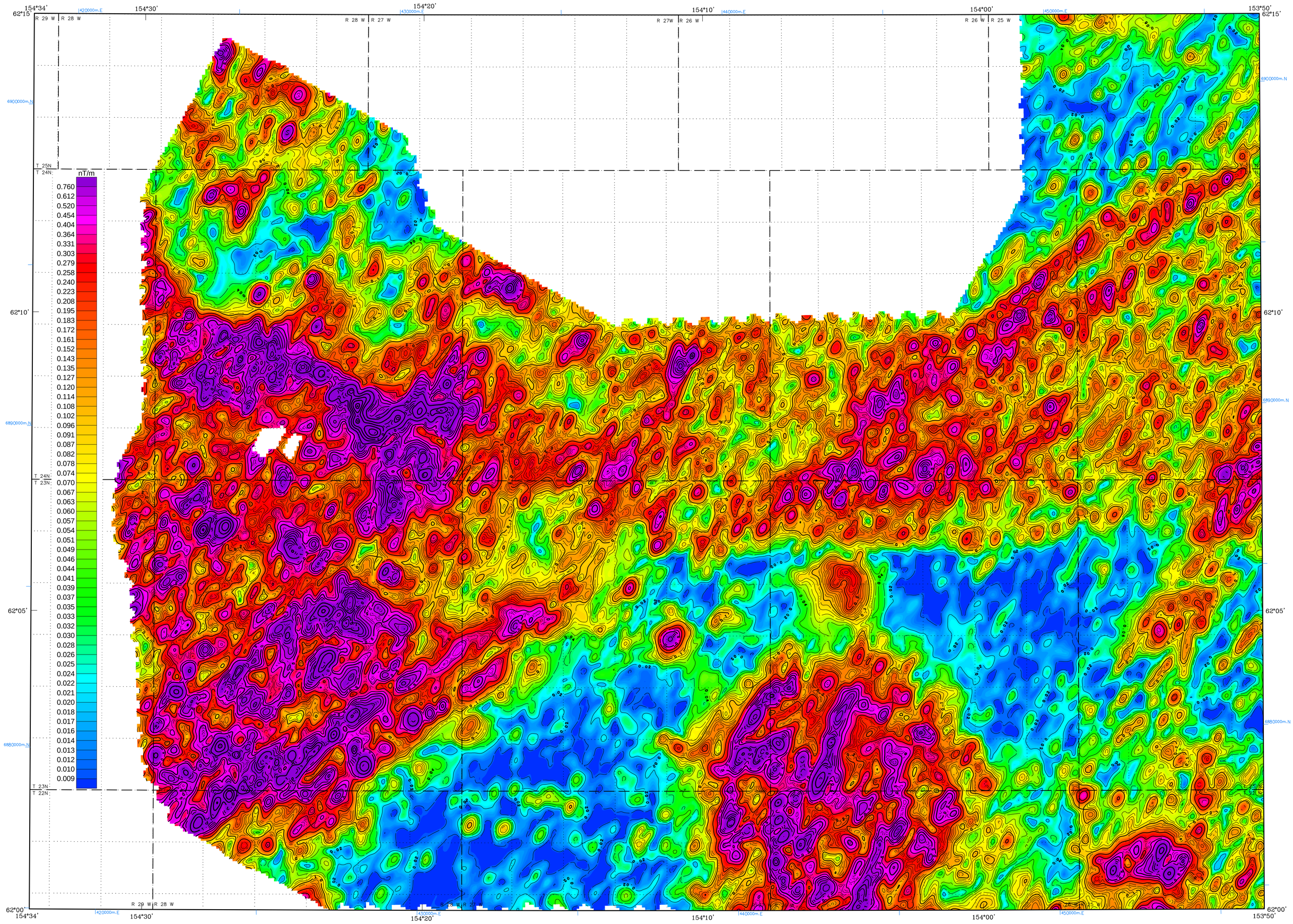
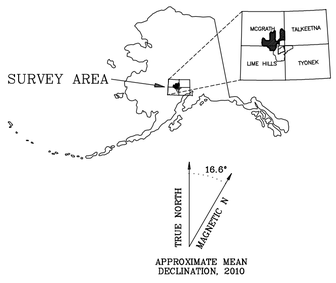


Section outlines from U.S. Geological Survey McGrath A-2, 1958; A-3, 1958; McGrath A-4, 1954; Quadrangles, Alaska



SCALE 1:63,360

1 0 1 2 3 4 MILES

1 0 1 2 3 4 5 KILOMETERS

ANALYTIC SIGNAL WITH DATA CONTOURS, FAREWELL SURVEY AREA, SOUTH-CENTRAL ALASKA

PARTS OF MCGRATH AND LIME HILLS QUADRANGLES

by

Laurel E. Burns, CGG, and Fugro GeoServices, Inc.

2014

DESCRIPTIVE NOTES

The geophysical data were acquired with a DIGHEM^V Electromagnetic (EM) system, a Fugro D1344 magnetometer with a Scintrex CS3 cesium sensor, and a Radiation Solutions RS-500 gamma-ray spectrometer. Some flights acquired the radiometric data with an Exploranium GR-820 spectrometer. The EM and magnetic sensors were flown at a height of 100 feet. The gamma-ray spectrometers were flown at a height of 200 feet. In addition the survey recorded data from radar and laser altimeters, GPS navigation system, 50/60 Hz monitors and video camera. Flights were performed with an AS-350-B3 Squirrel heli-copter at a mean terrain clearance of 200 feet along NW-SE (120°) survey flight lines with a spacing of a quarter of a mile. Tie lines were flown perpendicular to the flight lines at intervals of approximately 3 miles.

A Novatel OEM5-G2L 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 5) spheroid, 1927 North American datum using a central meridian (CM) of 153°, 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.

ANALYTIC SIGNAL

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 (e.g., contacts, fault/shear zones, etc.). Analytic signal maxima are located directly over faults and contacts, regardless of structural dip, and independently of the direction of the induced and/or remanent magnetizations.

ANALYTIC SIGNAL CONTOURS

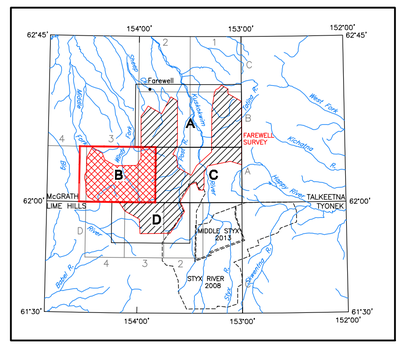
0.50 nT/metre

0.10 nT/metre

0.02 nT/metre

0.01 nT/metre

LOCATION INDEX FOR 1:63,360-SCALE MAPS



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 Fugro GeoServices, Inc. Airborne geophysical data for the area were acquired and processed by CGG in 2012, 2013, and 2014. Previously flown DGGS surveys adjacent to the current survey are shown in the location map by dashed lines, survey name, and date of publication. The project was funded by the Alaska State Legislature as part of the Alaska Strategic and Critical Minerals Assessment project, which is part of the Alaska Airborne Geophysical and Geological Mineral Inventory Program. Cook Inlet Region, Inc. (CIRI) contributed funding for a portion of the area.

All data and maps produced to date from this survey are available in digital format on DVD for a nominal fee through DGGS, 3354 College Road, Fairbanks, Alaska, 99709-3707, and are downloadable for free from the DGGS website (www.dggs.alaska.gov/pubs). Maps are also available on paper through the DGGS office, and are viewable online at the website in Adobe Acrobat .PDF file format.