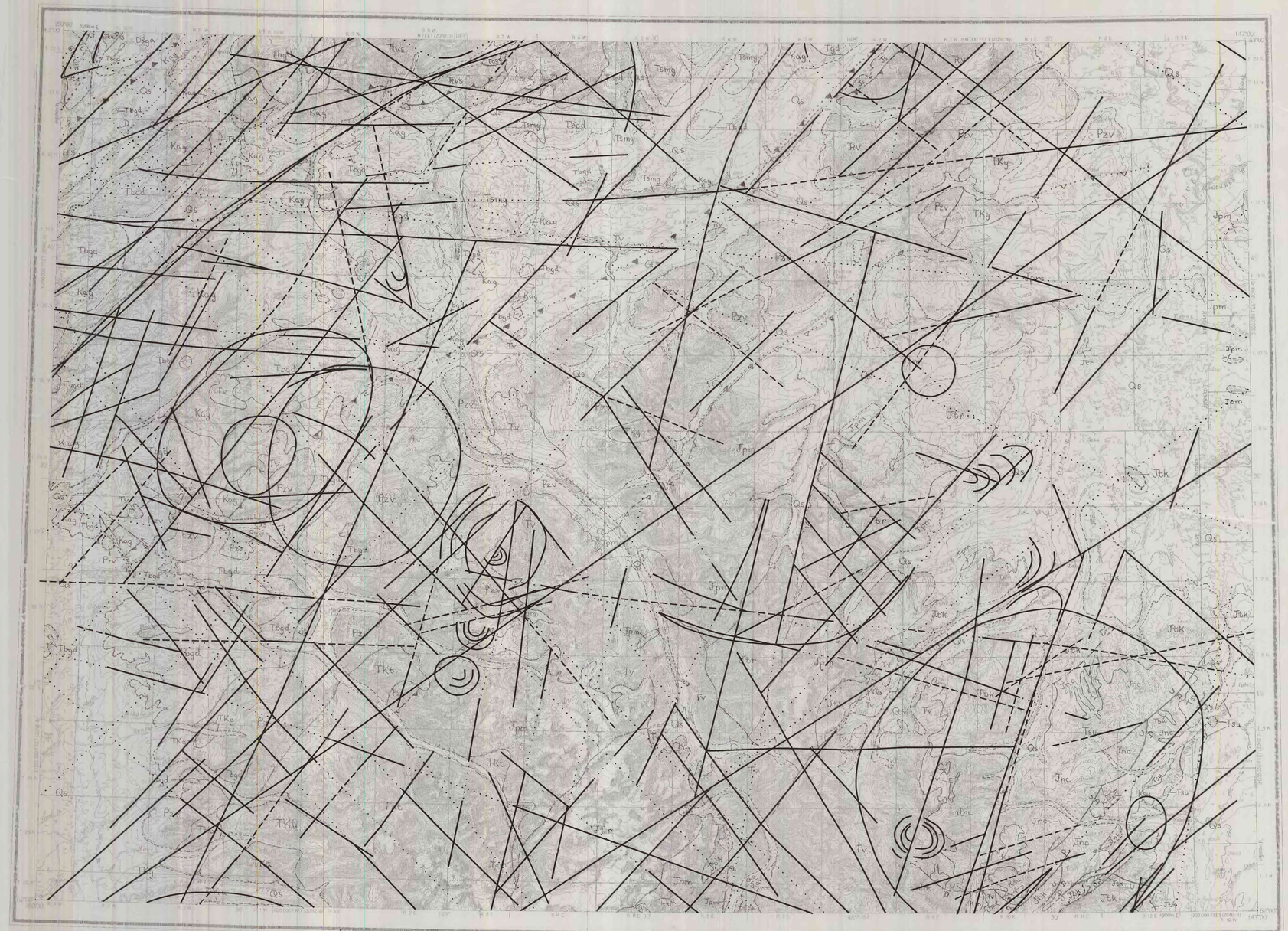
DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY

OPEN FILE REPORT
78-558D
Folio of the Talkeetna Mountains Quadrangle, Alaska
SHEET 1 OF 2
STEELE AND LE COMPTE--INTERPRETATION OF LANDSAT IMAGERY



Base by U.S. Geological Survey, 1954

SCALE 1:250000
5 0 5 10 15 20 25 MILES
5 0 5 10 15 20 25 KILOMETERS
CONTOUR INTERVAL 200 FEET
DATUM IS MEAN SEA LEVEL

LOCATION INDEX
150° 147°
MT MCKINLEY | HEALY | MT HAYES
TALKEETNA | TALKEETNA MOUNTAINS | GULKANA
TYONEK | ANCHORAGE | VALDEZ

This report is preliminary and has not been edited or reviewed for conformity with Geological Survey standards and nomenclature.

TRUE NORTH
MAGNETIC NORTH
27½°
APPROXIMATE MEAN DECLINATION, 1951

MAP SHOWING INTERPRETATION OF LANDSAT IMAGERY OF THE TALKEETNA MOUNTAINS QUADRANGLE, ALASKA

BY

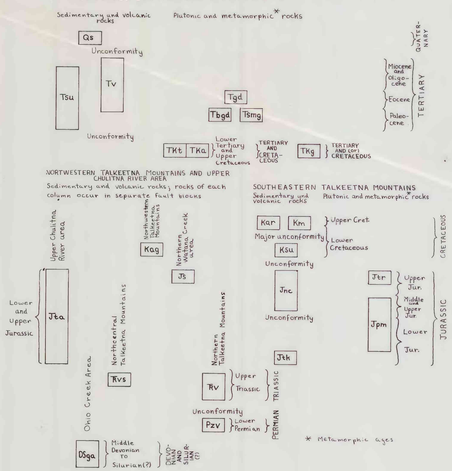
WM. CLINTON STEELE AND JAMES R. LE COMPTE

1978

ALASKA
QUADRANGLE LOCATION

CORRELATION OF MAP UNITS

(Geology generalized after Csejtey and others, 1978)



Discussion

To aid in the mineral resource assessment of the Talkeetna Mountains quadrangle, Landsat images were analyzed for possible extensions of known faults (Csejtey and others, 1978), color anomalies, lineaments, circular and arcuate features, and quadrangle-wide fracture patterns that might be related to known mineral occurrences or to areas of mineral resource potential. Details concerning the different types of imagery used are given in table 1, and image coverage is shown on figure 2. The methodology and limitations of this type of study are discussed in Albert (1975) and Albert and Steele (1976a, b).

References cited

Albert, N. R. D., 1975, Interpretation of Earth Resources Technology Satellite imagery of the Nabesna quadrangle, Alaska: U.S. Geological Survey Miscellaneous Field Studies Map MF-655J, scale 1:250,000, 2 sheets.

Albert, N. R. D., and Steele, W. C., 1976a, Interpretation of Landsat imagery of the McCarthy quadrangle, Alaska: U.S. Geological Survey Miscellaneous Field Studies Map MF-773H, scale 1:250,000, 3 sheets.

--- 1976b, Interpretation of Landsat imagery of the Tanacross quadrangle, Alaska: U.S. Geological Survey Miscellaneous Field Studies Map MF-767C, scale 1:250,000, 3 sheets.

Csejtey, Béla, Jr., Nelson, W. H., Jones, D. L., Silberling, N. J., Dean, R. M., Morris, M. S., Lanphere, M. A., Smith, J. G., and Silberman, M. L., 1978, Reconnaissance geologic map and geochronology, Talkeetna Mountains quadrangle, northern part of Anchorage quadrangle, and southwest corner of Healy quadrangle, Alaska: U.S. Geological Survey Open-File Report 78-558A, scale 1:250,000, 1 sheet, 60 p.

EXPLANATION OF IMAGERY INTERPRETATION

Well defined lineament
Moderately defined lineament
Poorly defined lineament
Circular or arcuate feature

DESCRIPTION OF MAP UNITS

Qs SURFICIAL DEPOSITS, UNDIFFERENTIATED (Quaternary).

Tv VOLCANIC ROCKS, UNDIVIDED (Paleocene to Pleistocene(?))--Felsic and mafic subaerial volcanic rocks and related shallow intrusions.

Tsu TERTIARY SEDIMENTARY ROCKS, UNDIFFERENTIATED (Paleocene to Miocene)--Terrestrial, mostly fluviatile strata with a few lignite interbeds.

Tgd GRANODIORITE (Eocene).

Tbgd BIOTITE AND HORNBLENDE GRANODIORITE (Paleocene, in part early Eocene).

Tsmg SCHIST, MIGMATITE, AND GRANITE (Paleocene intrusive and metamorphic ages)--Migmatitic border zone of biotite and hornblende granodiorite.

TKt TONALITE (Upper Cretaceous and lower Paleocene).

TKa ADAMELLITE (Upper Cretaceous and lower Paleocene).

TKg GRANITIC ROCKS, UNDIVIDED (Cretaceous and (or) Tertiary).

Kar ARKOSE RIDGE FORMATION (Lower and (or) Upper Cretaceous).

Km MATANUSKA FORMATION (Lower and Upper Cretaceous).

Ksu SEDIMENTARY ROCKS, UNDIVIDED (Lower Cretaceous)--Shallow marine sequence of calcareous sandstone, claystone, and massive clastic limestone.

Kag ARGILLITE AND LITHIC GRAYWACKE (Lower Cretaceous)--Intercalated, marine, flyschlike sequence.

Js SEDIMENTARY AND VOLCANIC ROCKS, UNDIVIDED (Upper Jurassic)--Marine sequence of argillite, graywacke, conglomerate, and andesitic to latitic feldspar porphyry dikes and intercalated flows.

Jtr TRONDHJEMITE (Upper Jurassic)

Jnc JURASSIC SEDIMENTARY ROCKS, UNDIVIDED (Middle and Upper Jurassic) --Includes Naknek and Chinitna Formations, and Tuxedni Group.

Jta CRYSTAL TUFF, ARGILLITE, CHERT, GRAYWACKE, AND LIMESTONE (Lower to Upper Jurassic)--Shallow to moderately deep marine, intercalated sequence.

Jpm PLUTONIC AND METAMORPHIC ROCKS, UNDIFFERENTIATED (Lower to Upper Jurassic)--Mainly quartz diorite, granodiorite, amphibolite, and greenschist.

Jtk TALKEETNA FORMATION (Lower Jurassic).

Trvs METABASALT AND SLATE (Upper Triassic)--Intercalated, shallow-water marine sequence.

Trv BASALTIC METAVOLCANIC ROCKS (Upper Triassic)--Mainly shallow water marine metabasalt flows.

Pzv BASALTIC AND ANDESITIC METAVOLCANOGENIC ROCKS (Pennsylvanian(?) and Early Permian)--Metamorphosed marine sequence of interlayered basaltic to andesitic flows, tuffs, coarse volcaniclastic rocks, and subordinate mudstone and limestone.

DSga GRAYWACKE, ARGILLITE, SHALE, AND LIMESTONE (Silurian(?) to Middle Devonian)--Intercalated marine sequence, probably continental margin deposits.

EXPLANATION OF MAP SYMBOLS

Contact, approximately located

Approximate contact of surficial deposits

Fault
Long dashed where approximately located; short dashed where inferred; dotted where concealed. U indicates upthrown side where direction of displacement is known. Arrows indicate relative lateral movement

Thrust fault
Long dashed where approximately located, dotted where concealed. Teeth indicate upthrown side.

Approximate axis of intense shear zone of variable width, possibly marking a thrust fault
Dotted where concealed; teeth indicate possible upthrown side of postulated thrust