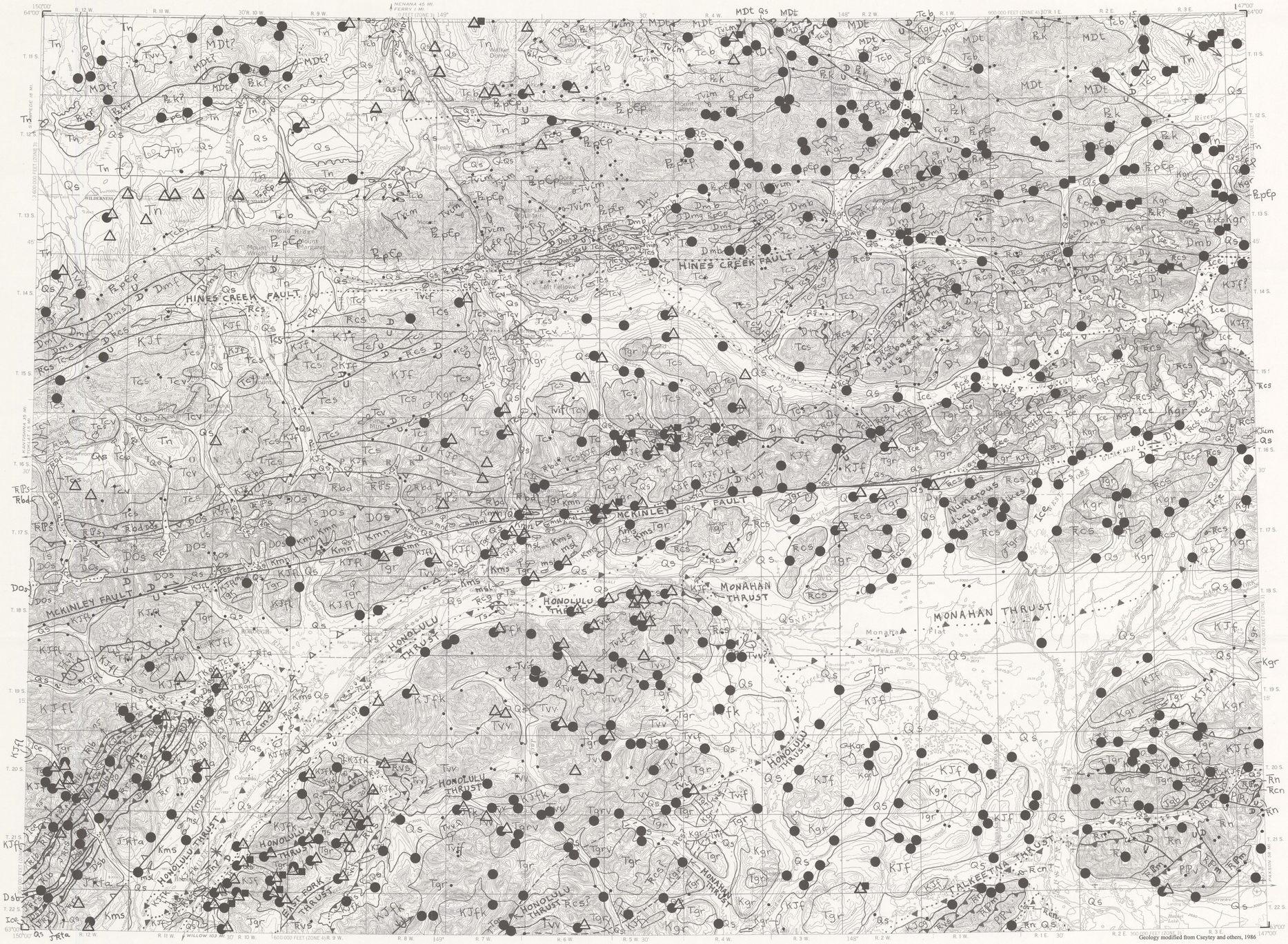
U.S. DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

MISCELLANEOUS FIELD STUDIES
MAP MF-2058-D
SHEET 2 OF 2

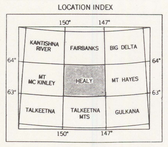


Base from U.S. Geological Survey, 1956

Manuscript approved for publication January 27, 1994

MAP C. DISTRIBUTION OF CASSITERITE, POWELLITE, AND SCHEELITE

LOCATION INDEX



SCALE 1:250000

5 0 5 10 15 20 25 MILES

5 0 5 10 15 20 25 KILOMETERS

CONTOUR INTERVAL 200 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929
1956 MAGNETIC DECLINATION AT SOUTH EDGE OF SHEET VARIES FROM 26°30' TO 28°30' EAST

EXPLANATION FOR MAP C

- △ **Cassiterite**
- ■ **Powellite**
- ● **Scheelite**
- • **Sample site** — None of the above minerals identified; amounts of the above minerals may exceed 20 percent by volume of the nonmagnetic fraction

MINERALOGICAL MAPS SHOWING THE DISTRIBUTION OF ORE-RELATED MINERALS IN THE MINUS-30-MESH, NONMAGNETIC HEAVY-MINERAL FRACTION OF STREAM SEDIMENT, HEALY QUADRANGLE, ALASKA

By

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1995

INTERIOR—GEOLOGICAL SURVEY, RESTON, VIRGINIA—1995

For sale by U.S. Geological Survey Map Distribution Box 25286, Federal Center, Denver, CO 80225

DESCRIPTION OF MAP UNITS

ALL AREAS OF THE QUADRANGLE

- Qs **Surficial deposits (Quaternary)**
- Thd **Hornblende dacite (Pliocene)**
- Tn **Nenana Gravel (Pliocene and Miocene)** — Poorly consolidated conglomerate and sandstone
- Tcb **Coal-bearing rocks (Miocene to Eocene)**
- Ts **Sedimentary rocks (Miocene? to Paleocene?)** — Mainly poorly consolidated shale, sandstone, siltstone, and conglomerate
- Tvv **Volcanic rocks (Oligocene to Paleocene)** **Flows, pyroclastic rocks, and subvolcanic intrusions** — Subaerial volcanic rocks and subordinate dikes ranging in composition from basalt to rhyolite
- Tvim **Mafic subvolcanic intrusive rocks** — Mainly dikes of basalt and subordinate andesite
- Tvif **Felsic subvolcanic intrusive rocks** — Mainly dikes of rhyolite and dacite
- Tgr **Granitic rocks (Oligocene to Paleocene)** — Mainly granite and granodiorite
- Tgrv **Granitic and volcanic rocks, undivided (Oligocene to Paleocene)** — Border zone between granitic rocks and Tertiary volcanic rocks
- Tfv **Fluviatile and volcanic rocks (Eocene?)** — Mainly conglomerate, sandstone, and siltstone and a few thin flows of basaltic andesite
- Tcv **Cantwell Formation (Paleocene)** **Volcanic rocks subunit** — Flows of andesite, basalt, rhyolite, and dacite and pyroclastic felsic rocks
- Tcs **Sedimentary rocks subunit** — Mainly conglomerate, sandstone, and shale and a few thin coal beds, volcanic flows, and tuff units
- TKgr **Granitic and hypabyssal intrusive rocks (Paleocene? and Late Cretaceous)** — Mainly granodiorite

NORTHERN, EASTERN, AND SOUTH-CENTRAL AREAS OF QUADRANGLE

- Kva **Andesitic subvolcanic intrusive rocks (Late Cretaceous)** — Hornblende andesite
- Kgr **Granitic rocks (Late and (or) Early Cretaceous)** — Mainly tonalite, quartz diorite, and granodiorite; generally well foliated
- Kgrt **Tourmaline-bearing granite (Late or Early Cretaceous)**
- KJf **Flysch sequence (Early Cretaceous and Late Jurassic)** — Graywacke turbidite, shale, siltstone, and conglomerate; metamorphosed in southeast part of area
- KJfk **Overthrust flysh-like rocks (Early Cretaceous and Late Jurassic)** — Lithology identical to unit KJf
- KJcg **Conglomerate, sandstone, siltstone, shale, and volcanic rocks (Early Cretaceous and Late Jurassic)**
- KJum **Ultramafic rocks (Early Cretaceous or Jurassic)** — Plagioclase-bearing peridotite
- Jgb **Alkali gabbro (Late Jurassic)**
- Dmg **Metagabbro (Late Devonian?)**

Yukon-Tanana terrane

- Kvb **Basaltic subvolcanic rocks (Late Cretaceous)** — Mainly dike swarms
- TrcS **Calcareous sedimentary rocks (Late Triassic; middle? Norian to late Karnian)** — Locally metamorphosed, carbonaceous, calcareous shale and sandstone, and sandy to silty limestone. Includes sills and dikes of gabbro
- MDt **Totatlanika Schist (Early Mississippian to Middle Devonian)** — Carbonaceous slate, phyllite, and schist; metachert, quartz-orthoclase-sericite schist, and augen gneiss; metavolcanic rocks

Talkeetna superterrane (includes Wrangellia terrane)

- TrvS **Metavolcanic, metavolcaniclastic, and subordinate metasedimentary rocks (Late Triassic; late Norian)** — Marine basalt, tuff, slate, and diabase sills
- Trcn **Chitistone and Nizina Limestones, undivided (Late Triassic; early Norian and late Karnian)**
- Trn **Nikolai Greenstone (Late and (or) Middle Triassic)** — Mainly subaerial flows of amygdaloidal basalt
- TrPm **Metasedimentary rocks sequence (Middle Triassic to Late Pennsylvanian?)** — Black argillite, thin beds of volcanic breccia and sandstone, and limestone overlain by thin-bedded chert. Sills and dikes of gabbro
- PPv **Andesitic volcanic rocks (Early Permian? and Pennsylvanian)** — Volcanic flows and breccias; probably marine

SOUTHWESTERN AND WEST-CENTRAL AREAS OF QUADRANGLE

- Kms **Melange south of McKinley fault (Late and (or) Early Cretaceous)** — Dark-gray flysch, cherty tuff, volcanic sandstone, and blocks of limestone (msl)
- Kmn **Melange north of McKinley fault (Late and (or) Early Cretaceous)** — Similar to unit Kms, but contains recrystallized limestones (mnl) and ophiolitic rocks (mno), mainly serpentinite, basalt, and chert
- KJfl **Flysch sequence (Late Cretaceous to Late Jurassic)**
- KJf **Flysch sequence (Early Cretaceous and Late Jurassic)**
- KJa **Argillite, chert, limestone, and sandstone (Early Cretaceous and Late Jurassic)**
- JTrta **Crystal tuff, argillite, chert, graywacke, and limestone (Late Jurassic to Late Triassic)**
- JTrs **Red and brown sedimentary rocks and basalt (Early Jurassic and Late Triassic)** — Red sandstone, siltstone, conglomerate, and basalt overlain by brown sandstone and siltstone
- Trcg **Conglomerate and volcanic sandstone (Late Triassic)**
- Trbd **Basalt, diabase, and subordinate sedimentary rocks (Late Triassic; Karnian and Norian)**
- Trlb **Limestone and basalt sequence (Late Triassic)**
- Trr **Red beds (Late Triassic)** — Red sandstone, siltstone, and conglomerate
- TrPs **Flysch-like sedimentary rocks (Late Triassic to Pennsylvanian)** — Impure sandstone, siltstone, and shale; minor limestone and chert
- TrDv **Volcanogenic and sedimentary rocks (Early Triassic to Late Devonian)** — Tuffaceous chert, mudstone, and basalt breccia; flysh-like graywacke and mudstone; limestone
- Dsb **Serpentinite, basalt, chert, and gabbro (Late Devonian)**

Nixon Fork terrane

- DOs **Sedimentary rocks sequence (Middle Devonian to Ordovician)** — Black argillite and siltstone, massive limestone (ls), thin-bedded limestone, and chert

- **Contact** — Approximately located
- **Thrust fault** — Showing direction of dip of overturned thrust fault. Dashed where inferred; dotted where concealed. Sawteeth on upper plate
- **High-angle reverse fault** — Dashed where inferred; dotted where concealed. Sawteeth on upper plate
- **Fault** — Dashed where inferred; dotted where concealed. Where displacement is known, U, upthrown side, D, downthrown side; arrows indicate relative horizontal movement
- **Postulated position of fault prior to intrusion of plutonic and subvolcanic rocks**
- **Anticline** — Showing direction of plunge
- **Overturned anticline** — Showing direction of dip of limbs and plunge
- **Syncline** — Showing direction of plunge. Dashed where inferred
- **Overturned syncline** — Showing direction of dip of limbs and plunge. Dashed where inferred