# AIRBORNE MAGNETIC GEOPHYSICAL SURVEY OF THE HOLITNA BASIN AREA, ALASKA, DATA COMPILATION

Laurel E. Burns, Abraham M. Emond, SIAL Geosciences, Inc., and On-line Exploration Services, Inc.

**Geophysical Report 2020-13**

2020
STATE OF ALASKA
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF GEOLOGICAL & GEOPHYSICAL SURVEYS

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# AIRBORNE MAGNETIC GEOPHYSICAL SURVEY OF THE HOLITNA BASIN AREA, ALASKA, DATA COMPILATION

Laurel E. burns[1], Abraham M. Emond[1], SIAL Geosciences Inc., and On-line Exploration Services, Inc.

## ABSTRACT

The Holitna airborne magnetic geophysical survey covers the Holitna basin, located in the Sleetemute and Lime Hills quadrangles surrounding the town of Stony River in southwest Alaska. Magnetic data were collected September 8th to October 7th 1997. A total of 13,658 line kilometers were collected covering 9,229.1 square kilometers. Line spacing was 800 meters (m). Data were collected using a fixed wing aircraft with a mean ground clearance of 90 m.

## PURPOSE

These data were collected to assist the state in assessing the hydrocarbon potential of the Holitna basin area. The aeromagnetic data was intended to be interpreted and integrated with available geoscience data.

## 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.

## REFERENCES

Burns, L.E., SIAL Geosciences, Inc., and On-line Exploration Services, Inc., 2008, Linedata and gridded data for the aeromagnetic survey of the Holitna basin area, western Alaska: Parts of the Lime Hills and Sleetmute quadrangles: Alaska Division of Geological & Geophysical Surveys Geophysical Report 2008-4, 1 DVD. http://doi.org/10.14509/16681

Burns, L.E., SIAL Geosciences, Inc., and On-line Exploration Services, Inc., 2008, Linedata and gridded data for the aeromagnetic survey of the Holitna basin area, western Alaska: Parts of the Lime Hills and Sleetmute quadrangles: Alaska Division of Geological & Geophysical Surveys Geophysical Report 2008-4, 1 DVD. http://doi.org/10.14509/16681

DGGS Staff, On-line Exploration Services, Inc., and SIAL Geosciences, Inc., 1998, Total field magnetics of the Holitna basin area, western Alaska: Alaska Division of Geological & Geophysical Surveys Report of Investigation 98-14, 2 sheets, scale 1:125,000. http://doi.org/10.14509/2589

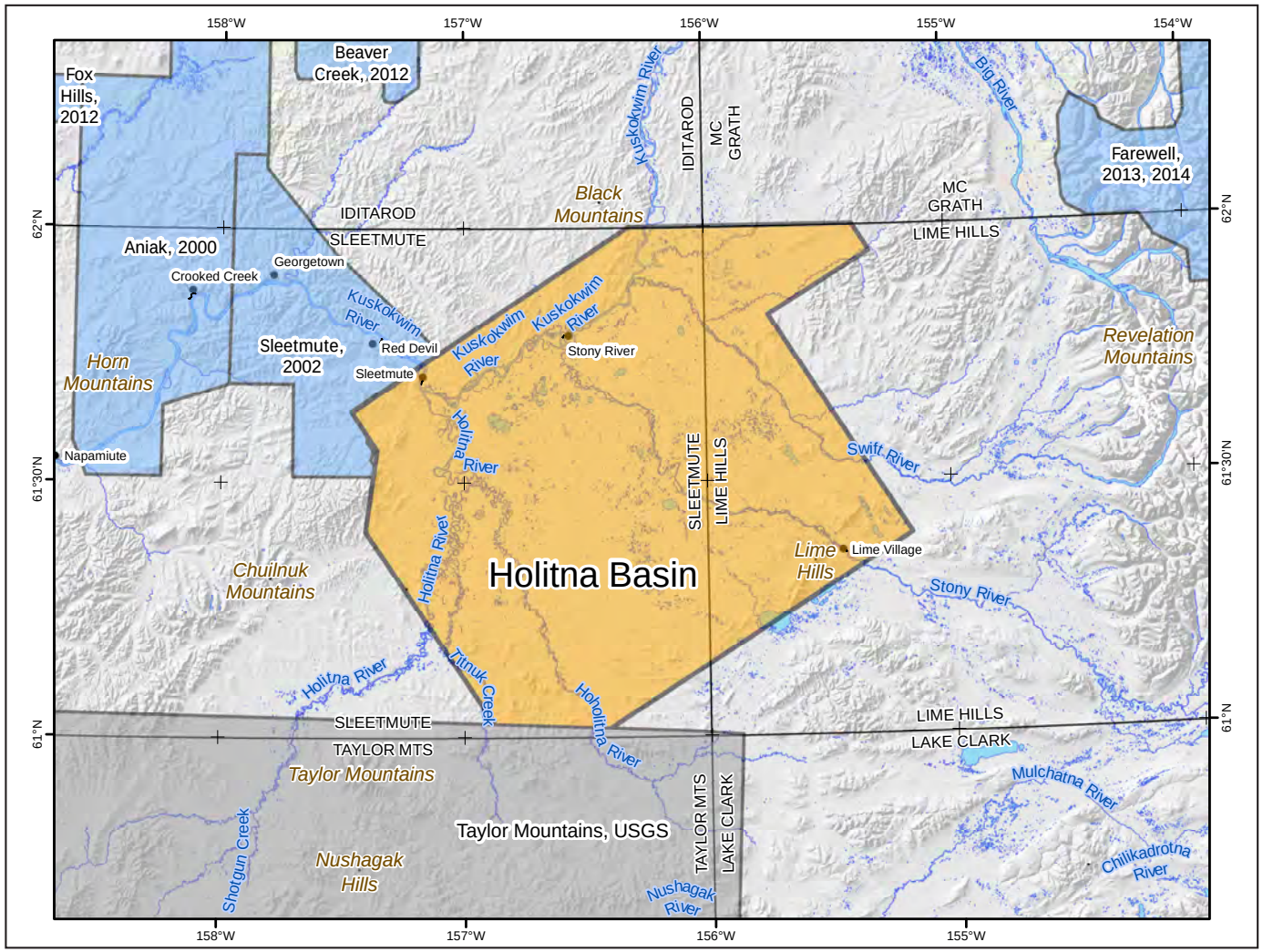
[1] Alaska Division of Geological & Geophysical Surveys, 3354 College Road, Fairbanks, Alaska 99709-3707

Edcon, Inc., 2001, Edcon land gravity survey, Holitna basin, southwest Alaska: Alaska Division of Geological & Geophysical Surveys Geophysical Report 2001-1, 1 DVD. http://doi.org/10.14509/2725

SIAL Geosciences, Inc., and On-line Exploration Services, Inc., 1998, Project report of the aeromagnetic survey for the Holitna basin area, western Alaska: Alaska Division of Geological & Geophysical Surveys Public Data File 98-29, 82 p., 2 sheets, scale 1:125,000. http://doi.org/10.14509/1854

## AVAILABLE DATA

| Data Type | Provider | Description |
|---|---|---|
| ascii_data | contractor | ASCII format line data, other ASCII data |
| databases_geosoft | DGGS | 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 | DGGS | Geographically registered gridded data, ER Mapper ERS format |
| grids_geosoft | DGGS | Geosoft-format grids, these grids can be viewed in ESRI ArcMap using a free plugin from Geosoft or the free viewer available from Geosoft |
| images_registered | DGGS | GeoTiff format images of all gridded data |
| kmz | DGGS | keyhole markup language (kml) kmz archive files of project data. Viewable in Google Earth and other compatible programs |
| maps_pdf_format | contractor and DGGS | Printable maps in pdf format. Includes a geographically registered pdf (GeoPDF) for use with mobile devices such as GPS enabled smartphones and tablets, other devices, and programs |
| vector_data | DGGS | Interpretation, data contours, flightpath and survey boundary in ESRI shapefile (SHP) format |



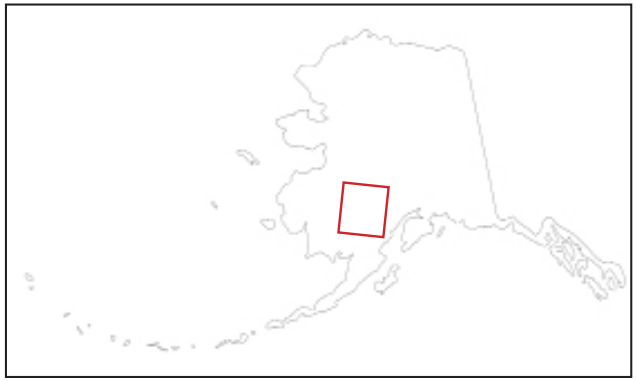



**Figure 1.** Holitna magnetic airborne geophysical survey location shown in interior Alaska (inset). Holitna survey area shown with adjacent DGGS geophysical surveys, landmarks, relevant 1:250,000-scale quadrangle boundaries, mountain ranges, rivers, glaciers, and elevation hillshade.


**Figure 2.** Flight path with orthometric image.

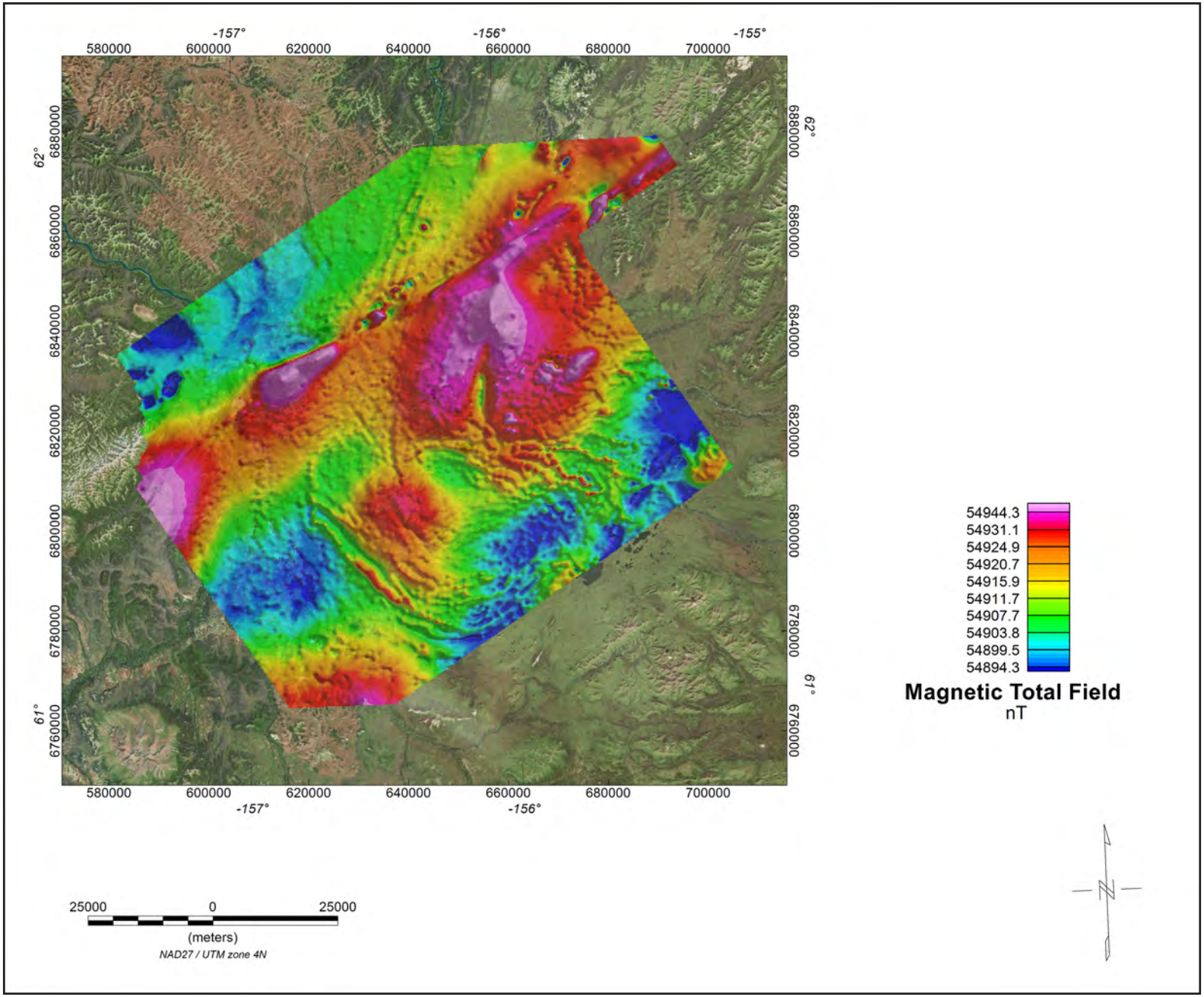



**Figure 3.** Total magnetic field grid with orthometric image. The total field magnetic data were acquired with a sampling interval of 0.1 seconds. The magnetic data were (1) corrected for diurnal variations by subtraction of the digitally recorded base station magnetic data, (2) leveled to the tie line data, and (3) interpolated onto a regular 200 m grid using a modified Akima (1970) technique.

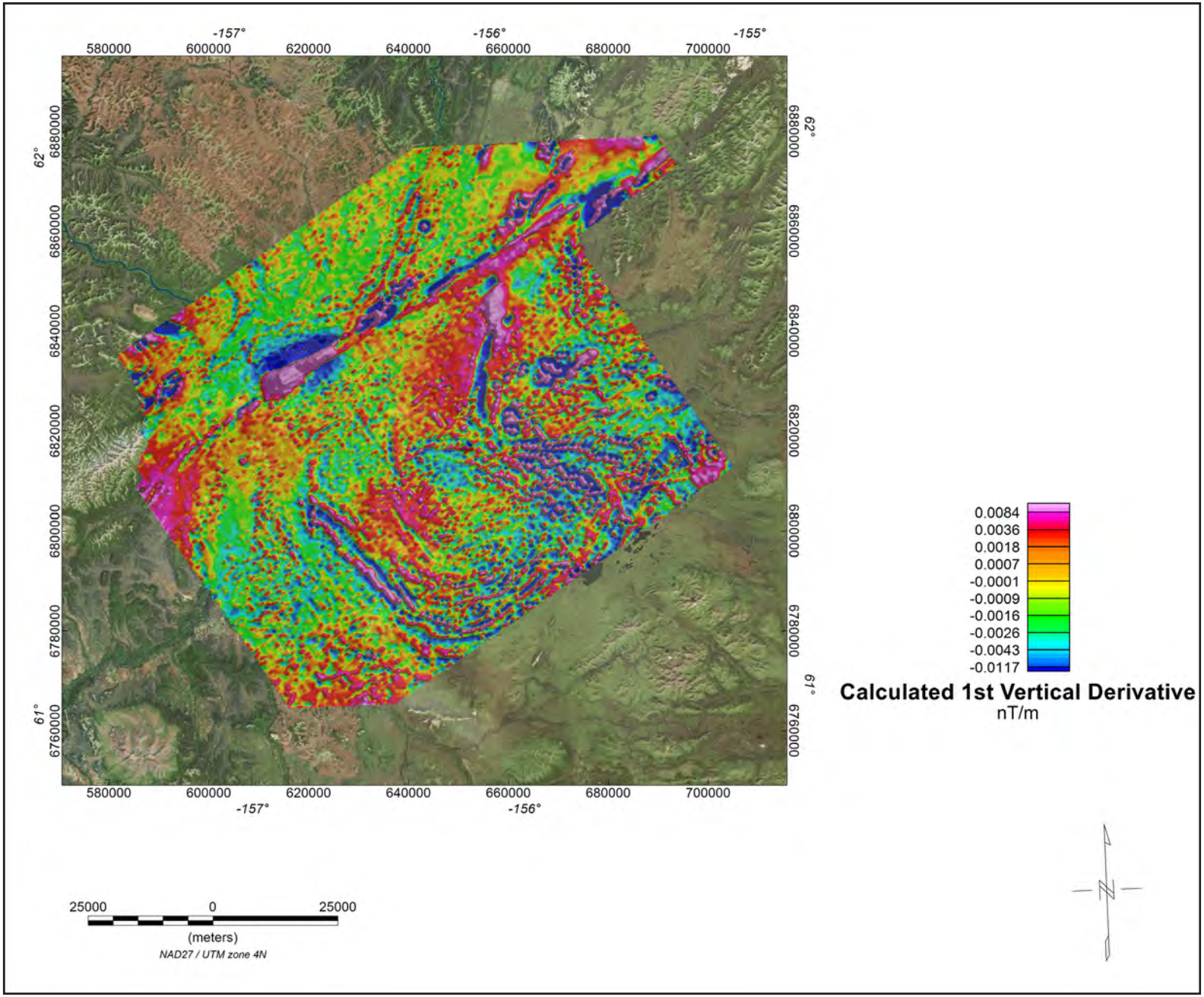



**Figure 4.** Calculated first vertical derivative grid with orthometric image. The first vertical derivative grid was calculated from the diurnally-corrected, IGRF-corrected total magnetic field grid using a FFT base frequency domain filtering algorithm. The resulting first vertical derivative grid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

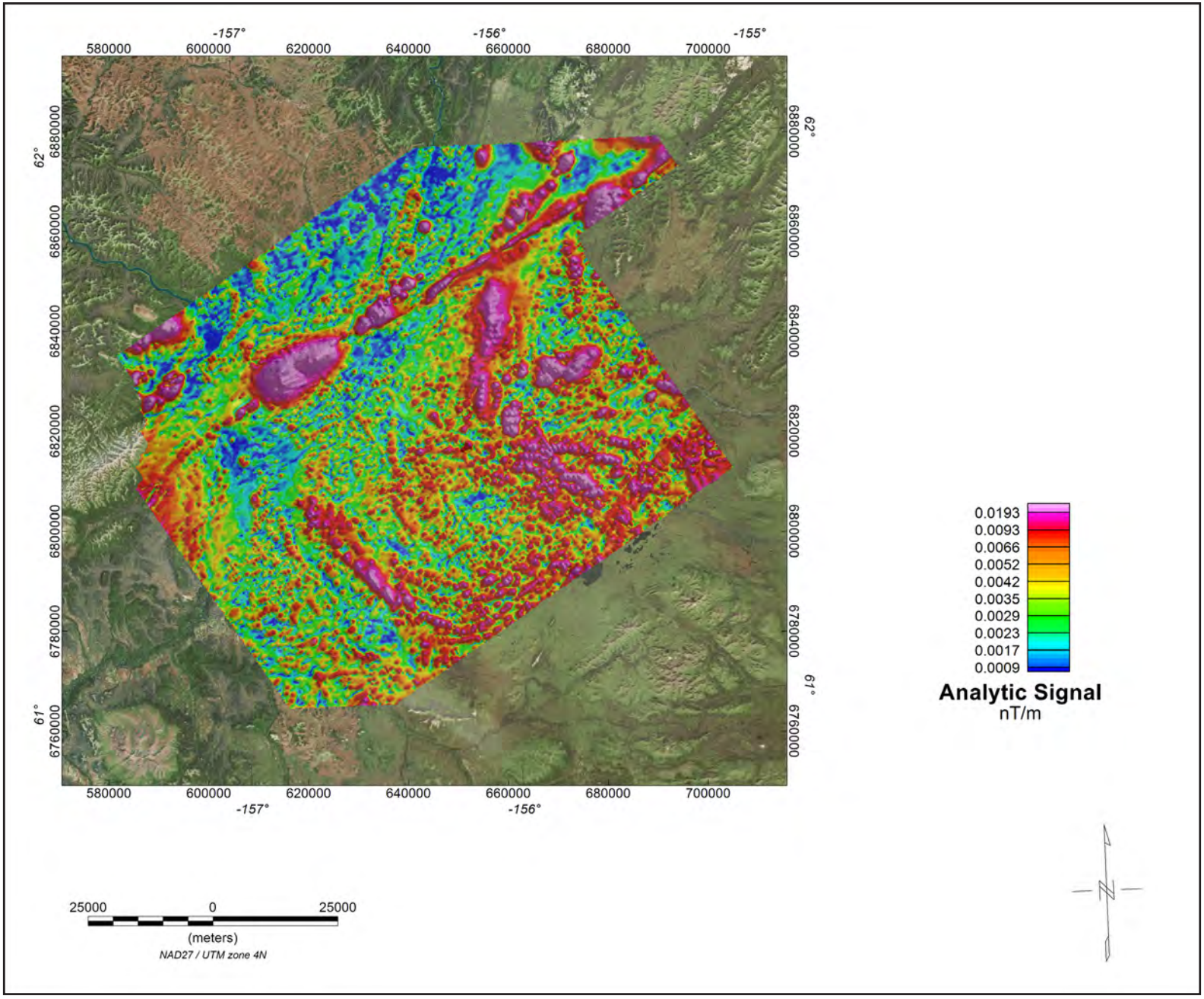



**Figure 5.** Analytic signal grid with orthometric image. Analytic signal is the total amplitude of all directions of magnetic gradient calculated from the sum of the squares of the three orthogonal gradients. Mapped highs in the calculated analytic signal of magnetic parameter locate the anomalous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

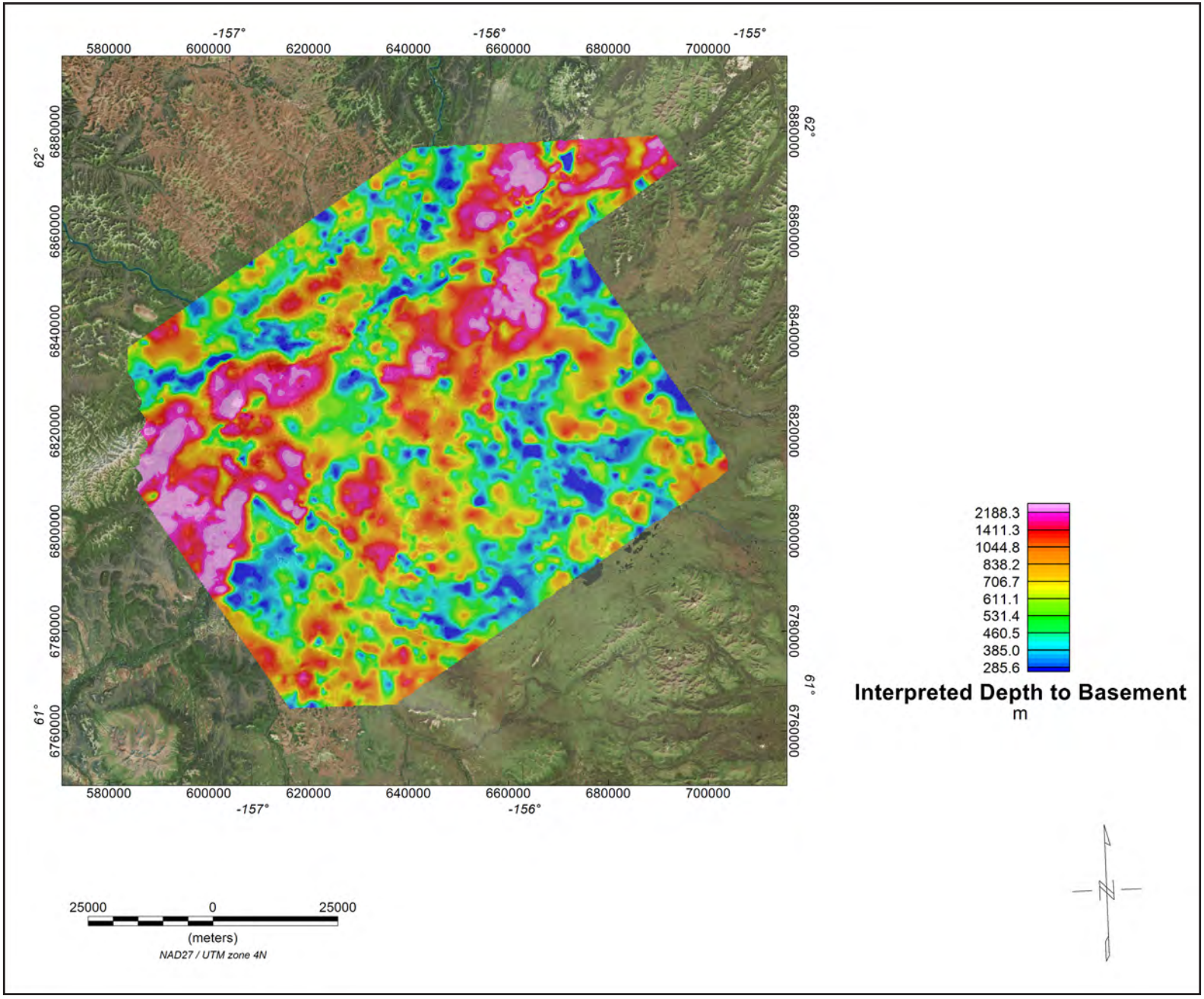



**Figure 6.** Interpreted depth to basement grid with orthometric image.

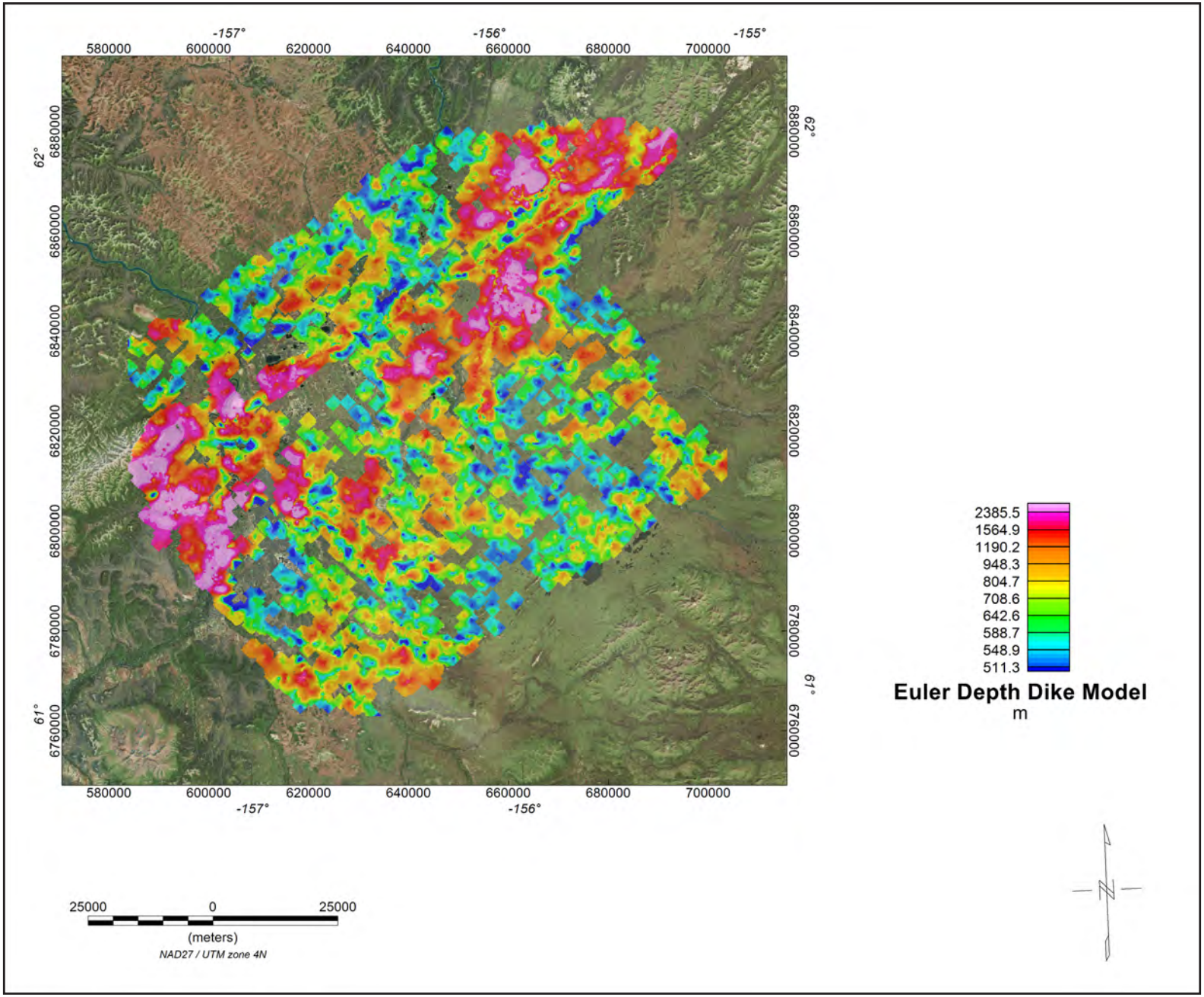



**Figure 7.** Euler dike model depth to magnetic basement grid and orthometric image.

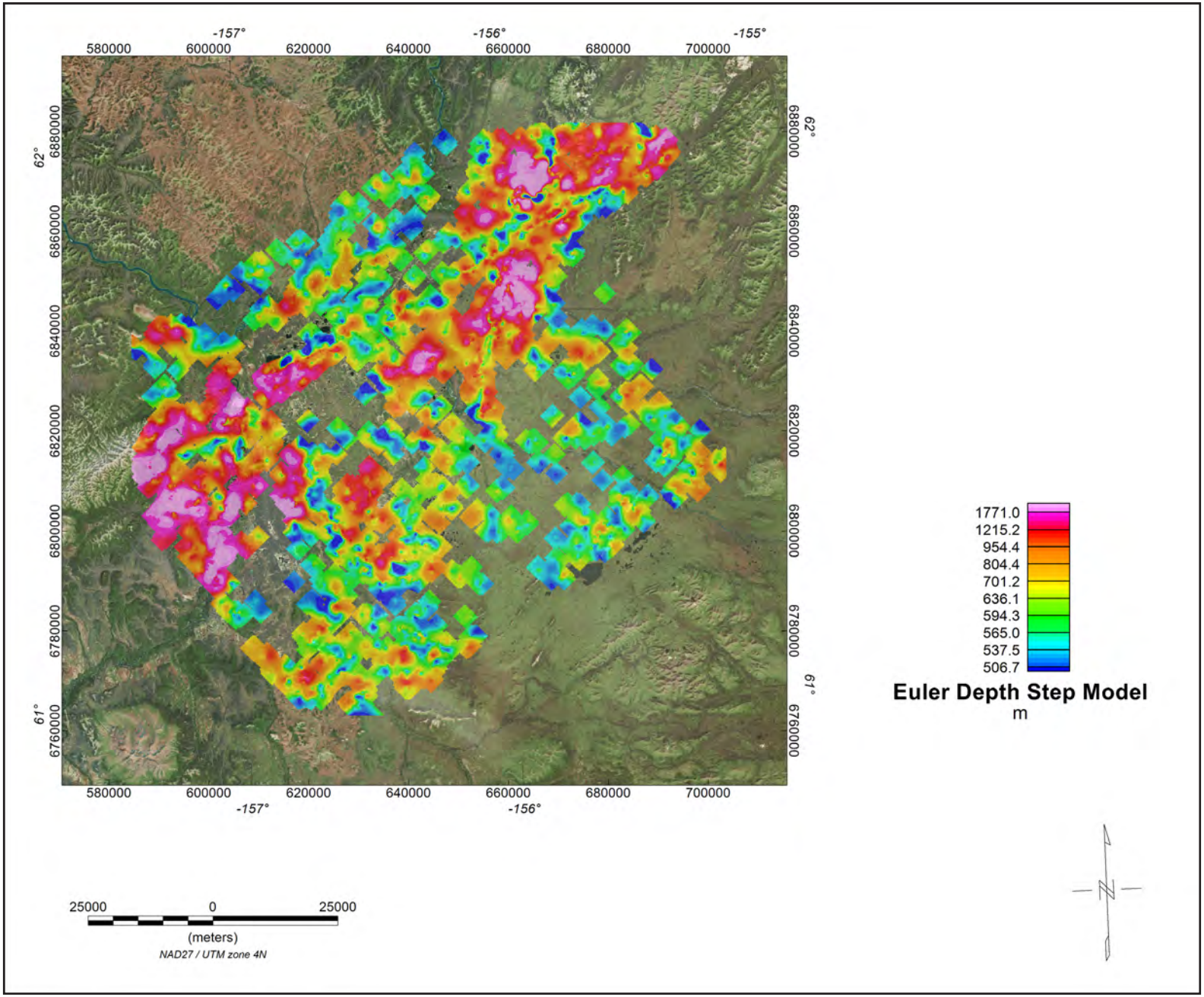
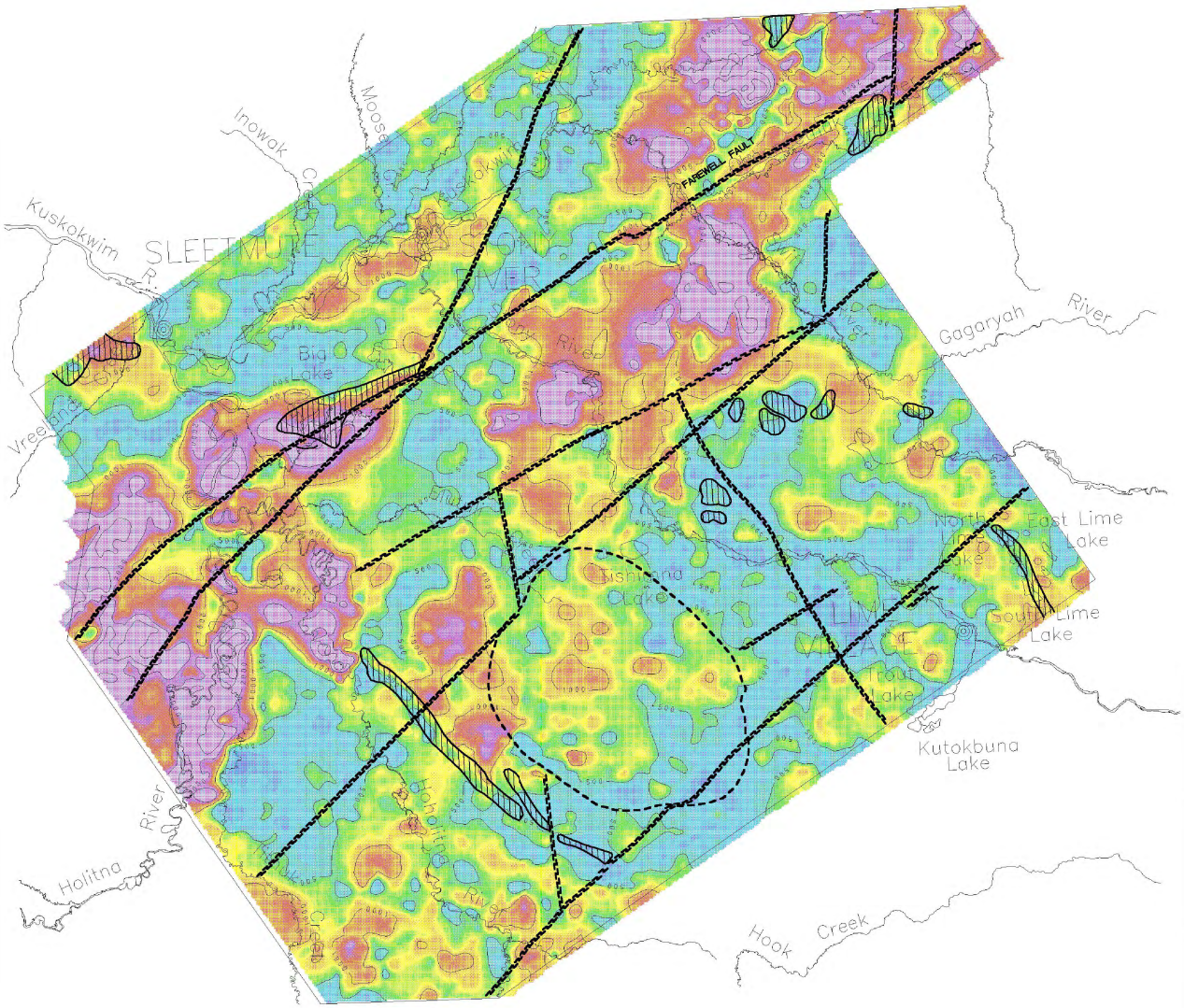



**Figure 8.** Euler step model depth to magnetic basement grid and orthometric image.

**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/10.14509/30459

| Map Title | Description |
|---|---|
| holitnamag_depth_to_basement_topo_map.pdf | depth to basement map |
| holitnamag_euler_depth_dike_model_topo_map.pdf | Euler depth to magnetic basement using dike model |
| holitnamag_euler_depth_step_model_topo_map.pdf | Euler depth to magnetic basement using step model |
| holitnamag_flightlines_topo_map_1of4.pdf | simulated magnetic total field grid with topographic base map |
| holitnamag_flightlines_topo_map_2of4.pdf | simulated magnetic total field grid with topographic base map |
| holitnamag_flightlines_topo_map_3of4.pdf | simulated magnetic total field grid and contours with public land survey system base layer |
| holitnamag_flightlines_topo_map_4of4.pdf | simulated magnetic total field grid and contours with public land survey system base layer |
| holitnamag_interpretation_plss_map_1of2.pdf | shaded simulated magnetic total field grid with public land survey system base layer |
| holitnamag_interpretation_plss_map_2of2.pdf | shaded simulated magnetic total field grid with public land survey system base layer |
| holitnamag_magtf_plss_map_1of2.pdf | magnetic total field grid and public land survey system base layer |
| holitnamag_magtf_plss_map_2of2.pdf | magnetic total field grid and public land survey system base layer |




BASEMENT DEPTH

Map contours are in meters.

500 m : 500
1000 m : 1000
2000 m : 2000
3000 m : 3000
4000 m : 4000

LEGEND FOR GEOPHYSICAL INTERPRETATION

. . . . . Batholith
. . . . . Presumed Fault
. . . . . Dike / Intrusif

2000
1800
1700
1600
1500
1400
1300
1200
1100
1000
900
850
800
750
700
650
600
550
500
400
300
200
100
0

BASEMENT DEPTH
( meters )

Scale 1:500 000

10000 0 10000 20000 50000
meters

# STATE OF ALASKA

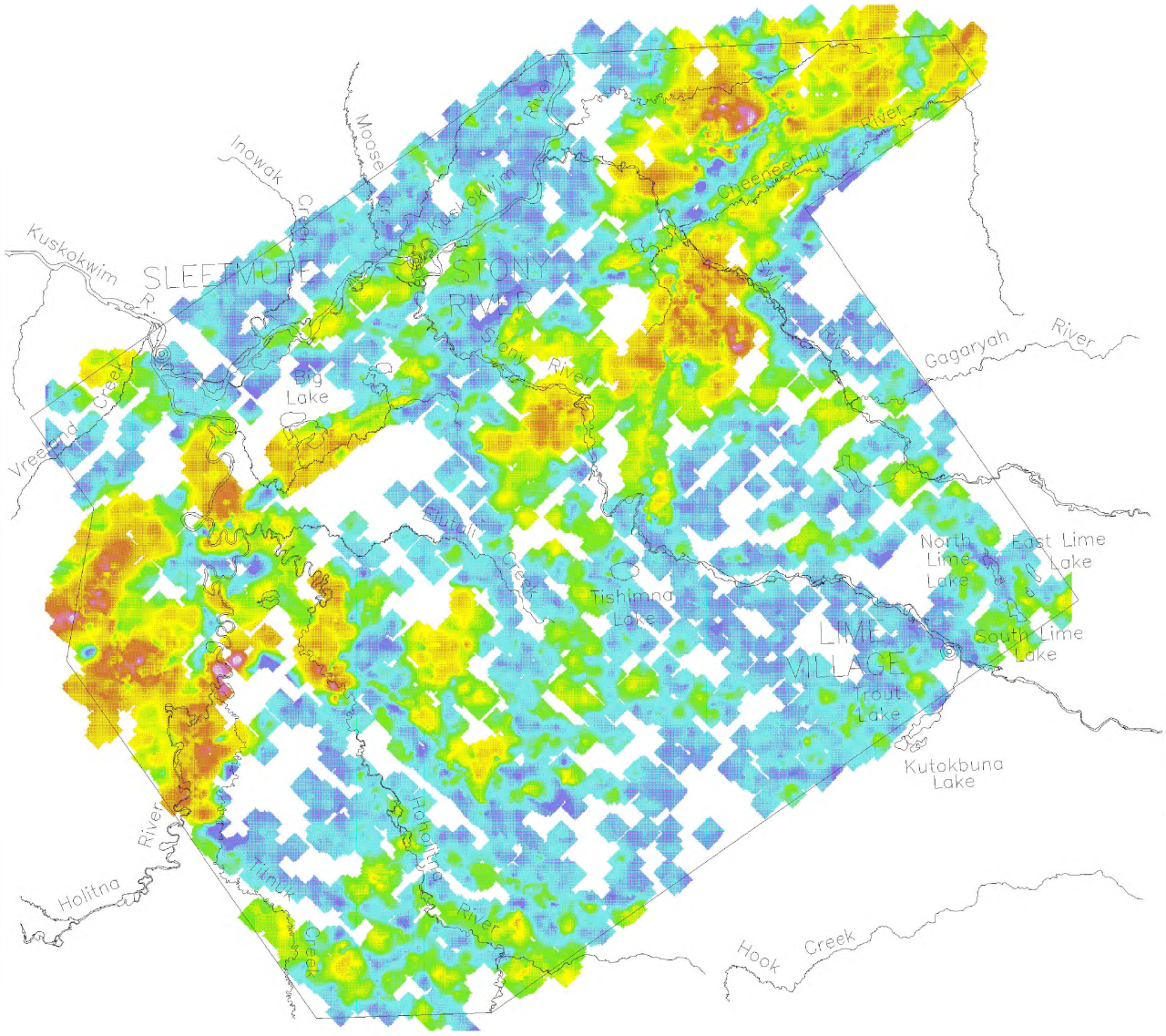
HOLITNA BASIN
AIRBORNE GEOPHYSICAL SURVEY
SOUTHWESTERN ALASKA

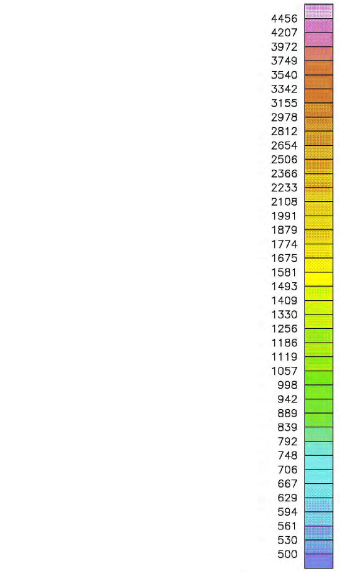
## INTERPRETATION SKETCH MAP

FIGURE 42

| | | | | |
|---|---|---|---|---|
| Map scale : | 1: 500 000 | Project Ref : | 97A03-36 | INTHOL500 |
| Date Compiled : | | Date Flown : | | |

SIAL Géosciences inc.




Scale 1:500 000

10000 0 10000 20000 50000

meters

FIGURE 40: Euler depth interpretaton (dike model)

# STATE OF ALASKA

HOLITNA BASIN
AIRBORNE GEOPHYSICAL SURVEY
SOUTHWESTERN ALASKA

## EULER DEPTH INTERPRETATION
## DIKE MODEL
## COLOUR MAP

| | | | | |
|---|---|---|---|---|
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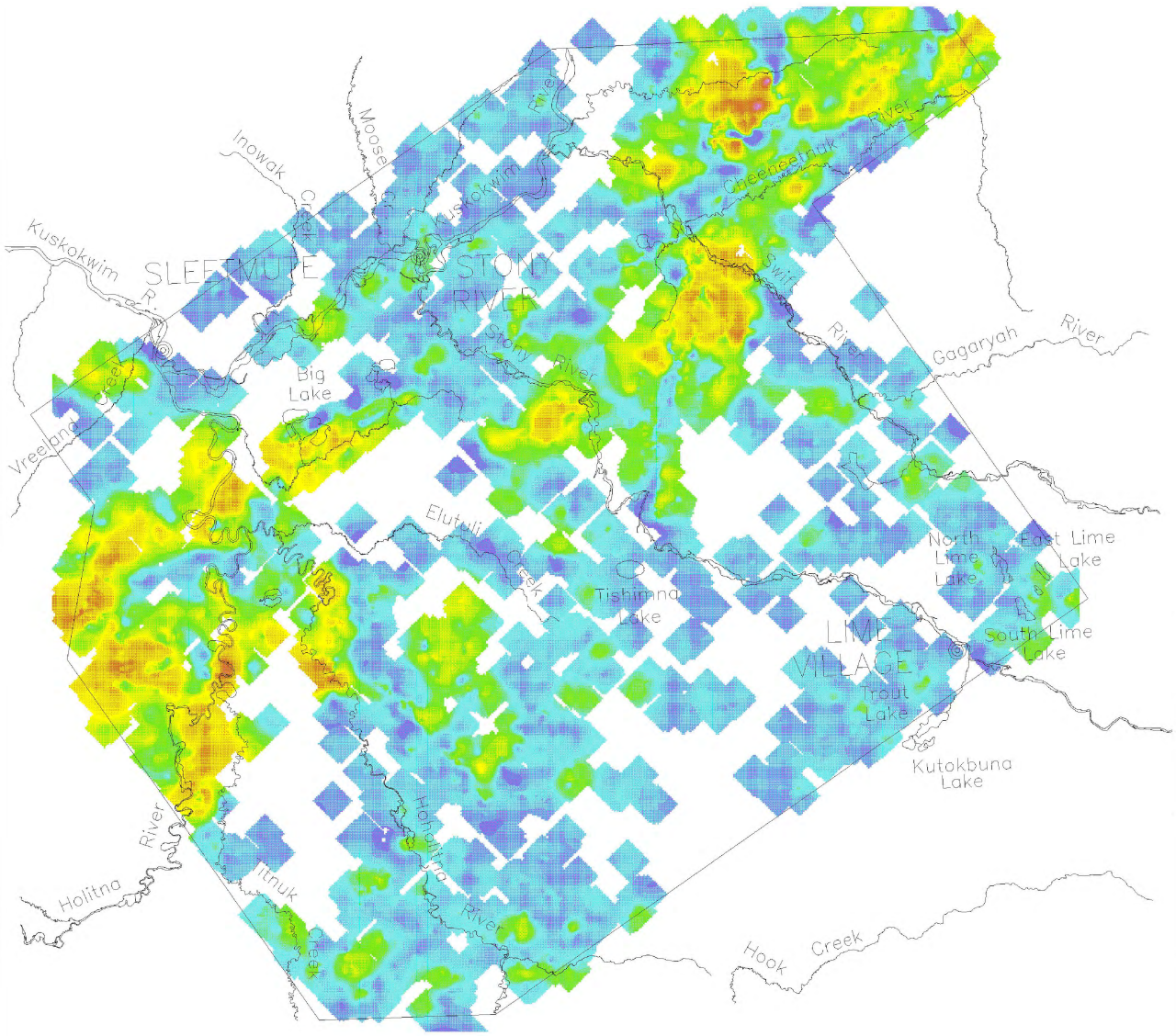
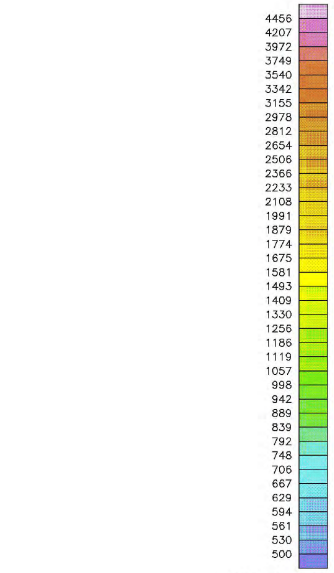
| Date Compiled : | | Date Flown : | | |

SIAL Géosciences inc.




Scale 1:500 000

10000 0 10000 20000 50000

meters

FIGURE 41 : Euler depth interpretation (step model)

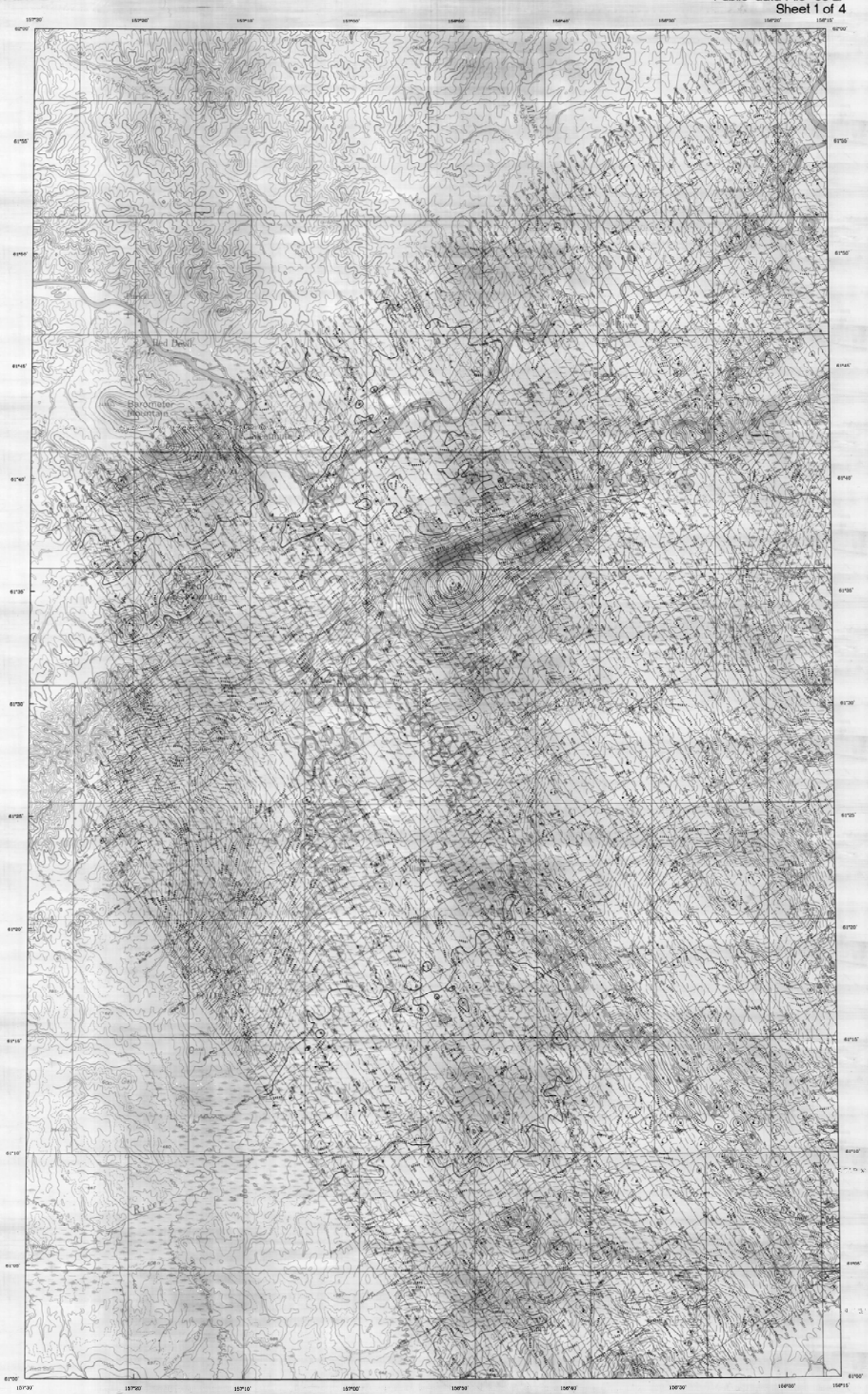
# STATE OF ALASKA

HOLITNA BASIN
AIRBORNE GEOPHYSICAL SURVEY
SOUTHWESTERN ALASKA

## EULER DEPTH INTERPRETATION
## STEP MODEL
## COLOUR MAP

| | | | | |
|---|---|---|---|---|
| Map scale : | 1: 500 000 | Project Ref : | 97A03-36 | CSTPHOL500 |
| Date Compiled : | | Date Flown : | | |

SIAL Géosciences inc.




MAGNETIC CONTOURS

100
25
5
1
L magnetic low
H magnetic high

FLIGHT PATH INFORMATION


SURVEY HISTORY

This map has been compiled and drawn under contract between the State of Alaska, Department of Natural Resources, Division of Geological & Geophysical Surveys, and On-Line Exploration Services, Inc. Airborne geophysical data for the area were acquired by Stal Geosciences, Inc., in 1997.

This map and other products from this survey are available from the Alaska Division of Geological & Geophysical Surveys, 794 University Ave., Suite 200, Fairbanks, Alaska 99709.

DESCRIPTIVE NOTES

The geophysical data were acquired with a RMS GR-33/H2560 data acquisition system, and a Geometrics G822A cesium magnetometer installed in a Piper Navajo 310 (C-GAKM) airplane. In addition, the survey recorded data from a radar altimeter (King KRA-10), GPS navigation system, and video camera. Flights were performed at a mean terrain clearance of 300 ft along survey flight lines with a spacing of a half of a mile. Tie lines were flown perpendicular to the flight lines at intervals of approximately three miles.

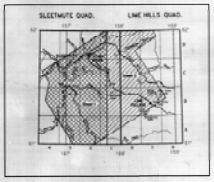
Two Trimble-4000 SE Differential Post-processing Global Positioning Systems were used for both navigation and flight path recovery. The airplane position was derived every one second to a relative accuracy of better than 10 m. Flight path positions were projected onto the Clarke 1866 (UTM) spheroid, 1927 North American datum using a Central Meridian (CM) of 159° W, a north constant of 0 and an east constant of 500,000. Positional accuracy of the presented data is better than 10 m with respect to the UTM grid.

TOTAL FIELD MAGNETICS

The total field magnetic data were acquired with a sampling interval of 0.1 seconds, and were (1) corrected for diurnal variations by subtraction of the digitally recorded base station magnetic data, (2) leveled to the tie line data, and (3) interpolated onto a regular 100 m grid using a modified Akima (1970) technique. A regional trend (IGRF 1995, updated to August 1997) was then removed from the leveled magnetic data.

Akima, H., 1970, A new method of interpolation and smooth curve fitting based on local procedures: Journal of the Association of Computing Machinery, v. 17, no.4, p.589-602.

LOCATION INDEX



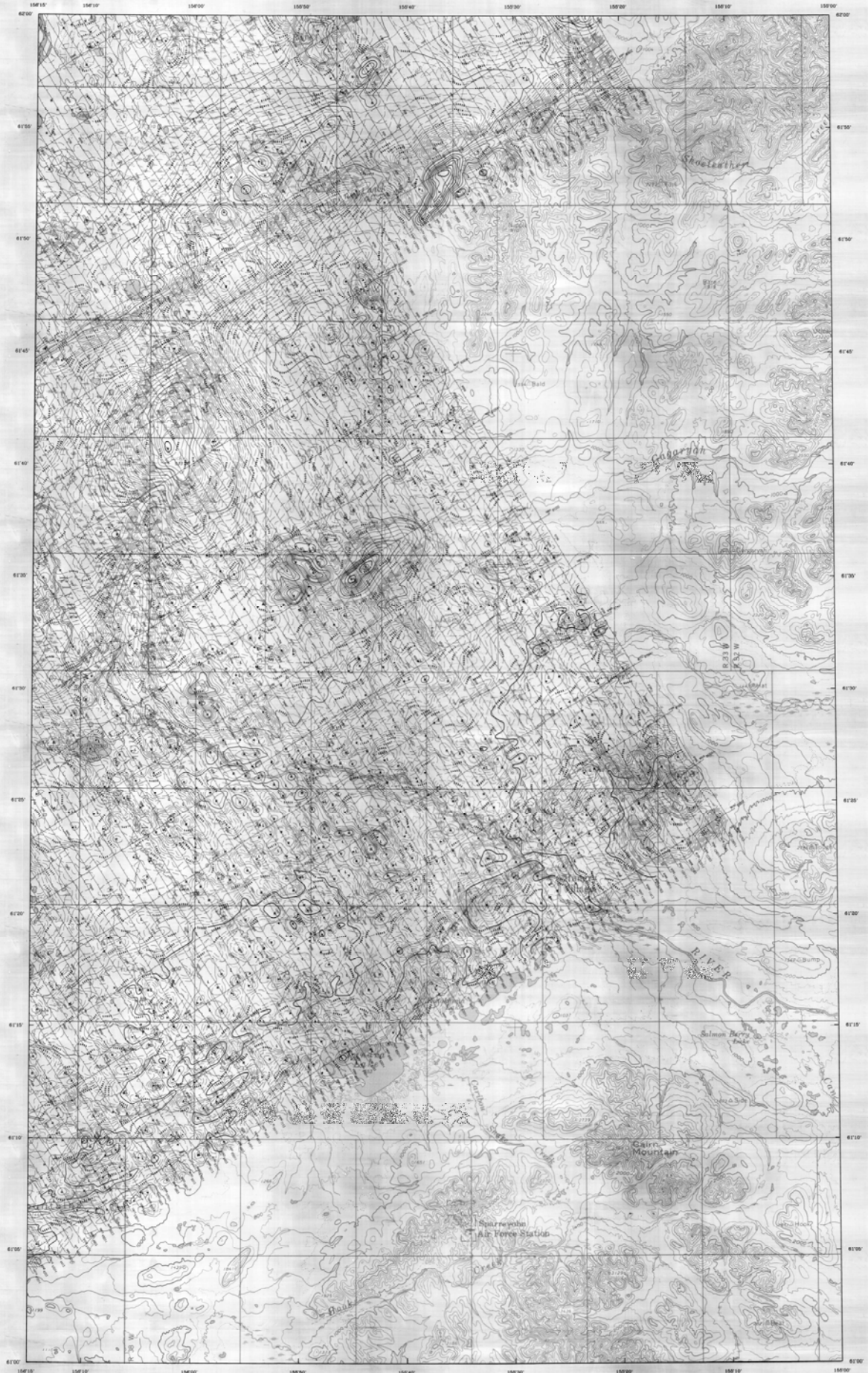

Base from U.S. Geological Survey
Raintmute A-1, A-2, A-3, A-4, 1954, B-1, B-2, B-3, B-4, 1954, C-1, 1954, C-2, 1951, C-3, 1972, C-4, 1954, D-1, 1955, D-2, 1977, D-3, 1978,
Quadrangles, Alaska
Projected in UTM zone 4

Scale 1:125,000
1 0 1 2 3 5 MILES
2.5 0 2.5 5 10.0 KILOMETERS

CONTOUR INTERVAL 200 FEET
DATUM MEAN SEA LEVEL


# TOTAL FIELD MAGNETICS CONTOURS OF THE HOLITNA BASIN AREA, WESTERN ALASKA


1998




MAGNETIC CONTOURS

100

25

5

1

magnetic low

magnetic high

FLIGHT PATH INFORMATION

LINE DIRECTION
LINE NUMBER
FIDUCIALS
LINE NUMBER
LINE DIRECTION

SURVEY HISTORY

This map has been compiled and drawn under contract between the State of Alaska, Department of Natural Resources, Division of Geological & Geophysical Surveys, and On-Line Exploration Services, Inc. Airborne geophysical data for the area were acquired by Sial Geosciences, Inc., in 1997.

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DESCRIPTIVE NOTES

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Akima, H., 1970, A new method of interpolation and smooth curve fitting based on local procedures: Journal of the Association of Computing Machinery, v. 17, no.4, p.589-602.

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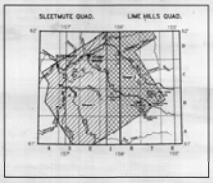



HOLITNA BASIN

Base from U.S. Geological Survey
Lime Hills A-8, 1975, B-8, B-7, D-8, 1954, C-7, C-8, 1954, D-7, D-8, 1954,
Sleetmute A-1, 1954, B-1, 1954, C-1, 1954, D-1, 1955,
Quadrangles, Alaska.
Projected in UTM zone 4

Scale 1:125,000

1 0 1 2 3 4 5 MILES

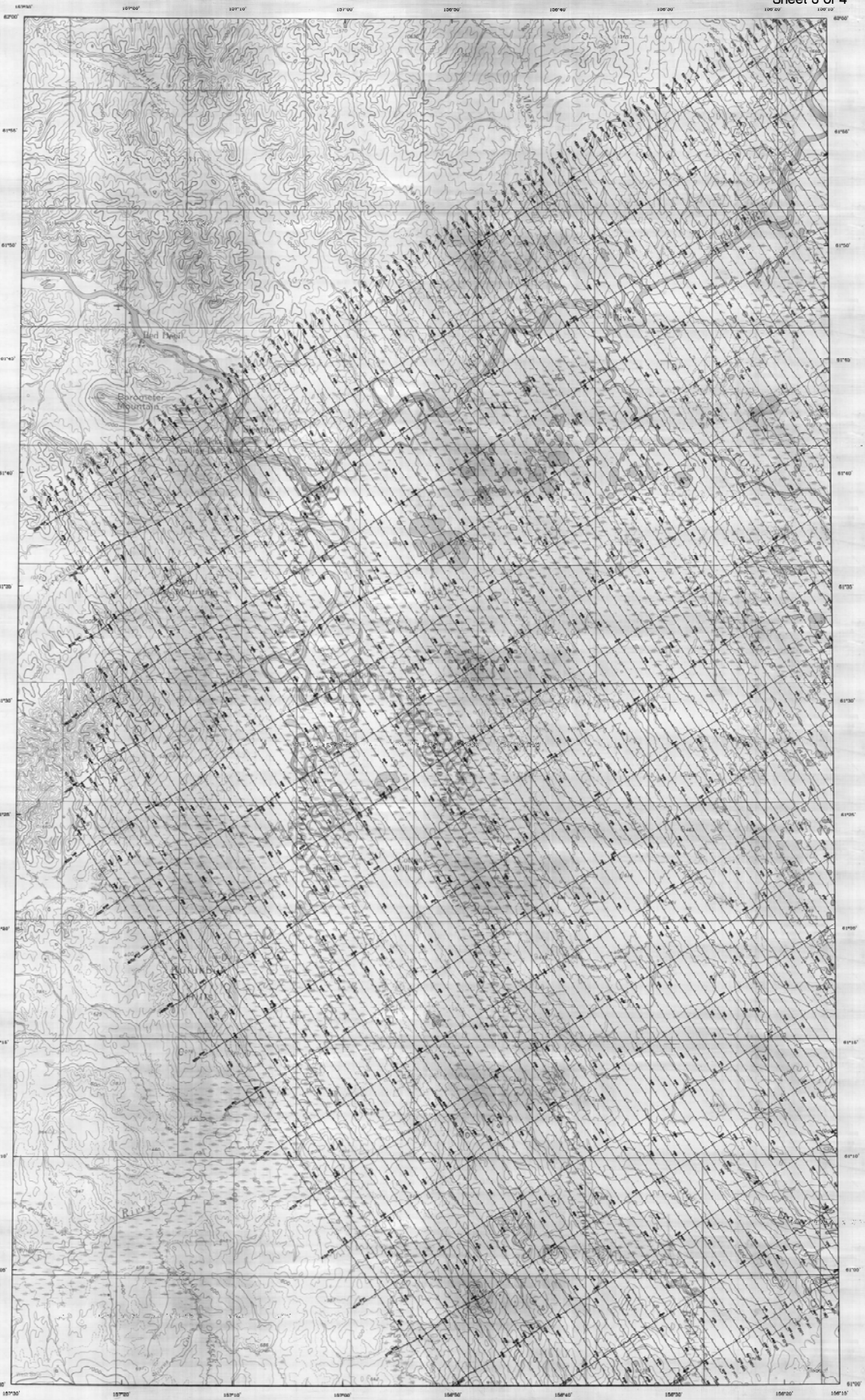
2.5 0 2.5 5 7.5 KILOMETERS

CONTOUR INTERVAL 200 FEET
DATUM MEAN SEA LEVEL



# TOTAL FIELD MAGNETICS CONTOURS OF THE HOLITNA BASIN AREA, WESTERN ALASKA

1998




FLIGHT PATH INFORMATION


SURVEY HISTORY

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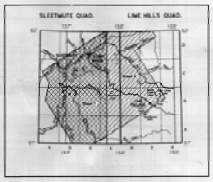
LOCATION INDEX




HOLITNA BASIN

Base from U.S. Geological Survey
Quadrangles, Alaska

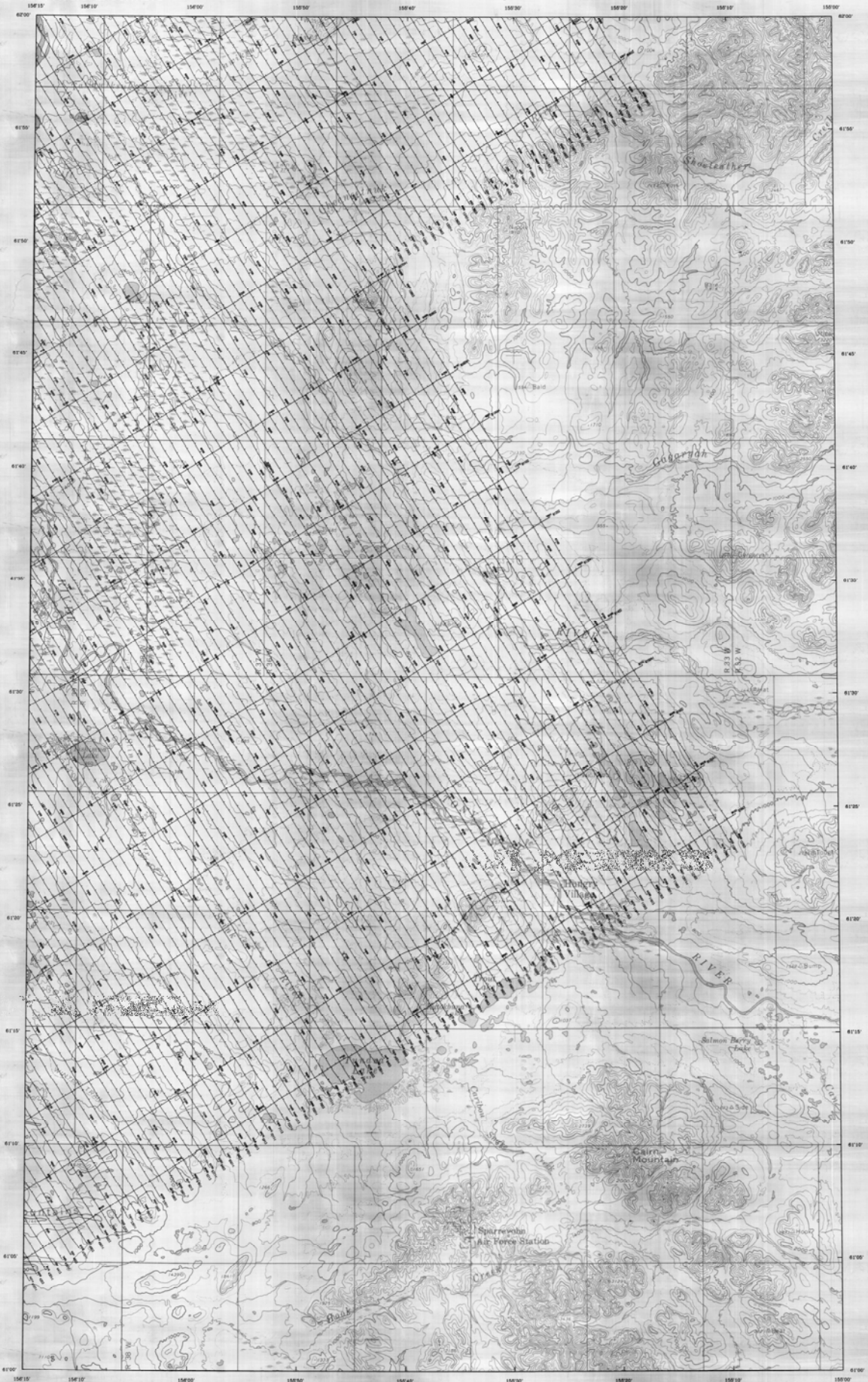
Scale 1:125,000

CONTOUR INTERVAL 200 FEET
DATUM MEAN SEA LEVEL

APPROXIMATE MEAN DECLINATION, 1998

# FLIGHT LINE PATH
# OF THE HOLITNA BASIN AREA, WESTERN ALASKA


1998




Base from U.S. Geological Survey
Lime Hills A-8, 1975, B-6, B-7, B-8, 1954,
C-7, C-8, 1954, D-7, D-8, 1954.
Sleetmute A-1, 1954, B-1, 1954,
C-1, 1954, D-1, 1955.
Quadrangles, Alaska.
Projected in UTM zone 4

Scale 1:125,000
1 0 1 2 3 MILES
2.5 0 2.5 5 7.5 KILOMETERS
CONTOUR INTERVAL 200 FEET
DATUM MEAN SEA LEVEL

APPROXIMATE MEAN DECLINATION, 1974

# FLIGHT LINE PATH
# OF THE HOLITNA BASIN AREA, WESTERN ALASKA

1998

## FLIGHT PATH INFORMATION


## SURVEY HISTORY

This map has been compiled and drawn under contract between the State of Alaska, Department of Natural Resources, Division of Geological & Geophysical Surveys, and On-Line Exploration Services, Inc. Airborne geophysical data for the area were acquired by Sial Geosciences, Inc. in 1997.

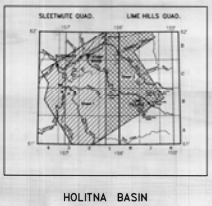
This map and other products from this survey are available from the Alaska Division of Geological & Geophysical Surveys, 794 University Ave., Suite 200, Fairbanks, Alaska, 99709.

## DESCRIPTIVE NOTES

The geophysical data were acquired with a RMS GR-33/HDS60 data acquisition system, and a Geometrics G822A cesium magnetometer installed in a Piper Navajo 310 (C-GAKM) airplane. In addition, the survey recorded data from a radar altimeter (King KRA-10), GPS navigation system, and video camera. Flights were performed at a mean terrain clearance of 300 ft along survey flight lines with a spacing of a half of a mile. Tie lines were flown perpendicular to the flight lines at intervals of approximately three miles.

Two Trimble-4000 SE Differential Post-processing Global Positioning Systems were used for both navigation and flight path recovery. The airplane position was derived every one second to a relative accuracy of better than 10 m. Flight path positions were projected onto the Clarke 1866 (UTM) spheroid, 1927 North American datum using a Central Meridian (CM) of 159° W., a north constant of 0 and an east constant of 500,000. Positional accuracy of the presented data is better than 10 m with respect to the UTM grid.

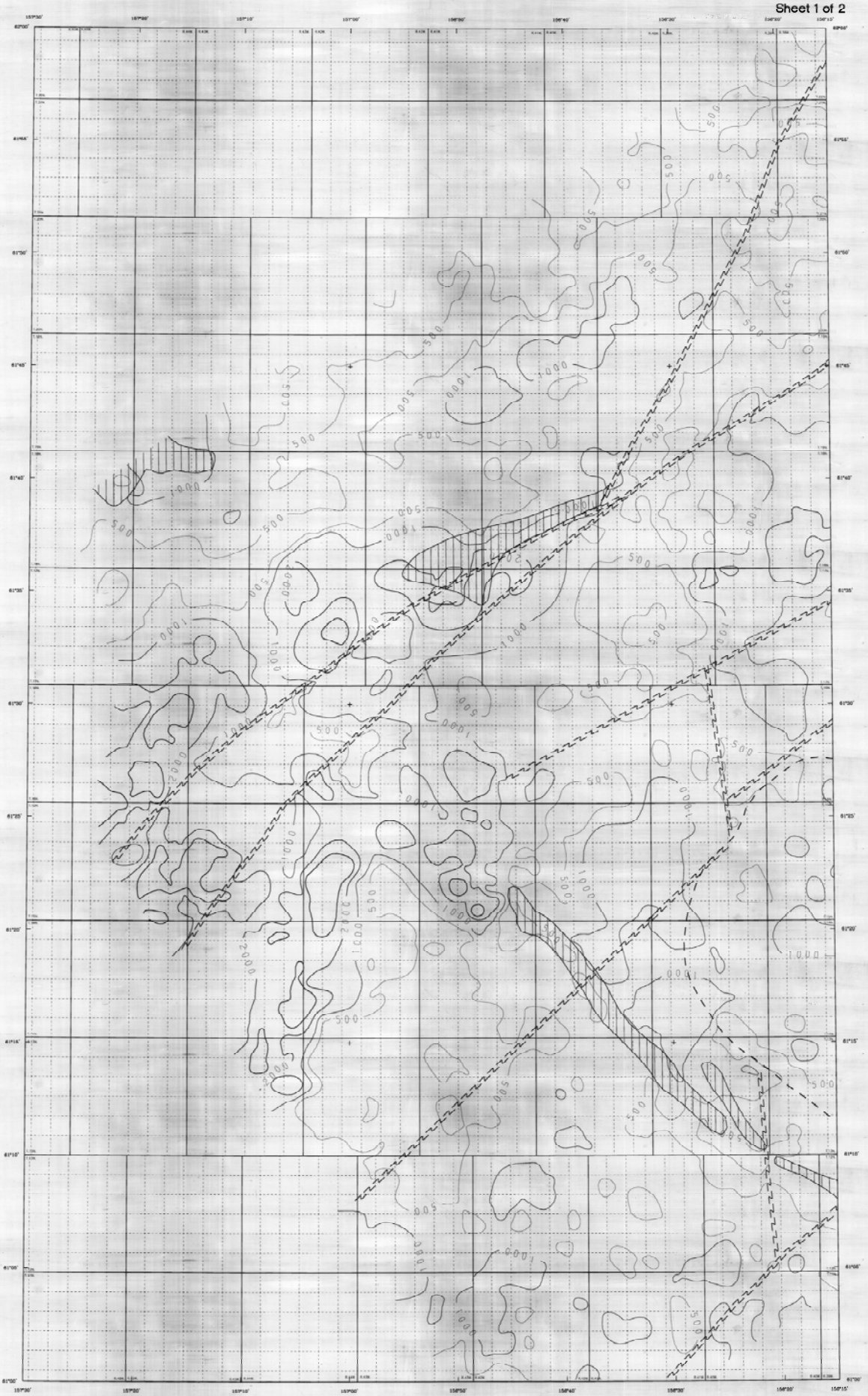
## LOCATION INDEX




ALASKA DIVISION OF GEOLOGICAL &
GEOPHYSICAL SURVEYS

PUBLIC-DATA FILE 98-29





BASEMENT DEPTH

Map contours are in meters.

500 m
1000 m
2000 m
3000 m
4000 m

LEGEND FOR GEOPHYSICAL INTERPRETATION

Batholith
Presumed Fault
Dike / Intrusion

## SURVEY HISTORY

This map has been compiled and drawn under contract between the State of Alaska, Department of Natural Resources, Division of Geological & Geophysical Surveys, and On-Line Exploration Services, Inc. Airborne geophysical data for the area were acquired by Skal Geosciences, Inc., in 1997.

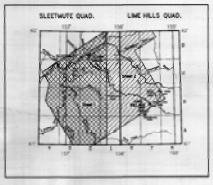
This map and other products from this survey are available from the Alaska Division of Geological & Geophysical Surveys, 794 University Ave., Suite 200, Fairbanks, Alaska, 99709.

## DESCRIPTIVE NOTES

The geophysical data were acquired with a RMS CR-1/HDAS data acquisition system, and a Geometrics G822A cesium magnetometer installed in a Piper Navajo 310 (C-GAKM) airplane. In addition, the survey recorded data from a radar altimeter (King KRA-10), GPS navigation system, and video camera. Flights were performed at a mean terrain clearance of 500 ft along survey flight lines with a spacing of a half of a mile. Tie lines were flown perpendicular to the flight lines at intervals of approximately three miles.

Two Trimble-4000 SE Differential Post-processing Global Positioning Systems were used for both navigation and flight path recovery. The airplane position was derived every one second to a relative accuracy of better than 10 m. Flight path positions were projected onto the Clarke 1866 (UTM) spheroid, 1927 North American datum using a Central Meridian (CM) of 160° W, a north constant of 0 and an east constant of 500,000. Positional accuracy of the presented data is better than 10 m with respect to the UTM grid.

LOCATION INDEX




Section lines from U.S. Geological Survey
Bathymetric data: A-1, A-2, A-3, A-4, 1994; B-1, B-2, B-3, B-4, 1994; C-1, 1994; C-2, 1994; C-3, 1995; C-4, 1994; D-1, 1995; D-2, 1977; D-3, 1979.
Quadrangles, Alaska
Projected in UTM zone 4

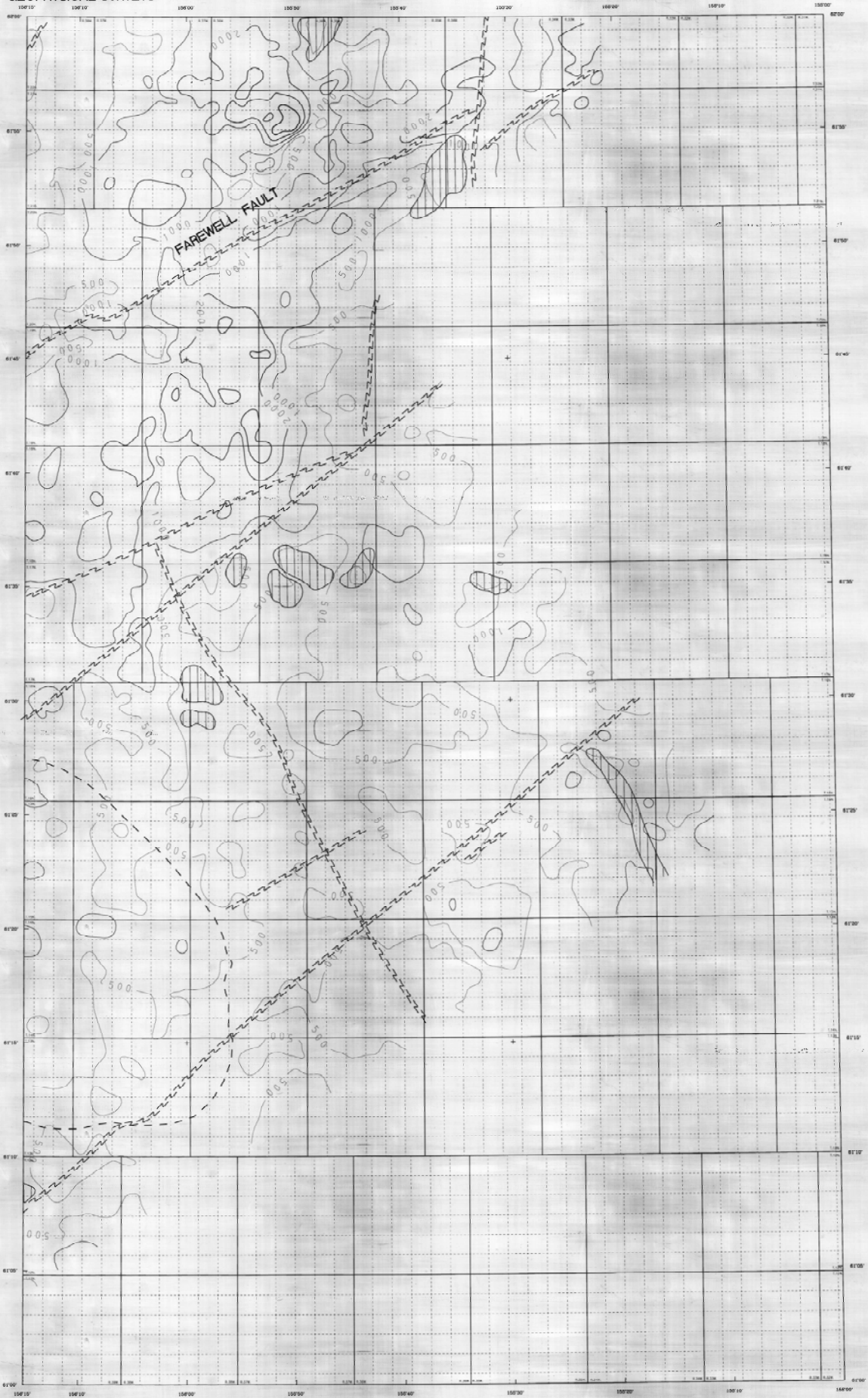
Scale 1:125,000





# INTERPRETATION SKETCH MAP OF THE HOLITNA BASIN AREA, WESTERN ALASKA

1998




BASEMENT DEPTH

Map contours are in meters.

500 m
1000 m
2000 m
3000 m
4000 m

LEGEND FOR GEOPHYSICAL INTERPRETATION

Terrain
Fracture Trace
Dike / Inferred

## SURVEY HISTORY

This map has been compiled and drawn under contract between the State of Alaska, Department of Natural Resources, Division of Geological & Geophysical Surveys, and On-Line Exploration Services, Inc. Airborne geophysical data for the area were acquired by Sial Geosciences, Inc., in 1997.

This map and other products from this survey are available from the Alaska Division of Geological & Geophysical Surveys, 794 University Ave., Suite 200, Fairbanks, Alaska, 99709.

## DESCRIPTIVE NOTES

The geophysical data were acquired with a RMS GR 33/ HG560 data acquisition system, and a Geometrics G822A cesium magnetometer installed in a Piper Navajo 310 (C-GAXM) airplane. In addition, the survey recorded data from a radar altimeter (King KRA-10), GPS navigation system, and video camera. Flights were performed at a mean terrain clearance of 300 ft along survey flight lines with a spacing of a half of a mile. Tie lines were flown perpendicular to the flight lines at intervals of approximately three miles.

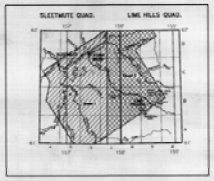
Two Trimble-4000 SE Differential Post-processing Global Positioning Systems were used for both navigation and flight path recovery. The airborne position was derived every one second to a relative accuracy of better than 10 m. Flight path positions were projected onto the Clarke 1866 (UTM) spheroid, 1927 North American datum using a Central Meridian (CM) of 158° W, a north constant of 0 and an east constant of 500,000. Positional accuracy of the presented data is better than 10 m with respect to the UTM grid.

Base from U.S. Geological Survey
Lime Hills A-5, 1973; B-5, B-7, D-5, 1954.
C-7, C-8, 1954; D-7, D-8, 1954.
Sleetmute A-1, 1954, B-1, 1954.
C-1, 1954, D-1, 1955.
Quadrangles, Alaska.
Projected in UTM zone 4

Scale 1:125,000

3.5 0 3.5 7 MILES
5 0 5 10 KILOMETERS

LOCATION INDEX






# INTERPRETATION SKETCH MAP
# OF THE HOLITNA BASIN AREA, WESTERN ALASKA

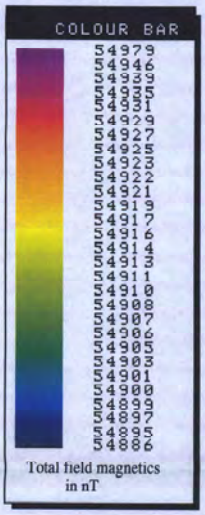
1998

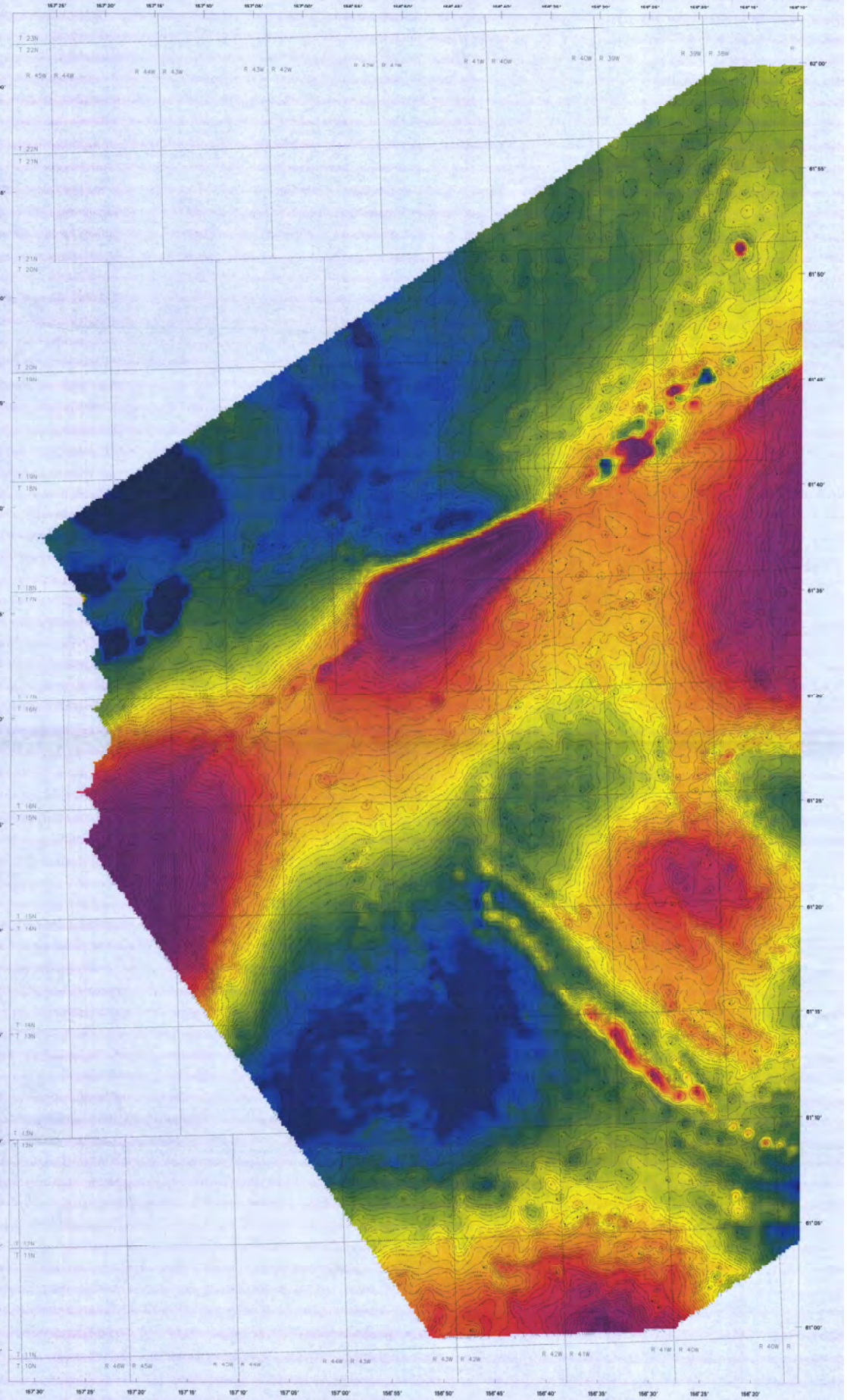
HOLITNA BASIN

ALASKA DIVISION OF GEOLOGICAL & GEOPHYSICAL SURVEYS

Report of Investigations 98-14
Sheet 1 of 2

Department of Natural Resources
Division of Geological and Geophysical Surveys
Geologic Data Modeling System



## 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 On-line Exploration Services, Inc. Airborne geophysical data for the area were acquired by Sial Geosciences, Inc., in 1997.

This map and other products from this survey are available from DGGS, 794 University Ave., Suite 200, Fairbanks, Alaska, 99709. Phone: (907) 451-5020. FAX: (907) 451-5050.

## DESCRIPTIVE NOTES

The geophysical data were acquired with a RMS GR-33/ HDS60 data acquisition system, and a Geometrics G822A cesium magnetometer installed in a Piper Navajo 310 (C-GAKM) airplane. In addition, the survey recorded data from a radar altimeter (King KRA-10), GPS navigation system, and video camera. Flights were performed at a mean terrain clearance of 300 ft along survey flight lines with a spacing of a half mile. Tie lines were flown perpendicular to the flight lines at intervals of approximately three miles.

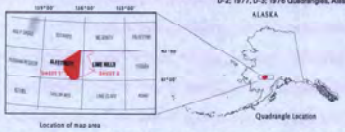
Two Trimble-4000 SE Differential Post-processing Global Positioning Systems were used for both navigation and flight path recovery. The airplane position was derived every one second to a relative accuracy of better than 10 m. Flight path positions were projected onto the Clarke 1866 (UTM) spheroid, NAD27 North American datum using a Central Meridian (CM) of 159 degrees west, a north constant of 0 and an east constant of 500,000. Positional accuracy of the presented data is better than 10 m with respect to the UTM grid.

## TOTAL FIELD MAGNETICS

The total field magnetic data were acquired 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) leveled to the tie line data, and (3) interpolated onto a regular 200 m grid using a modified Akima (1970) technique.

Akima, H., 1970, A new method of interpolation and smooth curve fitting based on local procedures: Journal of the Association of Computing Machinery, v. 17, no. 4, p. 589-602.

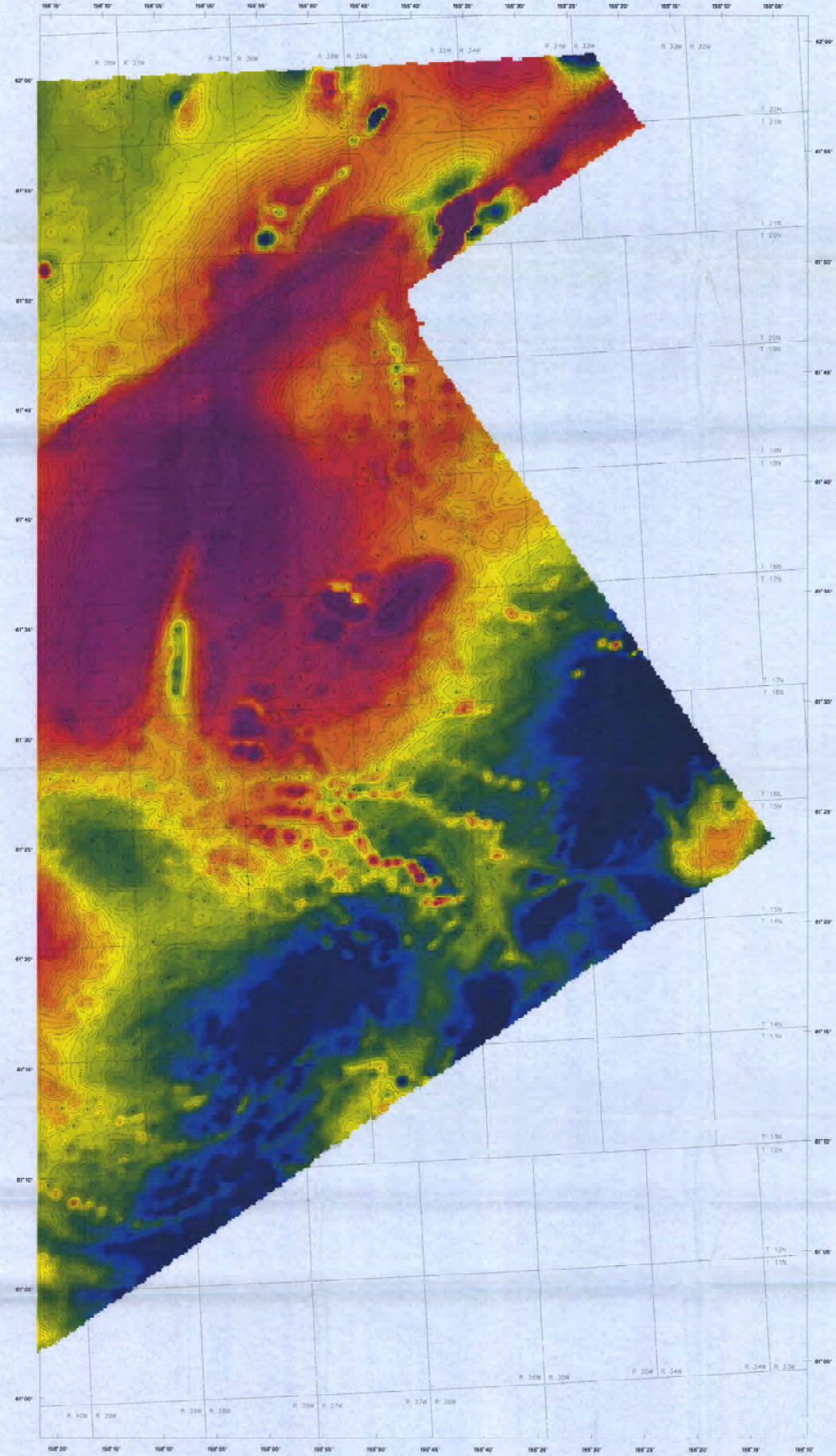
Section outlines from U.S. Geological Survey topographic bases: Sleetmute A-1, A-2, A-3, A-4; 1954, B-1, B-2, B-3, B-4; 1954, C-1; 1954, C-2; 1951, C-3; 1972, C-4; 1954, D-1; 1955, D-2; 1977, D-3; 1976 Quadrangles, Alaska.




SCALE 1:135,000

# TOTAL FIELD MAGNETICS OF THE HOLITNA BASIN AREA, WESTERN ALASKA

1998



Department of Natural Resources
Division of Geological and Geophysical Surveys
Geologic Data Modeling System

COLOUR BAR

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Total field magnetics in nT

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 On-line Exploration Services, Inc. Airborne geophysical data for the area were acquired by Dial Geosciences, Inc., in 1997.

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DESCRIPTIVE NOTES

The geophysical data were acquired with a RMS GR-33/ HO-680 data acquisition system, and a Geometrics G-822A cesium magnetometer installed in a Piper Navajo 310 (C-GAMM) airplane. In addition, the survey recorded data from a radar altimeter (King KRA-10), GPS navigation system, and video camera. Flights were performed at a mean terrain clearance of 300 ft along survey flight lines with a spacing of a half mile. Tie lines were flown perpendicular to the flight lines at intervals of approximately three miles.

Two Trimble-4000 SE Differential Post-processing Global Positioning Systems were used for both navigation and flight path recovery. The airplane position was derived every one second to a relative accuracy of better than 10 m. Flight path positions were projected onto the Clarke 1866 (UTM) spheroid, 1927 North American datum using a Central Meridian (CM) of 153 degrees west, a north constant of 0 and an east constant of 500,000. Positional accuracy of the presented data is better than 10 m with respect to the UTM grid.

TOTAL FIELD MAGNETICS

The total field magnetic data were acquired 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) leveled to the tie line data, and (3) interpolated onto a regular 200 m grid using a modified Akima (1970) technique.

Akima, H., 1970, A new method of interpolation and smooth curve fitting based on local procedures: Journal of the Association of Computing Machinery, v. 17, no. 4, p. 589-602.

Section outlines from U.S. Geological Survey topographic bases: Lime Hills A-6, 1978; B-6, B-7, B-8, C-7, C-8, D-7 and D-8, 1954; Stevenson A-1, B-1, and C-1, 1954; D-1, 1985; Quadrangles, Alaska.

SCALE 1:125,000



# TOTAL FIELD MAGNETICS OF THE HOLITNA BASIN AREA, WESTERN ALASKA

1998

ALASKA

Location of map area

Quadrangle Location