DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY

OPEN-FILE REPORT
81-27-T

Geochemical Symbols
(size of symbols explained on histogram)

- Anomalous cobalt value (fig. 1)
- Anomalous chromium value (fig. 2)
- Anomalous nickel value (fig. 3)

DISCUSSION

This map shows the distribution and abundance of cobalt, chromium and nickel in 287, nonmagnetic, heavy-mineral concentrate samples collected during the 1978-1979 field seasons in the West Chichagof-Yakobi Wilderness Study Area, Sitka quadrangle, southeastern Alaska.

The area of this project is about 600 square miles (1800 km^2). The heavy-mineral concentrate samples were taken from the active stream channels draining areas of about 2 square miles (6 km^2).

The preparation of the heavy-mineral concentrates prior to analysis involved panning stream sediment in the field to remove most of the low-density minerals. The panned sample was sieved through a 20-mesh (0.8 mm) sieve and the minus 20-mesh (0.8 mm) fraction was separated into light- and heavy-mineral fraction using bromoform (specific gravity of 2.86). The high density or heavy-mineral fraction was further prepared by removing magnetite and other strongly magnetic minerals by using a hand magnet.

The remaining heavy-mineral fraction was passed through a Frantz Isodynamic Separator[1] at a setting of 0.6 amperes, thereby separating the magnetic fractions from the nonmagnetic. A split of the nonmagnetic fraction was pulverized with mortar and pestle and analyzed by semiquantitative emission spectroscopy (Grimes and Marranzino, 1968).

The analytical data were compiled and used in preparing the histograms and geochemical map. The histograms were used to identify the range of anomalous values for each element.

A listing of results from the analysis of the various sample media collected in this Wilderness Study Area appears in Hessin and others, (1980).

REFERENCES CITED

Grimes, D. J., and Marranzino, A. P., 1968, Direct-current and alternating-current spark emission spectrographic field methods for the semi-quantitative analysis of geologic materials: U.S. Geological Survey Circular 591, 6 p.

Hessin, T. D., Spectman, W. S., Crenshaw, G. L., Hoffman, J. D., and Cooley, E. F., 1980, Analytical results of various types of samples taken in the West Chicagof-Yakobi Wilderness Study Area, Sitka quadrangle, southeastern Alaska, Open-File Report 80-905.

[1]Use of brand names in this report is for descriptive purposes only and does not constitute endorsement by the U.S. Geological Survey.

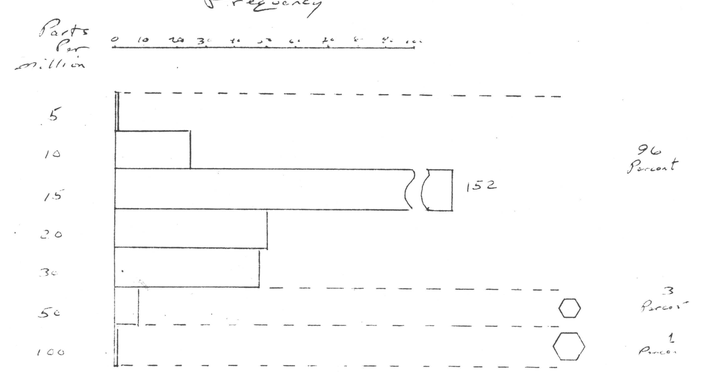


Figure 1.--Histogram showing cobalt in 287, nonmagnetic, heavy-mineral concentrates from the West Chichagof-Yakobi Wilderness Study Area. Analysis by optical emission spectroscopy (Grimes and Marranzino, 1968). Hexagons indicate anomalous concentrations and class percentages computed on total sample population.

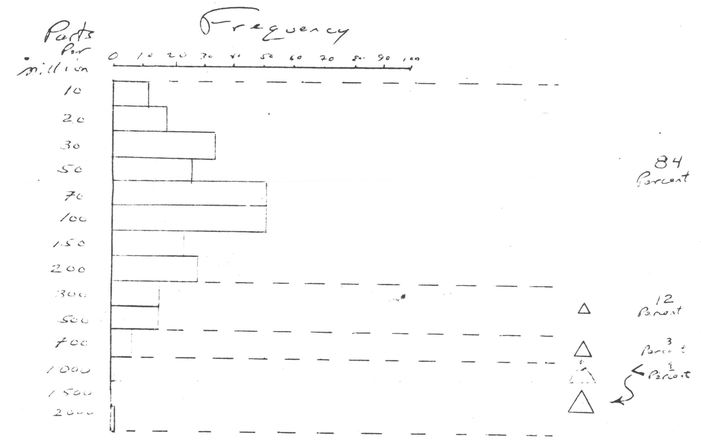


Figure 2.--Histogram showing chromium in 287, nonmagnetic, heavy-mineral concentrates from the West Chichagof-Yakobi Wilderness Study Area. Analysis by optical emission spectroscopy (Grimes and Marranzino, 1968). Triangles indicate anomalous concentrations and class percentages computed on total sample population.

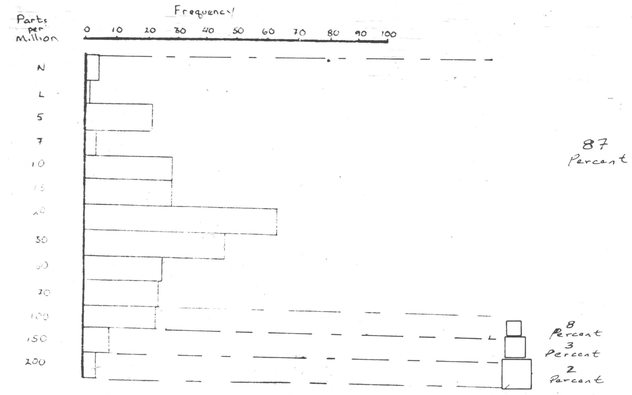


Figure 3.--Histogram showing nickel in 287, nonmagnetic, heavy-mineral concentrates from the West Chichagof-Yakobi Wilderness Study Area. Analysis by optical emission spectroscopy (Grimes and Marranzino, 1968). Squares indicate anomalous concentrations and class percentages computed on total sample population.

N, not detected at limit of detection

L, detected but below the limit of determination

CORRELATION OF MAP UNITS

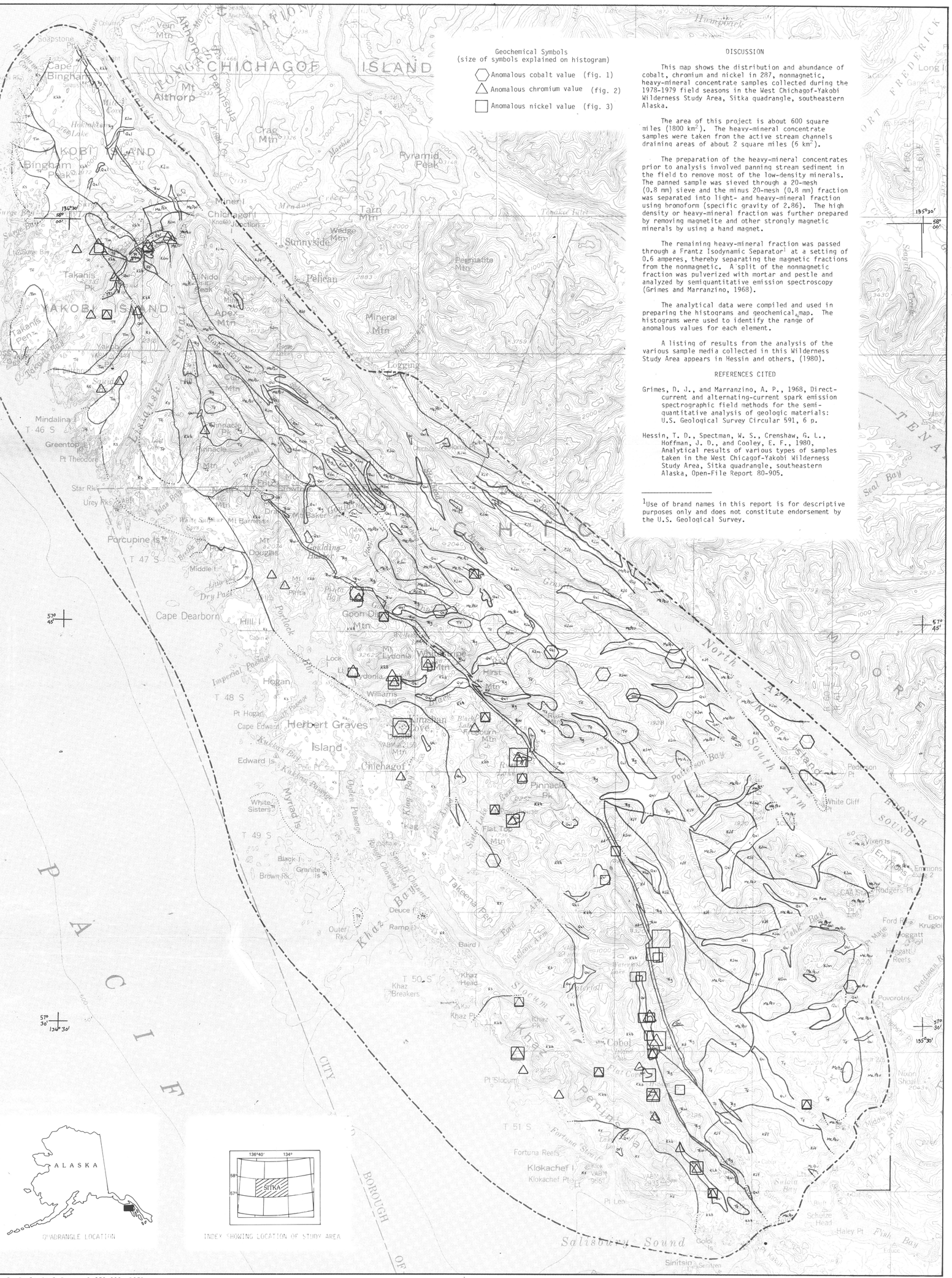
Qal	QUATERNARY
Tf, Tm	TERTIARY(?)
Kd	CRETACEOUS(?)
Ks	CRETACEOUS
Kkb	CRETACEOUS
KJf, KJm	CRETACEOUS AND JURASSIC
Trw	TRIASSIC(?)
Trg	TRIASSIC(?)
MzPzu	MESOZOIC AND PALEOZOIC(?)

LIST OF MAP UNITS

Qal	ALLUVIAL DEPOSITS--Undivided
Tf	FELSIC PLUTONIC ROCKS--Dominantly tonalitic
Tm	MAFIC PLUTONIC ROCKS--Dominantly gabbroic
Kd	DIORITE SILL--Extensively altered
Ks	SITKA GRAYWACKE
Kkb	KELP BAY GROUP--Metasediments and metavolcanics
KJf	FELSIC PLUTONIC ROCKS--Dominantly granodiorite
KJm	MAFIC PLUTONIC ROCKS--Dominantly quartz diorite, diorite, and gabbro
Trw	WHITESTRIPE MARBLE
Trg	GOON DIP GREENSTONE
MzPzu	UNDIVIDED METASEDIMENTARY--Metavolcanic and metaplutonic rocks

Studies Related to Wilderness

The Wilderness Act (Public Law 88-577, Sept. 3, 1964) and related Acts require the U.S. Geological Survey to survey certain areas on Federal lands to determine their mineral resource potential. Results must be made available to the public and be submitted to the President and the Congress. This report presents the results of a geochemical survey of the West Chicagof-Yakobi Wilderness Study Area, Sitka quadrangle, southeastern Alaska.



QUADRANGLE LOCATION

INDEX SHOWING LOCATION OF STUDY AREA

Base from U. S. Geological Survey 1:250,000, 1951
Sitka; Mt. Fairweather

Geology simplified by B. R. Johnson and S. M. Karl, 1981

SCALE 1:125 000
2 0 2 4 6 8 MILES
2 0 2 4 6 8 KILOMETERS

GEOCHEMICAL MAP SHOWING THE DISTRIBUTION AND ABUNDANCE OF COBALT, CHROMIUM, AND NICKEL IN THE NONMAGNETIC, HEAVY-MINERAL CONCENTRATE SAMPLES IN THE WEST CHICHAGOF-YAKOBI WILDERNESS STUDY AREA, SITKA QUADRANGLE, SOUTHEASTERN ALASKA

By

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