

COMPLETE BOUGUER GRAVITY ANOMALY MAP OF UTAH

by
Kenneth L. Cook¹, Viki Bankey², Don R. Mabey³, and Michael DePangher⁴

¹Professor Emeritus, Department of Geology and Geophysics, University of Utah,
U.S. Geological Survey, Formerly Utah Geological & Mineral Survey,
Formerly Department of Geology and Geophysics, University of Utah, currently consultant.

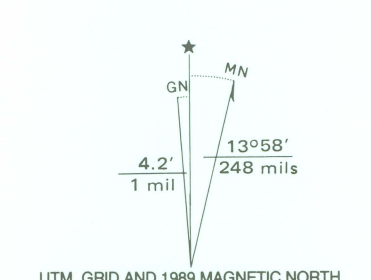
1989

Gravity contour interval 5 milligals
Topographic contour interval 500 feet

Lambert conformal conic projection based on standard parallels 33° and 45°

Scale 1:500,000

1 inch equals approximately 8 miles



DISCUSSION
The compilation and publication of this map is a cooperative effort by the Utah Geological and Mineral Survey (UGMS), the United States Geological Survey (USGS), and the Department of Geology and Geophysics, University of Utah (UOGG). This map is based on approximately 40,000 gravity stations established by many individuals and organizations. Principal data sources are listed in the Acknowledgments section. The data were reduced to a common datum and corrected for elevation, latitude, and longitude. The corrections were made using the method of Plafieff (1977). The corrections were then added algebraically to the simple Bouguer gravity anomaly values to give the complete Bouguer gravity anomaly values for each station.

The complete Bouguer gravity anomaly map was prepared on a Lambert conformal conic projection based on standard parallels 33° and 45° and with a central meridian longitude of 111°20'W and a true latitude of 36°50'N. The irregularly spaced complete Bouguer gravity anomaly values were gridded at a 2.5 km spacing using computer programs by Worthing (1981) based on minimum curvature (Bragg, 1954). Grid data were contoured at a 5-milligal interval using a program by Gordon and Worthing (1982), with contour smoothing using splines under tension. Data were extended approximately 15 minutes of arc (about 25 km or 15 miles) beyond the state border to reduce "edge effects" in the computer contouring. The map produced by Bankey was edited by Cook and Mabey and by DePangher. Minor adjustments were made in the computer contouring and contours were added in the Ogden Valley and Road Point areas from surveys of known high quality but where the principal data could not be located. In these two areas the contours are dashed as they are in the Base Map area.

The position control, gravity surveying techniques used, and the compilation procedures were designed to produce complete Bouguer anomaly values accurate to within 0.5 mgal in areas of relatively low topographic relief and 1 mgal in areas of high relief. The authors believe that nearly all of the stations in the data set meet these standards.

The following personnel compiled the gravity data in K.L. Cook and at the University of Utah and have given permission to use these data on this map. To include the data of principal focus, these gravity stations with all other stations used in making this map, and to open the data to other users after final publication of the map.

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The Great Foundation
Mobil Oil Corporation*
Mobil Oil Corporation*
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During the time period from June 1984, financial support for the original measurements and compilation of gravity data by the University of Utah was given by many of the organizations and individuals previously listed (indicated with an asterisk) and the following: National Science Foundation, U.S. Geological Survey, Department of Energy (Division of Geothermal Energy), Utah Geological Survey, American Smelting and Refining Company, Blue Creek Mining Company, Continental Oil Company, R.V. Doolittle, American Copper Corporation, Marathon Oil Company, Phelps Dodge Corporation, Shell Oil Corporation, Teton, The Associated Companies, and various entities of the University of Utah, namely the Center for the Department of Geology and Geophysics, the Engineering Experiment Station, the Geology and Mineral Survey, the Department of Geology, and the Utah State Office of Geology.

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A listing of principal stations included in the gravity survey is included on the specific type of the principal focus of the gravity data set on this map. Other gravity stations for the University of Utah, only associated with K.L. Cook, are the preliminary measurements, reduction, and editing of the UOGG gravity data for this gravity map.

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A magnetic tape containing the principal focus of the gravity stations, as well as the 2.5 km gridded data, is available from the ERIS Data Center, Data Services Office, Sioux Falls, South Dakota, 57105. The listing of the principal focus of the gravity stations includes the sources of the original data which have been arranged to preserve, insofar as possible, the grouping of individual gravity data sets of the various individuals and organizations that made the field measurements.

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