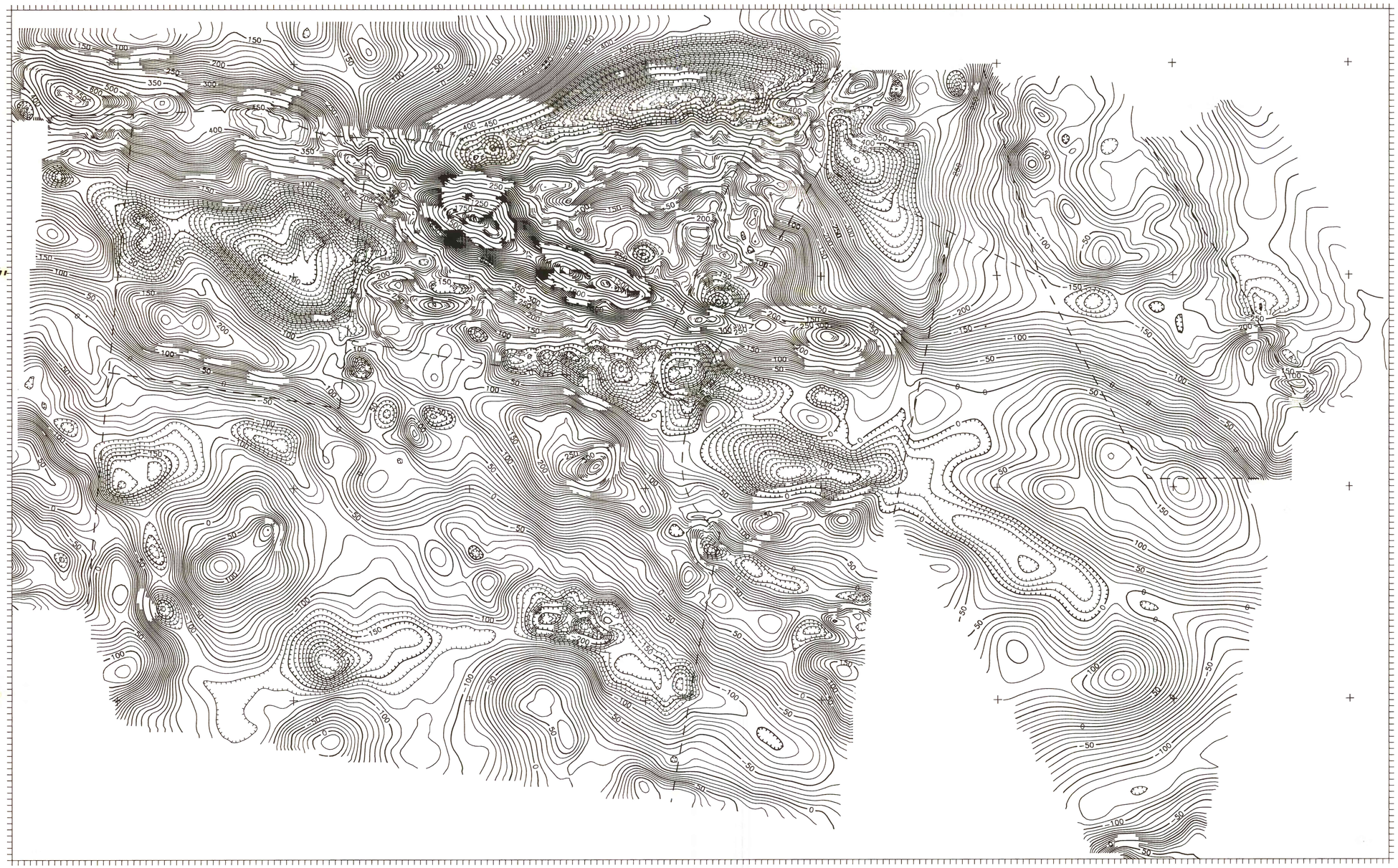
DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY

OPEN-FILE REPORT 84-502

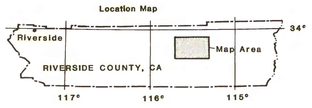
115°37′30″ 115°30′ 115°22′30″ 115°15′

33°52′30″

33°45′



Location Map



0 1 2 3 MI
0 1 2 3 4 KM

Scale 1:62,500
Contour interval 10 gammas (nT)
Polyconic projection

AEROMAGNETIC MAP OF THE EAGLE MOUNTAINS AREA, RIVERSIDE COUNTY, CALIFORNIA

by V. J. S. GRAUCH

1984

AEROMAGNETIC MAP OF THE EAGLE MOUNTAINS AREA,
RIVERSIDE COUNTY, CALIFORNIA
by V.J.S. Grauch

Total intensity aeromagnetic data for this map were obtained from surveys flown in 1954 by Fairchild Aerial Surveys, Inc. for a division of U.S. Steel. The surveys were flown at one time with an average spacing of 0.25 mi (0.4 km) but in a piece-meal fashion; the twelve pieces that cover the Eagle Mountains area were flown at different barometric elevations and different orientations. The aeromagnetic survey index map displays the survey specifications in more detail.

The surveys were analytically draped to 1000 feet above ground and merged into one large, coherent data set. By analytically draping the data, anomalies on mountaintops will look similar to those in valleys (if the sources are similar), whereas in level surveys, the plane flies closer to the tops of mountains than to the bottom of valleys so that small magnetic sources on mountaintops are enhanced over those in valleys. Draped data, however, deepen the lows due to valleys when compared to level data (Grauch and Campbell, 1984).

Data for the surveys were digitized from an existing map; they were projected (polyconic projection), then gridded using a minimum curvature technique (Webring, 1981) at a 0.2-km grid spacing. The grids were then draped individually at 1000 feet above ground principally by the method of Cordell and Grauch (1983) and constant datums removed. All grids were merged by splining their edges together over one grid interval (R. Sweeney, U.S. Geological Survey, unpub. computer program). The geomagnetic reference field established by the Goddard Space Flight Center (GSFC 12/66; Cain and others, 1967) and calculated on the draped surface was removed from the merged data. The contouring program of Dynamic Graphics (1976) generated the final contour map.

REFRENCES

Cain, J.C., Hendricks, S.J., Langel, R.A., and Hudson, W.V., 1967, A proposed model for the International Geomagnetic reference field—1965 (GSFC X-611-67-173, July 1967): Journal of Geomagnetism and Geoelectricity, V. 19, p. 335-355.

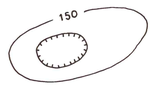
Cordell, Lindrith and V.J.S. Grauch, 1983, Mapping basement magnetization zones from aeromagnetic data in the San Juan Basin, New Mexico (abs.): Geophysics, V. 48, no. 4, p. 446; extended abstract in Society of Exploration Geophysicists, Technical Program, Abstracts and Bibliographies, 52nd Annual Meeting, Oct. 17-21, 1982, Dallas, Texas, p. 245-247.

Dynamic Graphics, 1976, User Manual for the Surface Display Library: Dynamic Graphics, Inc., Berkeley, CA.

Grauch, V.J.S. and David L. Campbell, 1984, Does draping aeromagnetic data reduce terrain-induced effects?: Geophysics, V. 49, no. 1, p. 75-80.

Webring, Michael, 1981, MINC: A gridding program based on minimum curvature: U.S. Geological Survey Open-File Report 81-1224, 41 p.

EXPLANATION

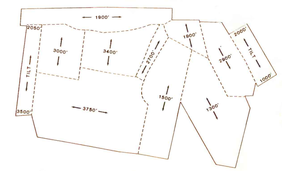


Residual total intensity magnetic contours; hachures represent closed lows. Analytically draped to 1000 feet above ground (see text). Arbitrary datums and geomagnetic reference field (see text) removed.

Aeromagnetic survey boundaries. See survey index map below for original flight specifications.

Map area boundary showing 0.2 km grid interval.

Survey Index Map



Arrows show direction of original flight lines; numbers represent the flight elevation; flight-line spacing averaged 1/4-mile for all surveys.