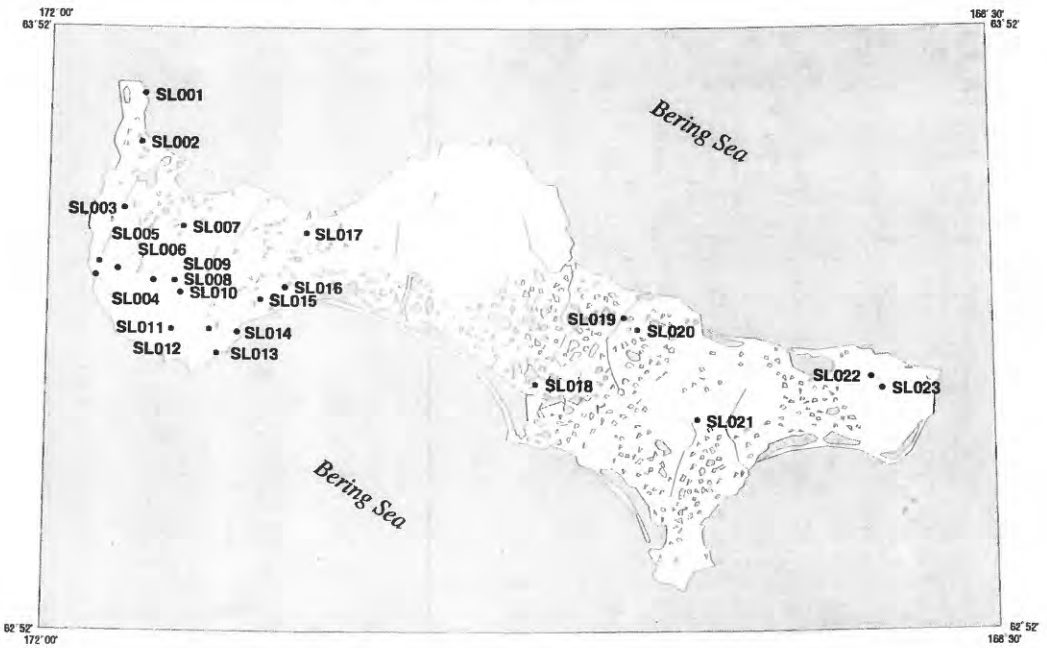
Alaska Resource Data File

U.S. Department of the Interior - U.S. Geological Survey

Saint Lawrence quadrangle

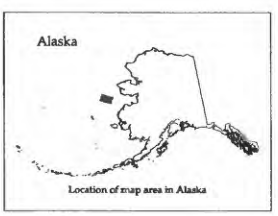
Descriptions of the mineral occurrences shown on the accompanying figure follow. See U.S. Geological Survey (1996) for a description of the information content of each field in the records. The data presented here are maintained as part of a statewide database on mines, prospects and mineral occurrences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



Distribution of mineral occurrences in the Saint Lawrence 1:250,000-scale quadrangle, western 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 Unversity Dr., Anchorage, AK 99508-4667, email dgrybeck@usgs.gov, telephone (907) 786-7424. This compilation is authored by:

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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.

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OPEN-FILE REPORT 98-786

Site name(s): Tiflighak Bay

Site Type: Occurrence

ARDF no.: SL001

Latitude: 63.76 **Quadrangle:** SL D-6

Longitude: 171.65

Location description and accuracy:
Tiflighak Bay is a small concave shoreline on the east side of the northwest tip of St. Lawrence Island. This is an area of steep sea cliffs cut into intrusive rocks of the Sevuokuk pluton. This location is only known from an oral communication (Cobb, 1980, p. 60). Small galena-bearing quartz veins are said to be exposed near the top of the cliff. This site is probably located within 0.5 mile. It is locality 1 of Cobb (1972) and Cobb (1980) summarized relevant references under the name 'Tiflighak Bay'.

Commodities:

Main: Pb

Other:

Ore minerals: Galena

Gangue minerals: Quartz

Geologic description:
Galena in small quartz veins in Cretaceous quartz monzonite exposed near top of cliff (oral communication, Bela Csejtey, Jr. May 24, 1972; as cited by Cobb, 1972; 1980). The Sevuokuk pluton in the vicinity of this site is biotite quartz monzonite (Csejtey, Patton and Miller, 1971) for which one K/Ar determination indicates an age of 108 +/- 3.2 Ma (Patton and Csejtey, 1980).

Alteration:

Age of mineralization:
Not known; assumed to be mid -Cretaceous, the age of the associated granitic rocks.

Deposit model:
Vein in granitic rock. Deposit model 22c (?); polymetallic veins

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
22c (?)

Production Status: None

Site Status: Inactive

Workings/exploration:
None

Production notes:

Reserves:

Additional comments:

References:
Csejtey, Patton, and Miller, 1971; Cobb, 1972 (MF-465); Patton and Csejtey, 1980; Cobb, 1980 (OFR 80-909)

Primary reference: Cobb, 1980 (OFR 80-909)

Reporter(s): Travis L. Hudson (Applied Geology)

Last report date: 9/10/98

Site name(s): Ikoygak Creek

Site Type: Occurrence

ARDF no.: SL002

Latitude: 63.68 **Quadrangle:** SL D-6

Longitude: 171.66

Location description and accuracy:
Ikoygak Creek flows north into Akeftapak Bay on the northwest coast of St. Lawrence Island. The mouth of this creek is 7 1/2 miles southeast of Gambell and almost 6 miles northwest of Naskok Camp. This site was not included by Cobb (1972; 1980).

Commodities:

Main: Chromium

Other:

Ore minerals: Chromite (?)

Gangue minerals:

Geologic description:
Three stream sediment samples on the lower part of this drainage contain 5,000 ppm chromium (Patton and Csejtey, 1972). This is an area of Quaternary surficial deposits and the concentration of chromium here could be in part related to alluvial or marine processes. Patton and Csejtey (1980) suggest that these high chromium values could indicate the presence of ultamafic rocks within a Triassic to Permian age mafic assemblage that is exposed at the surface 8 miles southeast of Ikoygak Creek. Patton and Csejtey (1980) also indicate that offshore dredge data support this interpretation but the source of this information (or the nature of the dredge data) is not indicated.

Alteration:

Age of mineralization:
If chromite deposits are present, they are probably related to intrusive rocks within the Triassic to Permian age mafic assemblage as suggested by Patton and Csejtey (1980).

Deposit model:
Placer concentration of chromite.

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

Production Status: None

Site Status: Inactive

Workings/exploration:
None

Production notes:

Reserves:

Additional comments:

References:
Patton and Cjestey, 1972; Cobb, 1972 (MF-465); Patton and Cjestey,1980; Cobb, 1980 (OFR 80-909)

Primary reference: Patton and Cjestey, 1972

Reporter(s): Travis L. Hudson (Applied Geology)

Last report date: 9/10/98

Site name(s): Kangik River

Site Type: Occurrence

ARDF no.: SL003

Latitude: 63.57 **Quadrangle:** SL C-6

Longitude: 171.72

Location description and accuracy:
Kangik River flows northeast into Aghnaghak Lagoon on the northwest coast of St. Lawrence Island. This site is in hornfels peripheral to the east side of the Sevuokuk pluton, 4.5 miles northeast of Vngyat Point' (Patton and Csejtey, 1971, p. C15). The site, probably located within 0.5 miles, is apparently on the Kangik River. This is locality 2 of Cobb (1972) and Cobb (1980) summarized relevant references under the name 'Kangik R.'

Commodities:

Main: Cu

Other:

Ore minerals: Native copper

Gangue minerals:

Geologic description:
A small amount of native copper was found in float of a mafic volcanic hornfels 4 1/2 miles northeast of Vngyat Point (Patton and Cjestey, 1971, p. C15).

The hornfels is apparently in the east contact zone of the Sevuokuk pluton. The Sevuokuk pluton is an elongate and composite intrusion that makes up the western coastal headlands of St. Lawrence Island (Patton and Csejtey, 1980). It includes biotite hornblende quartz monzonite and biotite quartz monzonite phases (Csejtey, Patton, and Miller, 1971). The copper-bearing hornfels occurrence is apparently in the contact zone of a biotite hornblende quartz monzonite phase where it intrudes a Cretaceous volcanic assemblage of diverse lithologies and compositions. One K/Ar age determination for the Sevuokuk pluton gave an age of 108 +/- 3.2 Ma (Patton and Csejtey, 1980).

Alteration:
The Cretaceous volcanic assemblage is thermally metamorphosed to hornblende hornfels and albite-epidote hornfels facies where it is in contact with granitic rocks but elsewhere it is commonly propylitically altered (Patton and Csejtey, 1980).

Age of mineralization:
Mid-Cretaceous, the age of the Sevuokuk pluton (108 +/- 3.2 Ma; Patton and Csejtey, 1980)

Deposit model:
Copper-bearing replacements in hornfels.

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

Production Status: None

Site Status: Inactive

Workings/exploration:
None

Production notes:

Reserves:

Additional comments:

References:
Patton and Csejtey, 1971 (PP 684-C); Csejtey, Patton, and Miller, 1971; Cobb, 1972 (MF-465); Patton and Csejtey, 1980; Cobb, 1980 (OFR 80-909)

Primary reference: Patton and Csejtey, 1971 (PP 684-C)

Reporter(s): Travis L. Hudson (Applied Geology)

Last report date: 9/10/98

Site name(s): Booshu Camp

Site Type: Prospect

ARDF no.: SL004

Latitude: 63.458 **Quadrangle:** SL C-6

Longitude: 171.823

Location description and accuracy:
The Booshu Camp site is located on a wave cut platform 1/2 mile south of the mouth of the Moghoweyik River, on the west coast of St. Lawrence Island. Mineralization here is exposed along the beach and for 150 feet inland across the wave cut bench. This site is located within 1/4 mile; it is locality 3 of Cobb (1972) and Cobb (1980) summarized relevant references under the name 'Booshu Camp'.

Commodities:

Main: Mo

Other:

Ore minerals: Chalcopyrite, molybdenite

Gangue minerals: Quartz, pyrite

Geologic description:
Molybdenite mineralization here is in the Sevuokuk pluton, a mid-Cretaceous (108 +/- 3.2 Ma) composite body that includes biotite hornblende quartz monzonite and biotite quartz monzonite phases (Csejtey, Patton, and Miller, 1971; Patton and Csejtey, 1980). At this site, molybdenite occurs as disseminations and as scaly fracture and joint coatings (Anderson, 1947, p. 35-36) in biotite quartz monzonite. Small amounts of chalcopyrite and pyrite locally accompany the molybdenite. The mineralization appears to be concentrated in a zone along the shoreline between major joints. Results of channel sampling here included (1) 3 feet of 0.71 % MoS2, (2) 6 feet of 0.28 % MoS2, and (3) 15 feet of 0.17 % MoS2 (Anderson, 1947, p. 36). Three grab samples of mineralized quartz monzonite contained 150, 700, and 1,000 ppm molybdenum and 300, 10, and 30 ppm copper respectively (Patton and Csejtey, 1971, p. C8). Alteration is restricted to small amounts of quartz (at least some in veins) and partial sericitization of feldspars (Patton and Csejtey, 1971, p. C8 and C10).

Alteration:
Alteration is restricted to small amounts of quartz (at least some in veins) and partial sericitization of feldspars (Patton and Csejtey, 1971, p. C8 and C10).

Age of mineralization:
Mid-Cretaceous, the age of the host Sevuokuk pluton (108 +/- 3.2 Ma; Patton and Csejtey, 1980).

Deposit model:
Fracture fillings and disseminations of molybdenite in granitic rock. Deposit model 21b (?); porphyry Mo, low-F

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
21b (?)

Production Status: None

Site Status: Inactive

Workings/exploration:
Results of channel sampling here included (1) 3 feet of 0.71 % MoS2, (2) 6 feet of 0.28 % MoS2, and (3) 15 feet of 0.17 % MoS2 (Anderson, 1947, p. 36). Three grab samples of mineralized quartz monzonite contained 150, 700, and 1,000 ppm molybdenum and 300, 10, and 30 ppm copper respectively (Patton and Csejtey, 1971, p. C8).

Production notes:

Reserves:

Additional comments:
Locality 6 (West Cape) of Cobb (1972) should be deleted (Cobb, 1980, p. 51) as the cited reference information (Anderson, 1947, p. 35-36) is for the Booshu Camp site and not West Cape.

References:
Anderson, 1947; Patton and Csejtey, 1971(PP 684-C); Csejtey, Patton, and Miller, 1971; Cobb, 1972 (MF 465); Patton and Csejtey, 1980; Cobb, 1980 (OFR 80-909)

Primary reference: Patton and Csejtey, 1971 (PP 684-C)

Reporter(s): Travis L. Hudson (Applied Geology)

Last report date: 9/10/98

Site name(s): Unnamed

Site Type: Occurrence

ARDF no.: SL005

Latitude: 63.48 **Quadrangle:** SL C-6

Longitude: 171.81

Location description and accuracy:
This site is 3 miles east of the mouth of the Moghoweyik River on western St. Lawrence Island. It is at an elevation of about 300 feet on the north side of the river valley and is probably located within 1/2 mile. It is locality 5 of Cobb (1972) and Cobb (1980) summarized relevant references under the name 'Unnamed occurrence'.

Commodities:

Main: Cu

Other:

Ore minerals: Chalcopyrite

Gangue minerals: Pyrite

Geologic description:
Chalcopyrite mineralization here is in the Sevuokuk pluton, a mid-Cretaceous (108 +/- 3.2 Ma) composite body that includes biotite hornblende quartz monzonite and biotite quartz monzonite phases (Csejtey, Patton, and Miller, 1971; Patton and Csejtey, 1980). At this site, pyrite and chalcopyrite are disseminated in botite quartz monzonite. One grab sample contained 1,000 ppm copper, 15 ppm molybdenum, and 1.5 ppm silver (Patton and Csejtey, 1971, p. C8). Other characteristics of this site, such as size and alteration, have not been described.

Alteration:
Alteration has not been described.

Age of mineralization:
Mid-Cretaceous, the age of the host Sevuokuk pluton (108 +/- 3.2 Ma; Patton and Csejtey, 1980).

Deposit model:
Fracture fillings, veins, and disseminations of chalcopyrite in granitic rock. Deposit model 17 (?); porphyry Cu

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
17 (?)

Production Status: None

Site Status: Inactive

Workings/exploration:
One grab sample contained 1,000 ppm copper, 15 ppm molybdenum, and 1.5 ppm silver (Patton and Csejtey, 1971, p. C8).

Production notes:

Reserves:

Additional comments:

References:
Csejtey, Patton, and Miller, 1971; Cobb, 1972 (MF-465); Patton and Csejtey, 1971 (PP 684-C); Patton and Csejtey, 1980; Cobb, 1980 (OFR 80-909)

Primary reference: Patton and Csejtey, 1971(PP 684-C)

Reporter(s): Travis L. Hudson (Applied Geology)

Last report date: 9/10/98

Site name(s): Moghoweyik River

Site Type: Occurrence

ARDF no.: SL006

Latitude: 63.469 **Quadrangle:** SL C-6

Longitude: 171.742

Location description and accuracy:
This site is on the north bank of the Moghoweyik River, 3/4 mile upstream from the mouth on the west coast of St. Lawrence Island. It is located within 1/4 mile and is locality 4 of Cobb (1972). Cobb (1980) summarized relevant references under the name 'Moghoweyik R., lower'.

Commodities:

Main: Mo

Other:

Ore minerals: Molybdenite

Gangue minerals: Quartz, pyrite

Geologic description:
Molybdenite mineralization here is in the Sevuokuk pluton, a mid-Cretaceous (108 +/- 3.2 Ma) composite body that includes biotite hornblende quartz monzonite and biotite quartz monzonite phases (Csejtey, Patton, and Miller, 1971; Patton and Csejtey, 1980). At this site, molybdenite occurs in thin veinlets cutting highly oxidized pyritiferous biotite quartz monzonite. The quartz monzonite is also cut by quartz veins and aplite dikes (Patton and Csejtey, 1971, p. C10).

Alteration:
Pyrite is apparently abundant and disseminated in the biotite quartz monzonite as well as accompanying molybdenite in veins. Pyrite oxidation is well-developed and other alteration is probably present although not described.

Age of mineralization:
Mid-Cretaceous, the age of the host Sevuokuk pluton (108 +/- 3.2 Ma; Patton and Csejtey, 1980).

Deposit model:
Fracture fillings, veins, and disseminations of moyldenite in granitic rock. Deposit model

21b (?); porphyry Mo, low-F

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
21b (?)

Production Status: None

Site Status: Inactive

Workings/exploration:
Three grab samples contained 7, 500, and 1,500 ppm molybdenum and 700, 150, and 15 ppm copper
respectively (Patton and Csejtey, 1971. p. C8). A pan concentrate from the riverbed gravels at this locality contained 70 ppm molybdenum and 5,000 ppm tungsten (Patton and Csejtey, 1971, p. C10).

Three grab samples contained 7, 500, and 1,500 ppm molybdenum and 700, 150, and 15 ppm copper respectively (Patton and Csejtey, 1971. p. C8). A pan concentrate from the riverbed gravels at this locality contained 70 ppm molybdenum and 5,000 ppm tungsten (Patton and Csejtey, 1971, p. C10).

Production notes:

Reserves:

Additional comments:

References:
Patton and Csejtey, 1971 (PP 694-C); Csejtey, Patton, and Miller, 1971; Cobb, 1972 (MF465); Patton and Csejtey, 1980; Cobb, 1980 (OFR 80-909)

Primary reference: Patton and Csejtey, 1971 (PP 684-C)

Reporter(s): Travis L. Hudson (Applied Geology)

Last report date: 9/10/98

Site name(s): Ikalooksik River

Site Type: Occurrence

ARDF no.: SL007

Latitude: 63.54 **Quadrangle:** SL C-6

Longitude: 171.5

Location description and accuracy:
The Ikalooksik River flows northward to Niyrakpak Lagoon on northwest St. Lawrence Island. This site includes the drainage area of the principal course of the river where stream sediments collected over a length of 8 miles have low but consistently anomalous amounts of copper. It was not identified as a separate locality by Cobb (1972, 1980).

Commodities:

Main: Cu

Other:

Ore minerals: Not identified

Gangue minerals:

Geologic description:
Stream sediments collected along the main drainage of the Ikalooksik River, over a distance of 8 miles, have low but anomalous levels of copper, vanadium, nickel, and manganese.

Alteration:

Age of mineralization:
Original, disseminated sulfide minerals in gabbro would be Triassic to Permian in age based on the results of two K/Ar age determinations on associated intrusive rocks (221 +/- 7 and 244 +/- 7 Ma; Patton and Csejtey, 1980).

Deposit model:
Disseminated sufide minerals in gabbro.

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

Production Status: None

Site Status: Inactive

Workings/exploration:

Of the 21 stream sediment samples along this drainage, 18 have 100 to 150 ppm copper, all have 300 to 1,000 ppm vanadium, all have 30 to 100 ppm Ni, and 20 contain 1,500 to 5,000 ppm Mn (Patton and Csejtey, 1972). Nineteen of these samples have chromium values between 100 and 300 ppm. These widespread slightly elevated metal values probably reflect a general characteristic of the bedrock in the drainage area.

The bedrock in this drainage is a Triassic to Permian age assemblage characterized by gabbro and diabase intrusions (Patton and Csejtey, 1980). Gabbro samples from this assemblage along the Okok River (see SL012) contain disseminated chalcopyrite and up to 700 ppm copper (Patton and Csejtey, 1971, p. C15). Samples of gabbro from along the Ikalooksik River are not available but the slightly elevated metal contents in stream sediments throughout this drainage probably reflect the presence of gabbro intrusions here.

Of the 21 stream sediment samples along this drainage, 18 have 100 to 150 ppm copper, all have 300 to 1,000 ppm vanadium, all have 30 to 100 ppm Ni, and 20 contain 1,500 to 5,000 ppm Mn (Patton and Csejtey, 1972). Nineteen of these samples have chromium values between 100 and 300 ppm.

Production notes:

Reserves:

Additional comments:

References:

Patton and Csejtey, 1971(PP 684-C); 1972; Cobb, 1972 (MF-465); Patton and Csejtey, 1980; Cobb, 1980 (OFR 80-909)

Primary reference: Patton and Csejtey, 1972

Reporter(s): Travis L. Hudson (Applied Geology)

Last report date: 9/10/98

Site name(s): Poovookpuk Mountain

Site Type: Prospect

ARDF no.: SL008

Latitude: 63.45 **Quadrangle:** SL C-6

Longitude: 171.53

Location description and accuracy:
This site is on the east side of Poovookpuk Mountain in the headwaters of the Kookooliktook River, western St. Lawrence Island. It is centered on a small ridge between headwater tributaries at an elevation of about 600 feet. It is located within 1/2 mile and is locality 9 of Cobb (1972). Cobb (1980) summarized relevant references under the name 'Poovookpuk Mtn.'

Commodities:

Main: Cu, Mo

Other:

Ore minerals: Chalcopyrite, malachite, molybdenite

Gangue minerals: Pyrite

Geologic description:
A stock of quartz monzonite porphyry, 1/2 mile across, intrudes Cretaceous volcanic rocks and contains disseminated chalcopyrite, malachite, pyrite and minor molybdenite (Patton and Csejtey, 1971, p. C13).

Alteration:
Alteration of the quartz monzonite porphyry has not been described but is probably present. The nearby volcanic rocks are probably also altered in addition to being pyritized.

Age of mineralization:
Mid-Cretaceous, the age of K/Ar dated intrusive and volcanic rocks on western St. Lawrence Island (Patton and Csejtey, 1980).

Deposit model:
Fracture fillings, veins, and disseminations of chalcopyrite and molybdenite in granitic rock. Deposit model 21a (?); porphyry Cu-Mo

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

21a (?)

Production Status: None

Site Status: Inactive

Workings/exploration:

A grab sample contained 3,000 ppm copper but the molybdenum concentration in this sample was below detection (Patton and Csejtey, 1971, p. C8). Composite chip samples collected across the stock contained 700 ppm copper or less (Patton and Csejtey, 1971, p. C13). The Cretaceous volcanic rocks peripheral to the stock are heavily pyritized and extensively oxidized. The only sulfide mineral identified in the volcanic rocks is pyrite but a grab sample of massive pyritized rock contained 1,500 ppm copper, 10 ppm silver, and 30 ppm molybdenum. Fourteen stream sediment samples collected over about 1.5 miles of the nearby headwater drainages (Patton and Csejtey, 1972) contained anomalous to highly anomalous concentrations of copper (to 1,500 ppm), molybdenum (to 70 ppm), and silver (to 1.5 ppm). Alteration of the quartz monzonite porphyry has not been described but is probably present. The nearby volcanic rocks are probably also altered in addition to being pyritized..

A grab sample contained 3,000 ppm copper but the molybdenum concentration in this sample was below detection (Patton and Csejtey, 1971, p. C8). Composite chip samples collected across the stock contained 700 ppm copper or less (Patton and Csejtey, 1971, p. C13). The only sulfide mineral identified in the volcanic rocks is pyrite but a grab sample of massive pyritized rock contained 1,500 ppm copper, 10 ppm silver, and 30 ppm molybdenum. Fourteen stream sediment samples collected over about 1.5 miles of the nearby headwater drainages (Patton and Csejtey, 1972) contained anomalous to highly anomalous concentrations of copper (to 1,500 ppm), molybdenum (to 70 ppm), and silver (to 1.5 ppm).

Production notes:

Reserves:

Additional comments:

References:

Patton and Csejtey, 1971(PP 684-C); Patton and Csejtey, 1972; Cobb, 1972 (MF-465); Patton and Csejtey, 1980; Cobb, 1980 (OFR 80-909)

Primary reference: Patton and Csejtey, 1971 (PP 684-C)

Reporter(s): Travis L. Hudson (Applied Geology)

Last report date: 9/10/98

Site name(s): Moghoweyik R.; Upper

Site Type: Occurrence

ARDF no.: SL009

Latitude: 63.45 **Quadrangle:** SL C-6

Longitude: 171.61

Location description and accuracy:
This site is in the headwaters of the Moghoeyik River on western St. Lawrence Island. The mineralized area is a 1/2 mile wide zone in the eastern part fo the Sevuokuk pluton near its contact with volcanic rocks. The site is located within 1/2 mile and is locality 5 of Cobb (1972). Cobb (1980) summarized relevant references under the name 'Moghoeyik R., upper'.

Commodities:

Main: Mo

Other: Cu

Ore minerals: Molybdenite

Gangue minerals: Quartz, pyrite

Geologic description:
Molybdenite is sparsely distributed throughout a 1/2 mile wide zone in the eastern part of the Sevuokuk pluton near the contact with Cretaceous volcanic rocks. The Sevuokuk pluton is a mid-Cretaceous (108 +/- 3.2 Ma) composite body that includes biotite hornblende quartz monzonite and biotite quartz monzonite phases (Csejtey, Patton, and Miller, 1971; Patton and Csejtey, 1980). Here, pyritiferous and highly oxidized biotite quartz monzonite is cut by quartz veins and locally silicified. Molybdenite occurs as scales on fractures, in thin veinlets, and as large euhedral crystals in drusy quartz veins (Patton and Csejtey, 1971, p. C11).

Alteration:
The biotite quartz monzonite is pyritized, cut by some quartz veins, and locally silicified. It is heavily oxidized and stained with limonite. Other alteration is probably present.

Age of mineralization:
Mid-Cretaceous, the age of the host Sevuokuk pluton (108 +/- 3.2 Ma; Patton and Csejtey, 1980).

Deposit model:
Fracture fillings, veins, and disseminations of molybdenite in granitic rock. Deposit model 21b (?); porphyry Mo, low-F

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
21b (?)

Production Status: None

Site Status: Inactive

Workings/exploration:
Three grab samples contained 500, 500, and 7 ppm molybdenum and 20, 150, and 1,000 ppm copper respectively (Patton and Csejtey, 1971, p. C8). Four stream sediment samples from the drainage headwatered in this mineralized area (Patton and Csejtey, 1972) contained only weakly anomalous concentrations of molybdenum (to 15 ppm) and copper (to 200 ppm).

Three grab samples contained 500, 500, and 7 ppm molybdenum and 20, 150, and 1,000 ppm copper respectively (Patton and Csejtey, 1971, p. C8). Four stream sediment samples from the drainage headwatered in this mineralized area (Patton and Csejtey, 1972) contained only weakly anomalous concentrations of molybdenum (to 15 ppm) and copper (to 200 ppm).

Production notes:

Reserves:

Additional comments:

References:
Patton and Csejtey, 1971 (PP 684-C); Csejtey, Patton, and Miller, 1971; Patton and Csejtey, 1972; Cobb, 1972 (MF-465); Patton and Csejtey, 1980; Cobb, 1980 (OFR 80-909)

Primary reference: Patton and Csejtey, 1971 (PP 684-C)

Reporter(s): Travis L. Hudson (Applied Geology)

Last report date: 9/10/98

Site name(s): Unnamed

Site Type: Occurrence

ARDF no.: SL010

Latitude: 63.43 **Quadrangle:** SL C-6

Longitude: 171.51

Location description and accuracy:
This site is on a low ridge, at elevations of 600 to 700 feet, between two headwater tributaries of the Kookooliktook River on the west side of Poovookpuk Mountain and about 1 1/3 mile southeast of the Poovookpuk Mountain prospect (SL008). It was not included by Cobb (1972; 1980).

Commodities:

Main: Cu

Other: Ag, Pb, Mo, Zn

Ore minerals:

Gangue minerals: Pyrite

Geologic description:
An area of pyrite enrichment in Cretaceous volcanic rocks, over a mile across, was identified by Patton and Csejtey (1971, Figure 4). Although samples and descriptions of this area are not available, stream sediments from the drainage on its north side contain anomalous levels of several metals. These stream sediment samples, collected over a distance of 2 1/2 miles downstream from the pyrite-enriched area, contain up to 700 ppm copper, 70 ppm molybdenum, 500 ppm lead, 1 ppm silver, and 700 ppm zinc (Patton and Csejtey, 1972). These values suggest a polymetallic character to mineralization in the headwaters of this drainage.

Alteration:
Pyrite-enrichment of the Cretaceous volcanic rocks is noted but other aspects of alteration here are not described.

Age of mineralization:
Proximity of this mineralized area to the Poovookpuk Mountain prospect , although apparently more polymetallic in character, suggests that it is probably mid-Cretaceous, the age of K/Ar-dated intrusive and volcanic rocks on western St. Lawrence Island (Patton and Csejtey, 1980).

Deposit model:
Polymetallic sulfide mineralization in altered volcanic rocks. Deposit model 22c (?); polymetallic veins

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
22c (?)

Production Status: None

Site Status: Inactive

Workings/exploration:
Stream sediments from the drainage on the north side of the site contain anomalous levels of several metals. These stream sediment samples, collected over a distance of 2 1/2 miles downstream from the pyrite-enriched area, contain up to 700 ppm copper, 70 ppm molybdenum, 500 ppm lead, 1 ppm silver, and 700 ppm zinc (Patton and Csejtey, 1972).

Production notes:

Reserves:

Additional comments:

References:
Patton and Csejtey, 1971 (PP 684-C); Patton and Csejtey, 1972: Cobb, 1972 (MF-465); Patton and Csejtey, 1980; Cobb, 1980 (OFR 80-909)

Primary reference: Patton and Csejtey, 1971 (PP 684-C)

Reporter(s): Travis L. Hudson (Applied Geology)

Last report date: 9/10/98

Site name(s): Boxer River

Site Type: Occurrence

ARDF no.: SL011

Latitude: 63.37 **Quadrangle:** SL C-6

Longitude: 171.54

Location description and accuracy:
This site is located about 3 miles upstream from the mouth of the Boxer River which flows south to its mouth on the southwest coast of St. Lawrence Island. The site is on the east side of the river, at an elevation of about 300 feet, just upstream of the first east tributary. This site was not included by Cobb (1972, 1980).

Commodities:

Main: Pb

Other: Mo, Cu, Ag

Ore minerals:

Gangue minerals: Pyrite

Geologic description:
A Cretaceous volcanic assemblage of diverse lithologies and compositions makes up the bedrock in the Boxer River drainage (Patton and Csejtey, 1980). A pyrite gossan in volcanic rocks is mapped in the area between the first east tributary and the main drainage of Boxer River (Patton and Csejtey, 1971, p. C9, C12). Stream sediment samples from this east tributary (Patton and Csejtey, 1972) indicate a polymetallic character to nearby mineralization. These stream sediment samples contain up to 150 ppm lead, 2 ppm silver, 50 ppm molybdenum, 700 ppm copper, and 30 ppm tin.

Alteration:
A pyrite gossan in volcanic rocks is present here and alteration is probably significant but it has not been described. The volcanic assemblage is commonly propylitically altered in the region (Patton and Csejtey, 1980).

Age of mineralization:
Mid-Cretaceous (?) - the age of K/Ar dated intrusive and volcanic rocks on western St. Lawrence Island (Patton and Csejtey, 1980). However, younger Late Cretaceous and Teritary igneous rocks are also present on the island (Patton and Csejtey, 1980) and the age of mineralization could be younger than mid-Cretaceous.

Deposit model:
22c (?)

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
Polymetallic sulfide mineralization in altered volcanic rocks. Deposit model 22c (?); polymetallic veins

Production Status: None

Site Status: Inactive

Workings/exploration:
Stream sediment samples from this east tributary (Patton and Csejtey, 1972) indicate a polymetallic character to nearby mineralization. These stream sediment samples contain up to 150 ppm lead, 2 ppm silver, 50 ppm molybdenum, 700 ppm copper, and 30 ppm tin.

Production notes:

Reserves:

Additional comments:

References:
Patton and Csejtey, 1971 (PP 684-C); Patton and Csejtey, 1972; Cobb, 1972 (MF-465); Patton and Csejtey, 1980; Cobb, 1980 (OFR 80-909)

Primary reference: Patton and Csejtey, 1971 (PP 684-C)

Reporter(s): Travis L. Hudson (Applied Geology)

Last report date: 9/10/98

Site name(s): Okok River

Site Type: Occurrence

ARDF no.: SL012

Latitude: 63.37 **Quadrangle:** SL C-5

Longitude: 171.4

Location description and accuracy:
The Okok River flows southeast to its mouth on the southwest coast of St. Lawrence Island (about 1 mile west of Singikpak Point). The site, located within 1/2 mile, is on the west side of the river valley about 2 1/2 miles upstream of the mouth. It is locality 10 of Cobb (1972) and Cobb (1980) summarized relevant references under the name 'Okok R.'

Commodities:

Main: Cu

Other:

Ore minerals: Chalcopyrite

Gangue minerals: Ilmenite, magnetite, pyrite

Geologic description:
Bedrock in the lower Okok River valley is a Triassic to Permian age assemblage characterized by gabbro and diabase intrusions (Patton and Csejtey, 1980). Gabbro samples from this assemblage along the Okok River contain disseminated chalcopyrite, ilmenite, magnetite, and pyrite. Two grab samples of this gabbro contain 700 ppm copper (Patton and Csejtey, 1971, P. C8). Stream sediments in the upper Okok River drainage do not have anomalous metal contents (Patton and Csejtey, 1972).

Alteration:
The gabbro is apparently unaltered.

Age of mineralization:
Disseminated sulfide minerals in gabbro of the Okok River drainage would be Permian in age, based on the results of two K/Ar age determinations for this assemblage (221 +/- 7 and 244 +/- 7 Ma; Patton and Csejtey, 1980).

Deposit model:
Disseminated sulfide minerals in gabbro.

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

Production Status: None

Site Status: Inactive

Workings/exploration:

Two grab samples of gabbro contain 700 ppm copper (Patton and Csejtey, 1971, P. C8). Stream sediments in the upper Okok River drainage do not have anomalous metal contents (Patton and Csejtey, 1972).

Production notes:

Reserves:

Additional comments:

References:

Patton and Csejtey, 1971 (PP 684-C); Patton and Csejtey, 1972; Cobb, 1972 (MF-465); Patton and Csejtey, 1980; Cobb, 1980 (OFR 80-909)

Primary reference: Patton and Csejtey, 1971 (PP 684-C)

Reporter(s): Travis L. Hudson (Applied Geology)

Last report date: 9/10/98

Site name(s): Unnamed

Site Type: Occurrence

ARDF no.: SL013

Latitude: 63.331 **Quadrangle:** SL B-5

Longitude: 171.371

Location description and accuracy:
This site is on a wave cut bench and adjacent tidal zone about 1/2 mile west of the mouth of the Okok River on the southwest coast of St. Lawrence Island. It is located within 1/4 mile and is locality 11 of Cobb (1972). Cobb (1980) summarized relevant references under the name 'Unnamed occurrence'.

Commodities:

Main: Cu, Pb, Zn

Other:

Ore minerals: Chalcopyrite, galena, sphalerite

Gangue minerals: Calcite, pyrite

Geologic description:
Fine-grained gabbro, exposed on the wave cut bench here, is cut by a 1- to 2-inch wide calcite vein that contains galena, sphalerite, chalcopyrite, and pyrite (Patton and Csejtey, 1971, p. C15). A sample of this vein contained 1,000 ppm silver, 1 % copper, greater than 2 % lead, and greater than 1 % zinc (Patton and Csejtey, 1971, p, C8).

Alteration:
Alteration is not described.

Age of mineralization:
The gabbro is mapped as part of a mafic Triassic to Permian age assemblage (based on the results of two K/Ar age determinations,221 +/- 7 and 244 +/- 7 Ma, Patton and Csejtey, 1980). However, the calcite-sulfide vein could be Cretaceous or Tertiary, the age of younger igneous rocks on western St. Lawrence Island (Patton and Csejtey, 1980).

Deposit model:
Sulfide-bearing calcite vein in gabbro.

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

Production Status: None

Site Status: Inactive

Workings/exploration:
A sample of this vein contained 1,000 ppm silver, 1 % copper, greater than 2 % lead, and greater than 1 % zinc (Patton and Csejtey, 1971, p, C8).

Production notes:

Reserves:

Additional comments:

References:
Patton and Csejtey, 1971 (PP 684-C); Cobb, 1972 (MF-465); Patton and Csejtey, 1980; Cobb, 1980 (OFR 80-909)

Primary reference: Patton and Csejtey, 1971 (PP 684-C)

Reporter(s): Travis L. Hudson (Applied Geology)

Last report date: 9/10/98

Site name(s): Powooiliak Point

Site Type: Occurrence

ARDF no.: SL014

Latitude: 63.365 **Quadrangle:** SL C-5

Longitude: 171.296

Location description and accuracy:
Poowooliak Point is on the southwest coast of St. Lawrence Island, 3 miles east of the mouth of the Okok River. The site is on a wave cut bench at the base of the sea cliff on the north side of Poowooliak Point. It is located within 1/4 mile and is locality 12 of Cobb (1972). Cobb (1980) summarized relevant references under the name 'Poowooliak Point'.

Commodities:

Main: Pb

Other:

Ore minerals: Galena

Gangue minerals: Calcite, pyrite, pyrrhotite

Geologic description:
Pyrite and galena are present in irregular quartz veins cutting kaolinized limonite-stained lithic tuffs. The mineralization is exposed on a wave cut bench below sea cliffs, northwest of Poowooiliak Point. This is close to the mapped contact between a Triassic to Permian age mafic assemblage and Cretaceous volcanic rocks (Patton and Csejtey, 1980). The mineralization described by Patton and Csejtey (1971) is apparently in Cretaceous volcanic rocks.

Berg and Cobb (1967, p. 9) report the presence of a 1/2 to 2 inch calcite vein containing pyrite, chalcopyrite, galena, pyrrhotite, and sphalerite in a small limestone outcrop at Cape Puguviliak (a former name for Poovooiliak Point, Cobb, 1980, p. 58). The source of this description is not identified. The mineralization described by Berg and Cobb (1967) may be in the nearby Triassic to Permian age mafic Permo-Triassic assemblage and a different occurrence than that described and sampled by Patton and Csejtey (1971).

Alteration:
The lithic tuff is kaolinized and cut by sulfide-bearing quartz veins.

Age of mineralization:
Cretaceous or Tertiary, the age of volcanic and related hypabyssal intrusive rocks on western St. Lawrence Island (Patton and Csejtey, 1980).

Deposit model:
Polymetallic sulfide mineralization in altered volcanic rocks. Deposit model 22c (?); polymetallic veins

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
22c (?)

Production Status: None

Site Status: Inactive

Workings/exploration:
None

Production notes:

Reserves:

Additional comments:
Berg and Cobb (1967, p. 9) report the presence of a 1/2 to 2 inch calcite vein containing pyrite, chalcopyrite, galena, pyrrhotite, and sphalerite in a small limestone outcrop at Cape Puguviliak (a former name for Poovooiliak Point, Cobb, 1980, p. 58). The source of this description is not identified. The mineralization described by Berg and Cobb (1967) may be in the nearby Triassic to Permian age mafic Permo-Triassic assemblage and a different occurrence than that described and sampled by Patton and Csejtey (1971).

References:
Berg and Cobb, 1967; Patton and Csejtey, 1971 (PP 684-C); Cobb, 1972 (MF-465); Patton and Csejtey, 1980; Cobb, 1980 (OFR 80-909)

Primary reference: Patton and Csejtey, 1971 (PP 684-C)

Reporter(s): Travis L. Hudson (Applied Geology)

Last report date: 9/10/98

Site name(s): Unnamed

Site Type: Occurrence

ARDF no.: SL015

Latitude: 63.42 **Quadrangle:** SL C-5

Longitude: 171.21

Location description and accuracy:
This occurrence is in the bed of an unnamed stream that flows southwest to its mouth at Poowooliak Bay on the southwest coast of St. Lawrence Island. The mouth of this stream is 4 miles northeast of Poowooliak Point. The site is about 1 1/2 miles upstream of the mouth, just inland of the coastal wavecut platform. It was not included by Cobb (1972, 1980).

Commodities:

Main: Zn

Other:

Ore minerals: Not identified

Gangue minerals: Pyrite

Geologic description:
Silicified, fine-grained volcanic rock exposed in the streambed contains pyrite and one rock sample contained 700 ppm zinc (Patton and Csejtey, 1971, p. C8, C15).

Alteration:
The volcanic rock here is silicified and pyrite-bearing.

Age of mineralization:
The volcanic rocks here are mapped as part of a mid-Cretaceous assemblage but the age of mineralization could be Cretaceous or Tertiary, the age of volcanic and related hypabyssal intrusive rocks on western St. Lawrence Island (Patton and Csejtey, 1980).

Deposit model:
Polymetallic(?) sulfide mineralization in altered volcanic rocks. Deposit model 22c (?); polymetallic veins

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
22c (?)

Production Status: None

Site Status: Inactive

Workings/exploration:
A single rock sample contained 700 ppm zinc (Patton and Csejtey, 1971, p. C8, C15).

Production notes:

Reserves:

Additional comments:

References:
Patton and Csejtey, 1971 (PP 684-C); Cobb, 1972 (MF-465); Cobb, 1980 (OFR 80-909); Patton and Csejtey, 1980

Primary reference: Patton and Csejtey, 1971 (PP 684-C)

Reporter(s): Travis L. Hudson (Applied Geology)

Last report date: 9/10/98

Site name(s): Unnamed

Site Type: Occurrence

ARDF no.: SL016

Latitude: 63.44 **Quadrangle:** SL C-5

Longitude: 171.12

Location description and accuracy:
This site is on an unnamed stream that flows southeast to its mouth at Poowooliak Bay on the southwest coast of St. Lawrence Island, 7 miles northeast of Poowooliak Point. The site is about 2 miles upstream of the mouth and is located within 1/2 mile. It is locality 13 of Cobb (1972) and Cobb (1980) summarized relevant references under the name 'Unnamed occurrence'.

Commodities:

Main: Pb, Zn

Other:

Ore minerals: Galena, sphalerite

Gangue minerals: Quartz

Geologic description:
Galena and sphalerite are present in quartz veins cutting altered andesitic volcanic rocks (Patton and Csejtey, 1971, p. C15).

Alteration:
The volcanic rocks here are altered but the nature of the alteration, except for the presence of quartz veins, is not described.

Age of mineralization:
The andesitic volcanic rocks are mapped as part of a mid-Cretaceous assemblage of diverse lithologies and compositions, but the mineralization here could be Cretaceous or Tertiary, the age of volcanic and related hypabyssal intrusive rocks on western St. Lawrence Island (Patton and Csejtey, 1980).

Deposit model:
Polymetallic sulfide mineralization in altered volcanic rocks. Deposit model 22c (?); polymetallic veins

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

Production Status: None

Site Status: Inactive

Workings/exploration:

One grab sample contained 150 ppm copper, 2,000 ppm lead, 3,000 ppm zinc, and 10 ppm silver (Patton and Csejtey, 1971, p. C8). Some of the nine stream sediment samples from this drainage contain anomalous metal concentrations, 2 samples have 100 and 200 ppm lead, one has 0.5 ppm silver, one has 15 ppm molybdenum, and nine contain 700 to 1,500 ppm barium (Patton and Csejtey, 1972).

One grab sample contained 150 ppm copper, 2,000 ppm lead, 3,000 ppm zinc, and 10 ppm silver (Patton and Csejtey, 1971, p. C8). Some of the nine stream sediment samples from this drainage contain anomalous metal concentrations, 2 samples have 100 and 200 ppm lead, one has 0.5 ppm silver, one has 15 ppm molybdenum, and nine contain 700 to 1,500 ppm barium (Patton and Csejtey, 1972).

Production notes:

Reserves:

Additional comments:

References:

Patton and Csejtey, 1971 (PP 684-C); Patton and Csejtey, 1972: Cobb, 1972 (MF-465); Patton and Csejtey, 1980; Cobb, 1980 (OFR 80-909)

Primary reference: Patton and Csejtey, 1971 (PP 684-C)

Reporter(s): Travis L. Hudson (Applied Geology)

Last report date: 9/10/98

Site name(s): Unnamed

Site Type: Occurrence

ARDF no.: SL017

Latitude: 63.53 **Quadrangle:** SL C-5

Longitude: 171.04

Location description and accuracy:
This site is in the headwaters of an unnamed stream that flows north to a lagoon on the northwest coast of St. Lawrence Island. The mouth of this stream is about 4 1/4 miles southwest of Kangee Camp and 7 miles southeast of Apatiki Camp on the island's northwest coast. The site is about 2 miles upstream of the mouth and is located within 1/2 mile. It is locality 14 of Cobb (1972) and Cobb (1980) summarized relevant references under the name 'Unnamed occurrence'.

Commodities:

Main: Pb, Zn

Other:

Ore minerals: Galena, sphalerite

Gangue minerals: Pyrite

Geologic description:
Thermally metamorphosed marble, cut by sulfide stringers containing galena, sphalerite, and pyrite, is exposed in the streambed (Patton and Csejtey, 1971, p. 15).

Alteration:
Thermal metamorphism of Mississippian limestone has commonly developed coarse marble on St. Lawrence Island (Patton and Csejtey, 1980) but calc-silicate minerals or tactite have not been described.

Age of mineralization:
Mid-Cretaceous; the marble is in the contact zone of the Taphook pluton with Mississippian limestone (Patton and Csejtey, 1980). This pluton has not been dated but it is similar to the Sevuokuk pluton on the west coast of St. Lawrence Island that has a K/Ar age of 108 +/- 3.2 Ma (Patton and Csejtey, 1980).

Deposit model:
Galena- and sphalerite-bearing veins in marble. Deposit model 18c (?); Zn-Pb skarn de-

posits

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
18c (?)

Production Status: None

Site Status: Inactive

Workings/exploration:
Two samples of sulfide-bearing marble contained (1) 15 ppm silver, 15 ppm copper, greater than 2 % lead, and 200 ppm zinc, and (2) 70 ppm silver, 700 ppm copper, greater than 2 % lead, and greater than 1 % zinc (Patton and Csejtey, 1971, p. C8). The marble is in the contact zone of the Taphook pluton with Mississippian limestone (Patton and Csejtey, 1980). The Taphook pluton is a composite intrusion that in this area is hornblende quartz monzonite. This pluton has not been dated but it is similar to the Sevuokuk pluton on the west coast of St. Lawrence Island that has a K/Ar age of 108 +/- 3.2 Ma (Patton and Csejtey, 1980).

Two samples of sulfide-bearing marble contained (1) 15 ppm silver, 15 ppm copper, greater than 2 % lead, and 200 ppm zinc, and (2) 70 ppm silver, 700 ppm copper, greater than 2 % lead, and greater than 1 % zinc (Patton and Csejtey, 1971, p. C8).

Production notes:

Reserves:

Additional comments:

References:
Patton and Csejtey, 1971 (PP 684-C); Cobb, 1972 (MF-465); Patton and Csejtey, 1980; Cobb, 1980 (OFR 80-909)

Primary reference: Patton and Csejtey, 1971 (PP 684-C)

Reporter(s): Travis L. Hudson (Applied Geology)

Last report date: 9/10/98

Site name(s): Unnamed

Site Type: Occurrence

ARDF no.: SL018

Latitude: 63.28 **Quadrangle:** SL B-3

Longitude: 170.19

Location description and accuracy:
This site is on an unnamed stream that flows into the eastern part of Koozata Lagoon on the southcentral coast of St. Lawrence Island. The mouth of this stream is about 4 1/2 miles southeast of VABM Koozata. The site is almost 2 miles upstream of the mouth and is located within 1/2 mile. This site was not included by Cobb (1972; 1980).

Commodities:

Main: W

Other:

Ore minerals:

Gangue minerals:

Geologic description:
One stream sediment sample from this drainage contained 150 ppm tungsten, the highest tungsten value reported in stream sediments from St. Lawrence Island (Patton and Csejtey, 1972). However, other elements were not significantly elevated in stream sediments from this drainage. Bedrock in the drainage area is biotite quartz monzonite that at least locally intrudes Mississippian limestone (Csejtey and Patton, 1974, p. 43; Patton and Csejtey, 1980).

Alteration:

Age of mineralization:
If the one anomalous tungsten value is correct and reflects the presence of mineralization, this mineralization is probably mid-Cretaceous in age, the age of other biotite quartz monzonite plutons on St. Lawrence Island (Patton and Csejtey, 1980).

Deposit model:
Tungsten-bearing skarn or veins in granitic rocks. Deposit models 14a (?) or 15a (?); W skarn deposits or W veins

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
14a (?); 15a (?)

Production Status: None

Site Status: Inactive

Workings/exploration:
One stream sediment sample from this drainage contained 150 ppm tungsten, the highest tungsten value reported in stream sediments from St. Lawrence Island (Patton and Csejtey, 1972). However, other elements were not significantly elevated in stream sediments from this drainage.

Production notes:

Reserves:

Additional comments:

References:
Patton and Csejtey, 1972; Cobb, 1972 (MF-465); Csejtey and Patton, 1974; Patton and Csejtey, 1980; Cobb, 1980 (OFR 80-909)

Primary reference: Patton and Csejtey, 1972

Reporter(s): Travis L. Hudson (Applied Geology)

Last report date: 9/10/98

Site name(s): Ongoveyuk River

Site Type: Occurrence

ARDF no.: SL019

Latitude: 63.39 **Quadrangle:** SL C-2

Longitude: 169.86

Location description and accuracy:
This site is on a small, unnamed east tributary to the Ongoveyuk River. The Ongoveyuk River flows northeast to Ongoveyuk Lagoon on the northeast coast of St. Lawrence Island. The unnamed east tributary enters Ongoveyuk River 3 1/2 miles upstream of the mouth. The site is the unnamed drainage. It was not included by Cobb (1972; 1980).

Commodities:

Main: Ba

Other: Ag, Mo, Zn

Ore minerals:

Gangue minerals:

Geologic description:
The one stream sediment sample from this drainage contains 2,000 ppm manganese, 0.7 ppm silver, 3,000 ppm barium, 15 ppm molybdenum, and 300 ppm zinc (Patton and Csejtey, 1972). The bedrock here is minimally exposed but includes part of a Mississippian to Triassic limestone, chert, shale, and siltstone sequence that includes a condensed section similar to the Triassic Shublik Formation on the North Slope and in the Brooks Range (Patton and Dutro, 1969). The weakly to moderately anomalous metal values at this site are 2 miles northwest of a drainage (see SL020) where many highly anomalous lead and silver values in stream sediments were found.

Alteration:

Age of mineralization:
If the stream sediment metal concentrations here reflect mineralization, this mineralization could be stratiform and similar in age to that of the enclosing sedimentary rocks (Mississippian to Triassic). Alternatively, the potential mineralization could be related to mid-Cretaceous quartz monzonite that intrudes Mississippian limestone 2 miles to the east of this drainage (Patton and Csejtey, 1980).

Deposit model:
Base metal deposits in sedimentary rocks (synsedimentary or epigenetic). Deposit model 31a (?); sedimentary exhalative Zn-Pb

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
31a (?)

Production Status: None

Site Status: Inactive

Workings/exploration:
The one stream sediment sample from this drainage contains 2,000 ppm manganese, 0.7 ppm silver, 3,000 ppm barium, 15 ppm molybdenum, and 300 ppm zinc (Patton and Csejtey, 1972).

Production notes:

Reserves:

Additional comments:

References:
Patton and Dutro, 1969; Patton and Csejtey, 1972; Cobb, 1972 (MF-465); Cobb,1980 (OFR 80-909); Patton and Csejtey, 1980

Primary reference: Patton and Csejtey, 1972

Reporter(s): Travis L. Hudson (Applied Geology)

Last report date: 9/10/98

Site name(s): Unnamed

Site Type: Occurrence

ARDF no.: SL020

Latitude: 63.37 **Quadrangle:** SL C-2

Longitude: 169.81

Location description and accuracy:
This site is on an unnamed south tributary to another unnamed stream that flows northwest and enters Ongoveyuk Lagoon at the mouth of the Ongoveyuk River. The site is the segment of the unnamed south tributary that extends from 3 to 6 miles due south of the mouth of the Ongoveyuk River. It was not included by Cobb (1972; 1980).

Commodities:

Main: Ag, Pb

Other:

Ore minerals:

Gangue minerals:

Geologic description:
Several of the stream sediment samples from this drainage, collected over a length of 1 1/2 miles, contain anomalous metal contents including 0.5 to 1.5 ppm silver and 100 to 500 ppm lead. Barium contents of all the stream sediment samples here are 150 to 500 ppm and their zinc contents are less than 200 to 700 ppm (Patton and Csejtey, 1972). Exposed bedrock in this drainage is a small area of quartz monzonite and Mississippian limestone at its lower end. The cause of the elevated metal values is not apparent but these are the highest and most consistently anomalous silver and lead values in stream sediments from St. Lawrence Island. If these anomalous values reflect mineralization, this mineralization could be stratiform (associated with Mississippian to Triassic sedimentary rocks) or epigenetic (associated with mid-Cretaceous plutonism).

Alteration:

Age of mineralization:
If the stream sediment metal concentrations here reflect mineralization, this mineralization could be stratiform and similar in age to that of the nearby sedimentary rocks (Mississippian to Triassic). Alternatively, the potential mineralization could be related to mid-Cretaceous quartz monzonite that intrudes Mississippian limestone at the lower

end of this drainage (Patton and Csejtey, 1980).

Deposit model:
Base metal deposits in sedimentary rocks (synsedimentary or epigenetic). Deposit model 31a (?); sedimentary exhalative Zn-Pb

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
31a (?)

Production Status: None

Site Status: Inactive

Workings/exploration:
Several of the stream sediment samples from this drainage, collected over a length of 1 1/2 miles, contain anomalous metal contents including 0.5 to 1.5 ppm silver and 100 to 500 ppm lead. Barium contents of all the stream sediment samples here are 150 to 500 ppm and their zinc contents are less than 200 to 700 ppm (Patton and Csejtey, 1972).

Production notes:

Reserves:

Additional comments:

References:
Patton and Csejtey, 1972; Cobb, 1972 (MF-465); Cobb, 1980 (OFR 80-909); Patton and Csejtey, 1980

Primary reference: Patton and Csejtey, 1972

Reporter(s): Travis L. Hudson (Applied Geology)

Last report date: 9/10/98

Site name(s): Myghapowit Mountain

Site Type: Prospect

ARDF no.: SL021

Latitude: 63.22 **Quadrangle:** SL B-2

Longitude: 169.59

Location description and accuracy:
This site is a local upland on the east side of Myahapowit Mountain between the headwaters of the Seknak and Maknek Rivers (east central St. Lawrence Island). It is a conspicuous orange-weathering area over 1 mile across. It was not included by Cobb (1972; 1980).

Commodities:

Main: Au

Other: Ag, Pb

Ore minerals: Not identified

Gangue minerals: Quartz, limonite, pyrite

Geologic description:
The 2 square mile, highly altered quatrz latite and latite stock is intruded along the east side of the Myghapowit pluton in east central St. Lawrence Island (Patton and Csejtey, 1971; Patton and Csejtey, 1980). About 1 mile of the northwest contact is with Mississippian limestone (Patton and Csejtey, 1971, Figure 3). The stock is altered to an assemblage of sericite, chlorite, clay minerals, and secondary silica. Only traces of the original textures are preserved in most places but breccia textures characterize several samples from the area (Patton and Csejtey, 1971, Table 1). The altered rocks are highly oxidized and well developed limonite staining and veining makes the stock conspicuously visible from a distance due to its red and orange color. Pyrite is the only sulfide mineral that has been identified in hand specimens.

Alteration:
The stock is altered to an assemblage of sericite, chlorite, clay minerals, and secondary silica. Only traces of the original textures are preserved in most places but breccia textures characterize several samples from the area (Patton and Csejtey, 1971, Table 1). The altered rocks are highly oxidized and well developed limonite staining and veining makes the stock conspicuously visible from a distance due to its red and orange color.

Age of mineralization:

Patton and Csejtey (1980) indicate that the altered stock is Cretaceous or Tertiary. There is no age control other than that it appears to intrude the Myghapowit pluton (mid-Cretaceous) and Mississippian limestone (Patton and Csejetey, 1980).

Deposit model:

Gold in altered, hypabyssal, felsic intrusive rocks.

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

Production Status: None

Site Status: Inactive

Workings/exploration:

Fifteen grab samples of rocks and soils from the altered stock have low to moderately anomalous contents of several metals but most importantly show that gold is present in this mineralized system. All of the samples had detectable gold although only three were at levels at or above the 0.02 ppm dectection limit (0.2, 0.3. and 0.6 ppm, Patton and Csejtey, 1971, Table 1). One of these samples contained 3,000 ppm arsenic and 300 ppm antimony. In the fifteen samples, lead ranges from 30 to 3,000 ppm, copper from 5 to 150 ppm, molydenum from less than 5 to 700 ppm, bismuth from less than 10 to 300 ppm, tin from less than 10 to 150 ppm, and silver from less than 0.5 to 1 ppm. Three stream sediment samples, each from the upper part of a drainage headed against the altered stock, contain 150 ppm lead and 10 to 20 ppm molybdenum (Patton and Csejtey, 1972). Other elements were not anomalous in these stream sediment samples.

Fifteen grab samples of rocks and soils from the altered stock have low to moderately anomalous contents of several metals but most importantly show that gold is present in this mineralized system. All of the samples had detectable gold although only three were at levels at or above the 0.02 ppm dectection limit (0.2, 0.3. and 0.6 ppm, Patton and Csejtey, 1971, Table 1). One of these samples contained 3,000 ppm arsenic and 300 ppm antimony. In the fifteen samples, lead ranges from 30 to 3,000 ppm, copper from 5 to 150 ppm, molydenum from less than 5 to 700 ppm, bismuth from less than 10 to 300 ppm, tin from less than 10 to 150 ppm, and silver from less than 0.5 to 1 ppm. Three stream sediment samples, each from the upper part of a drainage headed against the altered stock, contain 150 ppm lead and 10 to 20 ppm molybdenum (Patton and Csejtey, 1972). Other elements were not anomalous in these stream sediment samples.

Production notes:

Reserves:

Additional comments:

References:

Patton and Csejtey, 1971 (OFR 71-224); Patton and Csejtey, 1972; Cobb, 1972 (MF-465); Cobb, 1980 (OFR 80-909); Patton and Csejtey, 1980

Primary reference: Patton and Csejtey, 1971 (OFR 71-224)

Reporter(s): Travis L. Hudson (Applied Geology)

Last report date: 9/10/98

Site name(s): Kangukhsam Mountain

Site Type: Occurrence

ARDF no.: SL022

Latitude: 63.29 **Quadrangle:** SL B-0

Longitude: 168.95

Location description and accuracy:
This site is the headwater portion of a north-flowing unnamed drainage on the north side of Kangukhsam Mountain (eastern St. Lawrence Island). The mouth of this stream is at Kitnagak Point on the northeast coast of the island. This site was not included by Cobb (1972; 1980).

Commodities:

Main: Sn

Other:

Ore minerals: Cassiterite (?)

Gangue minerals:

Geologic description:
The headwaters of this drainage are in the north part of the mid-Cretaceous (104 +/1 3.1 Ma) Kinipaghulghat pluton (Csejtey, Patton, and Miller, 1971; Patton and Csejtey, 1980). This 65 square mile pluton makes up the resistant upland on the east end of St. Lawrence Island. It is a composite intrusion that contains several phases including monzonite, syenite, biotite quartz monzonite, quartz monzonite (granite), and alaskite (Csejtey, Patton, and Miller, 1971, Figure 6). Monzonite and syenite appear to make up discontinuous border phases on the north and south sides of the main pluton. Biotite quartz monzonite makes up the main part of the pluton and has border phases developed against monzonite and syenite. Quartz monzonite (granite) and alaskite forms small intrusive bodies that are emplaced in monzonite, syenite, and biotite quartz monzonite. Two hypabyssal latite to quartz latite intrusions are intruded in the northeast part of the pluton. Two stream sediment samples collected in the headwaters of this drainage contain 10 ppm tin and 5 and 7 ppm beryllium (Patton and Csejtey, 1972). Bedrock in the headwaters of this drainage includes an elongate, northeast-trending quartz monzonite (granite) and alaskite intrusion into monzonite and syenite. Specific data for bedrock in this drainage are not available but quartz monzonite (granite) and alaskite from this pluton are reported to be intensely altered to sericite, chlorite, and some epidote (Csejtey, Patton, and Miller 1971, p. D73). Float of tourmaline-rich granite samples from uniden-

tified streambeds of eastern St. Lawrence Island have high (but unspecified) tin values (Patton and Csejtey, 1971, p. 7).

Alteration:

Specific data for bedrock in this drainage are not available but quartz monzonite (granite) and alaskite from this pluton are reported to be intensely altered to sericite, chlorite, and some epidote (Csejtey, Patton, and Miller 1971, p. D73). Float of tourmaline-rich granite samples from unidentified streambeds of eastern St. Lawrence Island have high (but unspecified) tin values (Patton and Csejtey, 1971, p. 7).

Age of mineralization:

Potential tin mineralization in this area would be similar in age to that of the host intrusive rocks. The one K/Ar age from the Kinipaghulghat pluton is for biotite from the monzonite and syenite on the south side of the pluton. This age, 104 +/- 3.1 Ma (Patton and Cesjtey, 1980), may not accurately reflect the age of the more felsic and late-forming intrusions potentially associated with tin mineralization elsewhere in the pluton. However, a mid- to Late Cretaceous age for the potential tin mineralization is indicated.

Deposit model:

Cassiterite-bearing vein or greisen in felsic intrusive rocks. Deposit models 15b or 15c; Sn veins or Sn greisen deposits

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

15b, 15c

Production Status: None

Site Status: Inactive

Workings/exploration:

Two stream sediment samples collected in the headwaters of this drainage contain 10 ppm tin and 5 and 7 ppm beryllium (Patton and Csejtey, 1972).

Production notes:

Reserves:

Additional comments:

References:

Csejtey, Patton, and Miller, 1971; Patton and Csejtey, 1971 (OFR 71-224); 1972; Cobb, 1972 (MF-465); Cobb,1980 (OFR 80-909); Patton and Csejtey, 1980

Primary reference: Patton and Csejtey, 1971 (OFR 71-224)

Reporter(s): Travis L. Hudson (Applied Geology)

Last report date: 9/10/98

Site name(s): Tapisaghak River

Site Type: Occurrence

ARDF no.: SL023

Latitude: 63.27 **Quadrangle:** SL B-0

Longitude: 168.91

Location description and accuracy:
Tapisaghak River is a north-flowing stream that drains the Kinipaghulghat Mountains at the east end of St. Lawrence Island. This site includes all the southwest tributaries of the river. This area was not included by Cobb (1972; 1980).

Commodities:

Main: Sn

Other:

Ore minerals: Cassiterite

Gangue minerals:

Geologic description:
The Tapisaghat River has headwaters that drain the main part of the mid-Cretaceous (104 +/1 3.1 Ma) Kinipaghulghat pluton (Csejtey, Patton, and Miller, 1971; Patton and Csejtey, 1980). This 65 square mile pluton makes up the resistant upland on the east end of St. Lawrence Island. It is a composite intrusion that contains several phases including monzonite, syenite, biotite quartz monzonite, quartz monzonite (granite), and alaskite (Csejtey, Patton, and Miller, 1971, Figure 6). Monzonite and syenite appear to make up discontinuous border phases on the north and south sides of the main pluton. Biotite quartz monzonite makes up the main part of the pluton and has border phases developed against monzonite and syenite. Quartz monzonite (granite) and alaskite forms small intrusive bodies that are emplaced in monzonite, syenite, and biotite quartz monzonite. Two hypabyssal latite to quartz latite intrusions are intruded in the northeast part of the pluton. Stream sediment samples, particularly from the western headwater tributaries of the Tapisaghat River, contain 10 to 15 ppm tin, up to 5 ppm beryllium, and one contains 200 ppm boron (Patton and Csejtey, 1972). Bedrock in the area of these anomalies includes small (about 1/2 mile across) alaskite intrusions into monzonite, syenite, and biotite quartz monzonite (Csejtey, Patton, and Miller, 1971, Figure 6). Specific data for bedrock in these drainages are not available but quartz monzonite (granite) and alaskite from this pluton are reported to be intensely altered to sericite, chlorite, and some epidote (Csejtey, Patton, and Miller 1971, p. D73). Float of tourmaline-rich granite samples

from unidentified streambeds of eastern St. Lawrence Island have high (but unspecified) tin values (Patton and Csejtey, 1971, p. 7).

Alteration:

Specific data for bedrock in these drainages are not available but quartz monzonite (granite) and alaskite from this pluton are reported to be intensely altered to sericite, chlorite, and some epidote (Csejtey, Patton, and Miller 1971, p. D73). Float of tourmaline-rich granite samples from unidentified streambeds of eastern St. Lawrence Island have high (but unspecified) tin values (Patton and Csejtey, 1971, p. 7).

Age of mineralization:

Potential tin mineralization in this area would be similar in age to that of the host intrusive rocks. The one K/Ar age from the Kinipaghulghat pluton is for biotite from the monzonite and syenite on the south side of the pluton. This age, 104 +/- 3.1 Ma (Patton and Cesjtey, 1980), may not accurately reflect the age of the more felsic and late-forming intrusions potentially associated with tin mineralization elsewhere in the pluton. However, a mid- to Late Cretaceous age for the potential tin mineralization is indicated.

Deposit model:

Cassiterite-bearing vein or greisen in felsic intrusive rocks. Deposit models 15b or 15c; Sn veins or Sn greisen deposits

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

15b, 15c

Production Status: None

Site Status: Inactive

Workings/exploration:

Stream sediment samples, particularly from the western headwater tributaries of the Tapisaghat River, contain 10 to 15 ppm tin, up to 5 ppm beryllium, and one contains 200 ppm boron (Patton and Csejtey, 1972).

Production notes:

Reserves:

Additional comments:

References:

Csejtey, Patton, and Miller, 1971; Patton and Csejtey, 1971 (OFR 71-224); Patton and Csejtey, 1972; Cobb, 1972 (MF-465); Cobb, 1980 (OFR 80-909); Patton and Csejtey, 1980

Primary reference: Patton and Csejtey, 1971 (OFR 71-224)

Reporter(s): Travis L. Hudson (Applied Geology)

Last report date: 9/10/98

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