COMPOSITE MAGNETIC ANOMALY MAP OF THE UNITED STATES

PART A: CONTERMINOUS UNITED STATES

Compiled under the direction of

Isidore Zietz

UNITED STATES GEOLOGICAL SURVEY
In cooperation with
THE SOCIETY OF EXPLORATION GEOPHYSICISTS

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The accompanying magnetic-anomaly map of the conterminous United States and adjacent offshore areas was compiled as a cooperative effort by the U.S. Geological Survey and the Society of Exploration Geophysicists (Hinze, 1976). The map is published in two sheets in color showing magnetic-anomaly contours at an interval of 200 gammas (nanoteslas) with supplemental contours at an interval of 100 gammas on an Albers equal-area projection at the scale of 1:2,500,000. The map may be compared directly with the tectonic attitudes, directions, and spacings of aeromagnetic surveys varied widely; no attempt was made to analytically continue magnetic-anomaly data to a common altitude. The anomaly data were referenced to numerous magnetic-field datums; however, an attempt was made to adjust most anomaly data to a common magnetic-field datum. On the basis of comparisons with aeromagnetic-anomaly data of the U.S. Naval Oceanographic Office and the National Uranium Resource Evaluation (NURE) program of the Department of Energy, we inferred that the zero level of the survey, and an arbitrary zero datum; (2) contour lines at an interval of 100 or 200 gammas were selected; (3) the map of the selected contour lines was reduced to the 1:1,000,000 compilation scale; (4) the reduced map was placed on an albers equal-area projection master map of the conterminous United States and offshore areas; (5) near the boundaries of adjacent surveys, contour lines were visually joined as smoothly as possible; and (6) where major discontinuities of anomaly values existed, contoured NURE data were used to guide the connecting of contour lines; and (7) the map at the 1:1,000,000 compilation scale was photographically reduced to the 1:2,500,000 publication scale.

The NURE data, acquired during a 7-year period for the conterminous United States and referenced to the IGRF, provided a reliable base net for controlling the compilation of individual surveys. As an independent check on the validity of the compilation, profiles from the map were compared with a series of north-south aeromagnetic traverses of the U.S. Naval Oceanographic Office (NOO). The traverses were flown in 1976 and 1977 and were spaced approximately one degree of longitude apart across the conterminous United States. This comparison shows that the compiled data agree with the NOO data, after adjustment to the IGRF, to within 100 gammas throughout the country. Magnetic profiles for the 83°W, 90°W, and 119°W meridians comparing total-intensity magnetic anomaly data obtained from the NOO survey with those taken from the composite U.S. magnetic anomaly map are shown in Figure 1. The magnetic profiles along each meridian are arbitrarily displaced vertically to effect a better visual comparison.

Individual data sources used in the map compilation are shown on index maps. These index maps are keyied to the "Sources of Data" and "Specifications" (direction, altitude, and spacing of traverses), shown later in this pamphlet. Index maps for the Atlantic Ocean, Gulf of Mexico, and Pacific Ocean are included.

1 Exceptions: IGRF 1965.0 not updated, was removed from total-intensity data of reference B, Illinois; reference E, Nebraska; reference F, Ohio; and reference 2, Oregon. A field of 9 gammas per mile north and 3.2 gammas per mile east was removed from vertical-intensity data of reference F, South Dakota. Unknown reference fields were removed from vertical-intensity data of reference H, Missouri, and reference 38, New Mexico. It is not known whether a reference field has been removed from the total-intensity or vertical-intensity data of reference 26, New Mexico.
Figure 1.- Comparison of selected north-south aeromagnetic profiles from map in this report and those from the U.S. Naval Oceanographic Office.
Acknowledgements

The cooperative arrangement between the U.S. Geological Survey and the Society of Exploration Geophysicists, effected in 1975, resulted in formation of the National Magnetic Anomaly Map (NMAM) Committee, which interacted with a group of U.S. Geological Survey personnel. Current members of the NMAM Committee are:

William J. Hinze, Chairman (Purdue University)
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Previous members of the committee and their affiliation during their period of participation are:

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D. Beadle Moore (Exxon Co., U. S. A.)
Robert F. McMahon (Chevron Oil Co.)
Robert D. Regan (U.S. Geological Survey)

U.S. Geological Survey coordinators of the cooperative effort were Martin F. Kane, William F. Hanna, Gordon P. Eaton, and Charles J. Zablocki. Richard D. Hovey (Chevron Overseas Petroleum Co.) and Val W. Chandler (Minnesota Geological Survey) assisted the Editorial Committee in reviewing selected areas of preliminary versions of the map.

The Amoco Production Company, Chevron Oil Company, Gulf Oil Corporation, and Mobil Exploration and Production Services contributed data to the map. Compilation of the map was performed by Kevin R. Bond, Francis P. Gilbert (Deceased), John R. Kirby, Frederic E. Riggle, and Stephen L. Snyder, all of the U.S. Geological Survey.

References Cited


SOURCES OF DATA


**SOURCES OF DATA**


**SPECIFICATIONS**

A East-West, 400 feet above ground, 3 mile (Western Geophysical Co., 1979)

B North-South, 8000 feet barometric, 1 mile (USGS, 1972a)

C North-South, 3000 feet above sea level, 3 mile (Sauck and Sumner, 1970)

D North-South, 400 feet above ground, 3 mile (LKB Resources, Inc., 1980)

E East-West, 400 feet above ground, 6 mile (LKB Resources, Inc., 1980).

F North-South, 2400 feet barometric, 1 mile (Mitchell and Zandle, 1965)

G East-West, 400 feet above ground, 3 mile (EG&G GeoMetris, Inc., 1979a)

H East-West, 400 feet above ground, 3 mile (EG&G GeoMetris, Inc., 1979b)

I East-West, 400 feet above ground, 3 mile (EG&G GeoMetris, Inc., 1979b)

J North-South, 11,000 feet above sea level, 3 mile (Sauck and Sumner, 1970)

K East-West, 10,500 feet barometric, 1 mile (USGS, 1972b)

L East-West, 1500 feet mean terrain clearance, 0.6 mile (USGS, 1979)

M North-South, 1500 feet mean terrain clearance, 1 mile (USGS, 1979)

N North-South, 400 feet above ground, 3 mile (Texas Instruments, Inc., 1979)

O North-South, 9000 feet above sea level, 1.5 mile (Sauck and Sumner, 1970)
**ARIZONA**

**SPECIFICATIONS**

A East-West, 400 feet above ground, 3 mile (Texas Instruments, Inc., 1978)
B East-West, 400 feet above ground, 6 mile (EG&G GeoMetries, 1980f)
C East-West, 400 feet above ground, 6 mile (Geo-Life, 1979b)
D East-West, 400 feet above ground, 3 mile (EG&G GeoMetries, 1980a)
E East-West, 400 feet above ground, 6 mile (EG&G GeoMetries, 1980b)
F East-West, 400 feet above ground, 6 mile (EG&G GeoMetries, 1980h)
G North-South, 400 feet above ground, 3 mile (Geo-Life, 1979a)
H East-West, 400 feet above ground, 6 mile (EG&G GeoMetries, 1980d)
I East-West, 400 feet above ground, 3 mile (Texas Instruments, Inc., 1980)
J East-West, 400 feet above ground, 6 mile (EG&G GeoMetries, 1980c)
K East-West, 400 feet above ground, 6 mile (EG&G GeoMetries, 1980g)
L East-West, 400 feet above ground, 6 mile (EG&G GeoMetries, 1980e)
M East-West, 400 feet above ground, 6 mile (EG&G GeoMetries, 1980i)

**SOURCES OF DATA**


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<td><strong>III</strong></td>
<td>East-West, 12,500 feet barometric, 5 mile (unpublished data)</td>
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SOURCES OF DATA


California Division of Mines and Geology, 1979, Aeromagnetic map of the Modoc area, California: California Division of Mines and Geology Open-File Report 78-13A SAC, scale 1:250,000.


SPECIFICATIONS

A  East-West, 13,000 feet barometric, 1 mile (USGS, 1970b)
B  East-West, 14,000 feet barometric, 1 mile (USGS, 1968)
C  East-West, 14,500 feet barometric, 1 mile (USGS, 1970a)
D  East-West, 8500 feet barometric, 1 mile (Case and Joesting, 1972)
E  East-West, 10,000 feet barometric, 1 mile (Case and Joesting, 1972)
F  East-West, 500 feet above ground, 1 mile (Case and Joesting, 1972)
G  East-West, 500 feet above ground, 1 mile (Petty and others, 1966)
H  East-West, 4,500 feet barometric, 2 mile (USGS, 1978)
I  East-West, 14,500 feet barometric, 5 mile (Zietz and Kirby, 1972)
J  East-West, 14,500 feet to 18,000 feet barometric, 5 mile (Zietz and others, 1969)
K  East-West, 14,500 feet barometric, 1 mile (USGS, 1972)
L  East-West, 14,000 feet barometric, 1 mile (USGS, 1972)
M  East-West, 400 feet above ground, 3 mile (Geo-Life, 1979)
N  East-West, 400 feet above ground, 3 mile (LKB Resources, Inc., 1979)
O  East-West, 400 feet above ground, 3 mile (Texas Instruments, Inc., 1980)
P  East-West, 400 feet above ground, 5 mile (Texas Instruments, Inc., 1978a)
Q  East-West, 400 feet above ground, 5 mile (Texas Instruments, Inc., 1978b)

SOURCES OF DATA

SPECIFICATIONS

A. East-West, 4000 feet barometric, 2 mile (Zietz and others, 1972)
B. North-South, 3500 feet barometric, ½ mile (Zietz and others, 1972)
C. North-South, 1000 feet above ground, ½ mile (Zietz and others, 1972)
D. East-West, 2300 feet barometric, ½ mile (Zietz and others, 1972)
E. East-West, 5500 feet barometric, ½ mile (Zietz and others, 1972)
F. East-West, 5000 feet barometric, ½ mile (Zietz and others, 1972)
G. East-West, 500 feet above ground, 1 mile (Zietz and others, 1972)
H. East-West, 2200 feet barometric, 2 mile (Zietz and others, 1972)
I. East-West, 750 feet above ground, ½ mile (Zietz and others, 1972)
J. East-West, 500 feet above ground, ½ mile (Zietz and others, 1972)
K. East-West, 400 feet above ground, ½ mile (Zietz and others, 1972)
L. Shipborne survey, specifications unknown (Zietz and others, 1972; Heirtzler, 1971)
M. Northwest-Southeast, 500 to 2500 feet barometric, 5 mile (Zietz and others, 1972; Taylor and others, 1968)
N. North-South, 400 feet above ground, ½ mile (Zietz and others, 1972)

SOURCES OF DATA

A North-South, 500 feet above ground, 1 mile (Popoee and others, 1964)

B North-South, 1000 feet above ground, 4 mile (USGS 1974a, b, c, d, e, f)

C North-South, 1000 feet above ground, ½ mile (Joesting and others, 1949)

D North-South, 3000 feet barometric, 2 mile (USGS, 1969)

E North-South, 500 feet above ground, ¼ mile (Bromery and Griscom, 1967)

F North-South, 1000 feet above ground, ½ mile (Henderson and others, 1963)

G North-South, 1000 feet barometric, 1 mile (USGS, 1974k)

H North-South, 500 feet above ground, ½ mile (Henderson and others, 1966)

I North-South, 1000 feet above ground, 4 mile (unpublished data)

J East-West, 500 feet above ground, 1 mile (USGS, 1973a)

K East-West, 500 feet above ground, 1 mile (USGS, 1974g)

L East-West, 500 feet above ground, ½ mile (Bromery, 1967)

M Northwest-Southeast, 500 feet above ground, ½ mile (Bromery and others, 1964)

N East-West, 400 feet above ground, ½ mile (USGS, 1971a)

O East-West, 500 feet above ground, 1 mile (USGS, 1979)

P East-West, 500 feet above ground, 1 mile (USGS, 1974h)

Q East-West, 500 feet above ground, 1 mile (USGS, 1974j)

R East-West, 500 feet above ground, 1 mile (USGS, 1974i)

S East-West, 500 feet above ground, 1 mile (unpublished data)

T East-West, 400 feet above ground, ½ mile (USGS, 1971b)

U East-West, 1200 feet barometric, 1 mile (USGS, 1974n)

V East-West, 1200 feet barometric, 1 mile (USGS, 1974m)

W East-West, 1200 feet barometric, 1 mile (USGS, 1974l)

X East-West, 1200 feet barometric, 1 mile (USGS, 1973b)

Y East-West, 1000 feet barometric, 1 mile (Balsley and others, 1946)
SOURCES OF DATA


SPECIFICATIONS

A  East-West, 500 feet above ground, 1 mile (USGS, 1978c)
B  East-West, 500 feet mean terrain clearance, 1 mile (USGS, 1978a)
C  East-West, 500 feet mean terrain clearance, 1 mile (USGS, 1978b)
D  Southwest-Northeast, 1000 feet above sea level, 5 nautical mile
    (USNO, 1972)
E  Northwest-Southeast, 450 meters above ground, 8 kilometers
    (Klitgord and Behrendt, 1977)
F  East-West, 500 feet mean terrain clearance, 1 mile (USGS, 1978d)

SOURCES OF DATA

Klitgord, K. D., and Behrendt, J. C., 1977, Aeromagnetic anomaly map
of the United States Atlantic continental margin: U.S. Geological
Survey Map MF 913, 2 sheets, scale 1:1,000,000.

U.S. Geological Survey, 1978a, Aeromagnetic map of part of the
Apalachicola 1° x 2° quadrangle, Florida: U.S. Geological Survey
Open-File Report 78-714, scale 1:250,000.
     1978b, Aeromagnetic map of north-central Florida: U.S.
     1978c, Aeromagnetic map of northern Florida: U.S. Geological
     Survey Open-File Report 78-891, 2 sheets, scale 1:250,000.
     1978d, Aeromagnetic map of part of the Pensacola 1° x 2°
     quadrangle, Florida: U.S. Geological Survey Open-File Report 78-
     716, scale 1:250,000.

U.S. Naval Oceanographic Office, 1972, Residual magnetic intensity
contour chart—Gulf of Mexico, Caribbean Sea, North American
Basin in Environmental-acoustic atlas of the Caribbean Sea and Gulf
of Mexico, vol. II, marine environment: U.S. Naval Oceanographic
Office SP-189II, 181 p.
**SOURCES OF DATA**


**SPECIFICATIONS**

A East-West, 500 feet above ground, 2 mile (USGS, 1979c)
B East-West, 500 feet above ground, 2 mile (USGS, 1979a)
C Northwest-Southeast, 500 feet above ground, 1 mile (USGS, 1977a)
D Northwest-Southeast, 500 feet above ground, 1 mile (Philbin and others, 1964)
E North-South, 500 feet above ground, 1 mile (USGS, 1977b)
F Northwest-Southeast, 500 feet above ground, 1 mile (USGS, 1977a)
G Northwest-Southeast, 500 feet above ground, 1 mile (USGS, 1973)
H Northwest-Southeast, 500 feet above ground, 1 mile (Petty and others, 1965)
I Northwest-Southeast, 500 feet above ground, 1 mile (USGS, 1979b)
J Northwest-Southeast, 500 feet above ground, 1 mile (USGS, 1977c)
K Northwest-Southeast, 500 feet above ground, 1 mile (USGS, 1976a)
L East-West, 500 feet above ground, 1 mile (USGS, 1976b)
M East-West, 500 feet above ground, 1 mile (USGS, 1978)
A  East-West, 7000 feet barometric, 2 miles (A-1, USGS 1973a; A-2, USGS 1973c)
B  East-West, 7000 feet barometric, 1 mile (Kleinkopf and others, 19782).
C  Northern part North-South, 5000 feet barometric, ½–2 miles; Southern part East-West, 6000 feet barometric, ½–2 miles (Kleinkopf and others, 1972)
D  East-West, 12,000 feet barometric, 2 miles (USGS, 1975)
E  North-South, 11,000 feet barometric, 1 mile (E-1, USGS 1972c; E-2, USGS, 1972d; E-3, Weis and others, 1972; E-4, Cater and others, 1973; E-5, unpublished data)
F  East-West, 9000 feet barometric, 1 and 2 miles (USGS, 1980)
G  East-West, 15,000 feet barometric, 5 miles (Zietz and others, 1971)
H  North-South, 11,000 feet barometric, 2 miles (USGS, 1972b)
I  East-West, 9000 feet barometric, 1 mile (Zietz and others, 1978)
J  North-South, 12,000 feet barometric, 1 mile (Kilsgaard and others, 1970)
K  East-West, 11,000 feet barometric, 1 mile (K-1, USGS, 1971a; K-2, USGS, 1971b; K-3, USGS 1971c)
L  East-West, 12,500 feet barometric, 5 miles (L-1, USGS, 1972a; L-2, USGS, 1971d)
M  East-West, 12,000 feet barometric, 1 mile (USGS, 1973b)
N  North-South, 12,000 feet barometric, 5 miles (Zietz and others, 1978)
O  Northeast-Southwest, 9000 feet barometric, 1 mile (Meuschke and Long, 1965)
P  East-West, 9000 feet barometric, 1 mile (Mitchell and others, 1965)
R  North-South, 8000 feet barometric, 2 miles (USGS, 1974b)
S  North-South, 6000 feet barometric, ½ mile (USGS, 1974a)
T  North-South, 12,000 feet barometric, 1 mile (Tschantz and others, 1974)
U  North-South, 1000 feet above ground, ½ mile (USGS, 1981)
**SOURCES OF DATA**


SPECIFICATIONS
A  East-West, 500 feet above ground, 1 mile (Beck, 1965)
B  East-West, 6000 feet above sea level, 5 mile (Zietz and others, 1966)
C  North-South, 3000 feet above mean sea level, 1 mile (Heigold, 1976)
D  North-South, 1000 feet above mean terrain, 1 mile (Johnson and others, 1980)
E  East-West, 400 feet above ground, 6 mile (Texas Instruments, 1980)

SOURCES OF DATA
SPECIFICATIONS

North-South, 1000 feet above ground, 1 mile (Richardson, 1978)

SOURCES OF DATA

Richardson, N. R., Jr., 1978, Total magnetic intensity map of Indiana: Purdue University, Department of Geosciences, scale 1:500,000.

SPECIFICATIONS

The flight elevation of all surveys was 1000 feet above ground, except for area F which was 2000 feet above sea level. The flight direction and spacing for all the surveys was east-west and one mile, respectively. Data used to compile this map were published by the U.S. Geological Survey, A (Henderson and Vargo, 1965), and by the Iowa Geological Survey, B (1965), C (1968), D (1969), E (1970), and F (1973).

SOURCES OF DATA


SPECIFICATIONS
All lines flown in an East-West direction at 2 mile spacing with elevations as shown below.
A 4500 feet above sea level (Yarger and others, 1980)
B 3000 feet above sea level (Yarger and others, 1980)
C 2500 feet above sea level (Yarger and others, 1980)

 SOURCES OF DATA

SPECIFICATIONS
East-West, 1000 feet constant barometric altitude, 1 mile
(Johnson and others, 1978)

 SOURCES OF DATA
SOURCES OF DATA


SPECIFICATIONS

A Northwest-Southeast, 2500 feet barometric, 10 mile (Zietz and others, 1972)
B North-South, 2500 feet barometric, 2 to 6 mile (Zietz and others, 1972)
C East-West, 500 feet above ground, ½ mile (Zietz and others, 1972)
D East-West, 500 feet above ground, ½ mile (Zietz and others, 1972)
E North-South, 500 feet above ground, ¼ mile (Zietz and others, 1972)
F North-South, 3500 feet barometric, ½ mile (Zietz and others, 1972)
G Northwest-Southeast, 500 feet above ground, ¼ mile (Zietz and others, 1972)
H North-South, 500 feet above ground, ¼ mile (Zietz and others, 1972)
I East-West, 500 feet above ground, ¼ mile (Zietz and others, 1972)
J East-West, 1000 feet above ground, 2 mile (Zietz and others, 1972)
K North-South, 750 feet above ground, ¼ mile (Zietz and others, 1972)
L North-South, 500 feet above ground, ¼ mile (Zietz and others, 1972)
M East-West, 500 feet above ground, ½ mile (Zietz and others, 1972)
N North-South, 500 feet above ground, ½ mile (Zietz and others, 1972)
O North-South, 500 feet above ground, ¼ mile (Zietz and others, 1972)
P Northwest-Southeast, 2500 feet barometric, 5 mile (Zietz and others, 1972)
Q Northwest-Southeast, 500 feet above ground, ¼ to ½ mile (Zietz and others, 1972)
R North-South, 500 feet above ground, ½ mile (Zietz and others, 1972)
S Northwest-Southeast, 500 feet above ground, ½ mile (Zietz and others, 1972)
T Northwest-Southeast, 2500 feet barometric, 5 mile (Zietz and others, 1972)
U East-West, 500 feet above ground, ½ mile (Zietz and others, 1972)
V East-West, 400 feet above ground, ½ mile (Zietz and others, 1972)
W Northwest-Southeast, 2500 feet barometric, 6 mile (Zietz and others, 1972)
X East-West, 750 feet above ground, ½ mile (Zietz and others, 1972)
Y Northwest-Southeast, 150 meters above sea level, 8 kilometers (Taylor and others, 1968)

SOURCES OF DATA
SPECIFICATIONS

A  North-South and East-West, 500 feet above ground, 0.25–3 mile (Zietz and Kirby, 1971)
B  North-South, 500 feet above ground, 0.5 mile (USGS, 1970)
C  North-South, 3000 feet barometric, 3 mile (Hinze and others, 1971)
D  North-South, 3000 feet barometric, 6 mile (Wold and Ostenso, 1966)
E  Northeast-Southwest, 3000 feet barometric, 6 mile (Hinze and others, 1966)
F  Northwest-Southeast (southern half) Northeast-Southwest (northern half), 3000 feet barometric, 6 mile (O’Hara and Hinze, 1966)

SOURCES OF DATA

**MINNESOTA**

**SPECIFICATIONS**

A North-South, 500 feet above ground, 1 mile (Bath and others, 1964b)

B North-South, 1000 feet above ground, 1 mile (Bath and others, 1964b)

C North-South, 1000 feet above ground, 1 mile (Bath and others, 1965a)

D North-South, 1000 feet above ground, 1 mile (USGS, 1968b)

E North-South, 1000 feet above ground, 0.5 to 1 mile (Bath and others, 1965a)

F North-South, 1000 feet above ground, 1 mile (USGS, 1969)

G East-West, 1000 feet above ground, 1 mile (Bath and others, 1964a)

H North-South, 500 feet above ground, 1 mile (Bath and others, 1965b)

I North-South, 1000 feet above ground, 1 mile (Bath and others, 1965b)

J North-South, 1000 feet above ground, 1 mile (Bath and others, 1964a)

K East-West, 1000 feet above ground, 1 mile (Bath and others, 1964a)

L North-South, 1000 feet above ground, 2 to 4 mile (Bath and others, 1964a)

M East-West, 1000 feet barometric, 1 mile (USGS, 1968a)

N East-West, 1000 feet above ground, 1 mile (USGS, 1970)

O East-West, 500 feet above ground, 1 mile (Sims and Zietz, 1967)

P East-West, 1000 feet above ground, 1 mile (Philbin and Gilbert, 1966b)

Q East-West, 1000 feet above ground, 1 mile (Philbin and Gilbert, 1966a)

**SOURCES OF DATA**


________ 1968b, Aeromagnetic map of the Kabetogama Lake-Grassy Lake area, St. Louis County, Minnesota: U.S. Geological Survey Geophysical Investigations Map GP-616, scale 1:250,000.


MISSISSIPPI

SOURCES OF DATA


SPECIFICATIONS
All lines flown East-West, 400 feet above ground, with six-mile spacing.

A (EG&G GeoMetries, 1980g)
B (EG&G GeoMetries, 1980f)
C (EG&G GeoMetries, 1980a)
D (EG&G GeoMetries, 1980d)
E (EG&G GeoMetries, 1980h)
F (EG&G GeoMetries, 1980e)
G (EG&G GeoMetries, 1980b)
H (EG&G GeoMetries, 1980c)
I (EG&G GeoMetries, 1980i)
SOURCES OF DATA


Missouri Geological Survey and Water Resources, 1943, Magnetic map of Missouri showing anomalies of vertical intensity: (Rolla, Missouri), scale 1:500,000 (reprinted in 1968).


--- 1961b, Total intensity aeromagnetic maps, Boss, Corrion, Edgehill, and Lesterville quadrangles: (Rolla, Missouri), 4 sheets, scale 1:62,500.

--- 1962, Total intensity aeromagnetic maps, Ash Grove, Fairplay, Greenfield, Hermitage, Macks Creek, Stockton, Stockton 1, Stockton 2, Stoutland, and Urbana quadrangles: (Rolla, Missouri), 10 sheets, scale 1:62,500.

--- 1963a, Total intensity aeromagnetic maps, Butler 4, Clinton 3, Clinton 4, and Fristoe quadrangles: (Rolla, Missouri), 4 sheets, scale 1:62,500.

--- 1963b, Total intensity aeromagnetic map of Carter County, (Rolla, Missouri), scale 1:62,500.

--- 1963c, Total intensity aeromagnetic map, Advance quadrangle: (Rolla, Missouri), scale 1:62,500.

--- 1965, Total intensity aeromagnetic maps, Eugene, Iberia, Linn Creek, Little Niangua, Richland, Tavern, and Warsaw quadrangles: (Rolla, Missouri), 7 sheets, scale 1:62,500.

--- 1968a, Total intensity aeromagnetic maps, Joplin East, Neosho, Ritchey, Sarcoxie, Seneca, Bolivar, Buffalo, Morrisville, and Strafford quadrangles: (Rolla, Missouri), 9 sheets, scale 1:62,500.

--- 1968b, Total intensity aeromagnetic maps, Ellington, Green ville, Piedmont, and Zalma quadrangles: (Rolla, Missouri), 4 sheets, scale 1:62,500.

--- 1968c, Total intensity aeromagnetic maps, Gerald quadrangle: (Rolla, Missouri), scale 1:62,500.

--- 1968d, Total intensity aeromagnetic map, Cardavera quadrangle: (Rolla, Missouri) scale 1:62,500.


Missouri Geological Survey and Water Resources, 1943, Magnetic map of Missouri showing anomalies of vertical intensity: (Rolla, Missouri), scale 1:500,000 (reprinted in 1968).
A  East-West, 7000 feet barometric, 2 mile (USGS, 1973b)
B  East-West, 7000 feet barometric, 2 mile (USGS, 1973a)
C  East-West, 11,000 feet barometric, 2 mile (USGS, 1973a)
D  East-West, 7000 feet barometric, 1 mile (Kleinkopf and others, 1972)
E  East-West, 9000 feet barometric, 1 mile (Kleinkopf and Mudge, 1972)
F  East-West, 9000 feet barometric, 2 mile (USGS, 1969)
G  Northeast-Southwest, 9000 feet barometric, 2 mile (Kleinkopf and Mudge, 1972)
H  North-South, 7500 feet barometric, 1 mile (Douglas, 1971)
I  North-South, 11,000 feet barometric, 1 mile (USGS, 1972a)
J  East-West, 15,000 feet barometric, 5 mile (Zietz and others, 1971)
K  East-West, 10,500 feet barometric, 2 mile (Johnson and others, 1965)
L  East-West, 500 feet above ground, 0.5 mile (Davis and others, 1965)
M  East-West, 12,000 feet barometric, 2 mile (USGS, 1975b)
N  East-West, 12,500 feet barometric, 5 mile (USGS, 1972b)
O  East-West, 12,000 feet barometric, 1 mile (USGS, 1973c)
P  East-West, 12,000 feet above sea level, 2 mile (USGS, 1975a)
Q  East-West, 400 feet above ground, 6 mile (Texas Instruments, Inc., 1979)
R  East-West, 400 feet above ground, 3 mile (Texas Instruments, Inc., 1979)
S  East-West, 400 feet above ground, 3 mile (Texas Instruments, Inc., 1979)
T  East-West, 400 feet above ground, 3 mile (Texas Instruments, Inc., 1979)
U  East-West, 400 feet above ground, 3 mile (Texas Instruments, Inc., 1979)
V  East-West, 400 feet above ground, 6 mile (Texas Instruments, Inc., 1979)
W  East-West, 4000 feet barometric, 3 mile (USGS, 1981)
X  East-West, 400 feet above ground, 3 mile (EG&G GeoMetries, 1979)
SOURCES OF DATA


A East-West, 400 feet above ground, 3 mile (EG&G GeoMetries, 1979a)
B East-West, 400 feet above ground, 3 mile (EG&G GeoMetries, 1979b)
C East-West, 400 feet above ground, 6 mile (EG&G GeoMetries, 1980)
D East-West, 400 feet above ground, 6 mile (Geodata, 1981a)
E East-West, 6000 feet above sea level, 5 mile (Zietz and others, 1966)
F East-West, 400 feet above ground, 6 mile (Geodata, 1981b)
G East-West, 400 feet above ground, 5 mile (Texas Instruments, 1978)
H East-West, 400 feet above ground, 3 mile (EG&G GeoMetries, 1978)
I East-West, 1000 feet above ground, 2 mile (USGS, 1973)

SOURCES OF DATA


NEVADA

L East-West, 8000 feet barometric, 0.5 mile (Boynton and others, 1963a and b; Philbin and White, 1965a, b, c, d, e, f, g, h, i, and j)
M North-South, 12,000 feet barometric, 1 mile (USGS, 1976b)
N East-West, 9000 feet barometric, 3 mile (USGS, 1975)
O North-South, 400 feet above ground, 3 mile (Geo-Life, 1979)
P East-West, 400 feet above ground, 3 mile (Western Geophysical Co., 1979)
Q East-West, 8000 feet barometric, 1 mile (unpublished data)

SOURCES OF DATA
SOURCES OF DATA


SPECIFICATIONS

A  East-West, 400 feet above ground, 3 mile (EG&G GeoMetrics, 1979)
B  North-South, 1000 feet above ground, 1 mile (USGS, 1980)
C  East-West, 11,000 feet barometric, 1 mile (USGS, 1976a)
D  East-West, 11,000 feet barometric, 1 mile (USGS, 1972a)
E  East-West, 400 feet above ground, 6 mile (EG&G GeoMetrics, 1980)
F  East-West, 400 feet above ground, 3 mile (Texas Instruments, Inc., 1980)
G  East-West, 400 feet above ground, 3 mile (EG&G GeoMetrics, 1979)
H  East-West, 400 feet above ground, 3 mile (EG&G GeoMetrics, 1980)
I  East-West, 400 feet above ground, 3 mile (GeoData International, Inc., 1976c)
J  East-West, 400 feet above ground, 3 mile (Texas Instruments, Inc., 1979a)
K  East-West, 400 feet above ground, 3 mile (Texas Instruments, Inc., 1979a)
L  East-West, 8500 feet terrain clearance, 1 mile (USGS, 1979a)
M  East-West, 9500 feet terrain clearance, 1 mile (USGS, 1979a)
N  East-West, 400 feet above ground, 3 mile (Geo-Life, 1979a)
O  East-West, 8000 feet barometric, 1 mile (USGS, 1975a)
P  East-West, 10,000 feet barometric, 1 mile (USGS, 1975b)
Q  East-West, 10,000 feet above sea level, 1 mile (USGS, 1974b)
R  East-West, 8000 feet barometric, 1 mile (USGS, 1975c)
S  East-West, 7500 feet barometric, 1 mile (USGS, 1976b)
T  East-West, 7000 feet barometric, 1 mile (USGS, 1976b)
U  East-West, 8500 feet barometric, 1 mile (USGS, 1976b)
V  East-West, 1000 feet above ground, 1 mile (Dempsey and Hill, 1950c)
W  East-West, 1000 feet above ground 1 mile (Dempsey and Hill, 1950d)
X  East-West, 1000 feet above ground, 1 mile (Dempsey and Hill, 1950a)
Y  East-West, 1000 feet above ground, 1 mile (Dempsey and Hill, 1950b)
Z  Specifications unknown (unpublished data)
AA  East-West, 400 feet above ground, 3 mile (GeoData International, Inc., 1976b)
BB  East-West, 400 feet above ground, 3 mile (Texas Instruments, Inc., 1979b)
CC  East-West, 400 feet above ground, 6 mile (Geo-Life, 1979b)
DD  East-West, 10,500 feet barometric, 1 mile (USGS, 1972b)
EE  East-West, 400 feet above ground, 3 mile (Geo-Life, 1979b)
FF  Northwest-Southeast, 1737 meter barometric, 2 kilometer
     (Bath, 1977)
GG  East-West, 1500 feet mean terrain clearance, 0.6 mile
     (USGS, 1979b)
HH  East-West, 400 feet above ground, 3 mile (Texas Instruments, Inc., 1979d)
II  East-West, 400 feet above ground, 3 mile (Texas Instruments, Inc., 1979c)
JJ  East-West, 10,000 feet above sea level, 1 mile (USGS, 1974a)
KK  Specifications unknown (unpublished data)
LL  Vertical-intensity ground survey, 1 mile (unpublished data)
MM  East-West, 400 feet above ground, 3 mile (GeoData International, Inc., 1976a)
NN  East-West, 500 feet above ground, 1 mile (USGS, 1973)
OO  East-West, 400 feet above ground, 3 mile (GeoData International, Inc., 1980)


A  East-West, 1700 feet barometric, 1 mile (USGS, 1979b)
B  East-West, 1700 feet barometric, ½ mile (USGS, 1979b)
C  East-West, 500 feet above ground, ½ mile (USGS, 1975a)
D  North-South, 1000 feet above ground, ¼ mile (Zietz and others, 1972)
E  East-West, 1000 feet above ground, ¼ mile (Zietz and others, 1972)
F  East-West, 1000 feet above ground, ½ mile (Zietz and others, 1972)
G  North-South, 1000 feet above ground, ¼ mile (Balsley and others, 1954b)
H  North-South, 1000 feet above ground, ¼ mile (Balsley and others, 1954a)
I  East-West, 1000 feet above ground, ¼ mile (Balsley and others, 1959a)
J  East-West, 1000 feet above ground, ¼ mile (Balsley and others, 1959b)
K  North-South, 1000 feet above ground, ½ mile (Balsley and others, 1965a)
L  North-South, 1000 feet above ground, ½ mile (Balsley and others, 1965f)
M  East-West, 1000 feet above ground, ½ mile (Balsley and others, 1965b)
N  East-West, 1000 feet above ground, ½ mile (Balsley and others, 1965d)
O  East-West, 1000 feet above ground, ½ mile (Balsley and others, 1965c)

P  East-West, 1000 feet above ground, ½ mile (Balsley and others, 1965e)
Q  East-West, 1000 feet above ground, 1 mile (USGS, 1978)
R  North-South, 1000 feet above ground, 1 mile (USGS, 1978)
S  East-West, 1000 feet above ground, ½ mile (Zietz and others, 1972)
T  North-South, 1000 feet above ground, ½ mile (Zietz and others, 1972)
U  East-West, 1000 feet above ground, 2 mile (USGS, 1975b)
V  East-West, 3000 feet barometric, 2 mile (USGS, 1979a)
W  East-West, 1000 feet above ground, 1 mile (USGS, 1977)
X  North-South, 500 feet above ground, 1 mile (unpublished data)
Y  North-South, 500 feet above ground, 1 mile (Zietz and others, 1972)
Z  East-West, 500 feet above ground, 1 mile (Zietz and others, 1972)
AA East-West, 3000 feet barometric, 2 mile (USGS, 1979c)
BB East-West, 500 feet above ground, ½ mile (Zietz and others, 1972)
CC North-South, 500 feet above ground, ½ mile (Henderson and others, 1966)
DD Northwest-Southeast, 500 to 2500 feet barometric, 5 mile (Zietz and others, 1972)
EE Specifications unknown (unpublished data)
SOURCES OF DATA


SPECIFICATIONS

All areas flown east-west, except area P which was flown north-south.

A 400 feet above ground, 3 mile (LKB Resources, 1979b)
B 500 feet above ground, 1 mile (USGS, 1977a)
C 500 feet above ground, 1 mile (USGS, 1978c)
D 500 feet above ground, 1 mile (USGS, 1977c)
E 500 feet above ground, ½ mile (Bates and Bell, 1965)
F 500 feet above ground, ¼ mile (Henderson and Gilbert, 1966)
G 400 feet above ground, ½ mile (USGS, 1971a, b, c, d, and e)
H 400 feet above ground, ½ mile (USGS, 1973a, b, c, d, and e)
I 500 feet above ground, ½ mile (USGS, 1974)
J 500 feet above ground, 1 mile (USGS, 1977b)
K 500 feet above ground, 1 mile (Coastal Plains Regional Commission and USGS, 1976a)
L 500 feet above ground, 1 mile (USGS, 1977d)
M 500 feet above ground, 1 mile (USGS, 1978b)
N 500 feet above ground, 1 mile (Coastal Plains Regional Commission and USGS, 1976b)
O 500 feet above ground, 1 mile (USGS, 1978a)
P 5000 feet barometric, 1 mile (USGS, 1976)
Q 400 feet above ground, 6 mile (Carson Helicopters, 1980)
R 400 feet above ground, 3 mile (LKB Resources, 1979a)


SPECIFICATIONS

A East-West, 4000 feet barometric, 3 mile (USGS, 1981b)
B East-West, 15,000 feet barometric, 5 mile (Zietz and others, 1971)
C East-West, 400 feet above ground, 3 mile (Geodata, 1979b)
D East-West, 400 feet above ground, 3 mile (Geodata, 1979a)
E East-West, 3500 feet barometric, 3 mile (USGS, 1981a)
F East-West, 3000 feet above sea level, 1 mile (Aeroservice Corporation, unpublished data)
G Total intensity ground magnetics, 3 mile (unpublished data)
H Total intensity ground magnetics, 2 mile (Okland, 1978)
I East-West, 3500 feet barometric, 3 mile (USGS, 1981b)

SOURCES OF DATA


**SPECIFICATIONS**

A  East-West, 6000 feet above sea level, 5 miles (Zietz and others, 1966)
B  East-West, 500 feet above ground, 1 mile (Philbin and others, 1965)
C  East-West, 2000 feet barometric, 1½ mile (USGS, 1980)
D  North-South, 500 feet above ground, 1 mile (Popenoe and others, 1964)
E  unpublished ground magnetics
F  unknown (Patterson, 1980)

**SOURCES OF DATA**

Patterson, R. L., 1980, Low-altitude aeromagnetic survey of south-central Ohio: Columbus, Ohio, The Ohio State University, M.S. Thesis (unpublished)


OKLAHOMA

A  East-West, 400 feet above ground, 3 mile (Texas Instruments, 1980)
B  East-West, 400 feet above ground, 6 mile (Geodata, 1980a)
C  East-West, 400 feet above ground, 6 mile (Geodata, 1980b)
D  East-West, 400 feet above ground, 3 mile (Geodata, 1976)
E  East-West, 400 feet above ground, 3 mile (Geodata, 1976)
F  East-West, 400 feet above ground, 3 mile (Texas Instruments, 1978)
G  East-West, 400 feet above ground, 3 mile (Geodata, 1976)
H  East-West, 400 feet above ground, 3 mile (Texas Instruments, 1977)
I  East-West, 400 feet above ground, 3 mile (Texas Instruments, 1978)
J  East-West, 400 feet above ground, 6 mile (GeoMetries, 1980b)
K  East-West, 400 feet above ground, 6 mile (Geodata, 1979)
L  East-West, 400 feet above ground, 3 mile (GeoMetries, 1980a)

SOURCES OF DATA


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SOURCES OF DATA

Balsley, J. R., Bromery, R. W., Remington, E. W., and others, 1960


SPECIFICATIONS

A Northeast-Southwest, 1000 feet above mean terrain, 0.5 mile
(United Engineers and Constructors, Inc., 1978)
B East-West, 15,000 feet barometric, 5 mile (Zietz and others, 1971)
C East-West, 7000 feet barometric, 1 mile (USGS, 1977b)
D East-West, 14,000 feet barometric, 1 mile (USGS, 1977b)
E East-West, 7000 feet barometric, 1 mile (USGS, 1977a)
F East-West, 4000 feet barometric, 3 to 18 mile (Bromery and Snavely, 1964)
G East-West, 1000 feet above ground, 0.5 mile (Bromery, 1965)
H East-West, 750 feet above ground, 0.5 mile (Bromery, 1962)
I East-West, 3500 feet above sea level, 2 mile (Lockwood, Kessler, and Bartlett, Inc., [1968?])
J East-West, 4500 feet barometric, 1 mile (USGS, 1979)
K East-West, 6500 feet barometric, 1 mile (USGS, 1979)
L East-West, 4500 feet barometric, 0.5 mile (Balsley and others, 1960)
M East-West, 9000 feet above sea level, 2 mile (USGS, 1973)
N Northeast-Southwest, 6500 feet barometric, 1 mile (unpublished data)
O East-West, 9000 feet above sea level, 1 mile (Couch and others, 1978a, c)
P East-West, 11,000 feet above sea level, 1 mile (Couch and others, 1978a, c)
Q East-West, 9000 feet barometric, 2 mile (USGS, 1972b)
R East-West, 9000 feet barometric, 2 mile (USGS, 1972a)
S East-West, 7000 feet above sea level, 1 mile (Couch and others, 1978b)
T East-West, 5000 feet above sea level, 1 mile (Couch and others, 1978b)
U East-West, 400 feet above ground, 3 mile (Geo-Life, 1978)
V East-West, 400 feet above ground, 3 mile (EG&G GeoMetrics, Inc., 1980)
SOUTH CAROLINA

SPECIFICATIONS
A East-West, 400 feet above ground, 3 mile (LKB Resources, 1979)
B East-West, 500 feet above ground, 1 mile (USGS, 1977)
C East-West, 500 feet above ground, 1 mile (Riggle and others, 1980)
D East-West, 400 feet above ground, ½ mile (USGS, 1970)
E East-West, 500 feet above ground, 1 mile (Tyson and others, 1965)
F North-South-Southeast, 500 feet above ground, 1 mile (Petty and others, 1965)
G East-West, 500 feet above ground, 1 mile (USGS, 1976a)
H North-South, 500 feet above ground, 1 mile (USGS, 1975)
I East-West, 500 feet above ground, 1 mile (USGS, 1976b)

SOURCES OF DATA


**SPECIFICATIONS**

A East-West, 400 feet above ground, 3 mile (EG&G GeoMetries, 1980)

B East-West, 400 feet above ground, 3 mile (Geodata, 1979)

C Vertical intensity ground magnetics, 1 mile spacing (Mobil Oil Company, unpublished data)

D East-West, 400 feet above ground, 3 mile (EG&G GeoMetries, 1979)

E East-West, 400 feet above ground, 3 mile (Texas Instruments, 1979)

F Vertical intensity ground magnetics, 4-6 mile (Petsch, 1967)

G East-West, 3000 feet above sea level, 6 mile (Aeroservice Corporation, unpublished data)

**SOURCES OF DATA**


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All surveys flown in an east-west direction with altitude and spacing as shown below.

A 1500 feet constant barometric altitude, 1 mile (USGS, 1974)
B 1500 feet constant barometric altitude, 1 mile (Johnson and others, 1979)
C 1000 feet above ground, 1 mile (Johnson and others, 1979)
D 2500 feet above mean sea level, 1 mile (Johnson and others, 1979)
E 3500 feet above mean sea level, 2 mile (Johnson and others, 1979)
F 3500 feet above mean sea level, 1 mile (Johnson and others, 1979)
G 400 feet above ground, 6 miles (Carson Helicopters, Inc., 1980)
H 3500 feet above mean sea level, 2 mile (Johnson and others, 1979)
I 400 feet above ground, 3 mile (LKB Resources, Inc., 1979b)
J 400 feet above ground, 3 mile (LKB Resources, Inc., 1979a)

SOURCES OF DATA

Johnson, R. W., Haygood, C., and Kunselman, P. M., 1979, Aeromagnetic map of Tennessee, Tennessee Division of Geology, 4 sheets, scale 1:250,000.


<table>
<thead>
<tr>
<th></th>
<th>Specifications</th>
</tr>
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<tbody>
<tr>
<td>A</td>
<td>East-West, 400 feet above ground, 3 mile (EG&amp;G Geometrics, 1978)</td>
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<tr>
<td>B</td>
<td>East-West, 400 feet above ground, 3 mile (LKB Resources, 1979)</td>
</tr>
<tr>
<td>C</td>
<td>East-West, 400 feet above ground, 3 mile (Texas Instruments, 1980c)</td>
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<td>D</td>
<td>East-West, 400 feet above ground, 6 mile (Geodata, 1980h)</td>
</tr>
<tr>
<td>E</td>
<td>East-West, 400 feet above ground, 3 mile (Geodata, 1978a)</td>
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<tr>
<td>F</td>
<td>Unpublished data</td>
</tr>
<tr>
<td>G</td>
<td>Vertical intensity ground magnetic data (Chevron Oil Company, unpublished data)</td>
</tr>
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<td>H</td>
<td>East-West, 400 feet above ground, 3 mile (Geodata, 1980g)</td>
</tr>
<tr>
<td>I</td>
<td>East-West, 400 feet above ground, 3 mile (Geodata, 1980f)</td>
</tr>
<tr>
<td>J</td>
<td>East-West, 400 feet above ground, 3 mile (Geodata, 1980e)</td>
</tr>
<tr>
<td>K</td>
<td>East-West, 400 feet above ground, 3 mile (Geodata, 1980i)</td>
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<tr>
<td>L</td>
<td>East-West, 400 feet above ground, 3 mile (Geodata, 1980b)</td>
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<tr>
<td>M</td>
<td>East-West, 400 feet above ground, 3 mile (Geodata, 1980c)</td>
</tr>
<tr>
<td>N</td>
<td>East-West, 400 feet above ground, 3 mile (Geodata, 1976b)</td>
</tr>
<tr>
<td>O</td>
<td>East-West, 400 feet above ground, 3 mile (Texas Instruments, 1977)</td>
</tr>
<tr>
<td>P</td>
<td>East-West, 400 feet above ground, 3 mile (Geodata, 1979a)</td>
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<td>Q</td>
<td>East-West, 400 feet above ground, 3 mile (Geodata, 1980a)</td>
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<td>R</td>
<td>East-West, 400 feet above ground, 3 mile (Geodata, 1980d)</td>
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<td>S</td>
<td>East-West, 400 feet above ground, 3 mile (Geodata, 1979c)</td>
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<td>East-West, 400 feet above ground, 3 mile (Geodata, 1979d)</td>
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<tr>
<td>U</td>
<td>East-West, 400 feet above ground, 3 mile (Geodata, 1978b)</td>
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<td>V</td>
<td>East-West, 400 feet above ground, 3 mile (Geodata, 1980f)</td>
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<td>W</td>
<td>East-West, 400 feet above ground, 3 mile (Geodata, 1979e)</td>
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<tr>
<td>X</td>
<td>Ground magnetic data (Gulf Oil Company, unpublished data)</td>
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<td>Y</td>
<td>North-South, 1000 feet above ground, 2 mile (USGS, 1974)</td>
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<td>Z</td>
<td>Specifications unknown (unpublished data)</td>
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<td>AA</td>
<td>East-West, 400 feet above ground, 3 mile (Geodata, 1979b)</td>
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<td>BB</td>
<td>East-West, 400 feet above ground, 3 mile (Texas Instruments, 1980b)</td>
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<td>CC</td>
<td>East-West, 400 feet above ground, 3 mile (Texas Instruments, 1980a)</td>
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<td>DD</td>
<td>East-West, 400 feet above ground, 3 mile (Geodata, 1978a)</td>
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<tr>
<td>EE</td>
<td>East-West, 400 feet above ground, 6 mile (EG&amp;G GeoMetries, 1980b)</td>
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<tr>
<td>FF</td>
<td>East-West, 400 feet above ground, 6 mile (EG&amp;G GeoMetries, 1980c)</td>
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SOURCES OF DATA


SPECIFICATIONS

A East-West, 8500 feet barometric, 1 mile (Case and Joesting, 1972)
B East-West, 9000 feet barometric, 1 mile (USGS, 1971)
C East-West, 9000 feet barometric, 1 mile (USGS, 1966)
D East-West, 12,500 feet barometric, 1 mile (Case and Joesting, 1972)
E East-West, 11,500 feet barometric, 1 mile (Case and Joesting, 1972)
F East-West, 12,500 feet barometric, 1 mile (Case and others, 1963)
G East-West, 500 feet above ground, 2 mile (Byerly and Joesting, 1959)
H East-West, 11,000 feet barometric, 2 mile (Crittenden and others, 1967)
I East-West, 12,000 feet barometric, 2 mile (Mabey and others, 1964)
J North-South, 12,000 feet barometric, 5 mile (Zietz and others, 1976)
L North-South, 12,000 feet barometric, 2 to 4 mile (L. B. Alley and R. T. Shuey, between 1971 and 1974, Zietz and others, 1976)
M East-West, 9000 feet barometric, 2 mile (USGS, 1972a)
N East-West, 9000 feet barometric, 2 mile (USGS, 1972b)
O North-South, 14,000 feet barometric, 2 mile (Steenland, 1968)
P East-West, 400 feet above ground, 3 mile (Geo-Life, 1979)
Q East-West, 15,000 feet barometric, individual flight lines (unpublished data)
SPECIFICATIONS

A North-South, 1000 feet above ground, 1 mile (USGS, 1976)
B Northwest-Southeast, 1000 feet above ground, 1 mile (USGS, 1976)
C Northwest-Southeast, 1000 feet above ground, 1 mile (USGS, 1974b)
D Northwest-Southeast, 1000 feet above ground, 1 mile (USGS, 1974a)
E Northwest-Southeast, 5000 feet above sea level, 1½ mile (Virginia Division of Mineral Resources, 1962)
F Northwest-Southeast, 5000 feet above sea level, 3 mile (Virginia Division of Mineral Resources, 1972)
G East-West, 500 feet above ground, ½ mile (Virginia Division of Mineral Resources, 1972)
H East-West, 500 feet above ground, ½ mile (Virginia Division of Mineral Resources, 1966)
I East-West, 500 feet above ground, ½ mile (Virginia Division of Mineral Resources, 1970)
J East-West, 500 feet above ground, ½ mile (Virginia Division of Mineral Resources, 1969)
K East-West, 400 feet above ground, ½ mile (USGS, 1971a, b, c)
L East-West, 500 feet above ground, ½ mile (Virginia Division of Mineral Resources, 1971)
M East-West, 500 feet above ground, ½ mile (USGS, unpublished data)
N East-West, 500 feet above ground, ½ mile (Bromery and others, 1963a, b)
O East-West, 500 feet above ground, ½ mile (Neuschel, 1970)
P East-West, 500 feet above ground, 2 mile (USGS, 1972)
SOURCES OF DATA


______ 1969, Composite aeromagnetic map of the south-central Piedmont, Virginia: Charlottesville, Virginia, scale 1:250,000.

______ 1970, Composite aeromagnetic map of the Roanoke quadrangle, Virginia: Charlottesville, Virginia, scale 1:250,000.

______ 1971, Composite aeromagnetic map of the Piedmont area, Virginia: Charlottesville, Virginia, scale 1:250,000.

______ 1972, Composite aeromagnetic map of western Virginia: Charlottesville, Virginia, 2 sheets, scale 1:250,000.
A North-South, 300 meters above sea level, 1.2 kilometers
(Geological Survey of Canada, 1979a)

B North-South, 300 meters above sea level, 1.2 kilometers
(Geological Survey of Canada, 1979b)

C East-West, 3000 feet barometric, 2 mile (USGS, 1978)

D East-West, 7000 feet barometric, 1 mile (Thompson, 1973)

E North-South, 3000 feet barometric, 2 mile (USGS, 1977a)

F North-South, 3000 feet barometric, 1 mile (USGS, 1974a)

G North-South, 4200 feet above sea level, 2 mile (USGS, 1980d)

H East-West, 500 feet above sea level, 2 mile (USGS, 1980a)

I East-West, 2500 feet above sea level, 2 mile (USGS, 1980c)

J East-West, 2500 feet above sea level, 2 mile (USGS, 1980b)

K East-West, 15,000 feet barometric, 5 mile (Zietz and others, 1971)

L East-West, 1000 feet above ground, 0.5 mile (Henderson and others, 1958h)

M East-West, 1000 feet above ground, 0.5 mile (Henderson and others, 1958d)

N East-West, 1000 feet above ground, 0.5 mile (Henderson and others, 1958j)

O East-West, 1000 feet above ground, 0.5 mile (Henderson and others, 1958i)

P East-West, 1000 feet above ground, 0.5 mile (Henderson and others, 1958l)

Q East-West, 1000 feet above ground, 0.5 mile (Henderson and others, 1958c)

R East-West, 1000 feet above ground, 0.5 mile (Henderson and others, 1958a)

S East-West, 1000 feet above ground, 0.5 mile (Henderson and others, 1958f)

T East-West, 1000 feet above ground, 0.5 mile (Henderson and others, 1958m)

U East-West, 1000 feet above ground, 0.5 mile (Henderson and others, 1958n)

V East-West, 1000 feet above ground, 0.5 mile (Henderson and others, 1958k)

W East-West, 1000 feet above ground, 0.5 mile (Henderson and others, 1958e)

X East-West, 1000 feet above ground, 0.5 mile (Henderson and others, 1958g)

Y East-West, 1000 feet above ground, 0.5 mile (Henderson and others, 1958b)

Z North-South, 8000 feet barometric, 1 mile (Simmons and others, 1974)

AA Northeast-Southwest, 1000 feet above mean terrain, 0.5 mile (United Engineers and Constructors, Inc., 1978)

BB Northeast-Southwest, 1500 feet above mean terrain, 0.5 mile (United Engineers and Constructors, Inc., 1978)

CC Northeast-Southwest, 1000 feet terrain clearance, 1 mile (USGS, 1979)

DD East-West, 10,000 feet barometric, 1 mile (Staatz and others, 1971)

EE East-West, 10,000 feet barometric, 1 mile (USGS, 1976)

FF East-West, 9500 feet barometric, 1 mile (USGS, 1977b)

GG East-West, 500 feet above ground, 0.25 mile (Hunting Geophysical Services, Inc., 1960)

HH East-West, 7000 feet barometric, 2 mile (USGS, 1973)

II East-West, 7000 feet barometric, 1 mile (USGS, 1974b)

JJ East-West, 400 feet above ground, 3 mile (LKB Resources, Inc., 1979)

KK East-West, 400 feet above ground, 3 mile (Texas Instruments, Inc., 1979)

LL East-West, 400 feet above ground, 3 mile (LKB Resources, Inc., 1978)


WISCONSIN

SPECIFICATIONS
A North-South, 3000 feet above sea level, 6 mile (Patenaude, 1966)
B North-South, 500 feet above ground, ½ mile (Zietz and others, 1977)
C North-South, 500 feet above ground, ½ mile (unpublished data)
D Northwest-Southeast (southern half) Northeast-Southwest (northern half), 3000 feet barometric, 6 mile (Hinze and O'Hara, 1966)

SOURCES OF DATA
Hinze, W. J., and O'Hara, N. W., Michigan State University, written communication, 1966
SPECIFICATIONS

A  East-West, 12,000 feet barometric, 1 mile (USGS, 1973)
B  North-South, 3700 meters barometric, 1.6 kilometers
   (Behrendt and others, 1968)
C  Unpublished data
D  East-West, 1000 feet above ground, 3 mile (Balsley and others, 1948)
E  East-West, 400 feet above ground, 3 mile (Geodata, 1980c)
F  East-West, 400 feet above ground, 3 mile (Geodata, 1980a)
G  East-West, 400 feet above ground, 3 mile (EG&G GeoMetrics, 1979a)
H  East-West, 400 feet above ground, 3 mile (EG&G GeoMetrics, 1979c)
I  East-West, 400 feet above ground, 6 mile (Geodata, 1980b)
J  East-West, 400 feet above ground, 2 mile (EG&G GeoMetrics, 1979d)
K  East-West, 400 feet above ground, 3 mile (EG&G GeoMetrics, 1979b)

SOURCES OF DATA


<table>
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<th>SPECIFICATIONS</th>
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<tr>
<td>E Northwest-Southeast, 460 meters above sea level, 32 kilometers (Klitgord and Behrendt, 1977)</td>
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<td>F Northwest-Southeast, 460 meters above sea level, 9.7 kilometers (Klitgord and Behrendt, 1977)</td>
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<td>G Northwest-Southeast, 460 meters above sea level, 4.8 kilometers (Klitgord and Behrendt, 1977)</td>
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<td>H Northwest-Southeast, 500 feet above sea level, 5 nautical miles (US Naval Oceanographic Office, 1972)</td>
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<tr>
<td>I Northeast-Southwest, 1500 feet above sea level, 5 nautical miles (US Naval Oceanographic Office, 1972)</td>
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<tr>
<td>J East-West and North-South, sea level, 10 nautical miles (US Naval Oceanographic Office, 1972)</td>
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SPECIFICATIONS

A Unknown, sea level, 5–10 kilometers (Tiffin and Currie, 1976)
B East-West, 500 feet above sea level, 2 mile (USGS, 1980a)
C East-West, 2500 feet above sea level, 2 mile (USGS, 1980c)
D East-West, 2500 feet above sea level, 2 mile (USGS, 1980b)
E East-West, sea level, 10 nautical miles (Couch and others, 1978)
F East-West, 15,000 feet barometric, 5 mile (Zietz and others, 1971)
G East-West, 500 feet above sea level, 2 mile (Lockwood, Kessler, and Bartlett, Inc., [19687])
H East-West, sea level, 5 nautical miles (Raff and Mason, 1961)
I Northeast-Southwest, 2900 meters barometric, 8 kilometers (unpublished data)
J Specifications unknown (Affleck, 1962)
K East-West, sea level, 5–15 nautical miles (Theberge, 1971)

SOURCES OF DATA


SPECIFICATIONS
A Northeast-Southwest, 1000 feet above sea level, 5 nautical miles (U.S. Naval Oceanographic Office, 1972)
B East-West, sea level, 15 nautical miles (U.S. Naval Oceanographic Office, 1972)
C North-South and East-West, 20,000 feet above sea level, 2 nautical miles (U.S. Naval Oceanographic Office, 1972)
D East-West, sea level, 10 nautical miles (U.S. Naval Oceanographic Office, 1972)
E Specifications unknown (unpublished data)

SOURCES OF DATA