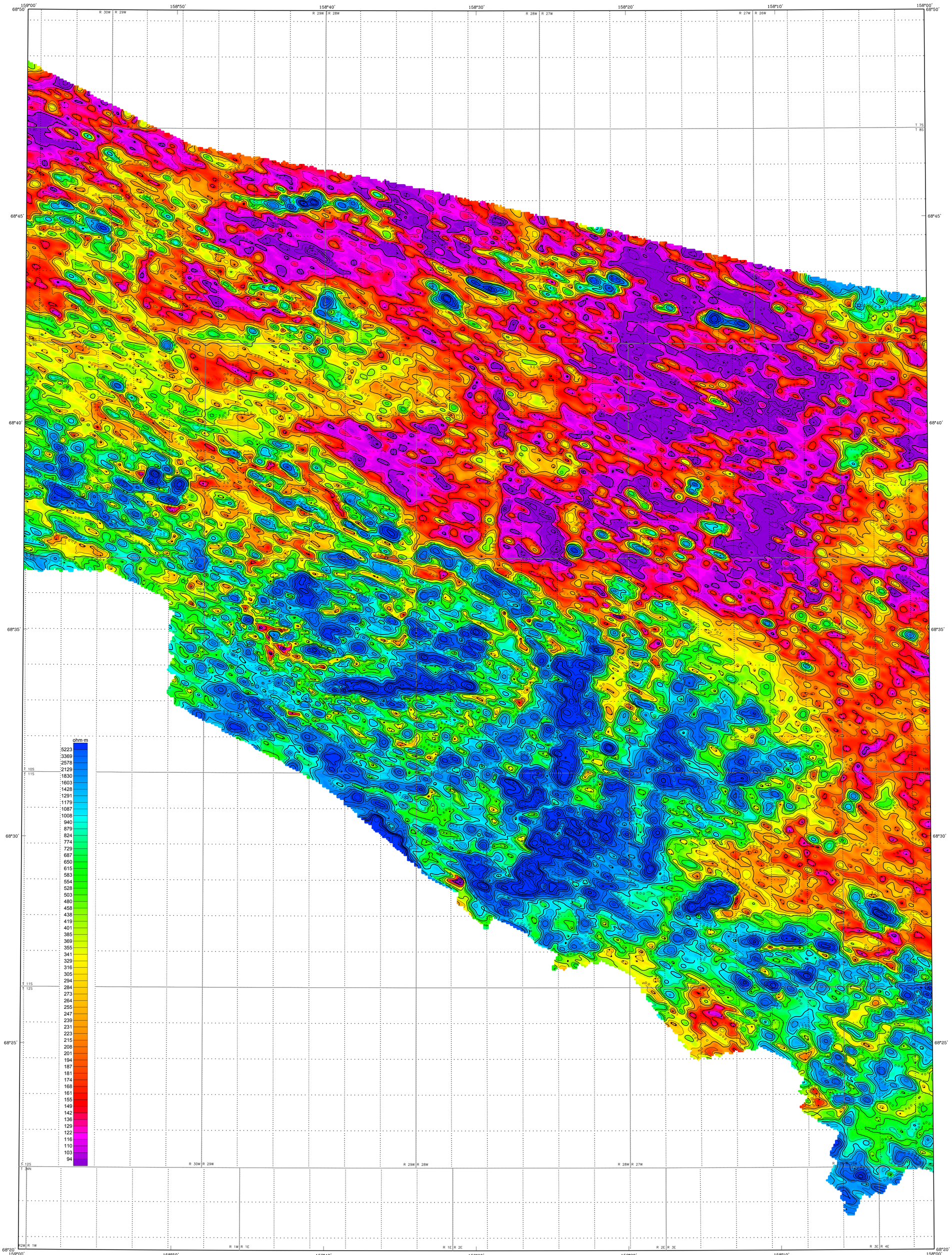
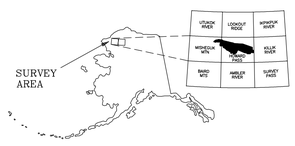


Section outlines from U.S. Geological Survey Howard Pass B–4, 1984; B–5, 1984; C–4, 1984; C–5, 1984; D–4, 1984; D–5, 1984; Quadrangles, Alaska



SCALE 1:63,360

1 0 1 2 3 4 MILES

1 0 1 2 3 4 5 KILOMETERS

56,000 Hz COPLANAR APPARENT RESISTIVITY OF PARTS OF SOUTHERN NATIONAL PETROLEUM RESERVE - ALASKA, NORTHWEST ALASKA

PARTS OF HOWARD PASS AND MISHEGUK MOUNTAIN QUADRANGLES

by
Laurel E. Burns, U.S. Bureau of Land Management, Fugro Airborne Surveys Corp., and Stevens Exploration Management Corp.
2006

DESCRIPTIVE NOTES

The geophysical data were acquired with a DIGHEM^V Electromagnetic (EM) system and a Scintrex cesium magnetometer. The EM and magnetic sensors were flown at a height of 100 feet. In addition the survey recorded data from a radar altimeter, GPS navigation system, 50/60 Hz monitors and video camera. Flights were performed with an AS350B–2 Squirrel helicopter at a mean terrain clearance of 200 feet along NW–SE (340°) survey flight lines west of the red line shown on the location index and NE–SW (25°) survey flight lines east of the red line. Flight lines were spaced a quarter of a mile with the exception of the Drenchwater Creek area (red area in the location index), where flight lines were spaced one eighth of a mile. Tie lines were flown perpendicular to the flight line intervals of approximately 3 miles except for the Drenchwater Creek areas, where the flight interval was 1.5 miles.

An Ashtech GG24 NAVSTAR / GLONASS Global Positioning System was used for navigation. The helicopter position was derived every 0.5 seconds using post–flight differential positioning to a relative accuracy of better than 5 m. Flight path positions were projected onto the Clarke 1866 (UTM zone 4) spheroid, 1927 North American datum using a central meridian (CM) of 159°, a north constant of 0 and an east constant of 500,000. Positional accuracy of the presented data is better than 10 m. with respect to the UTM grid.

RESISTIVITY

The DIGHEM^V EM system measured inphase and quadrature components at five frequencies. Two vertical coaxial coil–pairs operated at 1000 and 5000 Hz while three horizontal coplanar coil–pairs operated at 900, 7200 and 56,000 Hz. EM data were sampled at 0.1 second intervals. The EM system responds to bedrock conductors, conductive overburden, and cultural sources. Apparent resistivity is generated from the inphase and quadrature component of the coplanar 56,000 Hz using the pseudo–layer half space model. The data were interpolated onto a regular 80 m grid using a modified Akima (1970) technique.

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

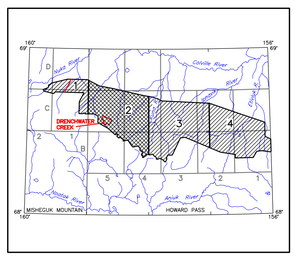
RESISTIVITY CONTOURS

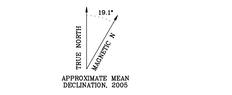
1000
800
600
500
400
300
250
200
150
125
100

Contours in ohm–m at 10 intervals per decade

. . . . . resistivity low

LOCATION INDEX





SURVEY HISTORY

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 area were acquired and processed by Fugro Airborne Surveys Corp. in 2005. Funding for the project was provided by the U.S. Department of the Interior, Bureau of Land Management (BLM).

This map and other products from this survey are available by mail order in person from DGGS, 3354 College Road, Fairbanks, Alaska, 99709–3707. Published maps are also available for viewing or downloading as Adobe Acrobat Files (*.pdf) on our Web site (http://www.dggs.dnr.state.ak.us/pubs/). Some products are also available for viewing at the BLM Alaska State Office, 222 W. 7th Avenue, Anchorage, AK 99513.