DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY

MISCELLANEOUS FIELD STUDIES
MAP MF-1447-C

Base from U.S. Geological Survey, 1:24,000
Copeland, Farnham Peak, 1965; Dodge Peak, Mount Roothaan, Roman Nose, The Wigwams, 1967; Smith Falls, 1968; Caribou Creek, Grass Mountain, Pyramid Peak, Shorty Peak, Smith Peak, 1969

Geology from Miller (1983a)

SCALE 1:48 000

CONTOUR INTERVAL 40 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

EXPLANATION

9-25 SAMPLE LOCALITY -- Miller (1983b)

Pb BOUNDARY ENCLOSING AREA OF ANOMALOUS METAL VALUES -- Letters refer to anomalous element: Cr, chromium; Mo, molybdenum; W, tungsten; Pb, lead

CORRELATION OF MAP UNITS

	Qog, Qls	QUATERNARY
Igneous complex of Selkirk Crest	TKscc, TKslc, TKsl, TKshl, TKsk, TKss, TKsc, TKsb, Ksihc	TERTIARY AND (OR) CRETACEOUS; CRETACEOUS(?)
	Ŧm	TRIASSIC (?)
Belt Supergroup	Yp	PROTEROZOIC Y
	gn	PROTEROZOIC OR ARCHEAN

DESCRIPTION OF MAP UNITS

Qag GLACIAL AND ALLUVIAL MATERIAL (QUATERNARY)

Qls LANDSLIDE DEBRIS (QUATERNARY)

IGNEOUS COMPLEX OF SELKIRK CREST--Divided into:

TKscc GRANODIORITE OF CARIBOU CREEK (TERTIARY AND (OR) CRETACEOUS)

TKslc MAFIC GRANODIORITE OF LUCKY CREEK (TERTIARY AND (OR) CRETACEOUS)

TKsl MIXED GRANITIC AND METAMORPHIC ROCKS OF LOOKOUT MOUNTAIN (TERTIARY AND (OR) CRETACEOUS)

TKshl GRANODIORITE OF HIDDEN LAKE (TERTIARY AND (OR) CRETACEOUS)

TKsk MONZOGRANITE OF KLOOTCH MOUNTAIN (TERTIARY AND (OR) CRETACEOUS)

TKss MONZOGRANITE OF SHORTY PEAK (TERTIARY AND (OR) CRETACEOUS)

TKsc MIXED GRANITIC ROCKS OF CAMELS PRAIRIE (TERTIARY AND (OR) CRETACEOUS)

TKsb MIXED TWO-MICA ROCKS OF BALL CREEK (TERTIARY AND (OR) CRETACEOUS)

Ksihc GRANODIORITE OF HUNT CREEK (CRETACEOUS?)

Ŧm MONZONITE OF LONG CANYON (TRIASSIC?)

BELT SUPENGROUP (PROTEROZOIC Y)--In this area, consists of:

Yp METAMORPHOSED PRICHARD FORMATION

gn PORPHYROBLASTIC GRANITIC GNEISS (PROTEROZOIC OR ARCHEAN)

CONTACT, APPROXIMATELY LOCATED -- Queried where projected

FAULT, SHOWING DIP -- Dashed where approximately located; queried where inferred

STRIKE AND DIP OF FLATTENED OR STREAKED-OUT INCLUSIONS
Inclined
Vertical

STRIKE AND DIP OF CONTACT BETWEEN DIFFERENT IGNEOUS LITHOLOGIES IN SAME UNIT
Inclined
Vertical

STRIKE AND DIP
Primary foliation in igneous rock
Secondary foliation in igneous rock
Foliation in metamorphic rock
Inclined
Vertical
Alined tabular megacrysts

BEARING AND PLUNGE
Primary minerals in igneous rock
Secondary minerals in igneous rock
Minor fold axis
Prismatic potassium feldspar crystals
Mullions

[140] SCINTILLOMETER READING -- Number in bracket indicates counts per second

[140p] SCINTILLOMETER READING ON PEGMATITE DIKE -- Number in bracket indicates counts per second; p, pegmatite dike

APPROXIMATE BOUNDARY OF ROADLESS AREA

NOTE: Symbols may be combined

STUDIES RELATED TO WILDERNESS

The Wilderness Act (Public Law 88-577, September 3, 1964) and related acts require the U.S. Geological Survey and the U.S. Bureau of Mines 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 mineral resource potential survey of the Selkirk Roadless Area in the Kaniksu National Forest, Boundary County, Idaho. Area A1-125 was classified as a recommended wilderness, and B1-125, C1-125, and D1-125 as further planning areas during the Second Roadless Area Review and Evaluation (RARE II) by the U.S. Forest Service, January 1979.

SUMMARY

The Selkirk Roadless Area has a low mineral resource potential based on geologic and geochemical surveys, and on examination of all known mining claims. Molybdenum, lead, uranium, chromium, tungsten, and rare-earth metals were detected in panned-concentrate stream-sediment samples, but no minerals containing these elements as major constituents were found in place. Except for the low uranium potential there is no indication of energy resources in the area. Stone is abundant, but is unlikely to be quarried in the roadless area because better, more accessible deposits occur outside the area.

INTRODUCTION

The Selkirk Roadless Area lies about 70 mi north-northeast of Spokane, Wash. The area comprises 69,864 acres in the Kaniksu National Forest, Boundary County, Idaho. Elevations range from about 2,000 to 7,600 ft; lower elevations are heavily forested; higher elevations consist of rugged, rocky, glaciated terrain.

GEOLOGY

Porphyroblastic granitic gneiss appears to be the oldest rock unit in the area. The metamorphosed Prichard Formation of the Proterozoic Y Belt Supergroup structurally overlies the porphyroblastic granitic gneiss, but owing to intense deformation in rocks above and below the contact, it is not possible to ascertain if the contact is depositional or intrusive. The Prichard Formation (in areas where it is unmetamorphosed) is made up of about equal parts argillite, siltite, and quartzite and is intruded by numerous diabase sills. Almost everywhere in the study area dynamothermal metamorphism has converted these protolithic sediments to schist, quartzite, and amphibolite. Highly alkalic monzonite (monzonite of Long Canyon) of Triassic(?) age intrudes the porphyroblastic granitic gneiss and is, in turn, intruded by two-mica granitic rocks of the igneous complex of Selkirk Crest. The complex underlies the greater part of the study area and consists of about two dozen mappable two-mica units, of which 10 occur in the roadless area. All appear to be related to one another in age, composition, and origin. The entire complex was probably emplaced as a single mass derived from anatectic melting of Belt and (or) pre-Belt Supergroup rocks. Both the complex as a whole and the constituent masses that comprise it are extremely heterogeneous with respect to composition and texture. Glacial and fluvial-glacial materials mantle all older units; Holocene alluvium occupies most modern stream drainages.

Other than a concealed fault outside the study area in the Purcell Trench (Kootenai River valley), almost no faults occur in the area. Considerable movement, distributed across zones between individual units of the Selkirk Crest complex, probably occurred during emplacement of the complex, but these zones do not constitute faults per se. Cataclasis and secondary penetrative structures probably related to emplacement of the complex and the fault in the Purcell Trench are well developed along the northeast edge of D1-125 and C1-125. A more detailed summary of the geology of the study areas may be found in Miller (1983a).

GEOCHEMISTRY

Analyses of both bulk stream-sediment and panned heavy-mineral concentrates yield values for most samples that fall well within the expected limits for the rock types underlying areas drained by the respective streams (Miller, 1983b). A few sample sets, however, define areas of slightly anomalous molybdenum, lead, chromium, uranium, and rare-earth metals, and individual samples show anomalous silver, copper, and tungsten. The resource potential for these metals is considered low, however.

Most detectable molybdenum is restricted to samples taken from streams draining the alkalic monzonite of Triassic(?) age, although no molybdenite was observed in this rock unit during the geologic mapping. No concentrations of the metal were found anywhere in the study area.

Anomalous lead values occur in five panned-concentrate samples. The streams from which they were collected drain four different rock units, none of which appear to be particularly attractive sources for lead mineralization. No lead-bearing minerals or anomalous concentration of veins were observed during the stream-sediment sampling or geologic mapping of this area.

Uranium appears to be associated almost exclusively with two granitic bodies, the alkalic monzonite of Triassic(?) age and the granodiorite of Hunt Creek, one of the units of the Selkirk Crest complex. Both bodies exhibit higher radioactivity than most rock types in the study area, but at least part of the radioactivity is due to thorium. Most of the uranium and thorium is probably in accessory minerals in trace amounts, especially zircon and allanite which are very abundant in both units, and possibly in monazite. Scintillometer readings indicative of significant uranium or thorium concentrations were not found, however.

Anomalous amounts of chromium occur in eight of the stream-sediment samples; all occurrences appear to be related to diabase sills that are common in the metamorphosed Prichard Formation or to xenoliths of these sills in the granitic rocks.

Tungsten was detected in a small area in the upper reaches of Long Canyon. No tungsten minerals were observed in outcrops during stream-sediment sampling or geologic mapping and the source of the tungsten in the panned concentrates is unknown. The most likely source is pegmatite dikes or metamorphic inclusions in the mixed granitic and metamorphic rocks of Lookout Mountain unit.

Lanthanum, yttrium, and thorium are abundant in almost all panned-concentrate samples. The high value for these elements is undoubtedly due to the high concentration of allanite in almost all granitic rocks in the region. Zirconium values are high because of abundant zircon. Nowhere in the area, however, do any of these elements occur even marginally in concentrations significant enough to constitute a potential resource.

All other stream-sediment analyses appear to be well within the range of values expected for samples from streams draining unmineralized rocks of the types present.

No geophysical surveys of the roadless area were scheduled until the geochemical sampling program was completed and that information could be used to construct the most productive geophysical survey. Since the geochemical program was largely negative, plans for geophysical work were considered unnecessary and dropped.

ASSESSMENT OF MINERAL RESOURCE POTENTIAL

The mineral resource potential of the Selkirk Roadless Area is considered to be low. Several metals have been detected in slightly to moderately anomalous amounts in panned-concentrate stream-sediment samples, but no minerals containing these elements as the major constituents were found in outcrops, nor were any conditions indicative of their natural concentration found.

Most molybdenum anomalies are associated with an alkalic monzonite pluton, but no molybdenum minerals or indications of molybdenum concentration were found in the pluton or surrounding rocks.

Anomalous lead values are found east of the granodiorite of Hunt Creek, but none of the rock units in this area appear to be the type with which lead mineralization is normally associated. No lead-bearing minerals or anomalous concentrations of veins were observed in the area of these geochemical anomalies.

Uranium is slightly anomalous in sediment from streams draining the alkalic monzonite body and the granodiorite of Hunt Creek. The uranium appears to be in accessory minerals, and although carefully searched for, no concentrations of uranium of even marginal significance were found in either plutonic body or in the surrounding rocks.

Chromium anomalies in several stream-sediment samples appear to be related to diabase sills common in the metamorphosed Prichard Formation. Nowhere does the chromium approach more than trace amounts in these sills.

Tungsten was marginally detected in a localized area in stream-sediment panned concentrates, but no favorable host rocks for tungsten exist in that area and no tungsten minerals were identified in outcrops.

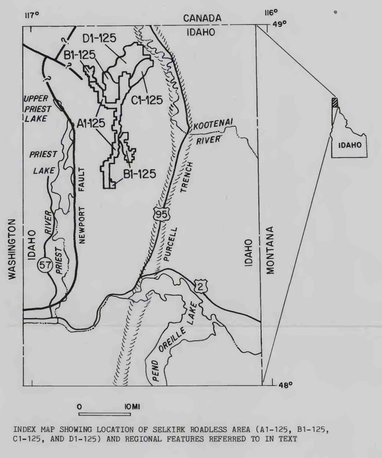
Relatively high values for several rare-earth elements, zirconium, and thorium in panned-concentrate samples are probably due to the relative abundances of the accessory minerals allanite and zircon, both of which are heavy and are concentrated in the panning process. No natural concentrations of these metals were found in place or as placer deposits.

Examination of all recorded claims and prospects indicate that there are no identified mineral deposits in the roadless area. There are no current claims, or oil and gas, mineral, or geothermal leases in the study area; the resource potential of the roadless area for these categories is considered low.

REFERENCES CITED

Miller, F. K., 1983a, Geologic map of the Selkirk Roadless Area, Boundary County, Idaho: U.S. Geological Survey Miscellaneous Field Studies Map MF-1447-A, scale 1:48,000.

_____, 1983b, Geochemical map of the Selkirk Roadless Area, Boundary County, Idaho: U.S. Geological Survey Miscellaneous Field Studies Map MF-1447-B, scale 1:48,000.



INDEX MAP SHOWING LOCATION OF SELKIRK ROADLESS AREA (A1-125, B1-125, C1-125, AND D1-125) AND REGIONAL FEATURES REFERRED TO IN TEXT

MINERAL RESOURCE POTENTIAL MAP OF THE SELKIRK ROADLESS AREA, BOUNDARY COUNTY, IDAHO

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U.S. Geological Survey U.S. Bureau of Mines

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Explanatory pamphlet accompanies map

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