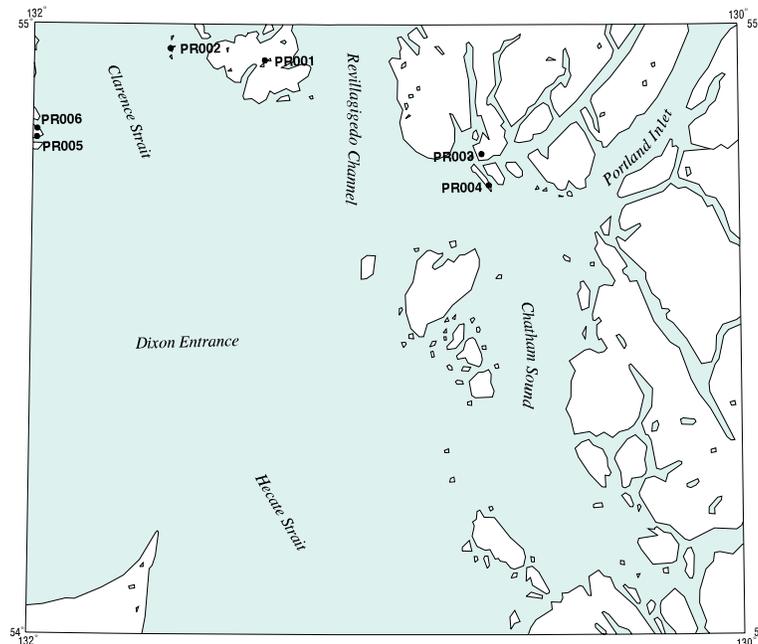


## Prince Rupert quadrangle

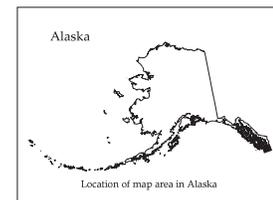
Descriptions of the mineral occurrences shown on the accompanying figure follow. See U.S. Geological Survey (1996) for a description of the information content of each field in the records. The data presented here are maintained as part of a statewide database on mines, prospects and mineral occurrences throughout Alaska.



*Distribution of mineral occurrences in the Prince Rupert  
1:250,000-scale quadrangle, southeastern Alaska*

This and related reports are accessible through the USGS World Wide Web site <http://www-mrs-ak.wr.usgs.gov/ardf>. Comments or information regarding corrections or missing data, or requests for digital retrievals should be directed to Donald Grybeck, USGS, 4200 University Dr., Anchorage, AK 99508-4667, email [dgrybeck@usgs.gov](mailto:dgrybeck@usgs.gov), telephone (907) 786-7424. This compilation is authored by:

Henry C. Berg  
c/o  
U.S. Geological Survey  
4200 University Drive  
Anchorage, AK 99508-4667



*This report is preliminary and has not been reviewed for conformity with U.S. Geological Survey editorial standards or with the North American Stratigraphic code. Any use of trade, product, or firm names is for descriptive purposes only and does not imply endorsement by the U.S. Government.*

**OPEN-FILE REPORT 99-306**

**Site name(s): Duke Island****Site type:** Prospects**ARDF no.:** PR001**Latitude:** 54.923**Quadrangle:** PR D-4**Longitude:** 131.314**Location description and accuracy:**

This site represents the locations of all prospects and occurrences of magnetite- and chromite-bearing ultramafic rocks on Duke and adjacent islands for which there either are U.S. Bureau of Mines (1974) claim records, or other published descriptions (Irvine, 1959; Taylor and Noble, 1960; Clark and Greenwood, 1972; Elliott and others, 1978, locations 159-174; Cobb and Elliott, 1980, p. 137). The coordinates are for the approximate center of the estimated 48-square-mile outcrop area of the ultramafic complex and are accurate within about 0.25 mile. (The 16 prospects and occurrences represented by this site are in both the Prince Rupert D-4 and D-5 quadrangles; the coordinates of the center of the site are in the D-4 quadrangle.)

Also see Additional Comments field.

**Commodities:****Main:** Cr, Fe**Other:** Cu, Ni, PGE**Ore minerals:** Chalcopyrite, chromite, magnetite, pentlandite, pyrite, pyrrhotite**Gangue minerals:****Geologic description:**

Duke Island and adjacent islands (Irvine, 1959; Taylor and Noble, 1960, p. 178-180; Berg and others, 1988) are underlain by metamorphosed undivided Silurian or Ordovician intermediate and mafic intrusive rocks; by Triassic gabbro, which intrudes the metamorphic rocks; and by a Cretaceous ultramafic complex, which intrudes the gabbro. The ultramafic complex is roughly concentrically zoned outward from a core of dunite and peridotite, succeeded by shells of olivine pyroxenite and hornblende pyroxenite. The complex is distinguished by locally conspicuous graded layering and other cumulate features, especially in the dunite, peridotite, and olivine pyroxenite.

Metalliferous minerals include chromite, which occurs in the dunite and peridotite as individual crystals and as small veins and clots; titaniferous magnetite, which locally accompanies pyroxene in graded layers in the hornblende pyroxenite; and rare specks of pyrrhotite, pyrite, pentlandite, and chalcopyrite (Irvine, 1959; Cobb and Elliott, 1980, p.

137).

Analyses of 22 samples (Clark and Greenwood, 1972, p. 159) showed averages of 0.037 ppm Pt (10 samples), 0.033 ppm Pd (16 samples), and 0.010 ppm Rh (6 samples). The acid-soluble iron content of 261 samples of pyroxenite (Berg and others, 1978, p. 25) ranged from 8 to 18% and averaged about 12%. Several of the prospects have been drilled by private interests, but no data on potential iron resources have been made public.

The site includes the 16 claims and prospects scattered over the ultramafic complex that have been described in the literature (and are located individually in the 'Additional comments' field). However, chromite, magnetite, and disseminated sulfides are pervasively distributed throughout the complex, rather than only at a few specific locations.

**Alteration:**

**Age of mineralization:**

Cretaceous

**Deposit model:**

Alaska PGE (Cox and Singer, 1986; model 9)

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

9

**Production Status:** None

**Site Status:** Probably inactive

**Workings/exploration:**

Analyses of 22 samples (Clark and Greenwood, 1972, p. 159) showed averages of 0.037 ppm Pt (10 samples), 0.033 ppm Pd (16 samples), and 0.010 ppm Rh (6 samples). The acid-soluble iron content of 261 samples of pyroxenite (Berg and others, 1978, p. 25) ranged from 8% to 18% and averaged about 12%. Several of the prospects have been drilled by private interests, but no data on potential iron resources have been made public.

**Production notes:**

**Reserves:**

**Additional comments:**

The following names, most probably names of claims, (Elliott and others, 1978) have been used for some of the prospects on Duke and adjacent islands (location numbers are from Elliott and others, 1978): Dud, loc. 163; Sec 14, T. 80 S., R. 93 E., of the Copper River Meridian; Peter?, loc. 164; Sec 13, T. 80 S., R. 93 E., of the Copper River Meridian; Red, loc. 165; Sec 13, T. 80 S., R. 93 E., of the Copper River Meridian; Ditto?, loc. 166; Sec 14, T. 80 S., R. 93 E., of the Copper River Meridian; Cave, loc. 167; Sec 23, T. 80 S., R. 93 E., of the Copper River Meridian; Camp, loc. 169; Sec 27, T. 80 S., R. 93 E., of the Copper River Meridian; Richard, loc. 171; Sec 31, T. 80 S., R. 94 E., of the Copper

River Meridian; Creek?, loc. 173; Sec 7, T. 80 S., R. 95 E., of the Copper River Meridian; and Ted, loc. 174; Sec 3, T. 81 S., R. 95 E., of the Copper River Meridian.

**References:**

Irvine, 1959; Clark and Greenwood, 1972; U.S. Bureau of Mines, 1974; Berg and others, 1978; Elliott and others, 1978; Cobb and Elliott, 1980.

**Primary reference:** Irvine, 1959; Cobb and Elliott, 1980

**Reporter(s):** H.C. Berg (USGS)

**Last report date:** 02/02/99

**Site name(s): Stebbins; and unnamed (on Percy and Cow Islands)****Site type:** Prospects**ARDF no.:** PR002**Latitude:** 54.951**Quadrangle:** PR D-5**Longitude:** 131.592**Location description and accuracy:**

This site represents the locations of three prospects for iron minerals in ultramafic rocks on the the Percy Islands (Sec 8, T. 80 S., R. 92 E., of the Copper River Meridian), Cow Island (Sec 5, T. 80 S., R. 92 E., of the Copper River Meridian), and an adjacent island (Stebbins, Sec 7, T. 80 S., R. 92 E.) for which there either are U.S. Bureau of Mines (1974) claim records, or other published descriptions (Taylor and Noble, 1960; Elliott and others, 1978, locs. 156-158; Cobb and Elliott, 1980, p. 141). The coordinates are for the approximate center of the estimated 6-square-mile outcrop area of the ultramafic rocks and are accurate within about 0.1 mile.

**Commodities:****Main:** Fe**Other:****Ore minerals:** Titaniferous magnetite**Gangue minerals:****Geologic description:**

The Percy Islands, Cow Island, and adjacent islands (Taylor and Noble, 1960, p. 181; Berg and others, 1988) are underlain by metamorphosed undivided Silurian or Ordovician intermediate and mafic intrusive rocks, and by a Cretaceous ultramafic complex, which intrudes the metamorphic rocks. The ultramafic complex consists of olivine pyroxenite with a border zone of hornblende pyroxenite, which in turn is surrounded by gabbro.

The hornblende pyroxenite contains titaniferous magnetite, whose abundance and distribution probably is similar to that on Duke Island (ARDF PR001). A prospect on the Percy Islands has been drilled by private interests, but no data on potential iron resources have been made public.

**Alteration:****Age of mineralization:**

Cretaceous

**Deposit model:**

Alaska PGE (Cox and Singer, 1986; model 9)

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

9

**Production Status:** No

**Site Status:** Inactive

**Workings/exploration:**

A prospect on the Percy Islands has been drilled by private interests, but no data on potential iron resources have been made public.

**Production notes:****Reserves:****Additional comments:****References:**

Taylor and Noble, 1960; U.S. Bureau of Mines, 1974; Elliott and others, 1978; Cobb and Elliott, 1980; Berg and others, 1988.

**Primary reference:** U. S. Bureau of Mines, 1974; Cobb and Elliott, 1980

**Reporter(s):** H.C. Berg (USGS)

**Last report date:** 02/02/99

**Site name(s): Hyder Mica; Last Chance; Nakat Mica; Nakat Feldspar; Pegmatite Mica; Pearson; Mica City; Mrs. Mack**

**Site type:** Prospects

**ARDF no.:** PR003

**Latitude:** 54.776

**Quadrangle:** PR D-3

**Longitude:** 130.712

**Location description and accuracy:**

This site (Elliott and others, 1978, locs. 175-182) consists of eight occurrences in the Nakat Bay-Sitklan Passage area, all of which have been prospected for mica. Six of the prospects, known only from U.S. Bureau of Mines (1974) claim records, are named: Nakat Mica (Elliott and others, 1978, loc. 175; Sec 35, T. 81 S., R. 98 E., of the Copper River Meridian); Nakat Feldspar (loc. 176; Sec 35, T. 81 S., R. 98 E., of the Copper River Meridian); Pegmatite Mica (loc. 177; Sec 12, T. 82 S., R. 98 E., of the Copper River Meridian); Pearson (loc. 178; Sec 12, T. 82 S., R. 98 E., of the Copper River Meridian); Mica City (loc. 179; Sec 12, T. 82 S., R. 98 E., of the Copper River Meridian); and Mrs. Mack (loc. 181; Sec 18, T. 82 S., R. 99 E., of the Copper River Meridian). The two remaining prospects (Sainsbury, 1957, p. 156-159) are named Last Chance (Elliott and others, 1978, loc. 180; Sec 13, T. 82 S., R. 98 E., of the Copper River Meridian); and Hyder Mica (loc. 182; Sec 18, T. 82 S., R. 99 E., of the Copper River Meridian).

The coordinates are for the approximate center of the estimated four-square-mile area that encompasses this group of prospects; the coordinates of the center are accurate within about 0.2 mile.

**Commodities:**

**Main:** Mica

**Other:** Feldspar

**Ore minerals:** Mica (muscovite)

**Gangue minerals:** Quartz

**Geologic description:**

The Nakat Bay-Sitklan Passage area (Sainsbury, 1957, p. 152-161; Berg and others, 1988) is underlain by intensely folded and faulted Mesozoic or Paleozoic sedimentary, volcanic, and intrusive rocks that are regionally metamorphosed to greenschist and amphibolite grade. The metamorphic rocks locally are replaced or intruded by quartz-feldspar-mica pegmatite bodies that in places contain books of muscovite mica as much as eight inches in diameter (Sainsbury, 1957, p. 152-161; Cobb and Elliott, 1980, p. 142-

143).

Massive pegmatite bodies at the Hyder Mica prospect (Sainsbury, 1957, p. 156-159) locally contain mica plates as much as 8 inches in diameter. The deposit was explored in the 1950s(?) by five trenches and several pits. Some of the mica was classified by state and federal agencies as 'strategic muscovite mica,' but most was of lower grade.

At the Last Chance prospect (Sainsbury, 1957, p. 156), a pegmatite body 2 to 3 feet thick contains thin books of silvery mica up to 1.5 inches in diameter. The estimated mica content of the pegmatite is less than 10%. The prospect was explored by a 4-foot-long trench.

**Alteration:**

**Age of mineralization:**

**Deposit model:**

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

**Production Status:** No

**Site Status:** Inactive

**Workings/exploration:**

The Hyder Mica prospect was explored, probably in the 1950s, by five trenches up to 40 feet long, and by several pits. Some of the mica was classified by federal and state agencies as 'strategic grade muscovite mica,' but most of the mica was of lower grade. The Last Chance prospect was explored by a four-foot trench.

**Production notes:**

**Reserves:**

**Additional comments:**

The site is in Wilderness of the Misty Fiords National Monument.

**References:**

Sainsbury, 1957 (B1024-G); U.S. Bureau of Mines, 1974; Elliott and others, 1978; Cobb and Elliott, 1980; Berg and others, 1988.

**Primary reference:** Sainsbury, 1957

**Reporter(s):** H.C. Berg (USGS)

**Last report date:** 02/03/99

**Site name(s):** Garnet (on Kanagunut Island)

**Site type:** Prospect

**ARDF no.:** PR004

**Latitude:** 54.726

**Quadrangle:** PR C-3

**Longitude:** 130.697

**Location description and accuracy:**

This site (Sainsbury, 1957, fig. 19; Elliott and others, 1978, loc. 183) is at or near sea level along the southwest shore of Kanagunut Island; it is about 0.7 mile from Garnet Point in Sec. 25, T. 82 S., R. 98 E., of the Copper River Meridian). The location is accurate within 0.1 mile.

**Commodities:**

**Main:** Garnet

**Other:**

**Ore minerals:** Garnet

**Gangue minerals:**

**Geologic description:**

Kanagunut Island is underlain by intensely folded and faulted pelitic schist, granulite, and marble of Mesozoic or Paleozoic age (Sainsbury, 1957, p. 152-153; Berg and others, 1988). Red garnets as much as an inch in diameter, and smaller, dark red to black garnets, are abundant in a wide belt of pelitic schist and granulite on the western part of Kanagunut Island. Locally, the garnet-bearing layers are estimated to contain as much as 30 to 40% garnet. Garnet sands along the west coast of the island are beach placers derived from the schist.

**Alteration:**

**Age of mineralization:**

**Deposit model:**

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

**Production Status:** No

**Site Status:** Inactive

**Workings/exploration:**

**Production notes:**

**Reserves:**

**Additional comments:**

The site is in Wilderness of the Misty Fiords National Monument.

**References:**

Sainsbury, 1957 (B1024-G); Elliott and others, 1978; Berg and others, 1988.

**Primary reference:** Sainsbury, 1957

**Reporter(s):** H.C. Berg (USGS)

**Last report date:** 02/03/99

**Site name(s): Nelson and Tift****Site type:** Mine**ARDF no.:** PR005**Latitude:** 54.802**Quadrangle:** PR D-6**Longitude:** 131.972**Location description and accuracy:**

The Nelson and Tift mine (MacKevett, 1963, p. 99-100 and pl. 1; Cobb and Elliott, 1980, p. 140) is on the north shore of McLean Arm, about 4000 ft west of the mouth of the arm; it is in Sec. 33, T. 81 S., R. 90 E., of the Copper River Meridian. The property consists of 10 lode claims and a millsite. The location is accurate within 300 feet.

**Commodities:****Main:** Ag, Au, Cu, Pb**Other:****Ore minerals:** Bornite, chalcopyrite, galena?, pyrite**Gangue minerals:** Quartz, calc-silicate minerals**Geologic description:**

The rocks in the area of the Nelson and Tift mine (MacKevett, 1963, pl. 1) consist of a Cretaceous quartz diorite stock; thin roof pendants of Devonian(?) marble and calc-silicate rock; and numerous Tertiary andesite or dacite dikes that cut both the stock and the roof pendants.

The deposit (MacKevett, 1963, p. 99-100), which has been mined out, consisted of a sulfide lens 75 ft long, 30 ft deep, and 9 ft wide, in a steep, 20- to 40-ft wide roof pendant of marble that has been intruded by quartz diorite. Near the intrusive contacts, parts of the pendant have been converted to calc-hornfels. The ore consisted largely of auriferous pyrite, accompanied by small amounts of chalcopyrite and bornite. A few pyrite-bearing quartz veins up to 6 inches thick that cut the pendant probably contain small amounts of gold. Pyrite and a little magnetite are disseminated in parts of the marble.

The deposit was discovered in 1935 and developed by an open-cut and several small pits and trenches. During 1936, 4 diamond-drill holes, up to 90 feet deep, were drilled, but did not intersect ore. About 1300 tons of ore were shipped to a smelter in the mid-late 1930s; gold, silver, some copper, and a little lead were recovered. Precious metal content of seven channel samples taken from the mine in the mid-1930s ranged from 0.12 to 2.08 oz Au and 0.05 to 0.40 oz Ag per ton.

**Alteration:****Age of mineralization:**

Probably Cretaceous or younger.

**Deposit model:**

Cu skarn (Cox and Singer, 1986; model 18b)

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

18b

**Production Status:** Yes; small

**Site Status:** Inactive

**Workings/exploration:**

The deposit was discovered in 1935 and developed by an opencut and several small pits and trenches. During 1936, 4 diamond-drill holes, up to 90 feet deep, were drilled, but did not intersect ore. About 1300 tons of ore were shipped to a smelter in the mid-late 1930s; gold, silver, some copper, and a little lead were recovered. Precious metal content of seven channel samples taken from the mine in the mid-1930s ranged from 0.12 to 2.08 oz Au and 0.05 to 0.40 oz Ag per ton.

**Production notes:**

About 1300 tons of ore were shipped to a smelter in the mid-late 1930s, with recovery of gold, silver, some copper, and a little lead.

**Reserves:**

Ore body was mined out.

**Additional comments:****References:**

MacKevett, 1963; Cobb and Elliott, 1980.

**Primary reference:** MacKevett, 1963

**Reporter(s):** H.C. Berg (USGS)

**Last report date:** 02/03/99

**Site name(s):** Unnamed (south shore of Gardner Bay)

**Site type:** Prospect

**ARDF no.:** PR006

**Latitude:** 54.821

**Quadrangle:** PR D-6

**Longitude:** 131.977

**Location description and accuracy:**

This site (MacKevett, 1963, pl. 1; Cobb and Elliott, 1980, p. 138) is at sea level on the south shore of Gardner Bay near the south entrance to the bay; it is in NE1/4NW1/4 sec. 28, T. 81 S., R. 90 E., of the Copper River Meridian. The location is accurate within 0.1 mile.

**Commodities:**

**Main:** U?

**Other:**

**Ore minerals:** Unidentified black radioactive mineral(s)

**Gangue minerals:**

**Geologic description:**

The area of this site is underlain by a Cretaceous quartz diorite stock that is intruded by numerous Tertiary andesite or dacite dikes (MacKevett, 1963, pl. 1). The prospects (MacKevett, 1963, p. 93-94; Cobb and Elliott, 1980, p. 138) are on pegmatite dikes and lenses up to 2 feet thick that cut quartz diorite. The dikes consist mainly of very coarse grained perthite and quartz, but they also contain small amounts of plagioclase, biotite, and magnetite, and a very sparse, unidentified black radioactive mineral or minerals. The prospects were explored by several small pits, probably in the 1950s.

**Alteration:**

**Age of mineralization:**

Cretaceous or younger.

**Deposit model:**

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

**Production Status:** No

**Site Status:** Inactive

**Workings/exploration:**

The prospects were explored by several small pits, probably in the 1950s.

**Production notes:**

**Reserves:**

**Additional comments:**

**References:**

MacKevett, 1963; Cobb and Elliott, 1980.

**Primary reference:** MacKevett, 1963

**Reporter(s):** H.C. Berg (USGS)

**Last report date:** 02/03/99

## References

- Berg, H.C., and Cobb, E.H., 1967, Metalliferous lode deposits of Alaska: U.S. Geological Survey Bulletin 1246, 254 p.
- Berg, H.C., Elliott, R.L., and Koch, R.D., 1978, Map and tables describing areas of metalliferous mineral resource potential in the Ketchikan and Prince Rupert quadrangles, Alaska: U.S. Geological Survey Open-file Report 78-73M, scale 1:250,000, 48 p. pamphlet.
- Berg, H.C., Elliott, R.L., and Koch, R. D., 1988, Geologic map of the Ketchikan and Prince Rupert quadrangles, southeastern Alaska: U.S. Geological Survey Miscellaneous Investigations Series Map I-1807, scale 1:250,000.
- Bufvers, John, 1967, History of mines and prospects, Ketchikan district, prior to 1952: Alaska Division of Mines and Minerals Special Report 1, 32 p.
- Clark, A.L., and Greenwood, W.R., 1972, Geochemistry and distribution of platinum-group metals in mafic to ultramafic complexes of southern and southeastern Alaska, *in* Geological Survey Research: U.S. Geological Survey Professional Paper 800-C, p. C157-C160.
- Cobb, E.H., 1972, Metallic mineral resources map of the Prince Rupert quadrangle, Alaska: U.S. Geological Survey Miscellaneous Field Studies Map MF-437, 1 sheet, scale 1:250,000.
- Cobb, E.H., and Elliott, R.L., 1980, Summary of data on and lists of references to metallic and selected nonmetallic mineral deposits in the Ketchikan and Prince Rupert quadrangles, Alaska: U.S. Geological Survey Open-file Report 80-1053, 156 p.
- Eakins, G. R., 1970, An experiment in geobotanical prospecting for uranium, Bokan Mountain area, southeastern Alaska: Alaska Division of Mines and Geology Geologic Report 41, 52 p.
- Eakins, G. R., 1975, Uranium investigations in southeastern Alaska: Alaska Division of Geological and Geophysical Surveys Geologic Report 44, 62 p.
- Elliott, R.L., Berg, H.C., and Karl, Susan, 1978, Map and table describing metalliferous and selected nonmetallic mineral deposits, Ketchikan and Prince Rupert quadrangles, Alaska: U.S. Geological Survey Open-file Report 78-73B, scale 1:250,000, 17 p. pamphlet.
- Irvine, T.N., 1959, The ultramafic complex and related rocks of Duke Island, southeastern Alaska: California Inst. Technology, Pasadena, Ph.D. thesis, 320 p.
- Irvine, 1974, Petrology of the Duke Island ultramafic complex, southeastern Alaska: Geological Society of America Memoir 138, 240 p.
- MacKevett, E. M., 1963, Geology and ore deposits of the Bokan Mountain uranium-thorium area, southeastern Alaska: U. S. Geological Survey Bulletin 1154, 125 p.
- Page, N.J., Clark, A.L., Desborough, G.A., and Parker, R.L., 1973, Platinum-group metals, *in* Brobst, D.A., and Pratt, W.P., eds., United States mineral resources: U.S. Geological Survey Professional Paper 820, p. 537-545.
- Sainsbury, C. L., 1957, Some pegmatite deposits in southeastern Alaska: U.S. Geological Survey Bulletin 1024-G, p. 141-161.
- Skow, M.L., 1962, Mica, a materials survey: U.S. Bureau of Mines Information Circular 8125, 240 p.

Smith, P.S., 1938, Mineral industry of Alaska in 1936: U. S. Geological Survey Bulletin 897-A, p. 1-107.

Smith, P.S., 1939, Mineral industry of Alaska in 1938: U.S. Geological Survey Bulletin 917-A, p. 1-113.

Smith, P.S., 1941, Mineral industry of Alaska in 1939: U.S. Geological Survey Bulletin 926-A, p. 1-106.

Taylor, H.P., and Noble, J.A., 1960, Origin of the ultramafic complexes in southeastern Alaska: International Geological Congress, 21<sup>st</sup>, Copenhagen, Report, p. 175-187.

U.S. Bureau of Mines, 1974, Claim map, Prince Rupert: U.S. Bureau of Mines Map, no. 122, scale 1:250,000.