DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY

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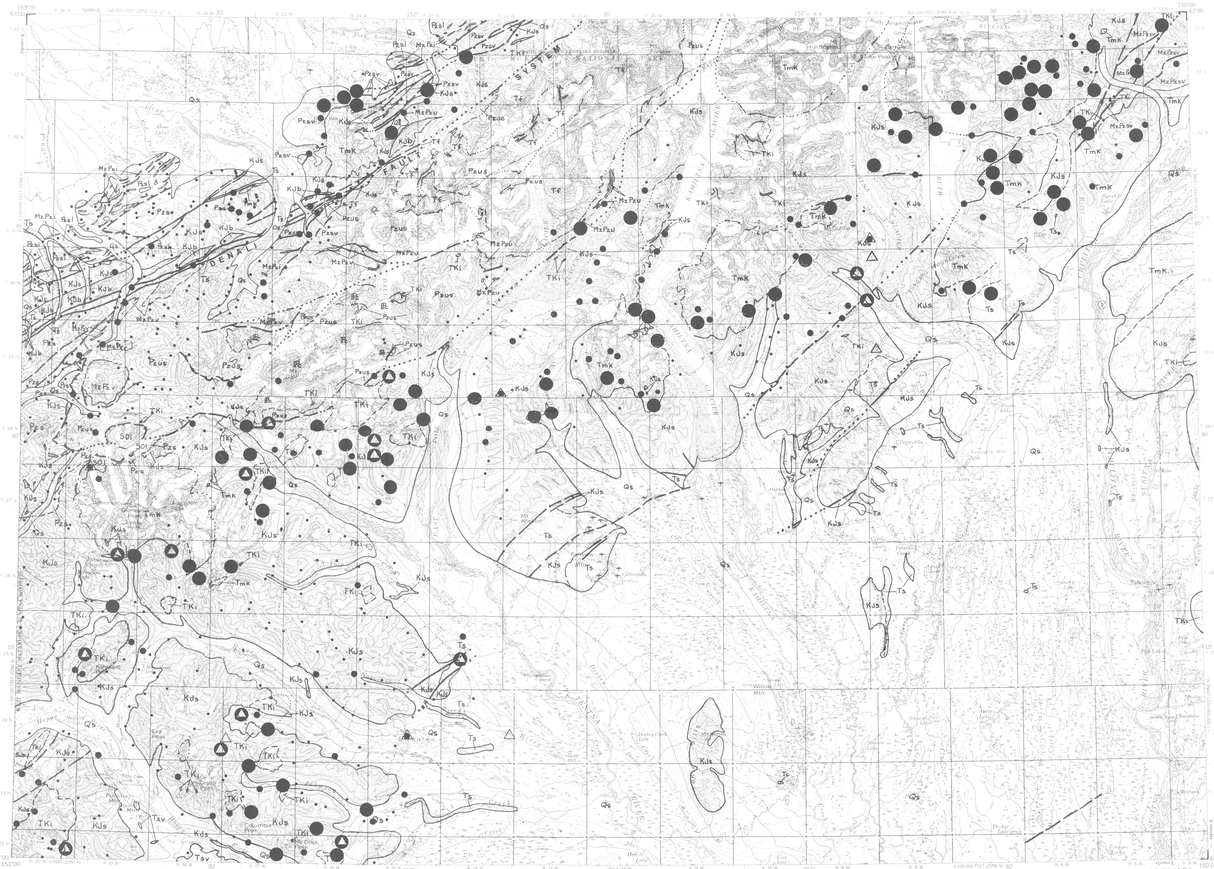
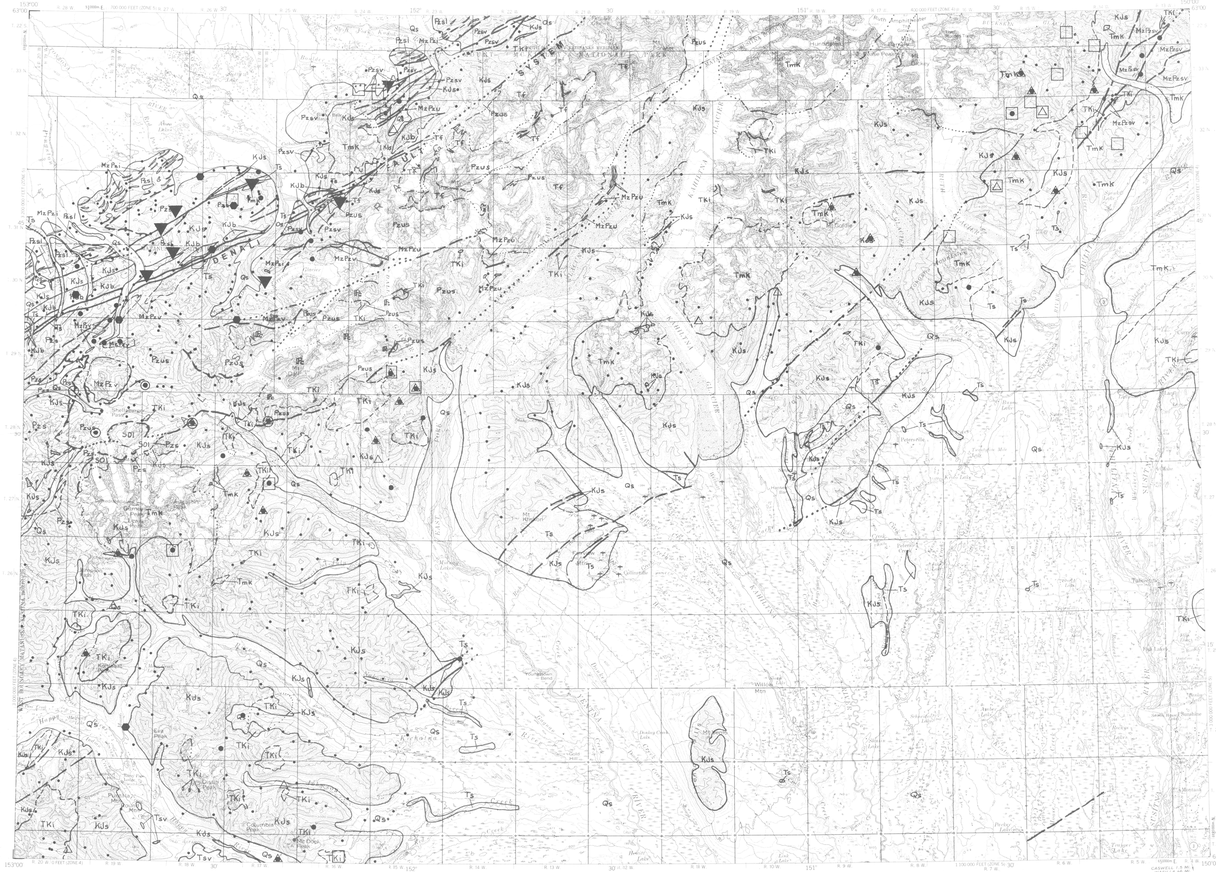
MISCELLANEOUS FIELD STUDIES
MAP MF-870I
FOLIO OF THE TALKEETNA QUAD., ALASKA



Base from U.S. Geological Survey, 1958

Geology generalized from Reed and Nelson, 1977

MAP SHOWING THE DISTRIBUTION OF GOLD AND SCHEELITE



Base from U.S. Geological Survey, 1958

Geology generalized from Reed and Nelson, 1977

MAP SHOWING THE DISTRIBUTION OF CHALCOPYRITE, ARSENOPYRITE, GALENA, FLUORITE, CINNABAR, AND MALACHITE

SCALE 1:250000

CONTOUR INTERVAL 200 FEET
DATUM IS MEAN SEA LEVEL

EXPLANATION FOR GENERALIZED GEOLOGIC MAP

[Geology generalized from Reed and Nelson (1977)]

CORRELATION OF MAP UNITS

SURFICIAL DEPOSITS

Qs — QUATERNARY

SEDIMENTARY AND VOLCANIC ROCKS

Ts, Tsv — TERTIARY

Kjs, Kjb — Lower Cretaceous and (or) Jurassic

KJsv, KJfsv — CRETACEOUS AND (OR) JURASSIC

MPzs — MESOZOIC AND (OR) UPPER PALEOZOIC

IPs — PENNSYLVANIAN

MPzs — UPPER PALEOZOIC

Pzs — PALEOZOIC

SOl — SILURIAN AND ORDOVICIAN

Rsl, Rsv — LOWER PALEOZOIC

INTRUSIVE AND ULTRAMAFIC ROCKS

Tf — Middle Tertiary

TMk — Lower Tertiary

TKi — Lower Tertiary and Upper Cretaceous

TERTIARY

TERTIARY AND(OR) CRETACEOUS

MzPzi, MzPzu — MESOZOIC AND (OR) PALEOZOIC

DESCRIPTION OF MAP UNITS

SURFICIAL DEPOSITS

Qs — UNCONSOLIDATED SEDIMENTARY DEPOSITS

SEDIMENTARY AND VOLCANIC ROCKS

Ts — CONTINENTAL SEDIMENTARY ROCKS--Includes Kenai Group

Tsv — SEDIMENTARY AND VOLCANIC ROCKS, UNDIVIDED

Kjs — MARINE SEDIMENTARY ROCKS, UNDIVIDED

Kjb — PILLOW BASALT

KJfsv — MAFIC VOLCANIC ROCKS, UNDIVIDED

MzPzsv — SEDIMENTARY AND VOLCANIC ROCKS, UNDIVIDED

IPs — LIMESTONE-CHERT CONGLOMERATE

MPzs — SEDIMENTARY ROCKS (FLYSCH), UNDIVIDED

Pzs — SEDIMENTARY ROCKS, UNDIVIDED--Chiefly limestone

SOl — MARBLEIZED LIMESTONE, CHERT, AND SHALE

Rsl — SHALE AND LIMESTONE

Rsv — METAMORPHOSED SEDIMENTARY AND VOLCANIC ROCKS, UNDIVIDED

INTRUSIVE AND ULTRAMAFIC ROCKS

Tf — GRANODIORITE OF FORAKER PLUTON

TMk — McKINLEY SEQUENCE--Chiefly quartz monzonite and granite

TKi — INTRUSIVE ROCKS, UNDIVIDED--Chiefly granodiorite and quartz diorite

MzPzi — INTRUSIVE ROCKS, UNDIVIDED

MzPzu — ULTRAMAFIC ROCKS, UNDIVIDED

GEOLOGIC SYMBOLS

Contact, dashed where approximately located, dotted where concealed

Fault, dashed where approximately located, dotted where concealed

Thrust or high-angle reverse fault; sawteeth on upper plate

MINERALOGICAL SYMBOLS

SAMPLE SITES

- No gold or scheelite found
- Gold--In nonmagnetic fraction, <0.50 percent gold found
- Scheelite--In nonmagnetic fraction, <0.50 percent scheelite found
- Scheelite--In nonmagnetic fraction, 0.50-1.0 percent scheelite found
- Gold and scheelite--In nonmagnetic fraction <0.50 percent gold and >0.50 percent scheelite found
- Gold and scheelite--In nonmagnetic fraction, <0.50 gold and >0.50-1.0 percent scheelite found

MINERALOGICAL SYMBOLS

SAMPLE SITES--Various combinations of these symbols are shown on this map. All minerals listed here are less than one percent by volume of the nonmagnetic fraction

- No chalcopyrite, arsenopyrite, galena, fluorite, cinnabar, or malachite observed
- Chalcopyrite
- Arsenopyrite
- Galena
- Fluorite
- Cinnabar
- Malachite

DISCUSSION

Reconnaissance geochemical and mineralogical sampling was done in the Talkeetna Quadrangle during 1975 and 1976 as part of the Alaska Mineral Resource Assessment Program (AMRAP). These maps show the distribution of gold, scheelite, chalcopyrite, arsenopyrite, galena, fluorite, cinnabar, and malachite in the nonmagnetic fraction of heavy-mineral concentrates.

Heavy-mineral concentrate samples were collected at 812 sites from active stream channels. The heavy-mineral concentrates were obtained by panning stream sediment in the field to remove most of the light minerals. The panned samples were then sieved through a 20-mesh (0.8 mm) sieve in the laboratory, and the minus-20-mesh fraction was further separated with bromoform (specific gravity, 2.86) to remove any remaining light-mineral grains. Magnetite and other strongly magnetic heavy minerals were removed from the heavy-mineral fraction by use of a hand magnet. The remaining sample was passed through a Frantz Isodynamic Separator[1] and a nonmagnetic fraction was examined for its mineralogical content with the aid of a binocular microscope and an X-ray diffractometer. The nonmagnetic concentrates primarily contain phyllite fragments, muscovite, sphene, zircon, apatite, tourmaline, rutile, and anatase. Most ore and ore-related minerals also occur in this fraction.

[1]The use of trade names is for descriptive purposes only and does not constitute endorsement of these products by the U.S. Geological Survey.

REFERENCES

Curtin, G. C., Karlson, R. C., O'Leary, R. M., Day, G. W., and McDanal, S. K., 1978, Geochemical maps showing the distribution and abundance of gold and silver in the Talkeetna quadrangle, Alaska: U.S. Geological Survey Miscellaneous Field Studies Map MF-870-E, scale 1:250,000.

Curtin, G. C., Karlson, R. C., Tripp, R. B., and Day, G. W., 1978, Geochemical maps showing the distribution and abundance of tin, tungsten, and beryllium in the Talkeetna quadrangle, Alaska: U.S. Geological Survey Miscellaneous Field Studies Map MF-780-F, scale 1:250,000.

Curtin, G. C., Karlson, R. C., O'Leary, R. M., Day, G. W., and McDougal, C. M., 1978, Geochemical maps showing the distribution and abundance of copper, lead, zinc, and molybdenum in the Talkeetna quadrangle, Alaska: U.S. Geological Survey Miscellaneous Field Studies Map MF-870-G, scale 1:250,000.

Curtin, G. C., Karlson, R. C., Tripp, R. B., Day, G. W., Cooley, E. F., and McDougal, C. M., 1978, Geochemical maps showing the distribution and abundance of chromium and nickel in the Talkeetna quadrangle, Alaska: U.S. Geological Survey Miscellaneous Field Studies Map MF-870-H, scale 1:250,000.

Reed, B. L., and Nelson, S. W., 1977, Geologic map of the Talkeetna quadrangle: U.S. Geological Survey Miscellaneous Field Studies Map MF-870A.

MAPS SHOWING MINERALOGICAL DATA FOR NONMAGNETIC HEAVY-MINERAL CONCENTRATES IN THE TALKEETNA QUADRANGLE, ALASKA

By

R. B. Tripp, R. C. Karlson, and G. C. Curtin

1978

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