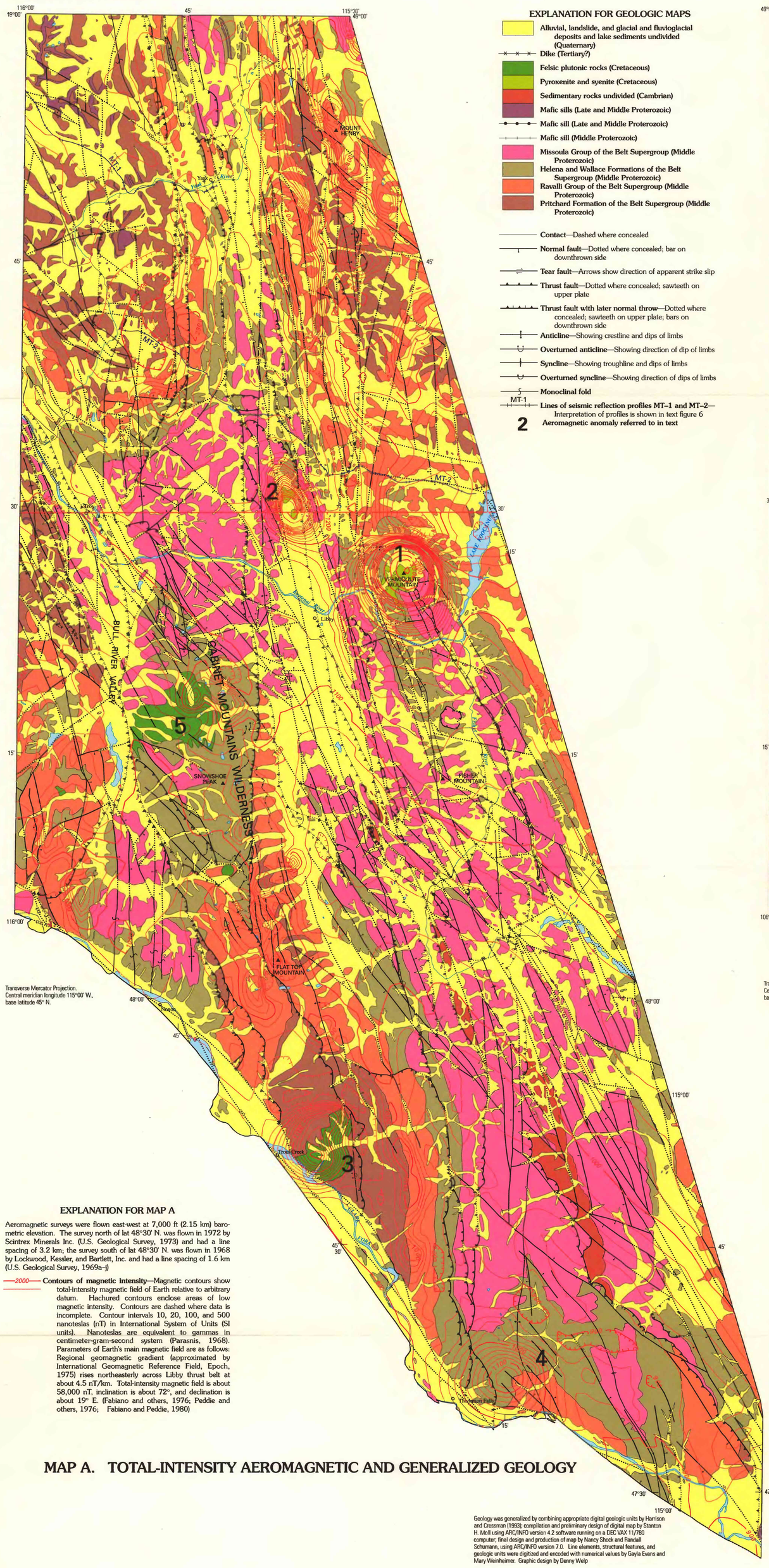


EXPLANATION FOR GEOLOGIC MAPS

- Alluvial, landslide, and glacial and fluvioglacial deposits and lake sediments undivided (Quaternary)
- Dike (Tertiary?)
- Felsic plutonic rocks (Cretaceous)
- Pyroxenite and syenite (Cretaceous)
- Sedimentary rocks undivided (Cambrian)
- Mafic sills (Late and Middle Proterozoic)
- Mafic sill (Late and Middle Proterozoic)
- Mafic sill (Middle Proterozoic)
- Missoula Group of the Belt Supergroup (Middle Proterozoic)
- Helena and Wallace Formations of the Belt Supergroup (Middle Proterozoic)
- Ravalli Group of the Belt Supergroup (Middle Proterozoic)
- Pritchard Formation of the Belt Supergroup (Middle Proterozoic)

Contact—Dashed where concealed

Normal fault—Dotted where concealed; bar on downthrown side

Tear fault—Arrows show direction of apparent strike slip

Thrust fault—Dotted where concealed; sawteeth on upper plate

Thrust fault with later normal throw—Dotted where concealed; sawteeth on upper plate; bars on downthrown side

Anticline—Showing crestline and dips of limbs

Overturned anticline—Showing direction of dip of limbs

Syncline—Showing troughline and dips of limbs

Overturned syncline—Showing direction of dips of limbs

Monoclinal fold

MT-1 **Lines of seismic reflection profiles MT–1 and MT–2**—Interpretation of profiles is shown in text figure 6

2 **Aeromagnetic anomaly referred to in text**

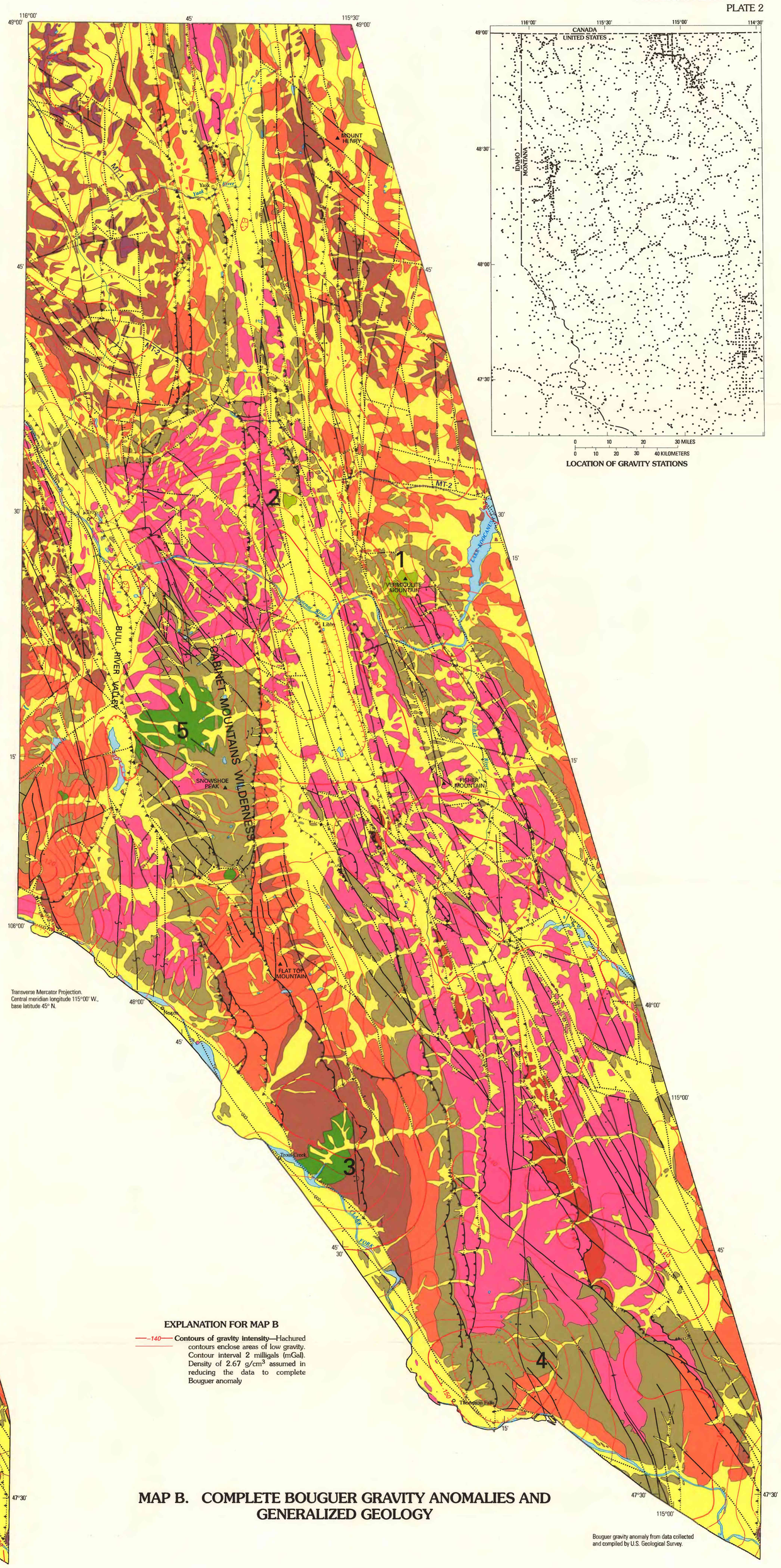
EXPLANATION FOR MAP A

Aeromagnetic surveys were flown east-west at 7,000 ft (2.15 km) barometric elevation. The survey north of lat 48°30' N. was flown in 1972 by Scintrex Minerals Inc. (U.S. Geological Survey, 1973) and had a line spacing of 3.2 km; the survey south of lat 48°30' N. was flown in 1968 by Lockwood, Kessler, and Bartlett, Inc. and had a line spacing of 1.6 km (U.S. Geological Survey, 1969a–j)

—2000— **Contours of magnetic intensity**—Magnetic contours show total-intensity magnetic field of Earth relative to arbitrary datum. Hachured contours enclose areas of low magnetic intensity. Contours are dashed where data is incomplete. Contour intervals 10, 20, 100, and 500 nanoteslas (nT) in International System of Units (SI units). Nanoteslas are equivalent to gammas in centimeter-gram-second system (Parasnis, 1968). Parameters of Earth's main magnetic field are as follows: Regional geomagnetic gradient (approximated by International Geomagnetic Reference Field, Epoch, 1975) rises northeasterly across Libby thrust belt at about 4.5 nT/km. Total-intensity magnetic field is about 58,000 nT, inclination is about 72°, and declination is about 19° E. (Fabiano and others, 1976; Peddie and others, 1976; Fabiano and Peddie, 1980)

MAP A. TOTAL-INTENSITY AEROMAGNETIC AND GENERALIZED GEOLOGY

Geology was generalized by combining appropriate digital geologic units by Harrison and Cressman (1993); compilation and preliminary design of digital map by Stanton H. Mooll using ARC/INFO version 4.2 software running on a DEC VAX 11/780 computer; final design and production of map by Nancy Shock and Randall Schumann, using ARC/INFO version 7.0. Line elements, structural features, and geologic units were digitized and encoded with numerical values by Gayla Evans and Mary Weinheimer. Graphic design by Denny Welp



EXPLANATION FOR MAP B

—140— **Contours of gravity intensity**—Hachured contours enclose areas of low gravity. Contour interval 2 milligals (mGal). Density of 2.67 g/cm^3 assumed in reducing the data to complete Bouguer anomaly

MAP B. COMPLETE BOUGUER GRAVITY ANOMALIES AND GENERALIZED GEOLOGY

Bouguer gravity anomaly from data collected and compiled by U.S. Geological Survey.

LOCATION OF GRAVITY STATIONS

SCALE 1:250 000

5 0 5 10 15 20 MILES

5 0 5 10 15 20 KILOMETERS

NATIONAL GEODETIC VERTICAL DATUM OF 1929

1997 MAGNETIC DECLINATION FROM TRUE NORTH VARIES FROM 18° EASTERLY FOR THE CENTER OF THE WEST EDGE TO 17.5° EASTERLY FOR THE CENTER OF THE EAST EDGE

MAPS SHOWING TOTAL-INTENSITY AEROMAGNETIC ANOMALIES, BOUGUER GRAVITY ANOMALIES, AND GENERALIZED GEOLOGY, LIBBY THRUST BELT, NORTHWESTERN MONTANA

By
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1997

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