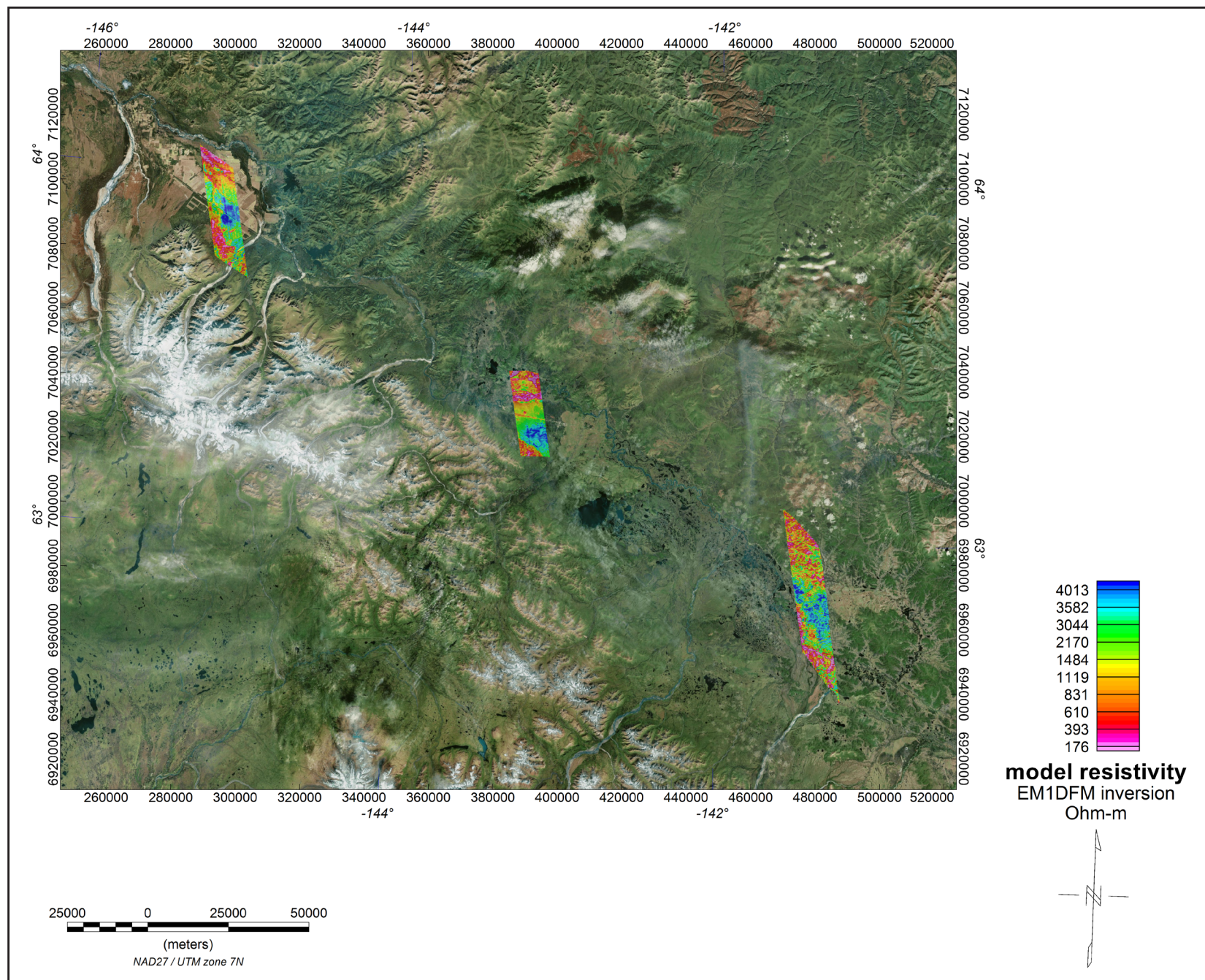


Figure 12. Depth slice grid, EM1DFM inversion model resistivity 4 meters below ground surface with orthometric image. Three resistivity models: Differential, Sengpiel, and EM1DFM were produced for this project.

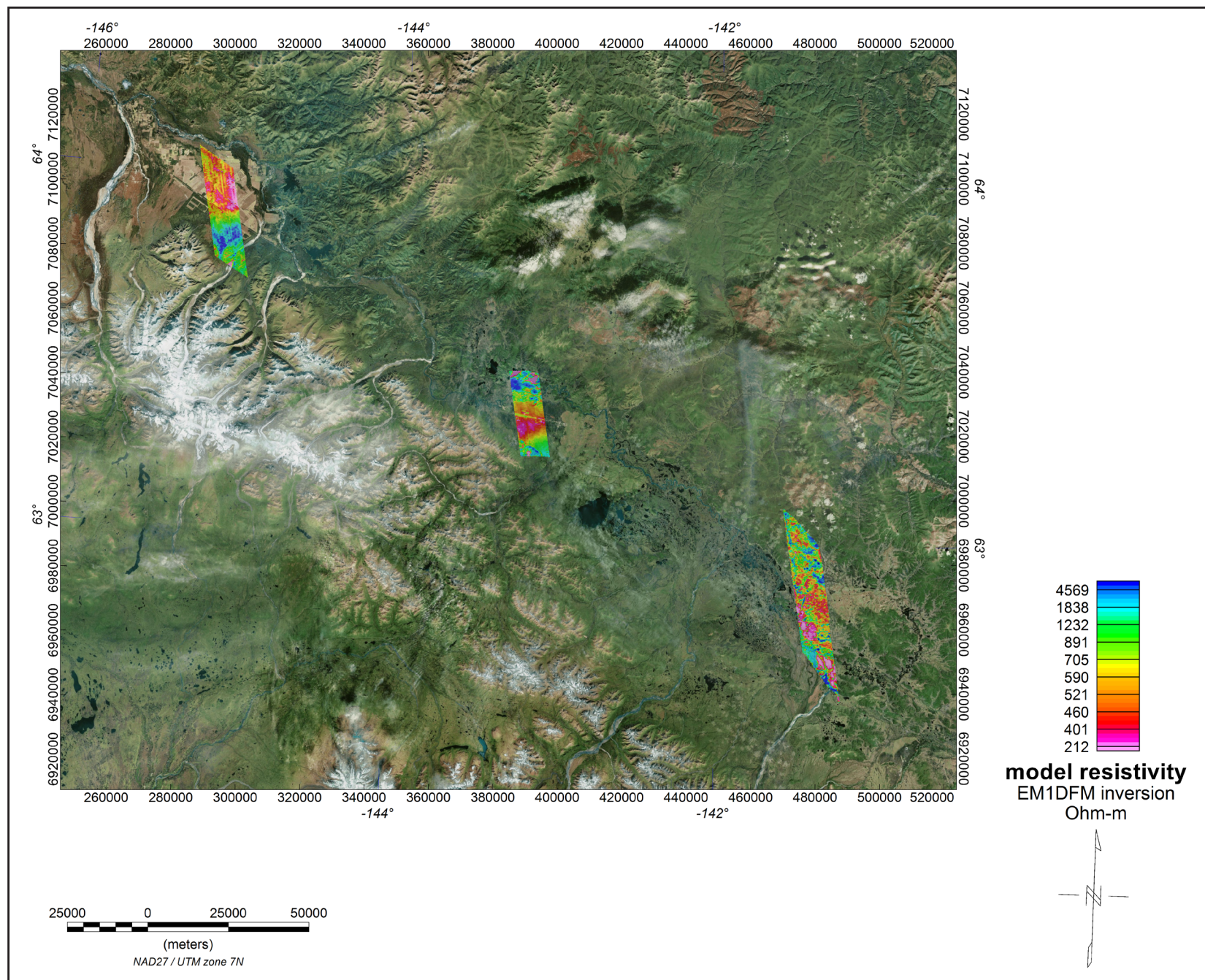


Figure 13. Depth slice grid, EM1DFM inversion model resistivity 40 meters below ground surface with orthometric image. Three resistivity models: Differential, Sengpiel, and EM1DFM were produced for this project.

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



PARTS OF BIG DELTA and MT. HAYES QUADRANGLES

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

DESCRIPTIVE NOTES

DESCRIPTIVE NOTES

The geophysical survey was conducted with a RESOLVE Electromagnetic (EM) system and a Solotex seismic magnetometer. The EM system consists of a series of cables flown at a height of 100 feet, in addition the survey recorded data at a raster interval of 100 feet. Survey navigation system, 50/500 Hz magnetote and noise channels. Figures 1 and 2 show the survey track. The survey was performed in a grid pattern with a minimum terrain clearance of 300 feet between the survey track and the terrain. The survey was conducted at a spacing of a quarter of a mile. The three were flown perpendicular to the strike of the fault at intervals of approximately 3 miles.

An Anschutz 0024 HAVASTAR[®], OLSON[®] Global Positioning System was used for navigation. The system was set up to record position data using post-registered differential positions to a base station of better than 0.5 m. Station positions were projected onto the Clarke 1866 UTM zone 6 geographic coordinate system using a central meridian (CM) of 147° 0 north-south of 0 and an elevation of 0 m. Positional accuracy of the presented data is better than 10 m, with respect to the UTM system.

RESISTIVITY

RESISTIVITY

THE RESISTIVE EM system measured inphase and quadrature components at six frequencies. One vertical coaxial coil—pair operated at 3300 Hz while five horizontal coils—pairs operated at 100, 1000, 10,000, 100,000, and 1,000,000 Hz. EM data were sampled at 0.1 second intervals. The EM system responds to bedrock conductivity, conductance, or conductance/capacitance. Apparent resistivity is generated from the inphase and quadrature component of the coplanar and 140,000 Hz using the pseudo-layer half space model. The data were processed using a modified EM grid using a modified Mima (1970) technique.

Almeida, H., 1970, A new method of interpretation and smooth curve fitting based on least procedures. *Journal of the Association of Geophysical Geophysicists*, 17, 1-10.

RESISTIVITY ALTITUDE LIMITS

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 flies higher to avoid cultural objects or for safety reasons.

SURVEY HISTORY

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 Geospatial & Management Services Corp. (GMS). Geophysical data for the survey 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 C Street, Fairbanks, Alaska 99707. 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/pub/>).



PARTS OF MT. HAYES QUADRANGLE

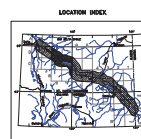
by
Laurel E. Burns, Pugh Adams Survey Corp., and Steven Expedition Management Corp.



DESCRIPTIVE NOTES

The geophysical data were acquired with a RESOLVE Earthquake Recorder (EGR) and a Solinas oceanic magnetometer. The EM and magnetic sensors were placed at a height of 1 m above the ground surface. The recorded data came from a raster altimeter, GPS navigation system, BG/80 Hz manometer and a 100 Hz pressure sensor. The data were collected along NW-SW (435007) and NE-SW (435008-2) 3-beam helicopter altimetry at a riverine transect, elevations of 200 feet above from NW-SW (435007) survey flight lines with a spacing of one quarter of a mile. The area covered by the helicopter altimetry is the 100 km line at intervals of approximately 3 miles.

An Aethan G224 NAVSTAR / GLONASS Global Positioning System (GPS) receiver was used. The helicopter position was derived every 0.5 seconds and the ground station was located at the base of the relative accuracy of better than 0.5 m. Flight path coordinates were derived from the GPS data. The flight path (shown in figure 8) consisted of 1927 north-south datum points at a central meridian (CM) of 142° 0 north-south. The flight path was defined by the GPS data. The position accuracy of the presented data is better than 0.5 m.



SURVEY HISTORY

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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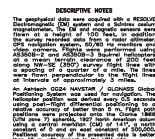
RESISTIVITY

THE RESOLVE EM system measured both the and quadrature components of the magnetic field. One vertical coil pair—coplanar—operated at 3300 Hz while five horizontal coplanar coil—pairs—operated at 400, 1800, 8200, 14,000 and 140,000 Hz. EM data were recorded at 0.3 second intervals. The EM system responds to bedrock conductors, conductive overburden, and cultural sources. Apparent resistivity is generated from the magnitude and quadrature of the coplanar coil pair at 140,000 Hz using the pseudo-layer half space model. The data were interpolated onto a regular 80 m grid using a modified Adams (1970) technique.

RESISTIVITY: A TITUDE LIMIT

RESISTIVITY ALTITUDE LIMITS

In areas where the EM bird height exceeded 100 m and the lignose and quadrature signals were below 1 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 slower to avoid cultural obstacles or for safety reasons.



by
Laurel E. Burns, Page Abrams-Savage Corp., and Steven Explosion Management Corp.

RESISTIVITY

The RESQSE EM system measured in-phase and quadrature components at six frequencies. One vertical coil pair coil-pole operated at 3300 Hz while five horizontal coil-pole pairs operated at 400, 1800, 6200, 22000, and 80000 Hz. The coil-pole pairs were spaced at 0.5 second intervals. The EM system responds to bedrock conductors, conductive overburden, and cultural structures. Apparent resistivity is generated from the in-phase and quadrature components of the coplanar coils using the pseudo-layer half space procedure (140,000 Ω m) using the modified Widess (1970) technique. The data are interpolated onto a regular 80 m grid using a modified Widess (1970) technique.

MINO, H.1970. A new method of interpretation and search curve for resistivity data. *Geophysical Prospecting*, 16, 1-14.

RESISTIVITY ALTITUDE LIMITS

In areas where the EM bird height exceeded 100 m and the in-phase and quadrature signals were below ppr, the resistivity was not calculated and the grid blank. This avoids meaningless resistivity calculations due to small signals in areas where the helicopter is

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 Corporation. Aerial photostatic data for the map were acquired and processed by Fugro Airborne Surveys Corp. In late 2006 and early 2008.

This map and other products from this survey are available by mail order or in person from DGGS, 3000 Codd Road, Fairbanks, Alaska 99709. Published maps are also available for viewing or downloading as Adobe Acrobat Files (*.pdf) on our Web site at <http://www.dggs.alaska.gov>.



PARTS OF NABESNA and TANACROSS QUADRANGLES

by
Laurel E. Burns, Fugro Alderson Surveys Corp., and Steven Exploration Management Corp.

DESCRIPTIVE NOTES

The geophysical data were acquired with a RESOLVE Diastrophm 3000, a 3000-channel, 12-bit, 1000-Hz, 100-msec magnetometer. The EM and magnetic sensors were mounted on a 100-m-long towed cable. The data from the survey recorded data from a radar altimeter, a magnetic compass, a heading sensor, a GPS receiver, a depth sounder, and a water temperature sensor. The data were collected using a 100-m-long towed cable. The data were collected using a 100-m-long towed cable. The data were collected using a 100-m-long towed cable.

RESISTIVITY

The RESOLVE EM system measured in-phase and quadrature components at six frequencies. One vertical coil pair coplanar coil-pairs operated at 3300 Hz while five horizontal coplanar coil-pairs operated at 400, 1800, 8200, 36,000, and 140,000 Hz. The data were sampled at 0.1- to 60-second intervals. The EM system responds to bedrock conductors, conductive overburden, and cultural sources. Apparent resistivity is generated from the in-phase and quadrature data using a coplanar coil pair at 140,000 Hz using the pseudo-layer half space model. The data were interpolated onto a regular 80 m grid using a modified Ainslie (1970) technique.

Ainslie, W., 1970, A new method of interpolation and smooth curve fitting for geophysical data, *Geophysical Prospecting*, 16, 1-11.

Geophysical Research Institute, 10000 Highway 63, Edmonton, Alberta, Canada T6C 2V4. Tel: 403-443-2211. Fax: 403-443-2212. Telex: 170601. Cable: 170601.

RESISTIVITY ALTITUDE LIMITS

RESISTIVITY ALTITUDE LIMITS

In areas where the EM bird height exceeded 100 m, and the in-phase 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

SURVEY HISTORY

This map has been compiled and drawn under contract between the State of Alaska, Department of Natural Resources, Division of Geology and Geophysical Surveys (DGGS) and David S. Ewing, Inc. Work on the Coast Airborne geophysical data for the new area was 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 by person from DGGS, 3354 E. 9th Avenue, Fairbanks, Alaska 99709. Detailed 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/>).

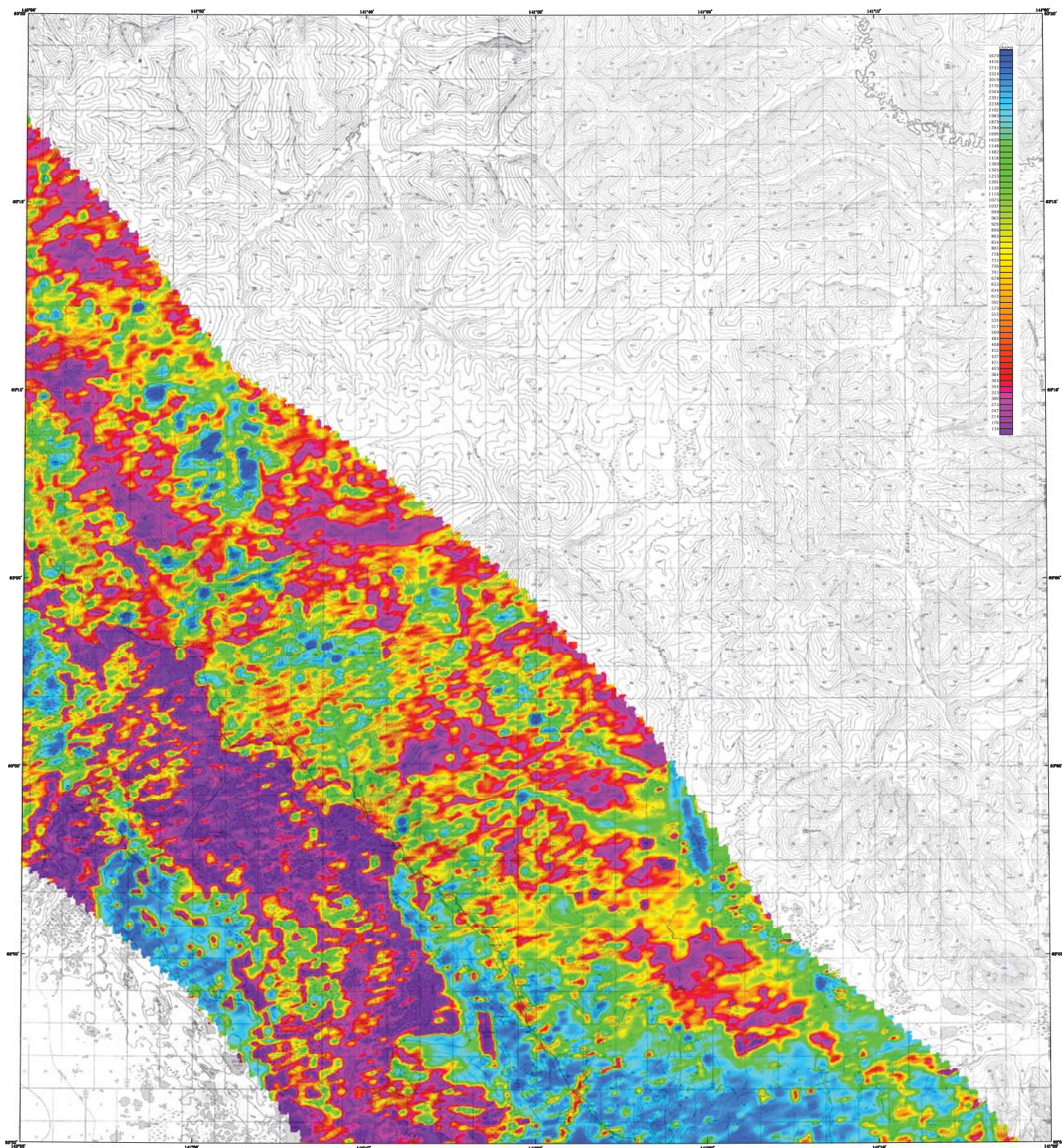


FIG. 206. 140,000 HZ COPLANAR APPARENT RESISTIVITY

SCALE 1:50,000
1 2 3 4 MILES
1 2 3 4 KILOMETERS

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

PARTS OF NABESNA and TANACROSS QUADRANGLES

by
Lauri E. Burn, Fugro Alabasca Survey Corp., and Stevens Exploration Management Corp.
2006

RESISTIVITY

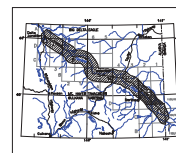
The RESISTIVITY EM system measured in-phase and quadrature components at six frequencies. One vertical resistivity component was measured at 3000 Hz using the horizontal coil system. The EM system was operated at 0.1 second intervals. The EM system response to bedrock, conductive overburden, and cultural sources. Apparent resistivity is generated from the 140,000 Hz using the pseudo-slow half space model. The data were interpolated onto a regular 50 m grid using a modified Akima (1970) technique.

These data are a part of a larger project of geophysical and geologic data for the Alaska Highway corridor. The project was funded by the Alaska Department of Transportation and Public Facilities.

RESISTIVITY ALTITUDE LIMITS

In areas where the EM bird height exceeded 100 m, and the in-phase and quadrature signals were below 20% of the maximum, the resistivity was not calculated and the grid is blank. This avoids topographic resistivity artifacts due to aerial signals in areas where the helicopter flies higher to avoid cultural objects or for safety reasons.

LOCATION INDEX



SURVEY HISTORY

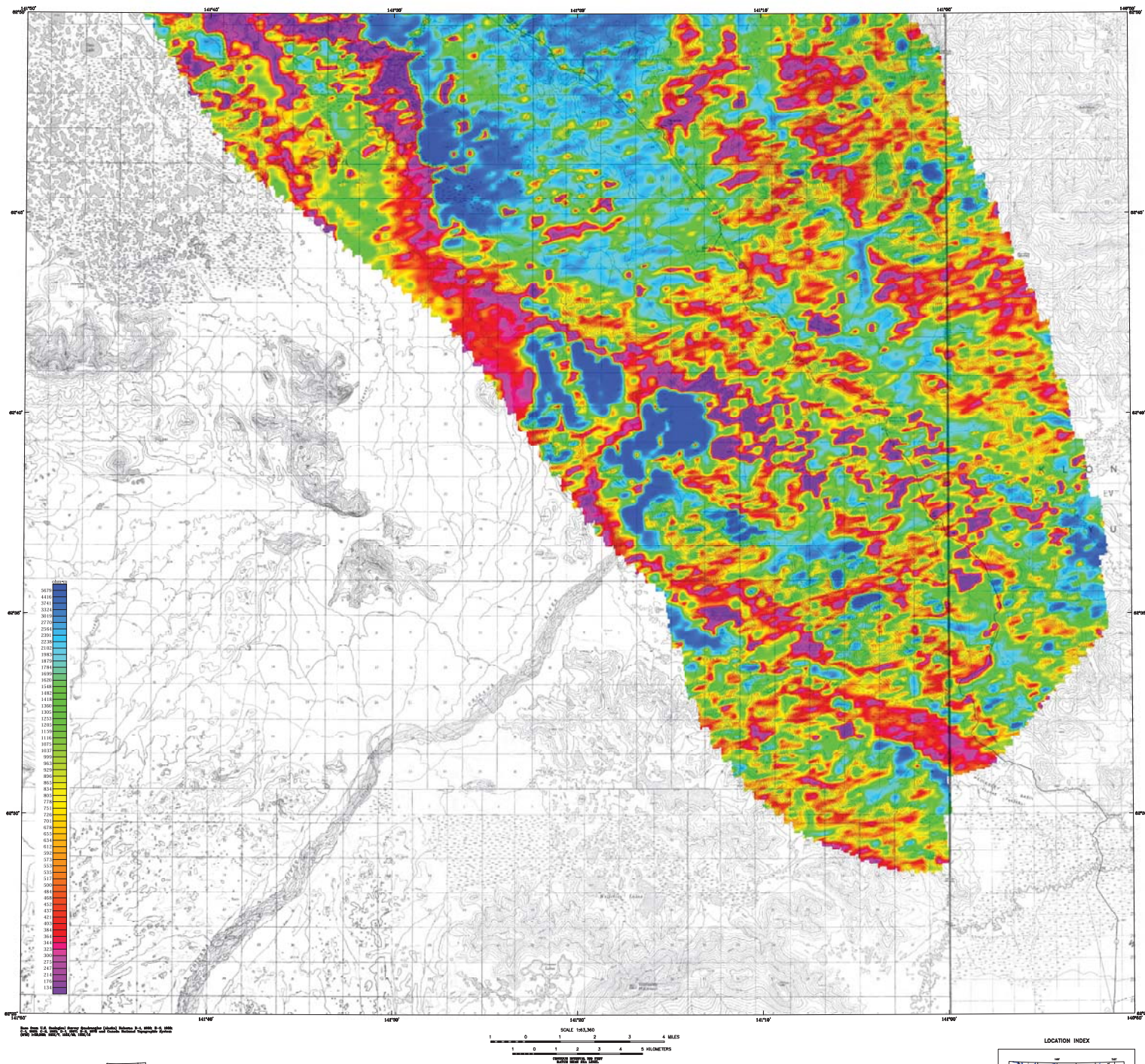
This map has been compiled and drawn under contract between the State of Alaska, Department of Natural Resources, Division of Geological & Geophysical Surveys (DGGGS), and Stevens Exploration Management Corp. (SEMC). The data were collected and processed by Fugro Alabasca Survey Corp. in late 2005 and early 2006.



DESCRIPTIVE NOTES

The resistivity data were collected with a RESISTIVITY EM system. The EM system and a 3000 Hz resistivity component were collected at a height of 100 feet. In addition, the survey recorded data from a resistivity system. The system was operated at 0.1 second intervals. The EM system response to bedrock, conductive overburden, and cultural sources. Apparent resistivity is generated from the 140,000 Hz using the pseudo-slow half space model. The data were interpolated onto a regular 50 m grid using a modified Akima (1970) technique.





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

PARTS OF NABESNA QUADRANGLE and CANADA 118K

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

DESCRIPTIVE NOTES

The geophysical data were collected with a RESOLVE Electromagnetic (EM) system and a Schriber odometer. The EM grid magnetic errors were flown at a height of 100 feet. In addition, the survey recorded data from a radio altimeter, GPS motion system, 50 Hz barometer and video camera. Flights were performed using AC500B-2 and AC500B-3 Schriber helicopters at a mean flight altitude of 200 feet along the 140,000 Hz resistivity flight line with a spacing of 0.5 miles. The flight line was flown perpendicular to the flight line at intervals of approximately 0.5 miles.

An Ahtech G224 NAVSTAR / GLONASS Global Positioning System was used for navigation. The helicopter position was derived every 0.5 seconds using real-time differential positioning. A real-time differential positioning system was used to provide real-time position data to the survey. The data were projected onto the Canada 1988 UTM zone 17 system. The data were then projected onto a central meridian (CM) at 141° 30' north coordinate of 0 and an east coordinate of 600,000. The altitude of the recorded data is better than 10 m, with respect to the UTM grid.



RESISTIVITY

The RESOLVE EM system measured in-phase and quadrature components of the magnetic field. One full cycle of the magnetic field was sampled at 140,000 Hz. The data were sampled at 0.1 second intervals. The EM system response to bedrock, conductive overburden, and cultural sources. Apparent resistivity is derived from the in-phase and quadrature components of the magnetic field. The data were interpolated onto a regular 60 m grid using a modified Akima (1970) technique.

NOTE: RESOLVE is a registered trademark of Fugro Alaska Surveys Corp. and Stevens Exploration Management Corp. All other trademarks are the property of their respective owners.

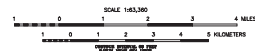
RESISTIVITY ALTITUDE LIMITS

In areas where the EM bird height exceeded 100 m, and the in-phase and quadrature signals were below 1 ppm, the resistivity was not calculated and the grid is blank. The resistivity was not calculated in these areas 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. Alaska geophysical data for the map were collected and processed by Fugro Alaska Surveys Corp. in late 2005 and early 2006.

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PARTS OF BIG DELTA and MT. HAYES QUADRANGLES

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

RESISTIVITY

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 coils—pairs operated at 100, 1000, 10,000, 100,000, and 1,000,000 Hz. EM data were sampled at 0.1, 0.2, and 0.5 second intervals. The EM system response to bedrock conductors, conductive clays, and cultural structures. Apparent resistivity is generated from the inphase and quadrature component of the coplanar 40,000 Hz using the pseudo-layer half space model. The system is portable and can be used in 80 m grid using a modified Alpha (1970) technique.

Almeida, H., 1970. A new method of interpretation and pseudo cross fitting based on local procedures. *Journal of the Association of Geophysical Engineers*, 17, 1-10.

RESISTIVITY ALTITUDE LIMITS

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

SURVEY HISTORY

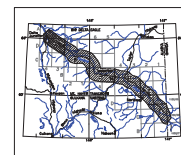
This map has been compiled and drawn under contract between the State of Alaska, Department of Natural Resources, Division of Geologist & Geophysical Surveys (2002), and the State of Alaska, Department of Management & Enterprise Services, Division of Geographical Information Systems (2005 and 2006). Airborne geophysical data for the new area were acquired and processed by Fugro Airborne Surveys Corp. in late 2005 and early 2006.

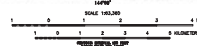
This map and other products from this survey are available by mail order or in person from DGGG, 3354 College Road, Fairbanks, Alaska 99707. Published maps are also available for viewing or downloading as Adobe Acrobat files ("pdf") on our Web site (<http://www.dggg.dnr.state.ak.us/pub/>).

DESCRIPTIVE NOTES

The geophysical data were acquired with a RESOLVE system consisting of a 6000 Hz digital streamer, a magnetometer, The EM and magnetic sensors were flown at a height of 100 feet, in addition to a Coda Octopus 8000 GPS receiver, a Trimble DGPS navigation system, 50/60 Hz monitors and analog recording equipment. Two Sikorski HO4S helicopters AS350B-2 and AS350B-3 Squirrel helicopters at a mean terrain clearance of 100 ft. flew over the area at approximately 10 knots. The flight track was spaced at a quarter of a mile; the tracks were oriented parallel to each other and they intersected at intervals of approximately 3 miles.

An Aachtch 0224 NAVSTAR / GLONASS Global Positioning System was used for navigation. The system uses GPS satellites and ground stations to provide post-flight differential positioning to obtain centimeter accuracy. The system consists of two receivers projected onto the Clarke 1966 UTM zone 6 sphereic, 1927 North American datum constant of D and an east constant of 500,000m. The datum is based on the Clarke 1866 spheroid which is better than 10 m. with respect to the UTM grid.





PARTS OF MT. HAYES QUADRANGLE

by
Laurel E. Barrs, Pogo Adams Survey-Care, and Steven Exploration Management Corp.

RESISTIVITY

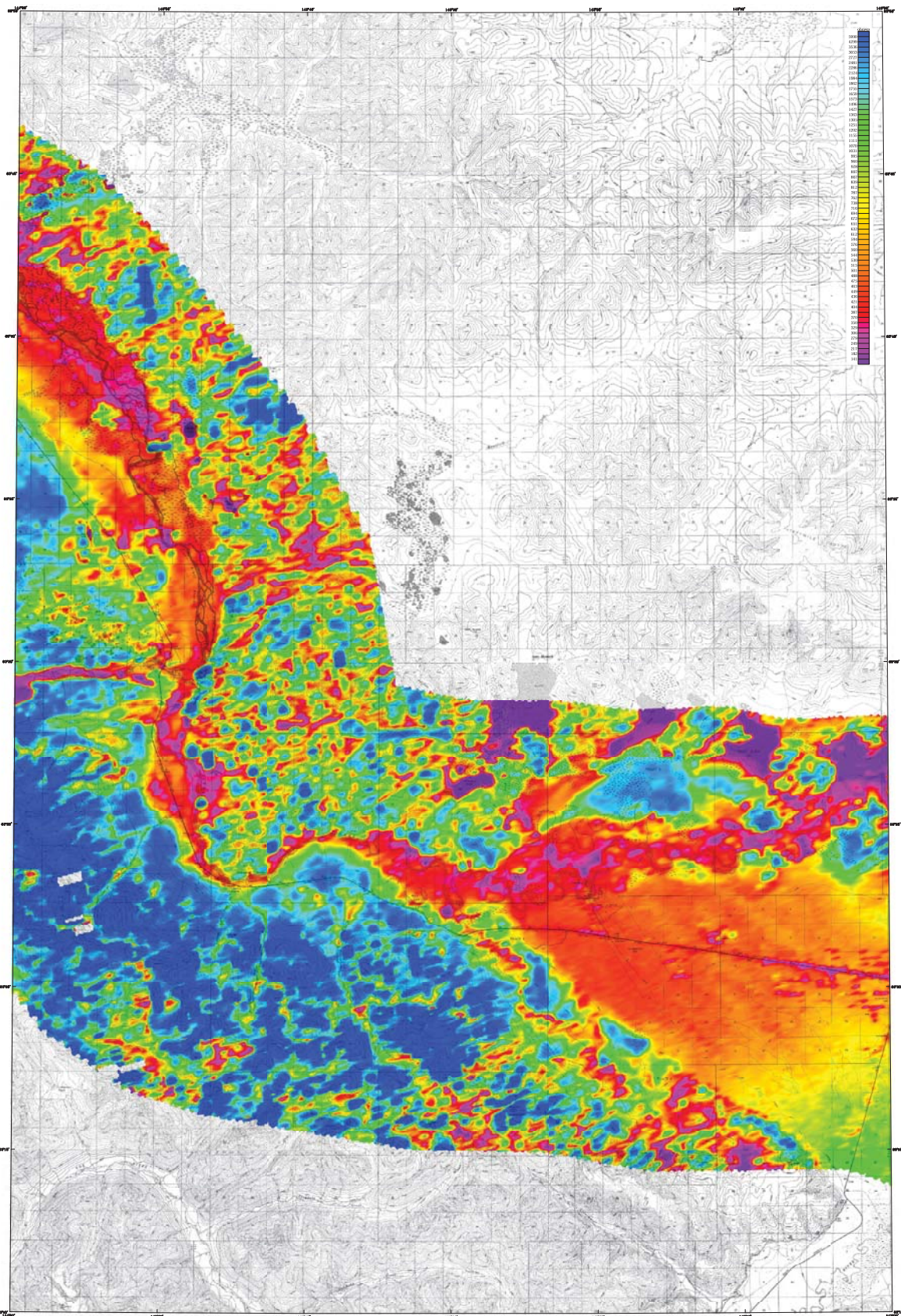
The RESOLVE EM system measured igneous and quadrature components of EM data frequencies, the vertical component of the magnetic field, and the apparent resistivity of the earth's crust. The system was operated at 3350 Hz while five horizontal coplanar coil-pairs operated at 400, 1800, 8200, 40,000 and 140,000 Hz. EM data were sampled at 0.1-second intervals. The EM system response to bedrock conductors, conductive overburden, and cultural sources. Apparent resistivity is generated from the inphase and quadrature component of the coplanar coil-pairs. EM using the pseudo-layer half space model. The data were used to generate a resistivity map of the ground using a modified Laiter (1970) technique.

James, R. 1970, A new method of the resistivity and quadrature curves of the EM system. In: *Proceedings of the 1970 EM Symposium*, pp. 1-10. *Geophysical Research Society of America*, Tulsa, Oklahoma.

RESISTIVITY ALTITUDE LIMITS

SURVEY HISTORY

This map has been compiled and assembled from data collected by the U.S. Geological Survey, Division of Geological and Geophysical Data, and the Alaska Department of Natural Resources, Division of Geological and Geophysical Data. The data were collected by the U.S. Geological Survey, Division of Geological and Geophysical Data, and the Alaska Department of Natural Resources, Division of Geological and Geophysical Data. The data were collected by the U.S. Geological Survey, Division of Geological and Geophysical Data, and the Alaska Department of Natural Resources, Division of Geological and Geophysical Data.



DETAILED DESCRIPTION OF THE DATA SET



DESCRIPTIVE NOTES
The geophysical data were acquired with a RESOLVE system (RESOLVE Systems International, Inc.) using a 40,000 Hz coplanar resistivity system. The system was configured with a 100 m electrode spacing and a 100 m array length. The data were collected in a grid pattern with a 100 m by 100 m grid cell size. The data were collected in a grid pattern with a 100 m by 100 m grid cell size. The data were collected in a grid pattern with a 100 m by 100 m grid cell size.

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

PARTS OF YANACROSS QUADRANGLE

by
Leland E. Bann, Page Alaska Surveying, Inc., and Steven R. Bann, Alaska Division of Geological & Geophysical Surveys

RESISTIVITY

The RESOLVE system measures apparent resistivity and apparent inductance at a frequency of 40,000 Hz. The system was configured with a 100 m electrode spacing and a 100 m array length. The data were collected in a grid pattern with a 100 m by 100 m grid cell size. The data were collected in a grid pattern with a 100 m by 100 m grid cell size. The data were collected in a grid pattern with a 100 m by 100 m grid cell size.

RESISTIVITY ALTITUDE LIMITS

In areas where the 100 m array length is not practical, the resistivity was measured at shorter array lengths. The resistivity was measured at shorter array lengths. The resistivity was measured at shorter array lengths. The resistivity was measured at shorter array lengths.

SURVEY HISTORY

The data were collected as part of a larger survey of the Alaska Highway corridor. The data were collected as part of a larger survey of the Alaska Highway corridor. The data were collected as part of a larger survey of the Alaska Highway corridor. The data were collected as part of a larger survey of the Alaska Highway corridor.



PARTS OF NABESNA and TANACROSS QUADRANGLES

by
Laurel E. Burns, Fugro Alderson Surveys Corp., and Steven Exploration Management Corp.

[illegible]

RESISTIVITY

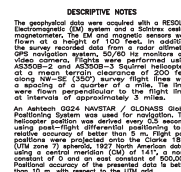
The RESOLVE EM system measured inphase and quadrature components at six frequencies. One vertical coil and two horizontal coils were used to induce a magnetic field in coplanar coil-pairs operated at 400, 1800, 8200, 42500 and 140500 Hz. EM data were sampled at 0.1 second intervals. The data were collected from 100 conductors, conductive overburden, and cultural sources. Apparent resistivity is generated from the inphase and quadrature component of the coplanar coil-pairs. The data are half-spectrum folded. The data were interpolated onto a regular 80 m grid using a modified Akima (1970) technique.

Akima, N., 1970, A new method of interpolation and smooth curve fitting based on local properties of arbitrary data sets, *IBM Systems Journal*, 15, 649-682.

Computing Machinery, Inc., 15, N.Y., 3389-0202.

in areas where the EM bird height exceeded 100 m and the inphase and quadrature signals were below ppm, the reliability was not calculated and the grid is blank. This avoids meaningless reliability calculation 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 to the State of Alaska, Department of Natural Resources, Division of Geological & Geophysical Surveys (DGGS), and the U.S. Geological Survey (USGS). Airborne geophysical data for the new area were acquired and processed by Fugro Airborne Survey, 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, 535 West 7th Avenue, Fairbanks, Alaska 99701. PDF maps are also available for viewing or download as Adobe Acrobat files (*.pdf) on our Web site (<http://www.dggs.dnr.state.ak.us/pubs/>).



PARTS OF NABESNA and TANACROSS QUADRANGLES
by
Laurel E. Burns, Fugro Airborne Surveys Corp., and Stevens Exploration Management Corp.

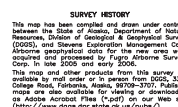
RESISTIVITY

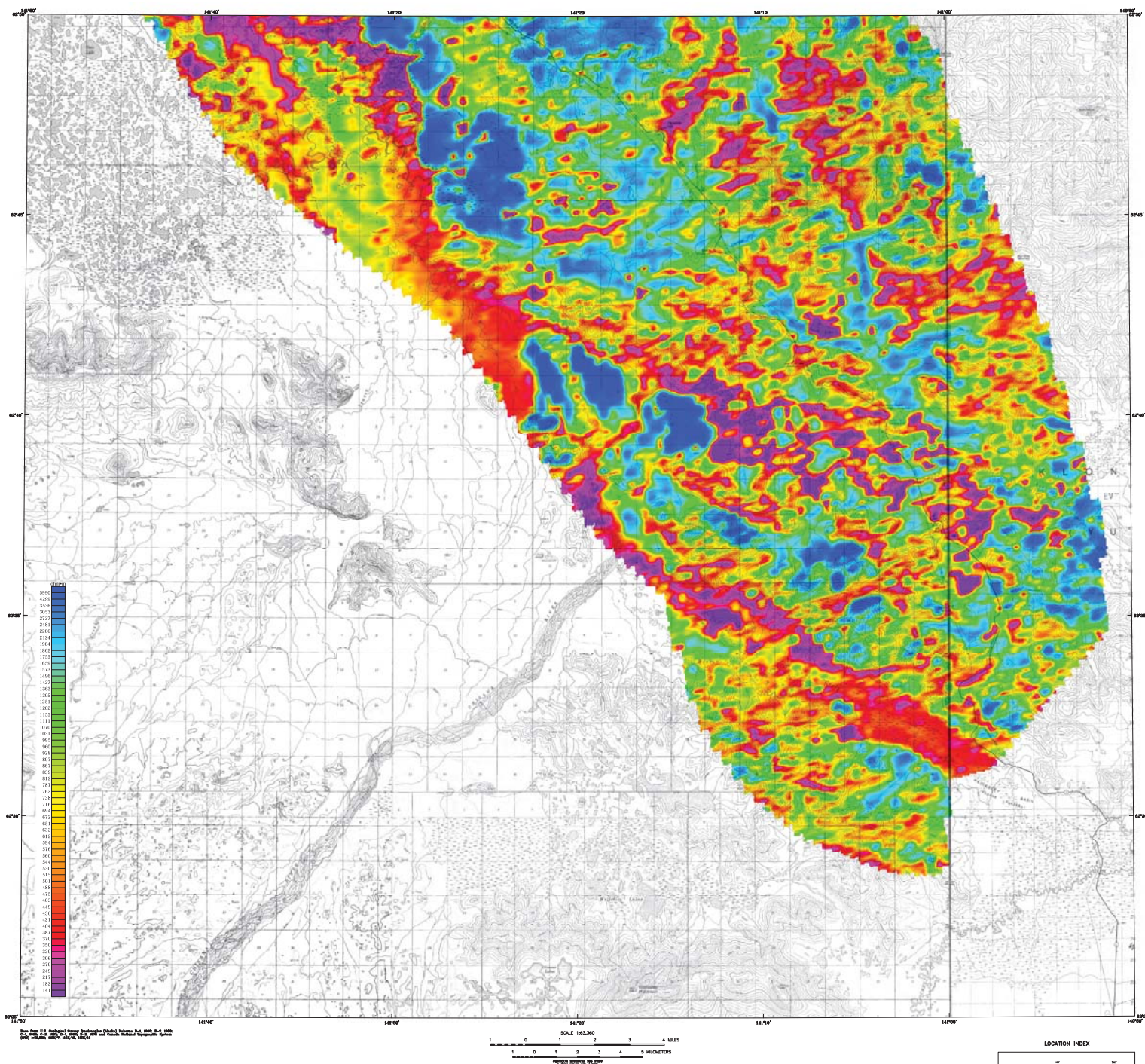
The RESOLVE EM system measured inphase and quadrature components at six frequencies. One vertical coaxial coil-pair operated at 3300 Hz while five horizontal coplanar coil-pairs operated at 400, 1800, 8200, 40,000 and 140,000 Hz. The EM data were sampled at 0.1 second intervals. The EM system responds 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 a modified Aluma technique. The data were interpolated onto a regular 80 m grid using a modified Aluma (1970) technique.

Aluma, H., 1970. A new method of interpretation and smooth curve fitting based on least procedures. *Journal of the Association of Professional Geophysicists*, 15, 1-12.

RESISTIVITY ALTITUDE LIMITS

RESISTIVITY ALTITUDE LIMITS





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

PARTS OF NABESNA QUADRANGLE and CANADA 118K

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

2006

RESISTIVITY

The RESOLVE EM system measured in-phase and quadrature components of an inductive, one-pole, spatially continuous, resistivity response. The system was operated at 40,000 Hz. EM data were sampled at 0.1 second intervals. The EM system response to bedrock, conductive overburden, and cultural sources. Apparent resistivity is derived from the in-phase and quadrature components of the response. The data were interpolated onto a regular 60 m grid using a modified Akima (1970) technique.

NOTE: RESOLVE is a non-pole-dipole system and therefore the apparent resistivity values are not directly comparable to those of a pole-dipole system.

RESISTIVITY ALTITUDE LIMITS

In areas where the EM bird height exceeded 100 m, and the in-phase and quadrature signals were below 1 ppm, the resistivity was not calculated and the grid is blank. This avoids anomalous 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 (DGGGS), and Stevens Exploration Management Corp. Alaska geophysical data for the map were first acquired and processed by Fugro Alaska Surveys Corp. in late 2000 and early 2006.

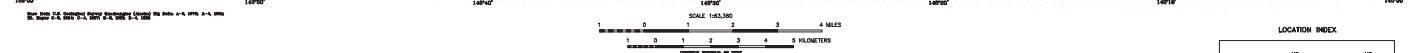
This map and other products from this survey are available by mail order or in person from 2006, 2006 College Road, Fairbanks, Alaska, 99709-3707. Published maps are also available for viewing or downloading on Alaska Geospatial Data (AGSD) on the DGGGS website (<http://www.dgggs.dnr.state.ak.us/pubs/>).

DESCRIPTIVE NOTES

The geophysical data were acquired with a RESOLVE Electromagnetic (EM) system and a Schriber, cadmium magnetometer. The EM and magnetic data were flown at a height of 100 feet. In addition, the survey recorded data from a radio altimeter, GPS motion system, 50 Hz barometer, and video camera. Flights were performed using AC500B-2 and AC500B-3 Schriber helicopters at a mean flight altitude of 200 feet above the ground. The survey flight lines were flown perpendicular to the flight lines at intervals of approximately 0.5 miles.

An Ahtech G224 NAVSTAR / GLONASS Global Positioning System was used for navigation. The helicopter position was derived every 0.5 seconds using real-time differential positioning. A real-time kinematic (RTK) system was used to provide real-time positioning. The data were processed using the Trimble 5600 software. The data were processed using the Trimble 5600 software. The data were processed using the Trimble 5600 software.





by
L. and E. Burns, Evans Albion Burns Corp., and Steam Evolution Management Corp.

DESCRIPTIVE NOTES

[illegible]

RESISTIVITY

THE RESOLVE EM system measured in-phase and quadrature components at six frequencies. One vertical column of coil-pairs operated at 400, 800, 1600, 3200, 6400 and 140,000 Hz. EM data were sampled at 0.1 second intervals. The EM system responds to bedrock conductors, conductive minerals, and metallic structures. Apparent resistivity is generated from the in-phase and quadrature component of the coplanar 6400 Hz using the pseudo-range half space model. The 140,000 Hz is used to determine the 50 m grid using a modified Ahima (1970) technique.

RESISTIVITY ALTITUDE LIMITS

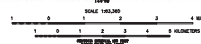
in areas where the EM bird height exceeded 100 m, and the inphase and quadrature signals were below 3 ppm, the resistivity was not calculated and the grid is blank. This avoids meaningless resistivity calculations due to small signals in areas where the helicopter flew below the maximum allowed altitude for resistivity measurements.

SURVEY HISTORY

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 this 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.



PARTS OF MT. HAYES QUADRANGLE

by
Laurel E. Burns, Pogo Atlanta Survey Data, and Shivers Exploration Management Corp.

RESISTIVITY

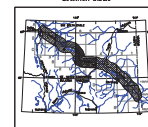
The RESQUC EM system measured inphase and quadrature components at six frequencies. One vertical coil was used for the inphase component while five horizontal coplanar coil-pairs operated at 400, 1800, 6200, 10,000 and 140,000 Hz. EM data were sampled at 0.1 second intervals. The EM system response to bedrock conductors, conductive overburden, and cultural sources. Apparent resistivity is generated from the inphase and quadrature component of the coplanar coil-pairs using the pseudo-layer method. Apparent resistivity values were calculated using a 100 m vertical coil and 80 m grid using a modified Laita (1970) technique.

RESISTIVITY ALTITUDE LIMITS

In areas where the EM bird height exceeded 100 m and the in-phase 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 slower to avoid ground obstacles or for safety reasons.

SURVEY HISTORY

SURVEY HISTORY
This map has been compiled and drawn by the State of Alaska, Department of Natural Resources, Division of Geological & Geomatics Sciences (DGGIS), and Stevens Exploration Ltd. All geophysical data for the area was acquired and processed by Fugro Inc. in late 2005 and early 2006.
This map and other products from this project are available by mail order or in person at the College Road, Fairbanks, Alaska, 99701. Maps are also available for viewing on Adobe Acrobat files (.pdf) at Online/www.state.ak.us/dnrgis.



PARTS OF TANACROSS QUADRANGLE

RESISTIVITY

RESISTIVITY

The RESOLVE EM system measured inphase and quadrature components at six frequencies. One vertical coiled coil-pole operated at 3300 Hz while five horizontal coplanar coil-poles operated at 400, 1800, 8200, 40,000, and 160,000 Hz. EM data were sampled at 0.2 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 exploration 8200 Hz using the pseudo-layer half space model. The data were interpolated onto a regular 80 m grid using a modified Adria (1970) technique.

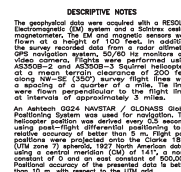
RESISTIVITY ALTITUDE LIMITS

In areas where the EM bore height exceeded 100 m, and the lagphase 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 telluric frequencies are small, and the resistivity is too low to be useful.

SURVEY HISTORY

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 (DGG&S), and Stevens Explorations Management Corp., Alaska geophysical data for the map area were acquired and processed by Stevens, Alaska Surveys Corp. in late 2006 and early 2008.
This map and other products from this survey are available by mail order or in person from 2008, 3364 Ocean Road, Fairbanks, Alaska, 99709-3707. Published maps are also available for viewing or downloading from the Arctic Slope Regional Corporation web site at ARCSLOPE.com/arcsls/arcsls.htm.





PARTS OF NABESNA and TANACROSS QUADRANGLES
by
Laurel E. Burns, Fugro Airborne Surveys Corp., and Stevens Exploration Management Corp.

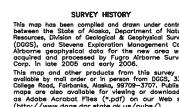
RESISTIVITY

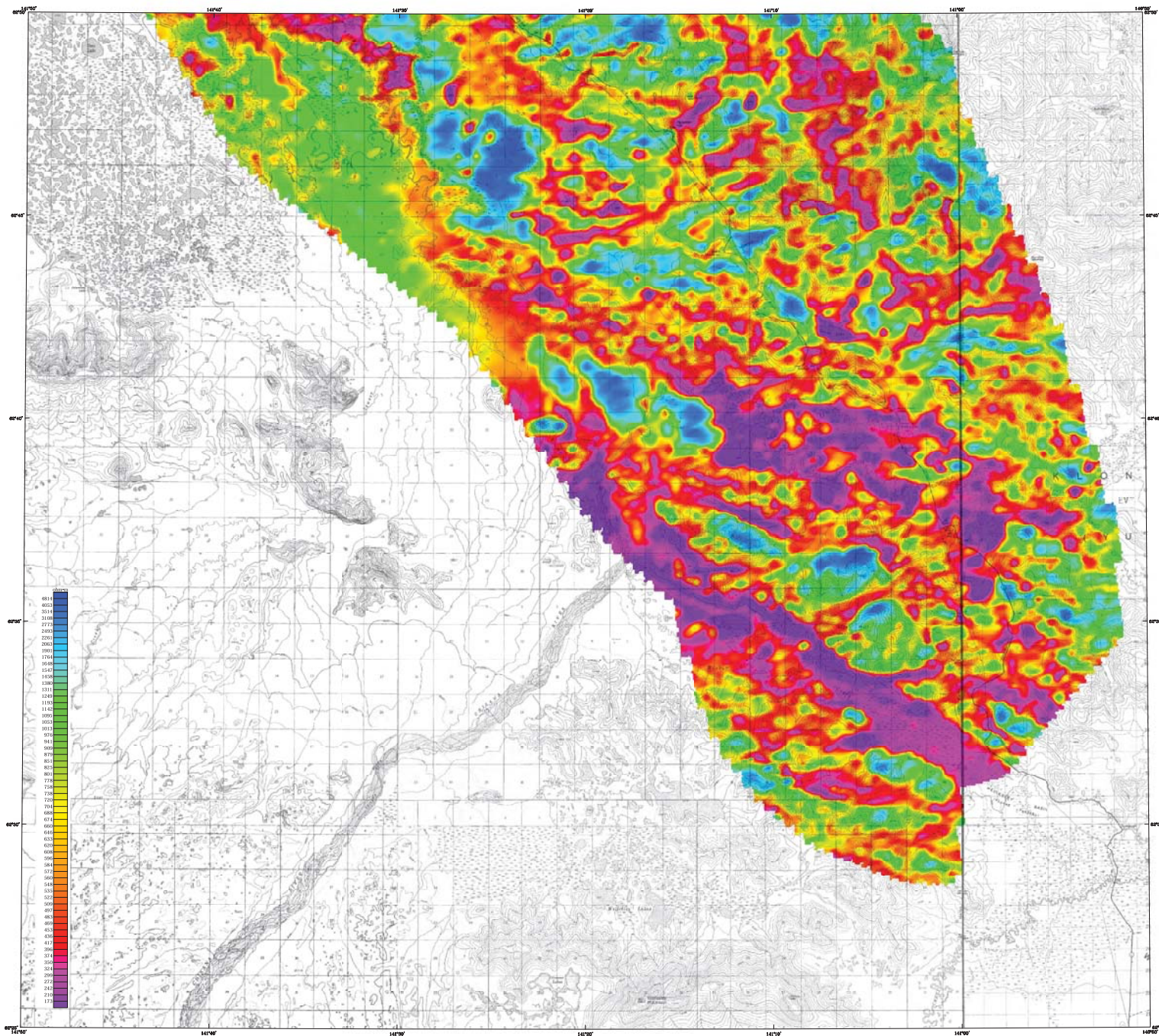
The RESOLVE EMI system measured inphase and quadrature components at six frequencies. One vertical coaxial cell-pair generated at 3300 Hz while five horizontal capacitor cell-pairs operated at 1600, 1800, 8200, 8200, and 140,000 Hz. The system required 1000 W. The EMI system responds to bedrock conductors, conductive overburden, and cultural structures. Apparent resistivity is generated from the inphase and quadrature component of the coplanar 8200 Hz using the pseudo-half space model. The 140,000 Hz is used to estimate the bedrock resistivity using a modified Aloma (1970) technique.

Aloma, R., 1970. A new method of interpretation and automatic least mean square fitting based on least procedures. *Journal of the Association of Professional Geophysicists*, 14, 1-10.

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 above the resistivity altitude limits for each frequency.





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

PARTS OF NABESNA QUADRANGLE and CANADA 118K

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

DESCRIPTIVE NOTES

The geophysical data were collected with a RESOLVE Electromagnetic (EM) system and a Schriber cadmium magnetometer. The EM and magnetic data were flown at a height of 100 feet. In addition, the survey recorded data from a radio altimeter, GPS motion system, 50 Hz barometer and video camera. Flights were performed using AS500B-2 and AS500B-3 Squire helicopters at a ground track spacing of 200 feet along north-south survey flight lines with a spacing of 0.5 mile on east-west lines. The lines were flown perpendicular to the flight lines at intervals of approximately 0.5 miles.

An Ahtech G224 NAVSTAR / GLONASS Global Positioning System was used for navigation. The helicopter position was derived every 0.5 seconds using real-time differential positioning. In a real-time mode, the data were projected onto the Canada 118K UTM zone 17, datum 1983 North American datum using a central meridian (CM) at 141° 30' north coordinate of 0 and an east coordinate of 600,000. Horizontal accuracy of the recorded data is better than 10 m, with respect to the UTM grid.

RESISTIVITY

The RESOLVE EM system measured in-phase and quadrature components of six frequencies. One vertical control coil was operated at 20,000 Hz and 14,000 Hz. The 40,000 and 14,000 Hz EM data were sampled at 0.1 second intervals. The EM system responses to bedrock, conductive overburden, and cultural sources. Apparent resistivity is generated from the in-phase and quadrature components of the measured 8200 Hz using the pseudo-layer half space model. The data were interpreted into a resistivity 60 m grid using a modified Aluma (1970) technique.

NOTE: RESOLVE is a registered trademark of Fugro Alaska Surveys Corp. and Stevens Exploration Management Corp. All other trademarks are the property of their respective owners.

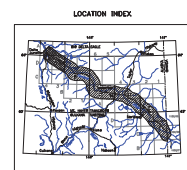
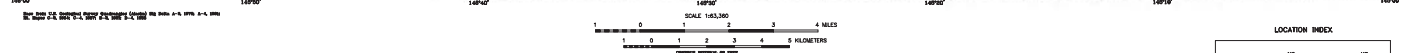
RESISTIVITY ALTITUDE LIMITS

In areas where the EM bird height exceeded 100 m, and the in-phase and quadrature signals were below 1 ppm, the resistivity was not calculated and the grid is blank. The resistivity map shows 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 (DGGGS), and Stevens Exploration Management Corp. Alaska geophysical data for the map were collected and processed by Fugro Alaska 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 2006, 2006 College Road, Fairbanks, Alaska, 99709-3707. Published maps are available for viewing or downloading at Alaska Geospatial Data Center on the DGGGS web site (<http://www.dgggs.dnr.state.ak.us/pubs/>).



PARTS OF BIG DELTA and MT. HAYES QUADRANGLES
by
Laurel E. Burns, Puerto Abasco Survey Corp., and Stevens Exploration Memorandum Corp.

by
Laurel E. Burns, Fuero Airborne Surveys Corp., and Steven Exploration Management Corp.

The geophysical data were acquired with a RESOLVE Digital Electromagnetic (EM) system and a Sinterch system magnetometer. The EM and magnetic sensors were towed by a 100-m cable behind the survey vessel. The survey recorded data from a radio altimeter, GPS navigation system, 50/60 Hz monitors on the power lines, and a 100-m cable. The survey was conducted along N-SE (350°) survey flight lines with a spacing of a quarter of a mile. The line spacing was 0.25 miles. The survey was conducted at intervals of approximately 3 miles.

An Ashtech G224 NAVSTAR / GLOASS Global Positioning System was used for navigation. The system was used to record the position of the survey vessel using post-flight differential positioning to a relative accuracy of better than 5 m. Flight paths were recorded using a 100-m cable. The survey was conducted along N-SE (350°) survey flight lines with a spacing of a quarter of a mile. The line spacing was 0.25 miles. The survey was conducted at intervals of approximately 3 miles.

RESOLUTION

The RESOLVE EM system measured inphase and quadrature components at six frequencies. One vertical column of coplanar coil-pairs was used. The 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 and to the conductive overburden. When above cultural sources, Apparent resistivity is generated from the inphase and quadrature component of the coplanar coil-pairs. The data were interpolated onto a regular 80 m grid using a modified Akima (1970) technique.

Akima, H., 1970, A new method of interpolating and smooth curve fitting based on local pressures, *Journal of the Association of Computers and Mathematics*, 16, 170-174.

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 Geology, and Geophysical Surveys (DGGS) and Sverdrup Corning Mapping and Information 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 purchase from Sverdrup Corning or Adobe Acrobat Files (.pdf) on our Web site (<http://www.dnrs.state.ak.us/pubn/c>).



PARTS OF MT. HAYES QUADRANGLE

by
Laurel E. Burns, Pugh Adams Survey Corp., and Steven Expedition Management Corp.

An Ashtek GQ24 NAVSTAR / GLONASS Global Positioning System was used for positioning. The helicopter position was defined 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 (WGS 84) spheroid, 1927 North American datum using a central meridian (CM) of 147°, a north constant of 0 and an east constant of 300,000. Position accuracy in the presented data is better than 10 m. The ground station is located at

RESISTIVITY

The RESOLVE EM system measured both one and quadrature components at six frequencies. One vertical coilset (coil-pair) operated at 3300 Hz while five horizontal coilsets (coil-pairs) operated at 400, 1800, 6200, 18000 and 140000 Hz. EM data were acquired at 0.5 m intervals. The EM system responds to bedrock conductance, conductive overburden, and cultural sources. Apparent resistivity is generated from the in-phase and quadrature components of the response. The 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.

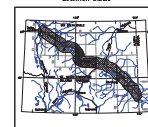
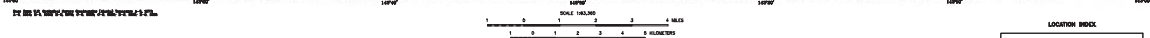
RESISTIVITY ALTITUDE LIMITS

SURVEY HISTORY

SURVEY HISTORY

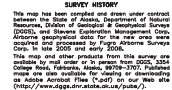
This map has been compiled and drawn under contract between the State of Alaska, Department of Natural Resources, Division of Geological & Geophysical Survey (DGGS), and Stevens Exploration Management Company. The geophysical data for the area were acquired and processed by Stevens Exploration Survey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

This map and other products from this survey are available by mail order or in person from 2005 College Road, Fairbanks, Alaska, 99709-3707. Publication maps are also available for viewing or downloading on the Alaska Internet Files ("AIF") on the Web at <http://DGGIS/Geophysical/Files>.



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 Explorations Management Corp. Airborne geophysical data for the area were acquired and processed by Fugro Airborne Survey Corp. In late 2006 and early 2008.

This map and other products from this survey are available by mail order or in person from DGGS, 3304 College Road, Fairbanks, Alaska, 99709-3701. Publication and distribution information for this map is available on Adobe Acrobat "File" ("pdf") menu item with the <http://www.dggs.alaska.gov/data/in/cadastral/>.



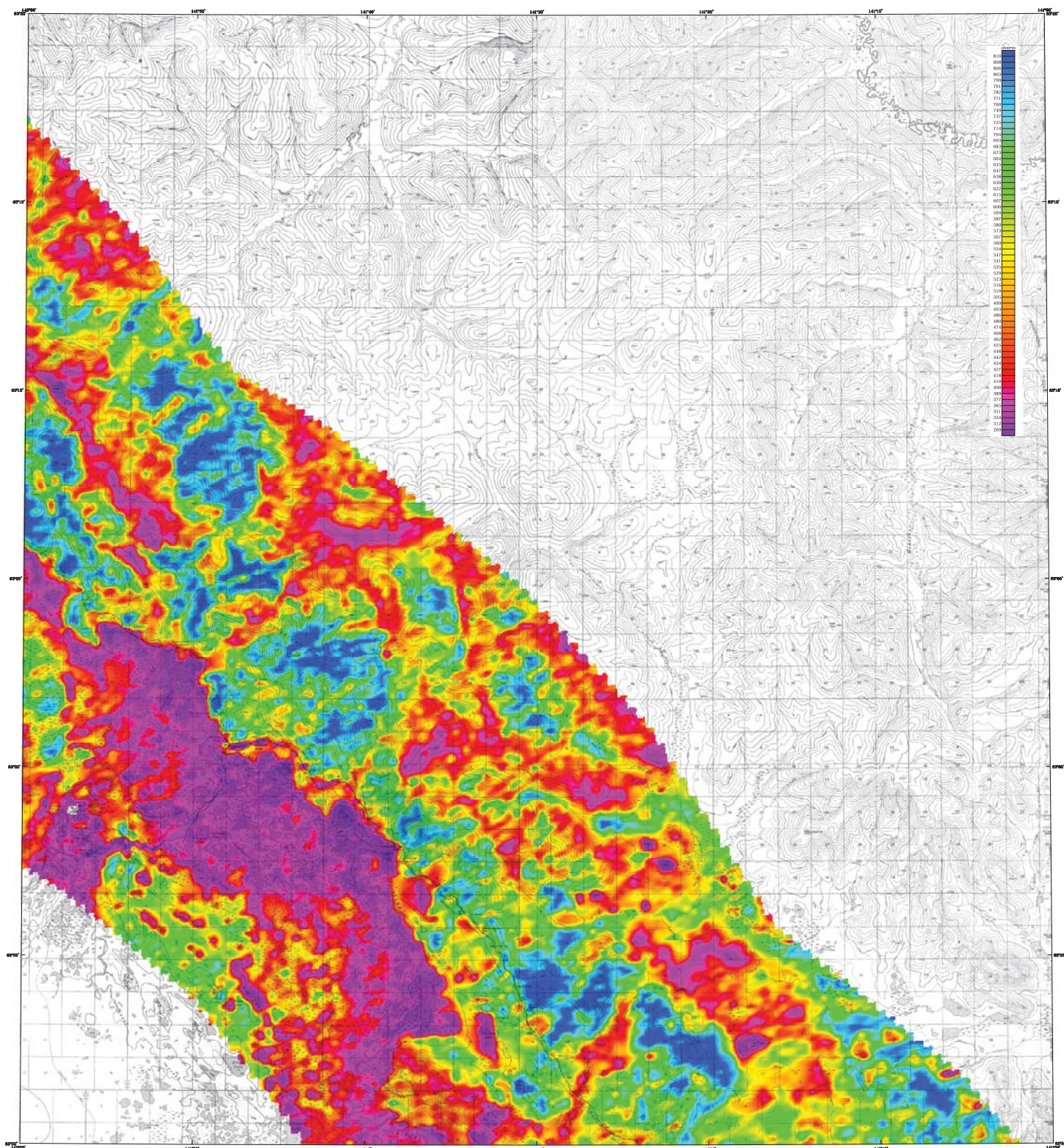


FIG. 606. ALASKA HIGHWAY CORRIDOR, EAST-CENTRAL ALASKA

SCALE 1:100,000
1 2 3 4 KILOMETERS
1 2 3 4 MILES

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

PARTS OF NABESNA and TANACROSS QUADRANGLES

by
Lauri E. Burn, Fugro Alaska Survey Corp., and Stevens Exploration Management Corp.
2006

RESISTIVITY

The RESISTIVITY EM system measured in-phase and quadrature components at six frequencies. One vertical resistivity component was measured at 3000 Hz using the coplanar electrode array. The EM data were sampled at 0.1 second intervals. The EM system response to resistivity, conductivity, overburden, and cultural sources. Apparent resistivity is generated from the 400 Hz using the pseudo-layer half space model. The data were interpolated onto a regular 50 m grid using a modified Akima (1970) technique.

Since the EM system is sensitive to ground area 100 m wide, a 100 m wide buffer of topographic data was used to ensure that the EM system was not over the edge of the map.

RESISTIVITY ALTITUDE LIMITS

In areas where the EM bird height exceeded 100 m, and the in-phase and quadrature signals were below 2 percent, the resistivity was not calculated and the grid is blank. This avoids topographic resistivity artifacts due to aerial signals in areas where the helicopter flies 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 Survey (DGGGS), and Stevens Exploration Management Corp. (SEMC). The data were collected and processed by Fugro Alaska Survey Corp. in late 2005 and early 2006.

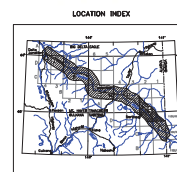
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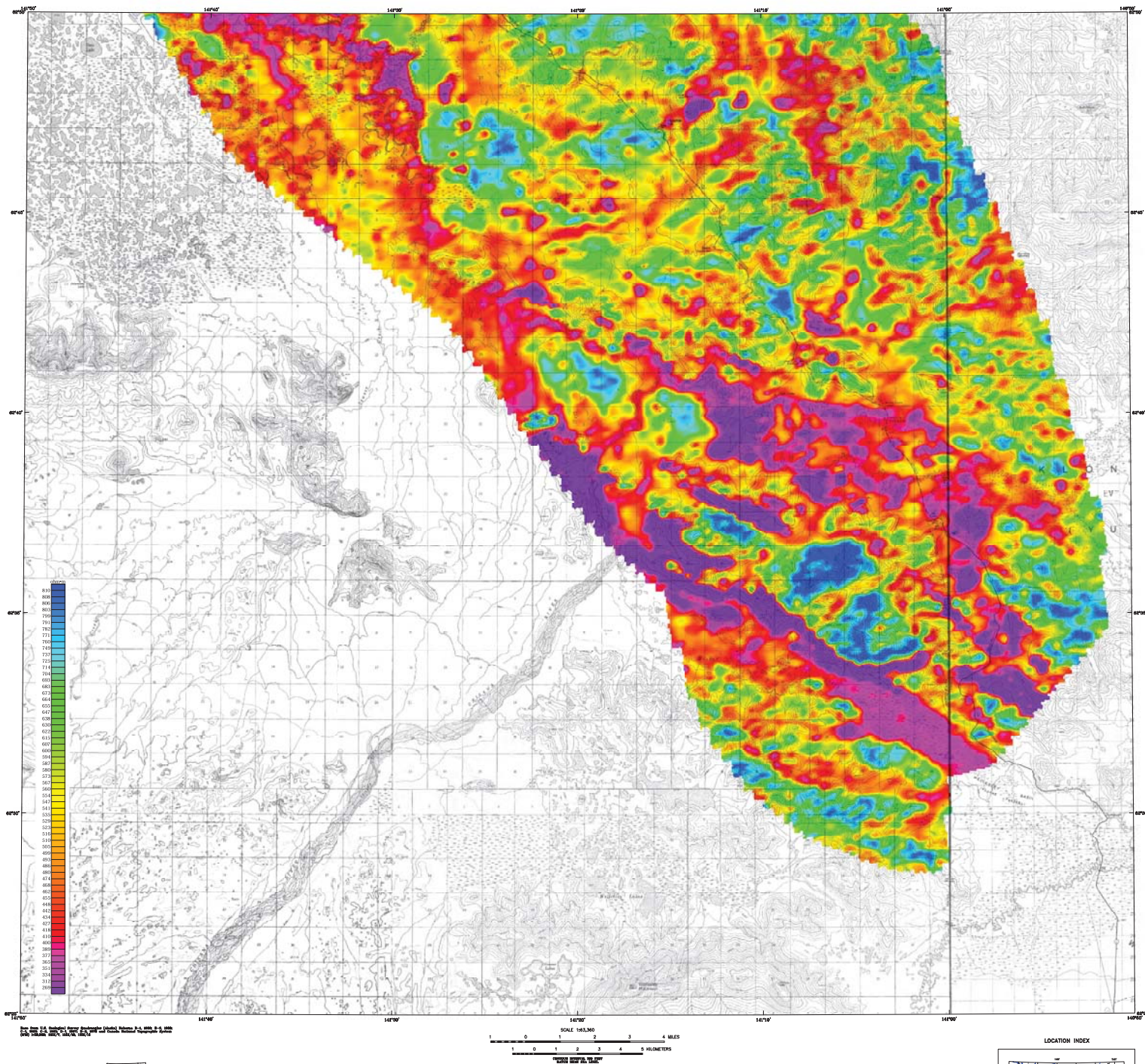


DESCRIPTIVE NOTES

The resistivity data were collected with a RESISTIVITY EM system. The EM system used a 3000 Hz coplanar electrode array. The EM data were sampled at 0.1 second intervals. The EM system response to resistivity, conductivity, overburden, and cultural sources. Apparent resistivity is generated from the 400 Hz using the pseudo-layer half space model. The data were interpolated onto a regular 50 m grid using a modified Akima (1970) technique.

An Ashland 5024 NAVSTAR / GLONASS Global Positioning System was used for survey control. The helicopter position was derived every 0.5 seconds using post-flight differential positioning to a base station. The base station was located at a known position. The base station was located at a known position. The base station was located at a known position.





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

PARTS OF NABESNA QUADRANGLE and CANADA 118K

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

DESCRIPTIVE NOTES

The geophysical data were acquired with a RESOLVE Electromagnetic (EM) system and a Schriber, cadum magnetometer. The EM and magnetic data were flown at a height of 100 feet. In addition, the survey recorded data from a radio altimeter, GPS motion system, 50/60 Hz monitor and video camera. Flights were performed using AS500B-2 and AS500B-3 Schriber helicopters at a mean terrain clearance of 200 feet along the 400 Hz survey flight line with a spacing of 0.5 miles. The flight lines were flown perpendicular to the flight lines at intervals of approximately 0.5 miles.

An Aircatch G224 NAVSTAR / GLONASS Global Positioning System was used for navigation. The helicopter position was derived every 0.5 seconds using real-time differential positioning. In a real-time mode, the data were projected onto the Canada 1988 UTM zone 17 system. 1927 North American datum using a central meridian (CM) at 141° 30' north coordinate of 0 and an east coordinate of 600,000. Horizontal accuracy of the recorded data is better than 10 m, with respect to the UTM grid.



RESISTIVITY

The RESOLVE EM system measured in-phase and quadrature components of air inductance. One vertical coplanar coil pair operated at 2000 Hz and 1400 Hz. The 40000 and 140000 Hz EM data were sampled at 0.1 second intervals. The EM system response to bedrock, conductive overburden, and cultural sources. Apparent resistivity is derived from the in-phase and quadrature components of the measured 400 Hz using the pseudo-layer half space model. The data were interpolated onto a regular 60 m grid using a modified Akima (1970) technique.

NOTE: RESOLVE is a registered trademark of Fugro Alabasca Surveys Corp. and Stevens Exploration Management Corp. All other names are trademarks of their respective owners.

RESISTIVITY ALTITUDE LIMITS

In areas where the EM bird height exceeded 100 m, and the in-phase and quadrature signals were below 1 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. Alaska geophysical data for the map were acquired and processed by Fugro Alabasca 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 2006, 2006 College Road, Fairbanks, Alaska, 99709-3707. Published maps are available for viewing or downloading on Alaska Geospatial Data (AGSD) on the AGSD web site (<http://www.dggs.alaska.gov/agsd/>).



The geophysical data were acquired with a RESOLVE Electromagnetic Induction (EMI) System, a total field magnetometer, the EM and magnetic sensors were mounted on a helicopter. The EMI system was used during the survey to record data from a radar altimeter, GPS navigation system, 50/60 Hz monitors and a 1000 Hz data logger. The data were collected using AS350B-2 and AS350B-3 Squirrel helicopters at a mean terrain clearance of 200 feet. The survey was conducted at a speed of 100 knots, with a spacing of a quarter of a mile. The lines were spaced at a peak-to-peak distance of 1 mile at intervals of approximately 3 miles.

An Ashtech GG24 NAVSTAR / GLONASS Global Positioning System was used for navigation. The system was used to provide a constant real-time position post-flight differential positioning to a relative accuracy of better than 5 m. Flight path data were collected using a Garmin 495 GPS receiver (UTM zone 6) spherical, 1927 North American datum, WGS 84 datum, 100 Hz, 1000 Hz, 1000 Hz, 1000 Hz, constant of 0 and an east constant of 500,000. Positional accuracy of the presented data is better than 5 m.



PARTS OF MT. HAYES QUADRANGLE

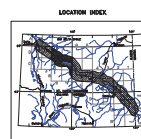
by
Laurel E. Burns, Pugh Adams Survey Corp., and Steven Expedition Management Corp.



DESCRIPTIVE NOTES

The geophysical data were acquired with a RESOLVE EarthImager 3000 system. The Solinas used a 100-magnetometer, the EM and magnetic sensors were placed at a height of 10 m above the ground. The data were recorded data from a raster altimeter, GPS navigation system, DG/RSI barometers and a digital compass. The system was configured with an AS3608-2 and AS3609-3 3-beam laser interferometer at a raster height, elevation of 20 m from the ground along NW-SW (355°) survey flight lines with a spacing of one quarter of a circle. The area covered by the perimeter of the flight lines is 10 m at intervals of approximately 3 miles.

An Ashtech GG24 NAVSTAR / GLOMAG Globalstar GPS receiver was used to track the position of the helicopter position was derived every 0.5 seconds and the position of the helicopter was recorded every 0.5 seconds. The helicopter was flown at a relative altitude of better than 2 m, flight path altitude was 100 m, and the flight path was 100 m (about 6 m) across. The flight path was 100 m (about 6 m) across, 1927 north and 1927 south of a central meridian (CM) of 142° 0' north and 142° 0' south. The flight path was 100 m (about 6 m) across, 1927 north and 1927 south of a central meridian (CM) of 142° 0' north and 142° 0' south. The flight path was 100 m (about 6 m) across, 1927 north and 1927 south of a central meridian (CM) of 142° 0' north and 142° 0' south.



SURVEY HISTORY

SURVEY HISTORY

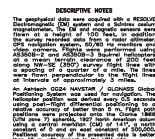
This map has been compiled and drawn under contract between the State of Alaska, Department of Natural Resources, Office of Geological & Geophysical Surveys (OGGS), and Stevens Exploration Management Corp. Airborne geophysical data for the new area were acquired and processed by Stevens Airborne Surveys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

This map and other products from this survey are available by mail order or in person from 2005, 3354 College Road, Fairbanks, Alaska, 99709-3707. Published maps are also available for viewing or downloading at the Alaskan Place ("xpl") our Web site AlaskanPlace.com.

RESISTIVITY

The RESOLVE EM system measured before and after the commencing of the acid frequency. One vertical coil-pair operated at 3300 Hz while five horizontal coil-pair coils operated at 4000, 1800, 1600, 1200, and 1400 Hz. EM data were recorded at 0.5 second intervals. The EM system response to bedrock conductors, conductive overburden, and cultural sources. Apparent resistivity is generated from the induced voltage and current of the explorer coil. 1800 Hz using the pseudo-layer half space model. The data were interpolated onto a regular 80 m grid using a modified Adams (1970) technique.

RESISTIVITY ALTITUDE LIMITS



Map of the study area showing the location of the study area (SOLE 183,300) and the distance scale in kilometers (0 to 5).

by
Laurel E. Burns, Page Abrams-Savage Corp., and Steven Explosion Management Corp.

RESISTIVITY

THE RESISTIVE EM system measured impedance and quadrature components at six frequencies. One vertical coil pair coil-pair operated at 3300 Hz while five horizontal coil-pair coil-pairs operated at 400, 1800, 820, 400, and 200 Hz. The EM system responded to bedrock conductors, conductive overburden, and cultural structures. Apparent resistivity is generated from the impedance and quadrature components of the coil-pairs at 1800 Hz using the pseudo-layer half space model. The data were interpolated onto a regular 80 m grid using a modified Adams (1970) technique.

ALMA, H. J. R. 1970. A new method of interpretation and search using the resistive EM system. *Geophysics* 35: 101-110.

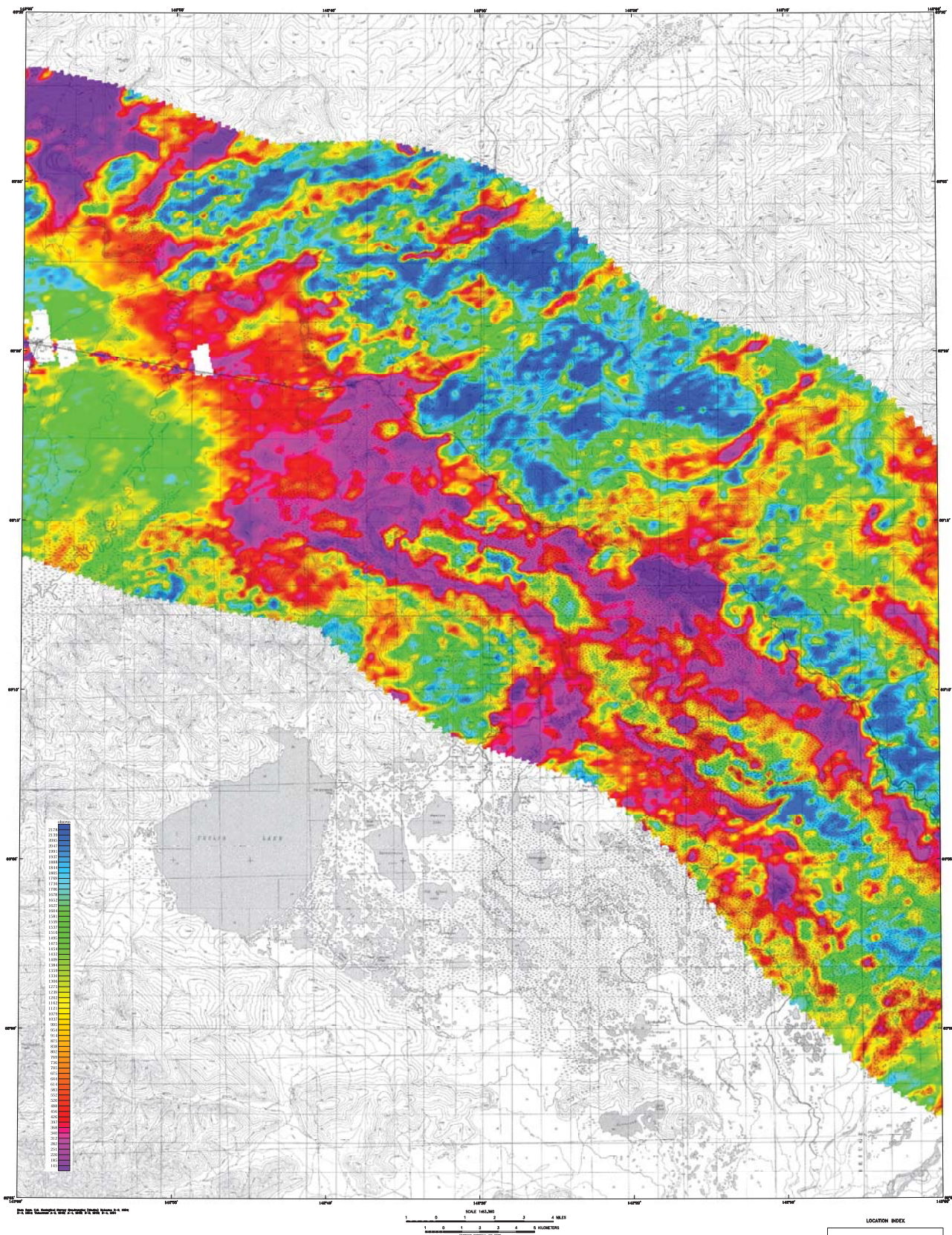
RESISTIVITY ALTITUDE LIMITS

In areas where the EM bird height exceeded 100 m and the in-phase and quadrature signals were below ppr, the resistivity was not calculated and the grid blank. This avoids meaningless resistivity calculations due to small signals in areas where the helicopter is

SURVEY HISTORY

This map has been compiled and drawn under contract between the State of Alaska, Department of Natural Resources, Division of Geological & Geophysical Survey (DGGS), and Shereff Exploration & Management, Corp. (SEM). The map is based on the data that was acquired and processed by Fugro Airborne Survey Corp. In late 2006 and early 2008.

This map and other products from this survey are available by mail, order or in person. For more information, contact: Doug Hays, 20000, 31st Avenue, Delta, Alaska 99006, 907-463-2222. Fax: 907-463-2223. Maps are also available for viewing or downloading on Adobe Acrobat File (.pdf) on our Web site: <http://www.fugro.com>



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

PARTS OF NABESNA and TANACROSS QUADRANGLES

Lance H. Burns, Pioneer Alaska Survey Corp., and Stevens Geophysical Management Corp.

RESISTIVITY

The RESISTIVITY data were measured using a quadrature component of an inductive coil system. The system consisted of a 1000 Hz AC current source, a 1000 Hz inductive coil, and a 1000 Hz inductive coil. The data were measured using a 1000 Hz AC current source, a 1000 Hz inductive coil, and a 1000 Hz inductive coil. The data were measured using a 1000 Hz AC current source, a 1000 Hz inductive coil, and a 1000 Hz inductive coil.

RESISTIVITY ALTITUDE LIMITS

The resistivity altitude limits were determined using a 1000 Hz AC current source, a 1000 Hz inductive coil, and a 1000 Hz inductive coil. The data were measured using a 1000 Hz AC current source, a 1000 Hz inductive coil, and a 1000 Hz inductive coil.

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 (DGGGS), and Stevens Geophysical Management Corp. (SGMC). The data were measured using a 1000 Hz AC current source, a 1000 Hz inductive coil, and a 1000 Hz inductive coil.



DESCRIPTIVE NOTES

The geophysical data were collected with a RESISTIVITY SYSTEM (RS) system and a RESISTIVITY SYSTEM (RS) system. The data were measured using a 1000 Hz AC current source, a 1000 Hz inductive coil, and a 1000 Hz inductive coil. The data were measured using a 1000 Hz AC current source, a 1000 Hz inductive coil, and a 1000 Hz inductive coil.



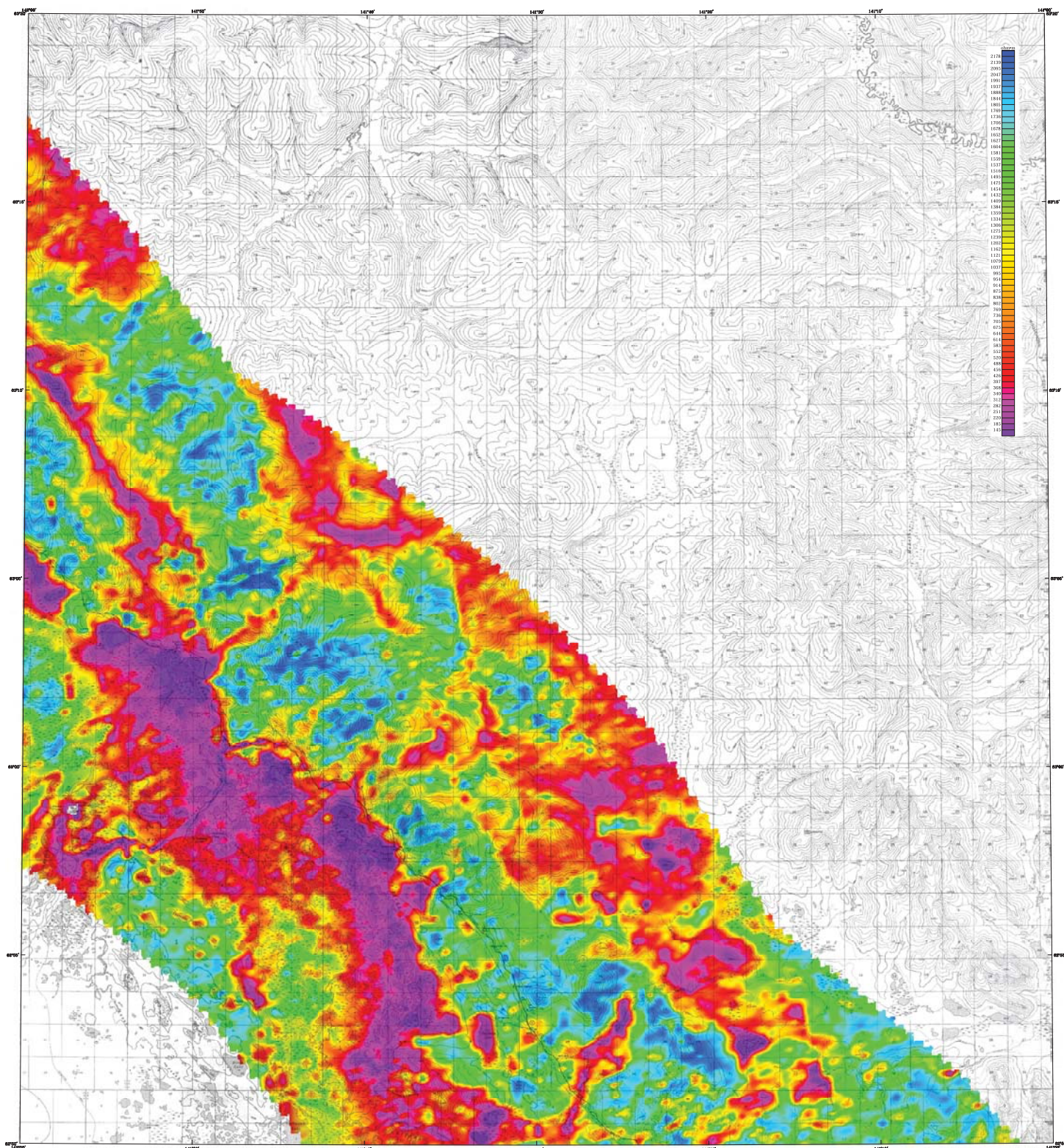


FIG. 206. 1800 HZ COPLANAR APPARENT RESISTIVITY, 1:50,000

SCALE 1:50,000
1 2 3 4 MILES
1 2 3 4 KILOMETERS

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

PARTS OF NABESNA and TANACROSS QUADRANGLES

by
Lauri E. Burn, Fugro Alaska Survey Corp., and Sevens Exploration Management Corp.
2006

RESISTIVITY

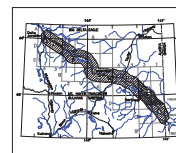
The RESOLVE EM system measured in-phase and quadrature components at six frequencies. One vertical resistivity component was measured at 1800 Hz using the coplanar coil system. The EM data were sampled at 0.1 second intervals. The EM system response to magnetic conductors, conductive overburden, and cultural sources. Apparent resistivity is generated from the 1800 Hz using the pseudo-layer half space model. The data were interpolated onto a regular 50 m grid using a modified Akima (1970) technique.

Since 1970, a new series of magnetic and gravity data has been collected in the area of the highway corridor.

RESISTIVITY ALTITUDE LIMITS

In areas where the EM bird height exceeded 100 m, and the in-phase and quadrature signals were below 2 percent, the resistivity was not calculated and the grid is blank. This avoids inappropriate resistivity calculations due to aerial signals in areas where the helicopter was 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 (DGGGS), and Sevens Exploration Management Corp. (SEMS). The data were collected by Fugro Alaska Survey Corp. in the 2000 and 2001.

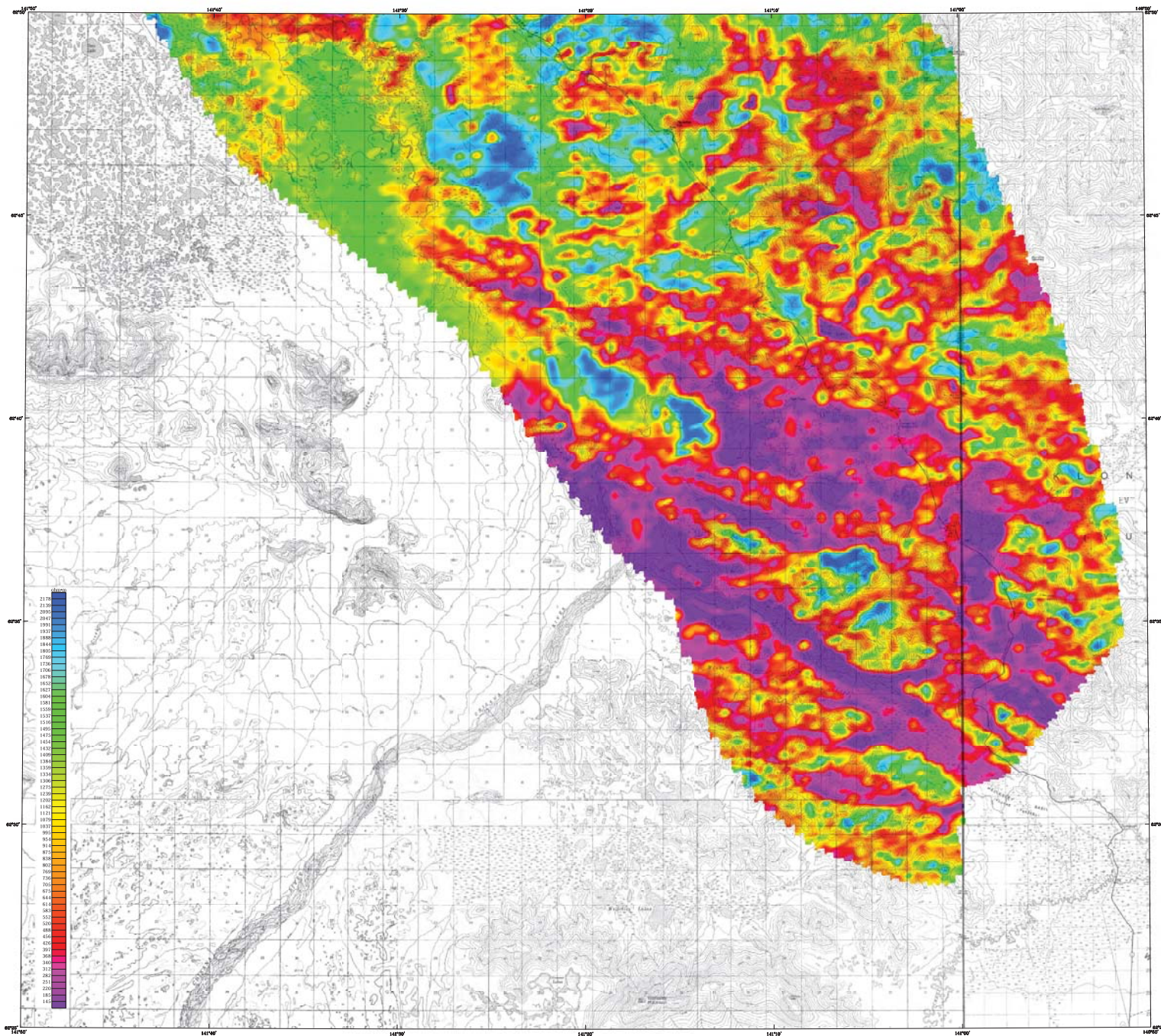
This map and other products from this survey are available for use under a Creative Commons Attribution-NonCommercial-ShareAlike license. The data were collected by Fugro Alaska Survey Corp. in the 2000 and 2001.



DESCRIPTIVE NOTES

The geophysical data were collected with a RESOLVE EM system. The EM system was flown at a height of 100 feet. In addition, the survey recorded data from a total station, a GPS, and a digital voice recorder. The data were collected in the 2000 and 2001.

An Ashbach 0024 NAVSTAR / GLONASS Global Positioning System was used for navigation. The helicopter position was derived every 0.5 seconds using post-flight differential positioning. The positions were projected onto the Clarke 1866 UTM zone 17N datum. The data were collected in the 2000 and 2001.



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

PARTS OF NABESNA QUADRANGLE and CANADA 118K

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

DESCRIPTIVE NOTES

The geophysical data were collected with a RESOLVE Electromagnetic (EM) system and a Schriber, ceum magnetometer. The EM and magnetic data were flown at a height of 100 feet. In addition, the survey recorded data from a radio altimeter, GPS motion system, 50/60 Hz monitor and video camera. Flights were performed using AS300B-3 and AS300B-3.5 Squire helicopters at a constant altitude of 200 feet along the 180° survey flight line with a 500-foot or 100-foot offset. The flight lines were flown perpendicular to the flight lines at intervals of approximately 0.5 miles.

An Ahtech G224 NAVSTAR / GLONASS Global Positioning System was used for navigation. The helicopter position was derived every 0.5 seconds using real-time differential positioning. In a real-time mode, the data were projected onto the Canada 118K (UTM zone 17) and the Alaska 118K (UTM zone 17) sheets. The data were projected using a central meridian (CM) at 141° 30' north constant of 0 and an east constant of 600,000. The horizontal accuracy of the projected data is better than 10 m, with respect to the UTM grid.



RESISTIVITY

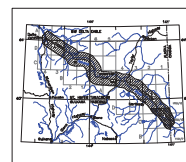
The RESOLVE EM system measured in-phase and quadrature components of the magnetic field. One full cycle of the magnetic field was sampled at 1000 Hz. The data were sampled at 40,000 and 140,000 Hz. EM data were sampled at 0.1 second intervals. The EM system responds to bedrock, conductive overburden, and cultural sources. Apparent resistivity is derived from the in-phase and quadrature components of the magnetic field using a modified Alumbaugh (1970) technique.

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RESISTIVITY ALTITUDE LIMITS

In areas where the EM bird height exceeded 100 ft, the in-phase and quadrature signals were below 1 ppm. The resistivity was not calculated and the grid is blank. This avoids erroneous resistivity calculations due to small signals in areas where the helicopter flew higher to avoid cultural objects or for safety reasons.

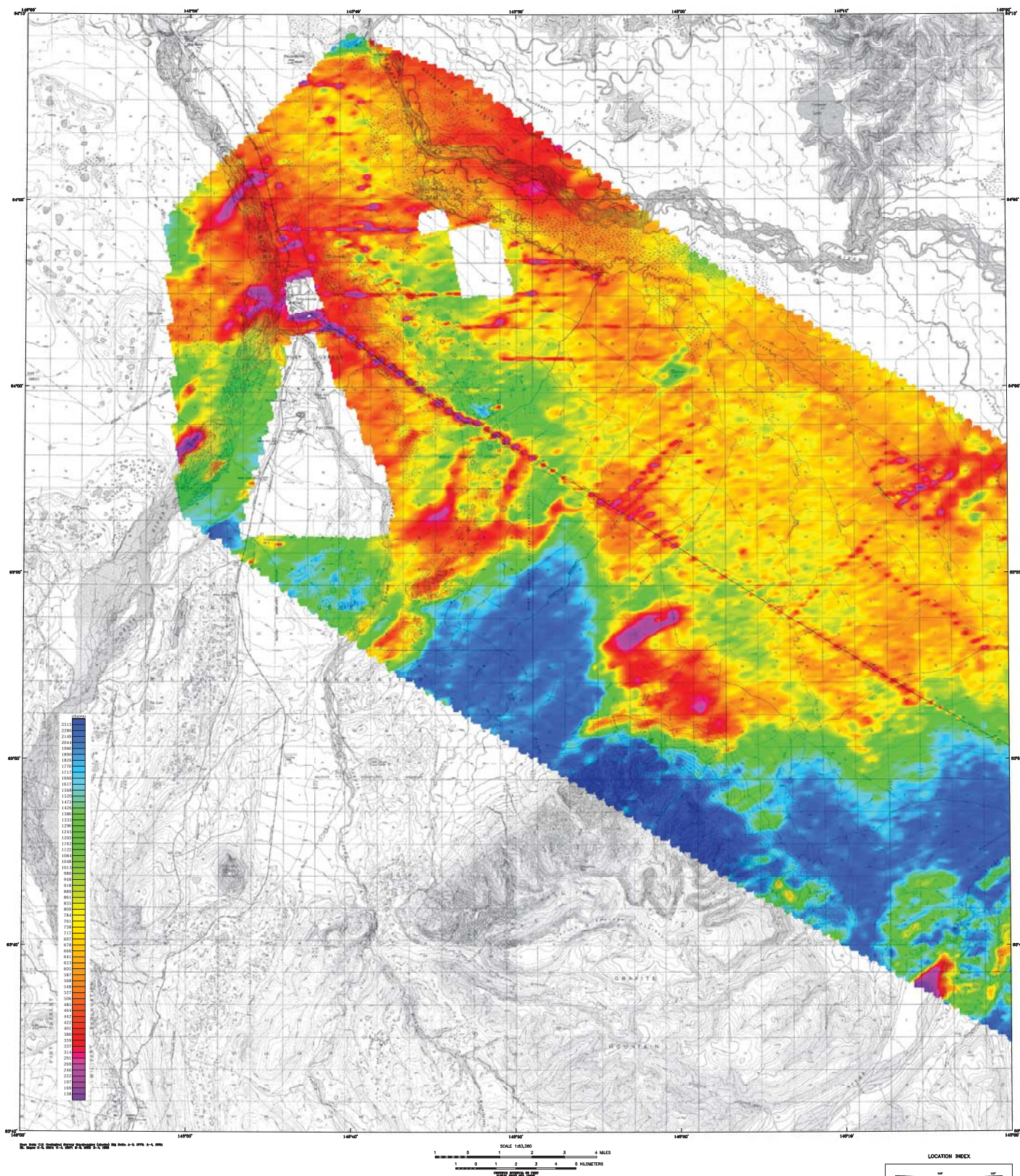
LOCATION INDEX



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 (DGGGS), and Stevens Exploration Management Corp. Alaska geophysical data for the map were collected and processed by Fugro Alaska Surveys Corp. in late 2005 and early 2006.

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

PARTS OF BIG DELTA and MT. HAYES QUADRANGLES

by
Leland H. Burns, Fugro Airborne Surveys Corp. and Stevens Exploration Management Corp.
2006

DESCRIPTIVE NOTES

The geophysical data were collected with a RESOLVE Electromagnetic (EM) system and a Sonotek cesium magnetometer. The EM and magnetic surveys were flown at a height of 100 feet, in addition the survey recorded data from a water altimeter, real-time pressure, 10/20 Hz resistance and conductance, 10/20 Hz resistivity and conductance, and 10/20 Hz resistivity and conductance. The EM system responds to bedrock, conductive overburden, and cultural sources. Apparent resistivity is derived from the 3300 Hz using the pseudo-natural log scale method. The data were interpolated onto a regular 40 m grid using a modified Akima (1970) technique.

An Ashbach 0024 NAVSTAR / GLOMAR Global Positioning System was used for navigation. The helicopter position was derived every 0.5 seconds using post-flight differential positioning to a position was projected onto the Clarke 1866 UTM zone 43 between 1977 North American datum using a control meridian (CM) of 147° a north coordinate of 0 and an east coordinate of 500,000. The horizontal accuracy of the collected data is better than 10 m, with respect to the UTM grid.



RESISTIVITY

The RESOLVE EM system measured in-phase and quadrature components at 30 frequencies. One vertical channel coil-set operated at 3300 Hz while the horizontal coil-set operated at 400, 1600, 6300, 25000 and 100000 Hz. EM data were sampled at 0.1 second intervals. The EM system responds to bedrock, conductive overburden, and cultural sources. Apparent resistivity is derived from the 3300 Hz using the pseudo-natural log scale method. The data were interpolated onto a regular 40 m grid using a modified Akima (1970) technique.

www.fugro.com, a new series of helicopter and ground data files
Copyright 2006, Fugro Airborne Surveys Corp., Fugro Airborne Surveys Corp., Fugro Airborne Surveys Corp.

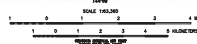
RESISTIVITY ALTITUDE LIMITS

In areas where the EM bird height exceeded 100 m, and the in-phase and quadrature signals were below 2 ppm, the resistivity was not calculated and the grid is blank. This could result in missing resistivity data due to EM bird height or terrain where the helicopter was 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 Geology & Geophysical Surveys (DGGGS), and Stevens Exploration Management Corp. (SEM). The data were collected 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 DGGGS, 2304 Columbia Road, Fairbanks, Alaska 99701-2700. Contact DGGGS for more information or to request a copy of the data. The data are also available for viewing or downloading on Fugro's website (http://www.fugro.com/pub/). (http://www.dgggs.com/active/csls/pub/).



PARTS OF MT. HAYES QUADRANGLE

by
Laurel E. Burns, Pugh Adams Survey Data, and Steven Expedition Management Corp.

An Ashtech GG24 NAVSTAR / GLONASS Global Positioning System was used for navigation. The helicopter position was defined 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 Corvus 1980 (UTM zone 6) spheroid, 1927 North American datum using a control meridian (CM) of 147°, a north constant of 0 and an east constant of 505,000. Positional accuracy of the presented data is better than 10 m, with respect to the UTM grid.

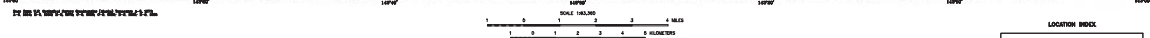
RESISTIVITY

The RESOLVE EM system measured bipole and quadrupole components at six frequencies. One vertical coilset (coil-pair oriented at 3300 Hz while five horizontal coilsets (coil-pairs) oriented at 400, 1800, 6200, 10,000 and 140,000 Hz. EM data were acquired at 0.5 second intervals. The EM system responds to bedrock conductance, conductive overburden, and cultural sources. Apparent resistivity is generated from the quadrupole and quadrupole of the conductance at 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.

RESISTIVITY ALTITUDE LIMITS

SURVEY HISTORY

SURVEY HISTORY
This map has been compiled and drawn under contract between the State of Alaska, Department of Natural Resources, Division of Geologist & Geophysical Surveys (DGG) and State of Alaska, Department of Fish & Game, 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 request from Fugro Airborne Surveys, 3384 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.fugroairbornesurveys.com/pubs/>).



PARTS OF TANACROSS QUADRANGLE

by
Laural E. Burns, Page Atkins-Savage Corp., and Steven E. Johnson, Johnson Management Corp.

The geophysical data were acquired with the RESOLVE Ditchamagnetic (DM) system and a Sintered calcium magnetometer. The DM and magnetic sensors were mounted on a motorized vehicle that was used to conduct the survey recorded data from a raster azimuth. GPS navigation system, SG600-Hi modules and AS3608-2 and AS3608-3 Sauerlin heliostats at a median terrain clearance of 200 feet. The system was configured to collect data at a spacing of a quarter of a mile. The lines were spaced at 100 feet and the survey was conducted at intervals of approximately 3 miles.

An Ashtech GG24 NAVSTAR / GLONASS Global Positioning System was used for navigation. The heliostats position was defined every 0.5 seconds. The system was configured to collect data at a median terrain clearance of 200 feet. The system was configured to collect data at a spacing of a quarter of a mile. The lines were spaced at 100 feet and the survey was conducted at intervals of approximately 3 miles.

The RESOLVE EM system measured lipase and acetylcholinesterase activity in six from four species. One vertical column of eight capillary tubes, 3300 Hz white, five horizontal capillary coplanar coil-poles operated at 400, 1800, 8200, 40,000 and 140,000 Hz. EM data were sampled at 0.2 second intervals. The EM system responds to bedrock and soil. Apparent resistivity is generated from the in-phase and quadrature component of the coil. 3300 Hz using the pseudo-layer half space model. The data were processed using a computer 80 x 80 grid using a modified Blake (1970) technique.

In areas where the EM bird height exceeded 100 m and the inphase and quadrature signals were below 4 ppm, the realivity was not calculated and the grid blank. This avoids meaningless realivity calculations due to small signals in areas where the helicopter is

This map has been compiled and drawn under contract from the State of Alaska, Department of Natural Resources, Division of Geology & Geophysics (DGGG), and Slavnova Engineering, a subsidiary of C. J. Slavnova, Inc. Geophysical data for the area was acquired and processed by Fugro Airborne Survey Corp. in late 2000 and early 2001.

This map and other products from this survey are available by mail order or in person from DGGG, 3000 College Road, Fairbanks, Alaska, 99709-2302. Public maps are also available for viewing or download on Adobe Acrobat files (.pdf) on our Web site.



PARTS OF NABESNA and TANACROSS QUADRANGLES

by
Laurel E. Burns, Fugro Alderson Surveys Corp., and Steven Exploration Management Corp.

DESCRIPTIVE NOTES

The geophysical data were acquired with a RESOLVE (Daeletronics) system. The system consists of a magnetometer, the EM and magnetic sensors were flown at a height of 100 feet. In addition, the system includes a GPS receiver, a real-time GPS navigation system, 50/60 Hz monitors and a 100 Hz real-time clock. The system is configured with AS3508-2 and AS3508-3 Squirrel helicopter engines. The system is mounted on a Robinson R44 helicopter along NA-357 (350°) survey flight lines which are spaced 1000 feet apart. The flight lines were flown perpendicular to the flight lines at intervals of approximately 3 miles.

On 22 May 2002, NAVSTAR GPS/GNSS Global Positioning System (GPS) data were collected. The helicopter position was derived every 0.5 seconds and the heading was derived every 0.2 seconds. The relative accuracy of better than 5 m. flight path accuracy was achieved. The flight lines were flown along UTM zone 7 sphereed, 102° North American datum. The flight lines were flown at a constant of 0 and on an east constant of 500,000. Positional accuracy of the presented data is better than 5 m.

RESISTIVITY

The RESOLVE EM system measured in-phase and quadrature components of the EM field at six frequencies. The vertical coil pair was oriented at 3300 Hz while five horizontal coil-pairs operated at 400, 1800, 8200, 40500 and 140500 Hz. EM data were sampled at 0.1 second intervals. The EM system responds to bedrock conductors, conductive overburden, and cultural structures. Apparent resistivity is generated from the in-phase and quadrature component of the observed EM field using a modified Ainslie (1970) model. The data were interpolated onto a regular 80 m grid using a modified Ainslie (1970) technique.

RESISTIVITY ALTITUDE LIMITS

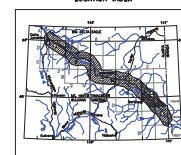
RESISTIVITY ALTITUDE LIMITS
In areas where the EM blind height exceeded 100 m, and the inphase and quadrature signals were below 3 ppm, the resistivity was not calculated and the grid is blank. This avoids meaningless resistivity calculations due to small signals in areas where the helicopter flew higher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

SURVEY HISTORY

SURVEY HISTORY

This map has been compiled and drawn under contract between the State of Alaska, Department of Natural Resources, Division of Geospatial & Geographical Surveys (DGOSS), and Silver Eagle Survey & Mapping Services Corp. Original geospatial data for this 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 by person from DGOSS, 3324 College Road, Fairbanks, Alaska, 99709-3707. Published versions of this map are also available for purchase from Adobe Acrobat Files ("pdf") on our Web site (<http://www.dgoss.dnr.alaska.us/pubs/>).



PARTS OF NABESNA and TANACROSS QUADRANGLES

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

RESISTIVITY

The RESOLVE EM system measured inphase and quadrature components at six frequencies. One vertical coaxial coil-pair operated at 300 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 components of the coil pair. 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.

RESISTIVITY ALTITUDE LIMITS
In areas where the EM bird height exceeded 100 m and the inphase and quadrature signals were below 1 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

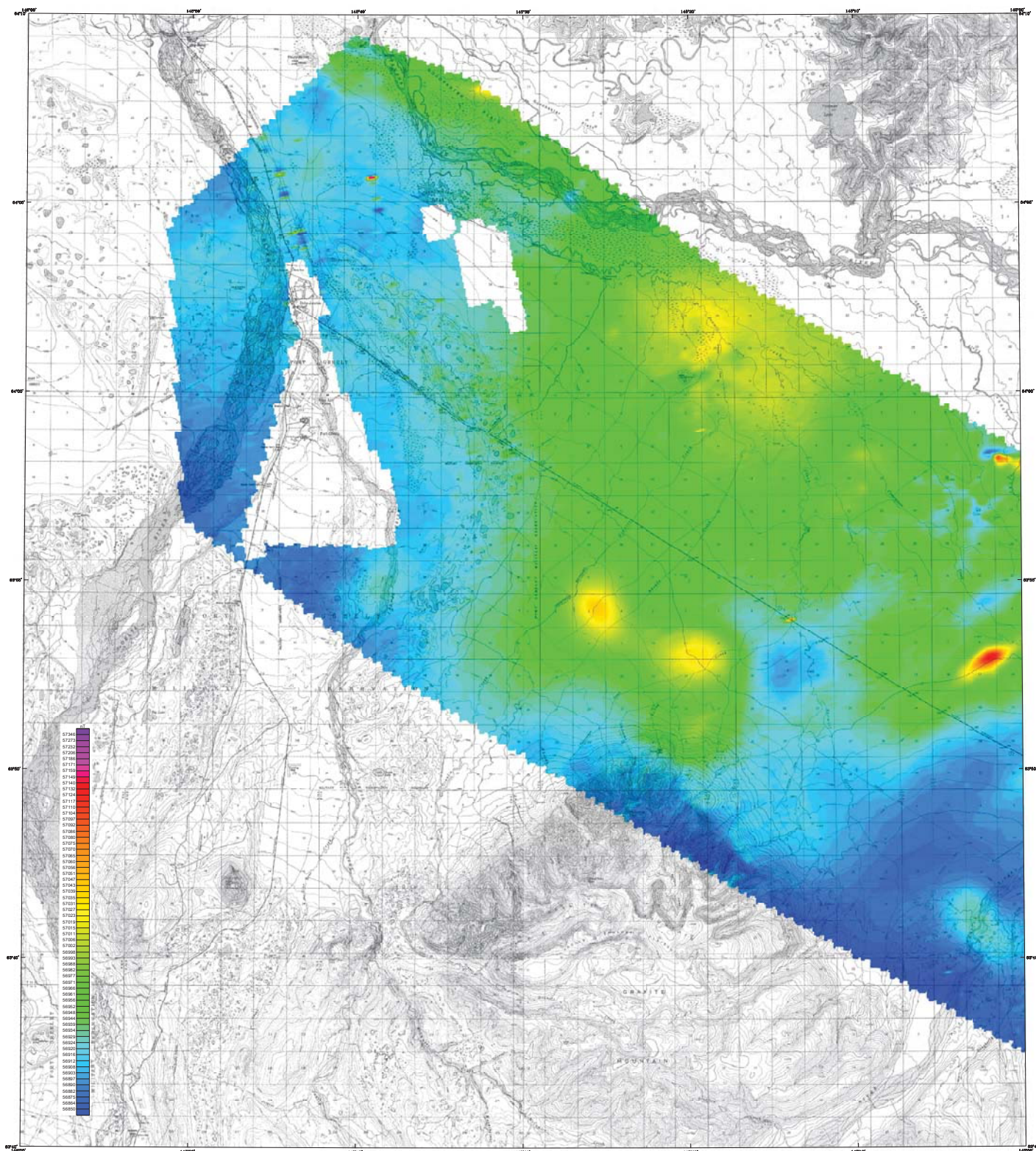
This map has been compiled and drawn under contract between the State of Alaska, Department of Natural Resources, Division of Geological & Geophysical Surveys (DGGS), and Stevens Exploration Management Corporation. Airborne geophysics data were collected by Stevens and acquired and processed by Fugro Airborne Surveying 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, 335 College Road, Fairbanks, Alaska, 99709-3707. Publications are also available in electronic format as PDF files using Adobe Acrobat files (.pdf) on our Web site (<http://www.dgnm.dnr.state.ak.us/pubs/>).

DESCRIPTIVE NOTES

[illegible]





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

PARTS OF BIG DELTA AND MT. HAYES QUADRANGLES

by
Leland H. Burns, Fugro Airborne Survey Corp. and Stevens Exploration Management Corp.
2006

TOTAL MAGNETIC FIELD

The magnetic total field contours were produced using digitally recorded data from a Sotters vector 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 IGR gradient, 2005, applied to November 2005) using altimeter adjusted IGR, (3) leveled to the tie line data, and (4) interpolated into a regular 50 m grid using a modified Akima (1978) technique.

Using the 2005 IGR model of magnetic and crustal source fields, the magnetic total field values can be seen on digital publication GPR 2006-6.

COLOR BAR HISTOGRAM

Approximate 95% of the entire Alaska Highway Corridor aeromagnetic data is within the range shown by the color bar. Data values actually range from 56705 nT (blue) to 58000 nT (red). Magnetic field values can be seen on digital publication GPR 2006-6.

DESCRIPTIVE NOTES

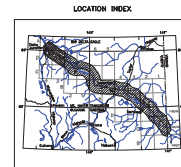
The aeromagnetic data were collected with a RESOLVE Electromagnetic (EM) system and a Sotters vector magnetometer. The EM and magnetic sensors were flown at a height of 100 feet, in addition the wing-mounted data (WMD) is meter altimeter. The magnetic sensors were 10/20 Hz measure and under-sampled. Flights were performed using GEOSAR-2 and GEOSAR-3 Sotters helicopters at a mean terrain clearance of 200 feet above the 2002 survey flight line with a heading of 180 degrees. The lines were flown perpendicular to the flight lines at intervals of approximately 3 miles.

An Ashbach 0024 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 position was projected onto the Clarke 1866 UTM zone 43 system, 1973 North American datum using a control meridian (CM) of 147° 40' north, longitude of 0 and an east constant of 500,000. Horizontal accuracy of the measured data is better than 10 m, with respect to the UTM grid.

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. Aeromagnetic data for the line used were acquired and processed by Fugro Airborne Survey Corp. in late 2005 and early 2006.

This map and other products from this survey are available by mail order or by access from 2005-2006 CD-ROM. Electronic maps 2005-2006 CD-ROM make the data available for viewing or downloading on Adobe Acrobat files (.pdf) or on a Web site (<http://www.dggs.alaska.gov/pubs/>).





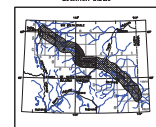
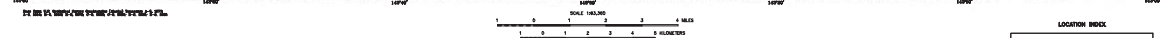
PARTS OF MT. HAYES QUADRANGLE
by
LESLIE E. BURN, PAUL ALLEN SURVEY CORP., and ROBERT EUSTON MANAGEMENT CORP.

[illegible]

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

COLOR BAR HISTOGRAM
Approximately 98% of the entire Aloha Highway Corridor
aeromagnetic data lie within the range displayed on the
color bar. Data values actually range from 58108 mT
(dark blue) to about 60199 mT (magenta). Actual values

SURVEY HISTORY
This map has been compiled and drawn under contract between the National 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 from the National Library of Medicine, 3334 College Road, Baltimore, Anns, 97070-3707. Published maps are also available for viewing or downloading as Adobe Acrobat Files (*.pdf) on our Web site.



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 Explorations Management Corp. Airborne geophysical data for the area were acquired and processed by Fugro Airborne Survey Corp. In late 2006 and early 2008.

This map and other products from this survey are available by mail order or in person from DGGS, 3304 College Road, Fairbanks, Alaska, 99709-3701. Publication and distribution information for this map is available on Adobe Acrobat "File" ("pdf") menu item with the <http://www.dggs.alaska.gov/data/in/cadastral/>.



PARTS OF NABESNA and TANACROSS QUADRANGLES

by
Lowell H. Burns, Fugro Aishome Surveys Corp., and Steven Explosion Management Corp.

The magnetic total field contours were produced using digitally recorded data from a Scintrex cesium 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 offcenter adjusted IGRF, (3) leveled to the tie line data, and (4) interpolated onto a regular 80 m grid using a modified Aldina (1970) technique.

Kilne, H., 1970. A new method of interpolation and smooth curve fitting based on local procedures. *Journal of the Association of Computational Mathematicians*, 17, no. 4, p. 389-397.

Approximately 98% of the entire Alaska Highway Corridor aeromagnetic data is 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.

This map has been compiled and drawn under contract between the State of Alaska, Department of Natural Resources, Division of Geological & Geophysical Investigations (DG&GI), and Stevens Exploration Management. Airborne geophysical data for the new area 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 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2



PARTS OF NABESNA and TANACROSS QUADRANGLES
by
Laurel E. Burns, Fugro Airborne Surveys Corp., and Stevens Exploration Management Corp.

TOTAL MAGNETIC FIELD

The magnetic total field contours were produced using digitally recorded data from a Sinterex 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 *omigrat* adjusted IGRF, (3) leveled to the tie line data, and 4) interpolated onto a regular 80 m grid using a modified Akima (1970) technique.

COLOR BAR HISTOGRAM

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 and Geophysical Surveys (DGGS) and Stevens & Sons Geospatial 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 purchase from the Alaska Division of Geological and Geophysical Surveys, Alaska Department of Natural Resources, 1400 W. 4th Avenue, Anchorage, Alaska 99501. For more information on Adobe Acrobat files (.pdf) on our Web site (<http://www.dggs.state.ak.us/pubs/>).





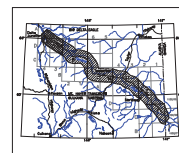
PARTS OF BIG DELTA and MT. HAYES QUADRANGLES

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

FIRST VERTICAL DERIVATIVE OF
THE MAGNETIC FIELD

The magnetic total field contours were produced using digitally recorded data from a Scripps caspette magnetometer with a sampling rate 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 magnetic variation using the 1990 declination (updated to November 2005) using computer adjusted (IGRF, (3) leveled to the tie line data, and 4) interpolated onto a regular 60 m grid using a bivariate spline. A vertical derivative grid was calculated from the processed total magnetic field grid using a FFT base frequency of 0.0001 Hz. The vertical derivative grid provides better definition and resolution of near-surface magnetic units and helps to identify the boundaries of features that may not be evident on the total field data.

LOCATION INDEX



SURVEY HISTORY

SURVEY REPORT

This map has been compiled and drawn under contract between the State of Alaska, Department of Natural Resources, Division of Geological and 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/pub/>).

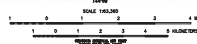
DESCRIPTIVE NOTES

The geophysical data were acquired with a RESOLVE Diagraphic System, a portable, rugged, and compact magnetometer. The EM and magnetic sensors were mounted on a flight rig that was suspended from the magnetometer recorder data from a radar altimeter, GPS navigation system, 50/60 Hz monitors and a 1000 Hz data logger. The flight rig was equipped with AS350B-2 and AS350B-3 squirrel helicopters and was flown in a series of parallel tracks, generally along NW-SE (350°) survey flight lines with a spacing of a quarter of a mile. The theoretical resolution of the system is 100 m, but the resolution of intervals of approximately 3 miles.

An Aachtach G224 NAVSTAR / GLONASS Global Positioning System was used for navigation. The system was configured to provide real-time position using post-flight differential positioning. On-board GPS receivers were used to determine the aircraft's position. The aircraft's position was projected onto the Clarke 1866 UTM zone 6 (spatial resolution of 100 m) and was constant of 0 and an east constant of 500,000. The magnetic declination at the time of the survey was 10 m, with respect to the UTM grid.

COLOR BAR HISTOGRAM

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.



PARTS OF MT. HAYES QUADRANGLE

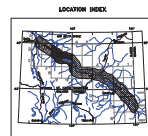
by
Laurel E. Barr, Page Adams Surveys Corp., and Steven Exploration Management Corp.

FIRST VERTICAL DERIVATIVE
THE MAGNETIC FIELD

The magnetic total field contours were produced using digital recorded data from a Schöberl caesium CS2 magnetometer, with a sampling interval of 0.1 seconds. The magnetic data were (1) corrected for diurnal variations by subtracting the daily mean, (2) corrected for seasonal variations by subtracting the annual mean, (3) corrected for the annual variations (or IGR gradient), 2002, updated to (November 2005) using annual adjusted IGRF, (3) leveled to the sea line datum, and (4) converted to a 100 m grid. The data were then modified using a modified Adami (1970) technique. The first vertical derivative grid was calculated from the processed data using a 100 m grid. The second vertical derivative domain filtering algorithm. The resulting first vertical derivative grid provides better definition and resolution of near-surface magnetic units and highlights any continuity of magnetic units that may not be evident on the total field data.

COLOR BAR HISTOGRAM

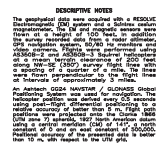
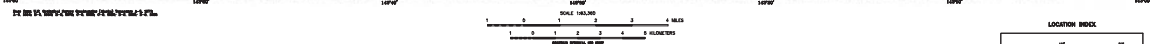
Approximately 88% of the first vertical derivative of the magnetic field for the entire Alaska Highway corridor dataset is within the range displayed on the color bar. Data values actually range from -8.699 nT/m (dark blue) to about 18.835 nT/m (magenta). Actual values can be seen in digital publication GPM 2008-6.



SURVEY HISTORY

This map has been compiled and drawn under contract between the State of Alaska, Department of Natural Resources, Division of Geologic & Geographical Survey (DGGS), and Stevens Exploration Management Corp. Airborne geophysical data for the new area were collected and processed by Fugro Airborne Surveys Corp. in late 2001 and early 2002.

This map and other products from this survey are available by request in hard copy for \$200, \$354 College Road, Fairbanks, Alaska, 99709-3707. Published maps are also available for viewing or downloading at Adobe Acrobat Files ("pdf") on our Web site (<http://www.dggs.state.ak.us/pubs/pubs/>).

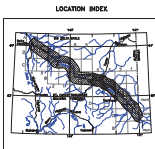


PARTS OF TANACROSS QUADRANGLE

by
Laurel E. Burns, Page Atkins-Savage Corp., and Steven E. Johnson, Johnson Management Corp.

The magnetic total field contours were produced using digitally recorded data from a Searles valley CS-2 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 magnetic variations (IGRF gradient 2005, updated to November 2005) using offshore adjusted IGRF, (3) leveled to the time offset, and (4) interpolated on a regular 80 m grid using a nearest neighbor interpolation. The resulting derivative grid was acquired from the processed total magnetic field grid using a FFT base frequency derivative filter (100 Hz). The resulting vertical derivative grid provides better definition and resolution of near-surface magnetic units and helps to identify local magnetic features that may not be evident on the total field data.





by
Leslie H. Burns, Fugro Altkorne Surveys Corp., and Steven Exploration Management Corp.

COLOR BAR HISTOGRAM

FIRST VERTICAL DERIVATIVE OF THE MAGNETIC FIELD

The magnetic total field contours were produced using digital derivatives of the Schlumberger CSD magnetometer, with a sampling interval of 0.1 seconds. The magnetic data were (1) corrected for diurnal variations, (2) converted from raw recorded base station magnetic data, (3) adjusted for regional variations (or IGRF gradient, 2005), updated for secular variation (IGRF gradient, 2005), (4) leveled to the sea level datum, and (5) modified Alumbaugh (1970) technique. The first vertical derivative was computed using a discrete total magnetic field grid using a FFT base frequency domain filtering algorithm. The resulting partial derivatives were used to compute gradients and resolution of near-surface magnetic units and helps to identify weak magnetic features that may not be evident on the total field data.

Alumbaugh, W., 1970, A new method of calculating and analyzing magnetic anomalies, *Journal of Geophysical Research*, Vol. 75, No. 16, pp. 3868-3872.

SURVEY HISTORY

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

This map and other products from this survey are available by mail from DGGS, P.O. Box 330, College Road, Fairbanks, Alaska, 99709-3707. Publication maps are also available for viewing or download as Adobe Acrobat files (*.pdf) on our Web site (<http://www.dggs.state.ak.us/pubs/>).

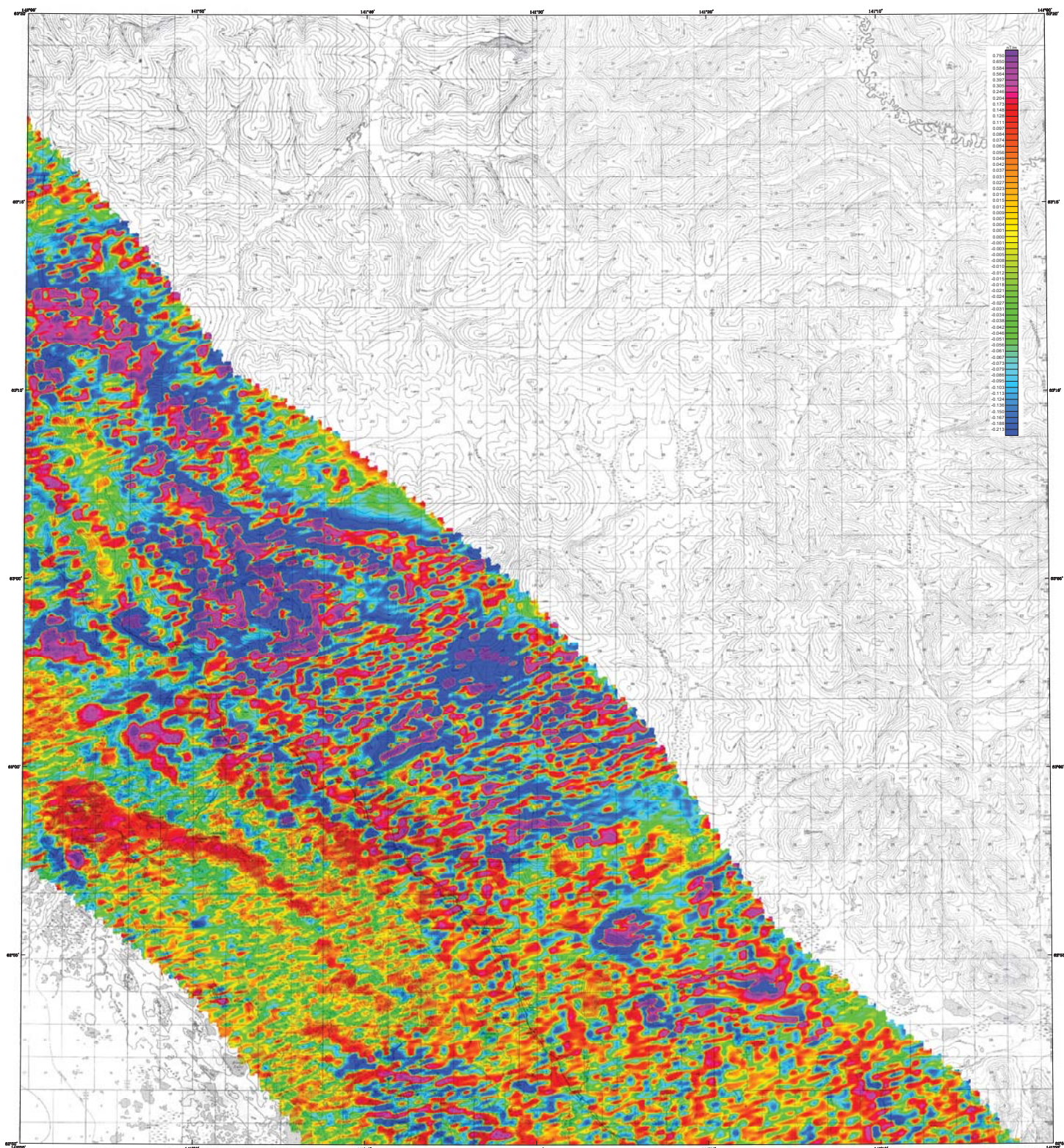


FIG. 206. FIRST VERTICAL DERIVATIVE OF THE MAGNETIC FIELD



DESCRIPTIVE NOTES

The aeromagnetic data were collected with a RESOLVE 3000 magnetometer (CM) and a 300-m, caesium magnetometer. The CM and the 300-m magnetometer were flown at a height of 100 feet, in addition the survey recorded data from a total station. The aeromagnetic data were collected with a RESOLVE 3000 magnetometer (CM) and a 300-m, caesium magnetometer. The CM and the 300-m magnetometer were flown at a height of 100 feet, in addition the survey recorded data from a total station. The aeromagnetic data were collected with a RESOLVE 3000 magnetometer (CM) and a 300-m, caesium magnetometer. The CM and the 300-m magnetometer were flown at a height of 100 feet, in addition the survey recorded data from a total station.



COLOR BAR HISTOGRAM

Approximately 98% of the first vertical derivative of the magnetic field for the entire Alaska Highway corridor dataset is within the range displayed on the color bar. Data values outside range from -0.088 to 0.113 (Gauss) are shown in digital publication GPR 2006-6.

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

PARTS OF NABESNA and TANACROSS QUADRANGLES

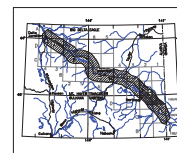
by
Lauri E. Burn, Fugro Alabona Survey Corp., and Stevens Exploration Management Corp.
2006

FIRST VERTICAL DERIVATIVE OF THE MAGNETIC FIELD

The magnetic total field contours were produced using digitally recorded data from a Solacon caesium CM 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), (3) leveled to the tie line data, and (4) interpolated onto a regular 82 m grid using a modified spline (1970) technique. The first vertical derivative grid was calculated from the processed total magnetic field grid using a FFT time 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.

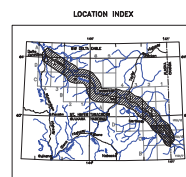
Map is based on a map of the Alaska Highway corridor showing the location of the survey area.

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 (DGGGS), and Stevens Exploration Management Corp. (SEMC). The data were collected and processed by Fugro Alabona Survey Corp. in late 2005 and early 2006. This map and other products from this survey are available by mail order or in person from DGGGS, 2000 West 10th Avenue, Anchorage, Alaska 99501. Further information is also available for viewing or downloading the Alaska Magnetic Field (1:50,000) map data site (<http://www.dgggs.state.ak.us/pub/>).



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.

The magnetic total field contours were produced using digitally recorded data from a Sinterex cesium CS2 magnetometer, with a sampling interval of 0.1 s. The magnetic data were (1) corrected for diurnal variations by subtracting the diurnal variation recorded base station magnetic data, (2) adjusted for regional variations (or IGRF frequency data, 2005, updated to November 2005) using a diameter adjusted IGRF, (3) leveled to the tie line data, and (4) interpolated onto a regular 80 m grid using a thin plate splines (1970) technique. The vertical derivative grid was computed from the processed total magnetic field data 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 hence variability. The magnetic data that may not be evident on the total field data.

SURVEY HISTORY

This map has been compiled and drawn under contract between the State of Alaska, Department of Natural Resources, Division of Geology and Geophysical Survey (DGGS), and the U.S. Geological Survey (USGS). The USGS Airborne geophysical data for the new area were acquired and processed by Fugro Airborne Survey 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, 333 College Road, Fairbanks, Alaska, 99709-3707, Publication and sales information is available by e-mail or on-line at dggs@alaska.gov or on the USGS web site at <http://www.dggs.dnr.state.ak.us/pubs/>.

