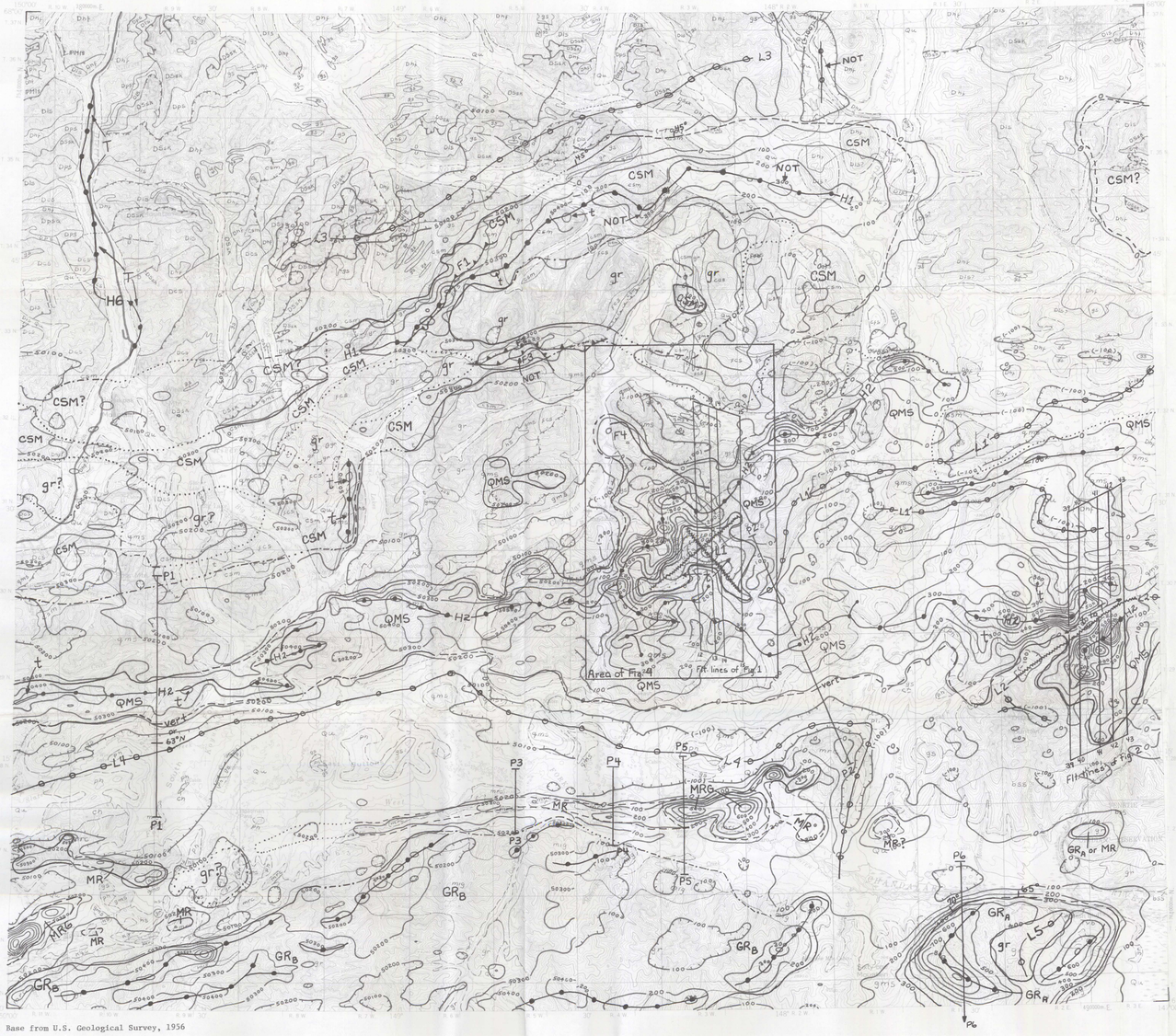
DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY

MISCELLANEOUS FIELD STUDIES
MAP MF-878C
CHANDALAR QUAD., ALASKA
SHEET 2 OF 2



Base from U.S. Geological Survey, 1956

SCALE 1:250 000

CONTOUR INTERVAL 200 FEET
DATUM IS MEAN SEA LEVEL

AEROMAGNETIC INTERPRETATION MAP

AEROMAGNETIC MAP AND INTERPRETATION, CHANDALAR QUADRANGLE, ALASKA

By
John W. Cady

1978

EXPLANATION

GEOLOGY GENERALIZED AND REVISED FROM BROSGE AND REISER,1964 , AND CHIPP,1970

CORRELATION OF MAP UNITS

SURFICIAL DEPOSITS

Qu } QUATERNARY

FOSSILIFEROUS PARTLY METAMORPHOSED SEDIMENTARY ROCKS

METAMORPHIC, INTRUSIVE, AND VOLCANIC ROCKS

Tvb } TERTIARY (?)

Kgc — CRETACEOUS — UNCONFORMITY

mig

PMIs — PENNSYLVANIAN AND MISSISSIPPIAN — UNCONFORMITY

gs, hs — MESOZOIC(?) AND PALEOZOIC

mrc, ch; umf } JURASSIC TO MISSISSIPPIAN

Dhf — UNCONFORMITY

ph

gr — MESOZOIC AND OLDER

Dps, Dpsa, Dcs, Dls — DEVONIAN

gms, gms, bss

csm, t; cgs, cas, fcs — PALEOZOIC OR OLDER

DSsk — DEVONIAN AND SILURIAN

DESCRIPTION OF MAP UNITS

This map is generalized from Brosgé and Reiser (1964). Many of these map units are combinations of units shown separately on the older map. The Devonian and Devonian(?) age that was assigned to the metamorphic rocks by Brosgé and Reiser (1964) is herein revised to early Paleozoic or older.

SURFICIAL DEPOSITS

Qu — Unconsolidated sedimentary deposits (Quaternary)

FOSSILIFEROUS PARTLY METAMORPHOSED SEDIMENTARY ROCKS

Kgc — Quartz pebble conglomerate (Cretaceous)

PMIs — Lisburne Group (Pennsylvanian and Mississippian) and Kayak Shale (Mississippian)—Limestone, dolomite, shale and conglomerate

Dhf — Hunt Fork Shale (Upper Devonian)—Slate and phyllite

Dps — Purple and green slate and phyllite (Devonian)

Dpsa — Purple and green andesitic volcanic sheared conglomerate (Devonian)

Dcs — Chloritic siltstone and grit (Devonian)—Schistose; in part graywacke

Dls — Limestone and siltstone (Upper Devonian)—Schistose; includes some green slate locally

DSsk — Skajit Limestone (Upper and Middle Devonian, Upper Silurian)—Limestone, dolomite, and marble

METAMORPHIC, INTRUSIVE AND VOLCANIC ROCKS

Tvb — Vesicular olivine basalt flows (Tertiary?)

mig — Migmatite—Intercalated mica schist and granite; granite with mafic inclusions

gr — Granitic rocks—K/Ar dates of biotite are 101 m.y. and 125 m.y. (Brosgé and Reiser, 1964); of hornblende, 486 m.y. (M. L. Silberman and D. L. Turner, written commun., 1977)

mrc, ch — Mafic rocks and chert—Pillow basalt, andesite, minor chert; diorite; diabase and gabbro. Chert (ch) differentiated where abundant

umf — Ultramafic rocks

gs — Greenstone and greenschist—Includes pillowed flows in Hunt Fork Shale (Dhf) in northeast part of the quadrangle

hs — Hornblende schist—Mostly hornfels facies

ph — Phyllite and schistose wacke

qms — Quartz muscovite schist

gms — Garnet mica schist—Mostly hornfels facies

bss — Biotite staurolite schist—Hornfels facies

csm, t — Calcareous schist, marble and tactite (t) locally

cfs — Undifferentiated calcareous schist (csm) and feldspathic chloritic schist (fcs)

fcs — Feldspathic chloritic schist—Includes metadiorite sills and pyritic quartzite

cas — Chloritized amphibole schist—Local remnant glaucophane

GEOLOGIC SYMBOLS

CONTACT—Dashed where approximate; dotted where concealed

NORMAL FAULT—Dashed where inferred, queried where doubtful; dotted where concealed; U, upthrown side; D, downthrown side

THRUST FAULT—Queried where doubtful; dotted where concealed. Sawteeth on upper plate

EXPLANATION FOR AEROMAGNETIC INTERPRETATION MAP

MAP UNITS

Each unit is named for the rock type believed to be the source of an anomaly. The mapped area of each unit may also include other rock types not believed to be significant magnetically.

UNITS ASSOCIATED WITH MAGNETIC HIGHS

CSM – CALC-MICA SCHIST, MARBLE, AND TACTITE—Queried where doubtful

QMS – QUARTZ-MUSCOVITE SCHIST

MR – MAFIC EXTRUSIVE AND INTRUSIVE ROCKS—Queried where doubtful

MRC – MAFIC ROCKS—Probably gabbro

$GR_{A,B}$ – GRANITIC ROCKS, MIGMATITE, AND CONTAMINATED GRANITE—Subscript is a label for discussion purposes in text

UNIT ASSOCIATED WITH MAGNETIC LOWS

gr – GRANITIC ROCKS—Queried where doubtful

MAP SYMBOLS

100 — MAGNETIC CONTOUR—Interval 100 gammas

INFERRED EXPOSED BOUNDARY BETWEEN MAGNETIC AND LESS MAGNETIC ROCKS—Dashed and dotted where poorly defined

INFERRED BOUNDARY BETWEEN MAGNETIC AND LESS MAGNETIC ROCKS—Probably buried by non-magnetic cover; dotted where poorly defined

45 — INFERRED STRIKE AND DIP OF CONTACT

INFERRED NON-MAGNETIC ALTERATION ZONE OR SHEAR ZONE

H_2 — AXIS OF SELECTED MAGNETIC HIGH—Letters refer to numbered highs

L_3 — AXIS OF SELECTED MAGNETIC LOW—Letters refer to numbered lows

F_1, F_2, F_3 — GEOLOGIC THRUST FAULT ASSOCIATED WITH MAGNETIC HIGH—Letters refer to numbered thrust faults

F_4 — GEOLOGIC FAULT THAT BOUNDS MAGNETIC HIGH—Letters refer to numbered faults

t — MAGNETIC HIGH OR LOW SLIGHTLY ENHANCED BY TOPOGRAPHIC RELIEF

T — MAGNETIC HIGH OR LOW PRINCIPALLY DUE TO TOPOGRAPHIC RELIEF

NOT — MAGNETIC HIGH OR LOW NOT CAUSED BY TOPOGRAPHIC RELIEF

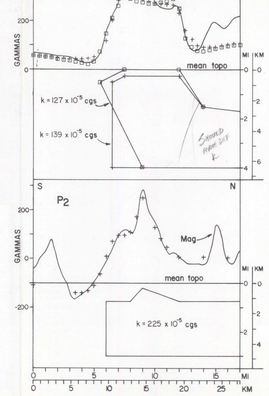


Figure 3.--Two-dimensional magnetic modeling of aeromagnetic profiles P1 and P2, across the south boundary of the QMS unit, Chandalar quadrangle, Alaska. "Mag" is the observed total field magnetic anomaly. Along profile P1, the plus signs indicate the anomaly calculated from the body with corners marked by plus signs, and the boxes indicate the anomaly calculated from the body with corners marked by boxes. Along profile P2, the plus signs indicate the anomaly calculated from the underlying body. K is the susceptibility in cgs.

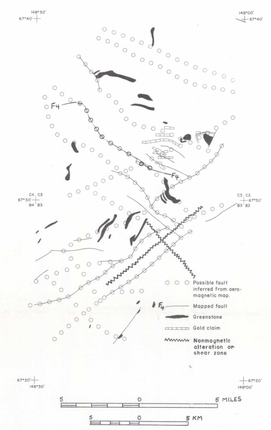


Figure 4.--Aeromagnetic interpretation map of the Chandalar C3 and B3 quadrangles, Alaska.

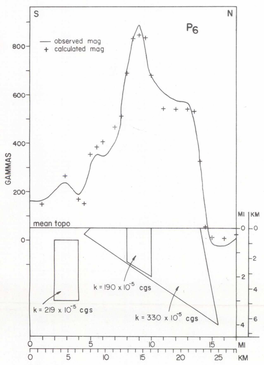


Figure 5.--Magnetic model for profile P6 over pluton GR_B. The plus signs show the total magnetic anomaly field calculated from three 2½-dimensional source bodies with 10 km strike lengths, shown in cross section by polygons. K equals the susceptibility of each body in cgs.

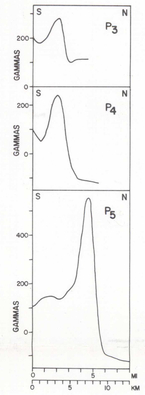


Figure 6.--Magnetic profiles P3, P4, and P5 over mafic rocks near the south side of Chandalar quadrangle, Alaska.

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