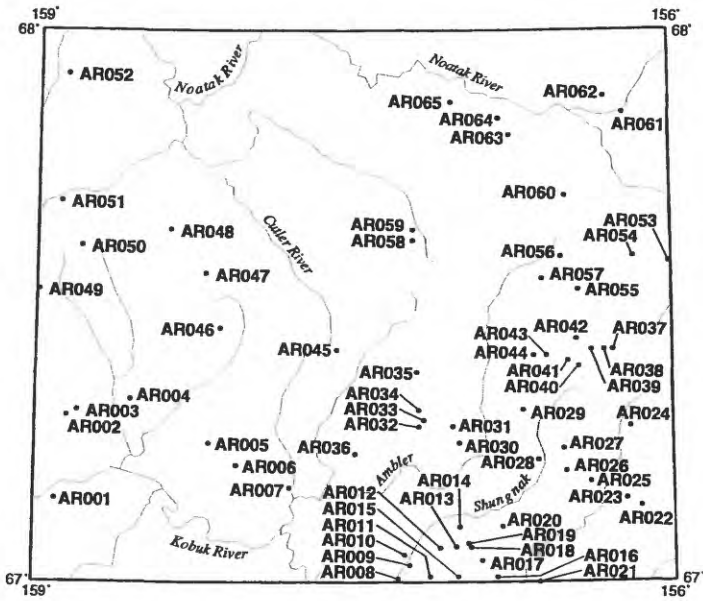
Alaska Resource Data File

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

# Ambler River 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 Ambler River 1:250,000-scale quadrangle, north central Alaska*

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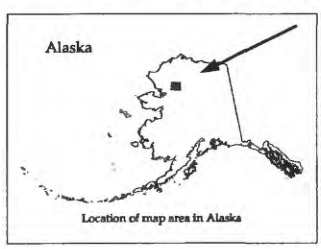
Steven Nelson
U.S. Geological Survey
4200 University Dr.
Anchorage, AK 99508-4667
Voice: (907) 786-7448
e-mail: fwilson@usgs.gov


*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 97-856**

# Site: Kobuk River

**Type:** Prospect

**ARDF no.** AR001

**Latitude:** 67.15 **Quadrangle:** AR A-6

**Longitude:** 158.9

**Location description and accuracy:**
Along Kobuk River northwest of VABM Kavet in T. 20 N., R. 1 W., Kateel River Meridian. Shown as locality 12 in Mayfield and Grybeck (1978) and accurate to within 2000 ft. (600 m).

**Commodities:**
**Main:** Jade **Other:**

**Ore minerals:**

**Gangue minerals:**

**Geologic description:**
Most likely a placer or reworked moraine containing jade boulders.

**Alteration:**

**Workings/Exploration:**
Assessment work reports jade cutting. One to two claims reported in period 1968-1970 (Mayfield and Grybeck, 1978).

**Age:**

**Deposit model:**

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

**Production:** Yes **Status:** Inactive

**Production notes:**

**Reserves:**

**Additional comments:**
Located in Kobuk Valley National Park.

**References:**
Mayfield and Grybeck, 1978

**Primary reference:** Mayfield and Grybeck, 1978

**Reporter:** S.W. Nelson (USGS retired)

**Reporter affiliation:**

**Last report date:** 5/12/97

# Site: Unnamed

**Type:** Occurrence

**ARDF no.** AR002

**Latitude:** 67.3 **Quadrangle:** AR B-6

**Longitude:** 158.85

**Location description and accuracy:**
Located on ridge southeast of VABM Rich and north of VABM Hunt in T. 22 N., R. 1 W., Kateel River Meridian. Shown as locality 11 in Mayfield and Grybeck (1978) and accurate to within 2000 ft. (600 m).

**Commodities:**
**Main:** Asbestos **Other:** Cu

**Ore minerals:** Tremolite

**Gangue minerals:**

**Geologic description:**
Tremolite asbestos veinlets and Cu staining on fractures in serpentinite (Mayfield and Grybeck, 1978).

**Alteration:**

**Workings/Exploration:**

**Age:**

**Deposit model:**
Serpentine-hosted asbestos

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**
8d

**Production:** No **Status:** Inactive

**Production notes:**

**Reserves:**

**Additional comments:**
Located within the Kobuk Valley National Park and probably not an economically exploitable resource.

**References:**
Mayfield and Grybeck, 1978

**Primary reference:** Mayfield and Grybeck, 1978

**Reporter:** K.R. Leonard (USGS), R. L. Elliott (USGS), J.M. Schmidt (USGS)

**Reporter affiliation:**

**Last report date:** 10/26/92

## Site: Unnamed

**Type:** Occurrence

**ARDF no.** AR003

**Latitude:** 67.31 **Quadrangle:** AR B-6

**Longitude:** 158.8

**Location description and accuracy:**
Located on ridge east of VABM Rich and north of VABM Hunt in T. 22 N., R. 1 W., Kateel River Meridian. Shown as locality 10 in Mayfield and Grybeck (1978) and accurate to within 2000 ft. (600 m).

**Commodities:**
**Main:** Asbestos, Cu **Other:**

**Ore minerals:** Chalcopyrite, malachite, tremolite

**Gangue minerals:**

**Geologic description:**
Tremolite asbestos in serpentinite and chalcopyrite and malachite in mafic rocks (Mayfield and Grybeck, 1978).

**Alteration:**

**Workings/Exploration:**

**Age:**

**Deposit model:**
Serpentine-hosted asbestos

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**
8d

**Production:** No **Status:** Inactive

**Production notes:**

**Reserves:**

**Additional comments:**
Located within Kobuk Valley National Park and not considered an exploitable resource.

**References:**
Mayfield and Grybeck, 1978

**Primary reference:** Mayfield and Grybeck, 1978

**Reporter:** K.R. Leonard (USGS), R.L. Elliott (USGS), J.M. Schmidt (USGS)

**Reporter affiliation:**

**Last report date:** 10/26/92

# Site: Hunt River

**Type:** Occurrence

**ARDF no.** AR004

**Latitude:** 67.33 **Quadrangle:** AR B-6

**Longitude:** 158.55

**Location description and accuracy:**
Located on low hill between the Hunt River and Nekakte Creek in T. 22 N., R. 2 E., Kateel River Meridian. Shown as locality 9 in Mayfield and Grybeck (1978) and accurate to within 2000 ft. (600 m).

**Commodities:**
**Main:** Asbestos **Other:**

**Ore minerals:** Tremolite

**Gangue minerals:**

**Geologic description:**
Veinlets of tremolite asbestos less than 0.5 in. (1 cm) wide containing fibers up to 2 in. (5 cm) long (Anderson, 1947, p. 16).

**Alteration:**

**Workings/Exploration:**

**Age:**

**Deposit model:**
Serpentine-hosted asbestos

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**
8d

**Production:** No **Status:** Inactive

**Production notes:**

**Reserves:**

**Additional comments:**
Located within Kobuk Valley National Park.

**References:**
Anderson, 1947; Mayfield and Grybeck, 1978

**Primary reference:** Mayfield and Grybeck, 1978

**Reporter:** K.R. Leonard (USGS), R.L. Elliott (USGS), J.M. Schmidt (USGS)

**Reporter affiliation:**

**Last report date:** 10/26/92

# Site: Unnamed

**Type:** Occurrence

**ARDF no.** AR005

**Latitude:** 67.25 **Quadrangle:** AR A-5

**Longitude:** 158.18

**Location description and accuracy:**
Located in the Jade Mountains near VABM Jade in T. 21 N., R. 3 E., Kateel River Meridian. Shown as locality 13 in Mayfield and Grybeck (1978) and is accurate to within 2000 ft. (600 m).

**Commodities:**
**Main:** Cu, Pb **Other:** Ag, Sb

**Ore minerals:** Azurite, galena, malachite

**Gangue minerals:**

**Geologic description:**
Quartz vein cuts limestone and contains malachite, azurite and galena (Brosge' and others, 1967).

**Alteration:**

**Workings/Exploration:**
Analytical data reported for one sample: 0.3% Cu, .005% Ag, 0.15% Pb, 0.1% Sb (Brosge' and others, 1967).

**Age:**

**Deposit model:**
Kipushi ?

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**
32c ?

**Production:** No **Status:** Inactive

**Production notes:**

**Reserves:**

**Additional comments:**

**References:**
Brosge' and others, 1967; Mayfield and Grybeck, 1978

**Primary reference:** Brosge' and others, 1967

**Reporter:** K.R. Leonard (USGS), R.L. Elliott (USGS), J.M. Schmidt (USGS)

**Reporter affiliation:**

**Last report date:** 10/26/92

# Site: Jade Mountain

**Type:** Mine

**ARDF no.** AR006

**Latitude:** 67.21 **Quadrangle:** AR A-5

**Longitude:** 158.05

**Location description and accuracy:**
Located on south slope of Jade Mountain above Jade Creek in T. 21 N., R. 4 E., Kateel River Meridian. Shown as locality 14 in Mayfield and Grybeck (1978) and accurate to within 2000 ft. (600 m).

**Commodities:**
**Main:** Jade **Other:** Asbestos

**Ore minerals:** Chrysotile, nephrite (jade), tremolite

**Gangue minerals:**

**Geologic description:**
2 sq. mi. (3.2 square km) area of highly serpentinized ultramafic rock contains residual inclusions of nephrite jade and schistose nephrite containing 0.25-0.5 in. (0.5 -1 cm) wide veinlets of chrysotile and tremolite asbestos; some slip - fiber chrysotile in fibers up to 5 in. (11 cm) long (Anderson, 1945, p. 22-25).

**Alteration:**

**Workings/Exploration:**
Short tunnel driven on asbestos veins many years prior to USBM study (Heide and others, 1949).

**Age:**

**Deposit model:**
Serpentine-hosted asbestos

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**
8d

**Production:** Yes; small **Status:** Inactive

**Production notes:**

**Reserves:**

**Additional comments:**
There also has been minor production of nephrite jade from stream gravels of Jade Creek.

**References:**
Anderson, 1945; Anderson 1947; Heide and others, 1949; Mayfield and Grybeck, 1978

**Primary reference:** Anderson, 1945

**Reporter:** K.R. Leonard (USGS), R.L. Elliott (USGS), J.M. Schmidt (USGS)

**Reporter affiliation:**

**Last report date:** 10/26/92

# Site: Jade Hills

**Type:** Occurrence

**ARDF no.** AR007

**Latitude:** 67.17 **Quadrangle:** AR A-4

**Longitude:** 157.8

**Location description and accuracy:**
Located just west of Manuilyisat Hills at an elevation of 130 m in T. 20 N., R. 5 E., Kateel River Meridian. Shown as locality 15 in Mayfield and Grybeck (1978) and accurate to within 2000 ft. (600 m).

**Commodities:**
**Main:** Ni **Other:** Asbestos?

**Ore minerals:** Garnierite?

**Gangue minerals:**

**Geologic description:**
Small amounts of garnierite coating or a related mineral in ultramafic rocks. Nephrite and asbestos mineralization reported in general area (Anderson, 1945, p. 24).

**Alteration:**

**Workings/Exploration:**

**Age:**

**Deposit model:**
Serpentine-hosted asbestos

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**
8d

**Production:** No **Status:** Inactive

**Production notes:**

**Reserves:**

**Additional comments:**

**References:**
Anderson, 1945; Mayfield and Grybeck, 1978; Smith and Mertie, 1930

**Primary reference:** Anderson, 1945

**Reporter:** K.R. Leonard (USGS), R.L. Elliott (USGS), J.M. Schmidt (USGS)

**Reporter affiliation:**

**Last report date:** 10/26/92

# Site: Bismark Creek

**Type:** Prospect

**ARDF no.** AR008

**Latitude:** 67.006 **Quadrangle:** AR A-3

**Longitude:** 157.29

**Location description and accuracy:**
Location at the confluence of Bismark Creek and the Shungnak River in T. 19 N., R. 7 E., Kateel River Meridian. Shown as locality 17 in Mayfield and Grybeck (1978). Accurate to 1000 ft. (300 m).

**Commodities:**
**Main:** Au **Other:**

**Ore minerals:** Gold

**Gangue minerals:**

**Geologic description:**
Gold on false bedrock in creek gravels up to 20 ft. (6.5 m) deep overlying Pleistocene glacial till. Bismark Creek cuts across bench deposit (Reed, 1931, p. 14-15).

**Alteration:**

**Workings/Exploration:**
Discrete zones contain 0.04-0.19 oz./cubic yard (1.2-5.9 g/cubic m) gold.

**Age:**

**Deposit model:**
Placer

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**
39a

**Production:** Yes, small **Status:** Inactive

**Production notes:**

**Reserves:**

**Additional comments:**

**References:**
Fritts, 1970; Reed, 1931; Mayfield and Grybeck, 1978

**Primary reference:** Reed, 1931

**Reporter:** K.R. Leonard (USGS), R.L. Elliott (USGS), J.M. Schmidt (USGS), S.W. Nelson (USGS retired)

**Reporter affiliation:**

**Last report date:** 5/6/97

# Site: Shungnak Rivers; Shingnek Creek

**Type:** Mine

**ARDF no.** AR009

**Latitude:** 67.031 **Quadrangle:** AR A-3

**Longitude:** 157.235

**Location description and accuracy:**
Located in canyon between Bismark Mountain and Shungnak Mountain near confluence with Bismark Creek in T. 19 N., R. 7 E., Kateel River Meridian. Shown as locality 19 in Mayfield and Grybeck (1978). Accurate to within 1000 ft. (300 m).

**Commodities:**
**Main:** Au **Other:** Ag, asbestos, Cu, jade

**Ore minerals:** Asbestos, copper (native), nephrite, silver (native)

**Gangue minerals:**

**Geologic description:**
Creek and bench placers. Creek gravels 1-3 ft. (0.3-1 m) deep in canyon; Au occurs in pockets in bedrock and lower 1 ft. (0.3 m) of gravel. Nephrite jade float along banks of river; nephrite and low-grade asbestos in greenstone and serpentine along river. Gold also occurs on false bedrock above Pleistocene till near confluence with Bismark Creek. Stream gravels are coarse, subangular with abundant boulders up to 3 ft. (1 m) in diameter.

**Alteration:**

**Workings/Exploration:**
Most of gravel is not frozen, in benches up to 25 ft. (9 m) above the river; prospect pits in gravel downstream from canyon did not reach bedrock; 40 ft. (13 m) drill hole in gravels below canyon did not reach bedrock (Reed, 1931, p. 15).

**Age:**

**Deposit model:**
Placer

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**
39a

**Production:** Yes; small **Status:** Inactive

**Production notes:**
Intermittent production during the period 1894 to 1940. May have produced as much as 10,000 oz (311 kg) of gold (Fritts, 1970, p. 54-55).

**Reserves:**

**Additional comments:**
Concentrates mainly magnetite along with rare nuggets of copper and silver (Anderson, 1945, p. 24-46).

**References:**
Anderson, 1945; Anderson, 1947; Fritts, 1970; Mayfield and Grybeck, 1978; Reed, 1931; Smith, 1913; Smith and Eakin, 1911

**Primary reference:** Fritts, 1970

**Reporter:** K.R. Leonard (USGS), R.L. Elliott (USGS), J.M. Schmidt (USGS), S.W. Nelson (USGS retired)

**Reporter affiliation:**

**Last report date:** 5/6/97

# Site: Bismark Mountain

**Type:** Prospect

**ARDF no.** AR010

**Latitude:** 67.05 **Quadrangle:** AR A-3

**Longitude:** 157.26

**Location description and accuracy:**
Located above Shungnak River on Bismark Mountain in T. 19 N., R. 7 E., Kateel River Meridian. Shown as locality 18 in Mayfield and Grybeck (1978) and accurate to within 1000 ft. (300 m).

**Commodities:**
**Main:** Asbestos **Other:** Jade, magnesite

**Ore minerals:** Chrysotile, nephrite

**Gangue minerals:** Magnesite, nemalite

**Geologic description:**
Network of low grade cross-and slip-fiber chrysotile veinlets 0.5-2.0 in. (1-4 cm) wide in area of serpentine float 800 ft. (244 m) long, several hundred feet (60 m) wide and up to 8 ft. (2.5 m) deep. Nearby magnesite veinlets and asbestos as well as residual boulders of nephrite occurr over a wide area of serpentinized ultramafic rocks cutting schist (Heide and others, 1949, p.16-18).

**Alteration:**

**Workings/Exploration:**
4 or 5 surface trenches dug by USBM circa WW II. Small test shipment made during World War ll but no production (Anderson, 1945, p. 19-20).

**Age:**

**Deposit model:**
Serpentine-hosted asbestos

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**
8d

**Production:** No **Status:** Inactive

**Production notes:**

**Reserves:**

**Additional comments:**

**References:**
Anderson, 1945; Heide and others, 1949; Mayfield and Grybeck, 1978

**Primary reference:** Heide and others, 1949

**Reporter:** K.R. Leonard (USGS), R.L. Elliott (USGS), J.M. Schmidt (USGS), S.W. Nelson (USGS retired)

**Reporter affiliation:**

**Last report date:** 5/6/97

# Site: Cosmos Creek

**Type:** Prospect

**ARDF no.** AR011

**Latitude:** 67.01 **Quadrangle:** AR A-3

**Longitude:** 157.14

**Location description and accuracy:**
Located near Shungnak Mountain above and along Cosmos Creek in T. 19 N., R. 8 E., Kateel River Meridian. Shown as locality 20 in Mayfield and Grybeck and accurate to within 1000 ft. (300 m).

**Commodities:**
**Main:** Asbestos **Other:** Au, jade

**Ore minerals:** Chrysotile, gold, jade, nephrite, tremolite

**Gangue minerals:**

**Geologic description:**
Low grade chrysotile and tremolite asbestos veinlets less than 1.5 in. (3 cm) wide, along strike length of over 1 mi. (1.6 km). Small amounts of Au and minor nephrite reported in nearby creek gravels (Anderson, 1947, p. 15).

**Alteration:**

**Workings/Exploration:**
Four trenches dug by USBM (Heide and others, 1949, p. 21-22) to obtain samples for testing.

**Age:**

**Deposit model:**
Serpentine-hosted asbestos/placer Au

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**
8d/39a

**Production:** No **Status:** Inactive

**Production notes:**

**Reserves:**

**Additional comments:**

**References:**
Anderson, 1945; Anderson, 1947; Heide and others, 1949; Reed, 1931; Mayfield and Grybeck, 1978

**Primary reference:** Anderson, 1947

**Reporter:** K.R. Leonard (USGS), R.L. Elliott (USGS), J.M. Schmidt (USGS), S.W. Nelson (USGS retired)

**Reporter affiliation:**

**Last report date:** 5/4/97

# Site: Aurora Mt.

**Type:** Prospect

**ARDF no.** AR012

**Latitude:** 67.062 **Quadrangle:** AR A-3

**Longitude:** 157.092

**Location description and accuracy:**
Located 4.5 mi. (7.2 km) west of Bornite on ridge in sec. 10, T. 19 N., R. 8 E., Kateel River Meridian. Shown as locality 21 in Mayfield and Grybeck (1978). Locationa accurate to within 1000 ft. (300 m).

**Commodities:**
**Main:** Cu **Other:** Ag, Co, Zn

**Ore minerals:** Azurite, bornite, chalcopyrite, malachite

**Gangue minerals:** Dolomite, quartz

**Geologic description:**
Three types of mineralization reported (Cobb and Mayfield, 1981, p. A4): 1. dolomitic zones containing disseminated blebs of chalcopyrite and bornite; malachite on weathered surfaces; 2. layered pyrite and chalcopyrite in schist; 3. malachite and azurite in quartz veins. Considered a hydrothermal replacement-type deposit in dolomite and dolomite breccia (Nana Development Corp., written comm., 1997).

**Alteration:**

**Workings/Exploration:**
Prospect located on Nana Corporation lands currently (1997) under exploration that includes geologic mapping, geochemical sampling, and diamond drilling. Additional exploration work completed by Kennecott Exploration in 1994 and 1995.

**Age:**
Devonian

**Deposit model:**
Kipushi

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**
32c

**Production:** No **Status:** Active

**Production notes:**

**Reserves:**

**Additional comments:**

**References:**
Cobb and Mayfield, 1981; Mayfield and Grybeck, 1978;

**Primary reference:** Cobb and Mayfield, 1981
**Reporter:** K.R. Leonard (USGS), R.L. Elliott (USGS), J.M. Schmidt (USGS), S.W. Nelson (USGS retired)

**Reporter affiliation:**

**Last report date:** 5/4/97

# Site: Pardner's Hill; Partners Hill; Eightmile Mt.

**Type:** Prospect

**ARDF no.** AR013

**Latitude:** 67.064 **Quadrangle:** AR A-3

**Longitude:** 157.017

**Location description and accuracy:**
Located on northeast flank of Eightmile Mountain in sec. 12, T. 19 N., R. 8 E., Kateel River Meridian. Shown as locality 22 in Mayfield and Grybeck (1978). Location accurate to within 1000 ft. (300 m).

**Commodities:**
**Main:** Au, Cu, Pb **Other:** Ag, Co

**Ore minerals:** Bornite, chalcopyrite, galena

**Gangue minerals:** Calcite, dolomite, quartz

**Geologic description:**
Chalcopyrite, bornite, minor galena and secondary Cu minerals in dolomite breccia. Deposit is similar to the one at Bornite (AR018) (Nana Development Corp. written comm., 1997).

**Alteration:**

**Workings/Exploration:**
Explored by 20 ft. (7 m) shaft, 30 ft. (10 m) adit, surface trenches and 21 diamond drill holes. Active exploration by Kennecott Exploration Co. in 1994, 1995, 1996 (Nana Development Corp., written comm., 1997). Selected samples contained up to 0.04 oz/ton (1.37 g/ton) Au and 1.5 oz/ton (47.9 g/ton) Ag (Sichermann and others, 1976).

**Age:**
Devonian

**Deposit model:**
Kipushi ?

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**
32c?

**Production:** No **Status:** active

**Production notes:**

**Reserves:**

**Additional comments:**
Nana Corporation has an agreement with Kennecott Exploration Co. to explore corporation-owned lands (1997).

**References:**
Berg and Cobb, 1967; Degenhart and others, 1978; Fritts, 1970; Mayfield and Grybeck, 1978; Smith and Eakin, 1911; Sichermann and others, 1976

**Primary reference:** Fritts, 1970

**Reporter:** K.R. Leonard (USGS), R.L. Elliott (USGS), J.M. Schmidt (USGS), S.W. Nelson (USGS retired)

**Reporter affiliation:**

**Last report date:** 4/30/97

# Site: Iron Mountain

**Type:** Occurrence

**ARDF no.** AR014

**Latitude:** 67.1 **Quadrangle:** AR A-2

**Longitude:** 157

**Location description and accuracy:**
Located at north end of Bannock Mountain, Cosmos Hills, in T. 19 N., R. 9 E., Kateel River Meridian. Shown as locality 5 in Cobb (1972) and is accurate to within 1 mi. (1.6 km). Also shown as locality 25 in Mayfield and Grybeck (1978).

**Commodities:**
**Main:** Fe **Other:**

**Ore minerals:** Magnetite

**Gangue minerals:**

**Geologic description:**
Float samples of magnetite weighing up to 100 lbs. (220 kg), but none seen in bedrock. Most common near bedrock contacts between limestone/marble and schist. (Smith, 1913, p. 153-154).

**Alteration:**

**Workings/Exploration:**

**Age:**

**Deposit model:**
Superior Fe ??

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**
34a ?

**Production:** No **Status:** Inactive

**Production notes:**

**Reserves:**

**Additional comments:**

**References:**
Cobb, 1975; Mayfield and Grybeck, 1978; Smith, 1913

**Primary reference:** Smith, 1913

**Reporter:** J.M. Schmidt (USGS), S.W. Nelson (USGS retired)

**Reporter affiliation:**

**Last report date:** 5/14/97

# Site: Unnamed

**Type:** Occurrence

**ARDF no.** AR015

**Latitude:** 67.01 **Quadrangle:** AR A-3

**Longitude:** 157.01

**Location description and accuracy:**
Located on hill near Cosmos Mountain and west of Wesley Creek in T. 19 N., R. 8 W., Kateel River Meridian. Shown as locality 26 in Mayfield and Grybeck (1978) and accurate to within 2000 ft. (600 m).

**Commodities:**
**Main:** Pb **Other:**

**Ore minerals:** Galena

**Gangue minerals:**

**Geologic description:**
Small amounts of galena in quartz vein and brecciated dolomite (Mayfield and Grybeck, 1978).

**Alteration:**

**Workings/Exploration:**
Shallow prospect hole (Cobb, 1972).

**Age:**

**Deposit model:**
Kipushi?

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**
32c ?

**Production:** No **Status:** Inactive

**Production notes:**

**Reserves:**

**Additional comments:**

**References:**
Berg and Cobb, 1967; Cobb, 1972; Smith, 1913; Smith and Mertie, 1930; Mayfield and Grybeck, 1978

**Primary reference:** Mayfield and Grybeck, 1978

**Reporter:** K.R. Leonard (USGS), R.L. Elliott (USGS), J.M. Schmidt (USGS)

**Reporter affiliation:**

**Last report date:** 10/26/92

# Site: Dahl Creek Head; Asbestos Mountain, Ing-Ink

**Type:** Mine

**ARDF no.** AR016

**Latitude:** 67.009 **Quadrangle:** AR A-2

**Longitude:** 156.825

**Location description and accuracy:**
Location is just northwest of Asbestos Mountain in T. 19 N., R. 9 E., Kateel River Meridian. Shown as locality 29 in Mayfield and Grybeck (1978). Location accurate to within 600 ft. (200 m).

**Commodities:**
**Main:** Asbestos **Other:** Jade, talc

**Ore minerals:** Chrysotile, nephrite, talc, tremolite, quartz

**Gangue minerals:**

**Geologic description:**
50 ft. (17 m) wide shear zone trending northeast and containing veins of slip-fiber tremolite, 6 in. to 2.5 ft. (12 cm to 0.66 m) thick; fibers up to 18-20 in. (36-40 cm) long, weak in tenacity, but relatively free of impurities. Veins plus residual fibers form lenticular ore bodies. Also present in area of mine are: 1) 0.25-4 in. (0.5-8 cm) seams of slip-fiber chrysotile and small veinlets of cross-fiber chrysotile; 2) small deposits of talc, soapstone and nephrite, 3) 6 in. (12 cm) wide veins of quartz containing crystals possibly of optical quality. Deposit is in serpentinized basic intrusive (peridotite?) in mica schist; abundant tremolite and chrysotile float (Heide and others, 1949, p.11-13).

**Alteration:**

**Workings/Exploration:**
Surface and underground. Explored by several trenches and a 229 ft. (76 m) adit.

**Age:**

**Deposit model:**
Serpentine-hosted asbestos

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**
8d

**Production:** Yes; small **Status:** Inactive

**Production notes:**
33 tons of tremolite and 0.9 tons of serpentine shipped during WW ll. Small amount of optical quartz crystals shipped in 1943 (Heide and others, 1949, p. 11-13).

**Reserves:**

**Additional comments:**

**References:**
Anderson, 1945; Anderson, 1947; Fritts, 1970; Heide and others, 1949; Mayfield and Grybeck, 1978; Reed, 1931

**Primary reference:** Heide and others, 1949

**Reporter:** K.R. Leonard (USGS), R.L. Elliott (USGS), J.M. Schmidt (USGS), S.W. Nelson (USGS retired)

**Reporter affiliation:**

**Last report date:** 4/30/97

# Site: Riley Creek

**Type:** Mine

**ARDF no.** AR017

**Latitude:** 67.039 **Quadrangle:** AR A-2

**Longitude:** 156.897

**Location description and accuracy:**
Location at head of Riley Creek 3000 ft. (1 km) northeast of Shields Mountain in the Cosmos Hills, in T. 19 N., R. 9 E., Kateel River Meridian. Shown as locality 28 in Mayfield and Grybeck (1978). Location accurate to within 1000 ft. (300 m).

**Commodities:**
**Main:** Au **Other:**

**Ore minerals:** Gold

**Gangue minerals:**

**Geologic description:**
Eluvial placer 200 m long, less than 10 m wide and about 2 m thick in high, steep and dry tributary to Riley Creek. Much of Au in bedrock crevices; also visible free Au is in quartz veins in drainage basin. Basin contains colluvium composed of slate, limestone and quartz gravel, and a few large greenstone boulders, up to 2 ft (0.6 m) in diameter, probably of glacofluvial origin (Fritts, 1970, p.58).

**Alteration:**

**Workings/Exploration:**
Surface.

**Age:**

**Deposit model:**
Placer

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**
39a

**Production:** Yes; small **Status:** Inactive

**Production notes:**

**Reserves:**

**Additional comments:**
Area mined was a high, steep, and dry tributary of Riley Creek (Smith and Mertie, 1930, p. 336).

**References:**
Cobb, 1973; Fritts, 1970; Mayfield and Grybeck, 1978; Reed, 1931; Smith and Mertie, 1930

**Primary reference:** Cobb, 1973
**Reporter:** K.R. Leonard (USGS), R.L. Elliott (USGS) J.M. Schmidt (USGS), S.W. Nelson (USGS retired)

**Reporter affiliation:**

**Last report date:** 4/30/97

# Site: Bornite, Ruby Creek

**Type:** Prospect

**ARDF no.** AR018

**Latitude:** 67.063 **Quadrangle:** AR A-2

**Longitude:** 156.947

**Location description and accuracy:**
Location along Ruby Creek on the north side of the Cosmos Hills in T. 19 N., R. 9 E., Kateel River Meridian. Shown as locality 24 in Mayfield and Grybeck (1978). Location accurate to within 600 ft. (200 m).

**Commodities:**
**Main:** Cu **Other:** Ag, Au, Co, Pb, U, Zn

**Ore minerals:** Bornite, carrollite, chalcocite, chalcopyrite, galena, germanite, renierite, sphalerite, tennantite-tetrahedrite,

**Gangue minerals:** Dolomite, pyrite, marcasite, cymrite, pyrrhotite, barite

**Geologic description:**
Sulfide minerals form matrix of breccia replacement deposits in brecciated and intensely folded and faulted dolomite and limestone of the Devonian Bornite marble, a 3000-ft.-thick (1000 m) unit of carbonate rocks. Deposit is structurally and stratigraphically confined to a sequence of Devonian dolomite, limestone, and calcareous phyllite (Kennecott Exploration Co., written comm., 1997). The deposit is interpreted (Hitzman, 1986, p. 1644-1674) to have formed along a rifted continental margin in Late Devonian time. It occurs along a fault (?)-contolled margin of a carbonate bank adjacent to a shale-filled graben.

**Alteration:**
Dolomite

**Workings/Exploration:**
Exploration shaft, drifts on two levels, and extensive core drilling have been completed (Kennecott Exploration Co., written comm., 1997).

**Age:**
Late Devonian

**Deposit model:**
Kipushi

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**
32c

**Production:** No **Status:** Active

**Production notes:**

**Reserves:**

**Additional comments:**

**References:**

Bernstein and Cox, 1986; Bundzten and others, 1995; Cobb, 1975; Cobb and Mayfield, 1981; Hitzman, 1986; Hitzman and others, 1982; Fritts, 1970; Matzko and Freeman, 1963; Mayfield and Grybeck, 1978; Runnels, 1969; Sichermann and others, 1976

**Primary reference:** Hitzman, 1986

**Reporter:** R.L. Elliott (USGS), J.M. Schmidt (USGS), S.W. Nelson (USGS retired)

**Reporter affiliation:**

**Last report date:** 4/30/97

# Site: Jay Creek

**Type:** Occurrence

**ARDF no.** AR019

**Latitude:** 67.07 **Quadrangle:** AR A-2

**Longitude:** 156.96

**Location description and accuracy:**
Located along Jay Creek on the north side of the Cosmos Hills in T. 19 N., R. 9 E., Kateel River Meridian. Shown as locality 23 in Mayfield and Grybeck and accurate to within 2000 ft (600 m).

**Commodities:**
**Main:** Au **Other:**

**Ore minerals:** Gold

**Gangue minerals:**

**Geologic description:**
Placer Au in stream gravels (Reed, 1931, p. 18).

**Alteration:**

**Workings/Exploration:**
Surface placer

**Age:**

**Deposit model:**
Placer

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**
39a

**Production:** Small **Status:** Inactive

**Production notes:**
A little gold recovered in 1931 (Reed, 1931, p. 31).

**Reserves:**

**Additional comments:**
Low grade placer Au occurrence having no significant production Fritts, 1970, p. 58).

**References:**
Fritts, 1970; Mayfield and Grybeck, 1978; Reed, 1931

**Primary reference:** Reed, 1931

**Reporter:** K.R. Leonard (USGS), R.L. Elliott (USGS), J.M. Schmidt (USGS), S.W. Nelson (USGS retired)

**Reporter affiliation:**

**Last report date:** 4/30/97

# Site: Pearl Creek

**Type:** Prospect

**ARDF no.** AR020

**Latitude:** 67.1 **Quadrangle:** AR A-2

**Longitude:** 156.8

**Location description and accuracy:**
Located in the Ambler Lowlands northeast of Bornite at 600 ft (200 m) elevation in T. 20 N., R. 9 E., Kateel River Meridian. Shown as locality 32 in Mayfield and Grybeck and accurate to within 1 mi. (1.6 km).

**Commodities:**
**Main:** Au **Other:**

**Ore minerals:** Gold

**Gangue minerals:**

**Geologic description:**

**Alteration:**

**Workings/Exploration:**
Surface placer.

**Age:**

**Deposit model:**
Placer

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**
39a

**Production:** Undet. **Status:** Inactive

**Production notes:**
Minor production in 1933 (Smith, 1934)

**Reserves:**

**Additional comments:**
Low-grade placer gold deposit: insignificant production (Smith, 1934).

**References:**
Mayfield and Grybeck, 1978; Smith, 1934

**Primary reference:** Mayfield and Grybeck, 1978

**Reporter:** K.R. Leonard (USGS), R.L. Elliott (USGS), J.M. Schmidt (USGS)

**Reporter affiliation:**

**Last report date:** 10/26/92

# Site: Canyon Creek

**Type:** Prospect

**ARDF no.** AR021

**Latitude:** 67 **Quadrangle:** AR A-2

**Longitude:** 156.63

**Location description and accuracy:**
Located along Canyon Creek, east of Asbestos Mountain in the Cosmos Hills in T. 19 N., R. 10 E., Kateel River Meridian. Shown as locality 31 in Mayfield and Grybeck (1978) and is accurate to within 2000 ft. (600 m).

**Commodities:**
**Main:** Au **Other:**

**Ore minerals:** Gold

**Gangue minerals:**

**Geologic description:**
Fine gold found in prospect shaft in unfrozen ground.

**Alteration:**

**Workings/Exploration:**
Type of workings: Surface and underground. 40 ft (13 m) prospect shaft did not reach bedrock; several prospect pits in vicinity.

**Age:**

**Deposit model:**
Placer

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**
39a

**Production:** Undet. **Status:** Inactive

**Production notes:**

**Reserves:**

**Additional comments:**
Low-grade placer gold deposit: insignificant production.

**References:**
Mayfield and Grybeck, 1978

**Primary reference:** Mayfield and Grybeck, 1978

**Reporter:** K.R. Leonard (USGS), R.L. Elliott, (USGS), J.M. Schmidt (USGS)

**Reporter affiliation:**

**Last report date:** 10/26/92

# Site: Tom Tom; Que Creek

**Type:** Prospect

**ARDF no.** AR022

**Latitude:** 67.136 **Quadrangle:** AR A-1

**Longitude:** 156.153

**Location description and accuracy:**
Accurate. On ridge east of Kogoluktuk River in T. 20 N., R. 12 E., Kateel River Meridian. Also shown as locality 44 of Mayfield and Grybeck (1978) and shown in Hitzman and others (1982). Location accurate to within 1000 ft. (300 m).

**Commodities:**
**Main:** Cu **Other:**

**Ore minerals:** Malachite

**Gangue minerals:** Muscovite, quartz

**Geologic description:**
Massive and disseminated malachite in quartz muscovite schist for at least 825 ft. (275 m) along strike. This copper prospect is in the area of Ambler sequence volcanogenic deposits. See also: Horse Creek (AR029), Smucker (AR033), and Arctic (AR025) deposits.

**Alteration:**

**Workings/Exploration:**
Diamond drilling

**Age:**

**Deposit model:**
Kuroko

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**
28a

**Production:** No **Status:** Active

**Production notes:**

**Reserves:**

**Additional comments:**

**References:**
Hitzman and others, 1982; Mayfield and Grybeck, 1978

**Primary reference:** Hitzman and others, 1982

**Reporter:** K. R. Leonard (USGS); R. L. Elliott (USGS); J.M. Schmidt (USGS)

**Reporter affiliation:**

**Last report date:** 10/26/92

# Site: Diane Creek

**Type:** Prospect

**ARDF no.** AR023

**Latitude:** 67.15 **Quadrangle:** AR A-1

**Longitude:** 156.22

**Location description and accuracy:**
Located on ridge, at 2000 ft. (600 m) elevation, east of the Kogoluktuk River in T. 20 N., R. 12 E., Kateel River Meridian. Location is accurate to within 2000 ft. (600 m). Same as locality 43 in Mayfield and Grybeck (1978).

**Commodities:**
**Main:** Cu, Zn **Other:**

**Ore minerals:** Bornite, chalcopyrite, sphalerite

**Gangue minerals:**

**Geologic description:**
Sparsely disseminated chalcopyrite, bornite, sphalerite and pyrrhotite in float samples of mineralized outcrop.

**Alteration:**

**Workings/Exploration:**
Surface exploration.

**Age:**

**Deposit model:**
Kuroko

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**
28a

**Production:** No **Status:** Inactive

**Production notes:**

**Reserves:**

**Additional comments:**

**References:**
Hitzman and others, 1982; Mayfield and Grybeck, 1978

**Primary reference:** Hitzman and others, 1982

**Reporter:** K.R. Leonard (USGS), R.L. Elliott (USGS), J.M. Schmidt (USGS)

**Reporter affiliation:**

**Last report date:** 10/26/92

# Site: Luk-Imp

**Type:** Prospect

**ARDF no.** AR024

**Latitude:** 67.28 **Quadrangle:** AR B-1

**Longitude:** 156.2

**Location description and accuracy:**
Location is to the east of the Kogoluktuk River in T. 22 N., R. 12 E., Kateel River Meridian. Location accurate to within 2000 ft. (600 m).

**Commodities:**
**Main:** Cu, Pb, Zn **Other:**

**Ore minerals:**

**Gangue minerals:**

**Geologic description:**
There are five main rock types underlying the Kuk-Imp prospect: coarse grained graphitic quartz-muscovite-chlorite schist; coarse grained quartz-muscovite schist; porphyroblastic quartz-muscovite-feldspar achist; quartz-carbonate-muscovite schist; and actinolitic marble. All units are complexly folded and some faults are mapped in the area. The porphyroblastic unit is thought to be a metamorphosed volcanic flow or sub-volcanic plug (unpublished Noranda report, 1975).

**Alteration:**

**Workings/Exploration:**
Geochemical sampling.

**Age:**
Devonian

**Deposit model:**
Kuroko

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**
28a

**Production:** No **Status:** Inactive

**Production notes:**

**Reserves:**

**Additional comments:**

**References:**
Unpublished Noranda report, 1975

**Primary reference:** Unpublished Noranda report, 1975

**Reporter:** S.W. Nelson (USGS retired)

**Reporter affiliation:**

**Last report date:** 5/12/97

# Site: Arctic; Arctic Camp

**Type:** Prospect

**ARDF no.** AR025

**Latitude:** 67.181 **Quadrangle:** AR A-1

**Longitude:** 156.386

**Location description and accuracy:**
Located east of VABM Riley on ridge above Kogoluktuk River in sec. 34, T. 21 N., R. 11 E., Kateel River Meridian. Shown as location 42 in Mayfield and Grybeck (1978). Accurate to within 600 ft. (200 m).

**Commodities:**
**Main:** Ag, Au, Cu, Pb, Zn **Other:** Sb

**Ore minerals:** Bornite, chalcocite, chalcopyrite, galena, sphalerite, stibnite, tennantite-tetrahedrite

**Gangue minerals:** Arsenopyrite, barite, calcite, pyrite, pyrrhotite, quartz, talc

**Geologic description:**
A syngenetic deposit hosted in a thick sequence of low to medium grade metamorphosed basaltic and rhyolitic rocks, submarine ash flow tuffs, volcaniclastic and minor plutonic rocks, and pelitic, carbonaceous and calcareous sedimentary rocks, known as the Ambler schist belt. These rocks are part of a large fold structure termed the Kalurivik arch. A Devonian or Mississippian age of mineralization is based both on fossil evidence and U-Pb radiometric dating (Hitzman and others, 1986, p.1592-1618). This polymetallic, stratabound, volcanogenic deposit consists of tabular masses of banded massive and disseminated sulfides, one foot (0.3 m) to more than 55 ft. (18 m) thick, composed of 20% to 90% pyrite, chalcopyrite and sphalerite, along with lesser amounts of pyrrhotite, chalcocite, bornite, galena, tennantite-tetrahedrite, arsenopyrite and stibnite. The sulfides are enclosed in calcareous talcose to quartzose lenses within a metavolcanic (rhyolitic) unit. The mineralized area is 3000 ft. by 2200 ft. (1030 m by 730 m), and about 270 ft. (90 m) thick. The massive sulfide occurrences are covered by a small gossan cap 9 ft. to 15 ft. (3 m to 5 m) deep (Schmidt, 1986, p. 1619-1643).

**Alteration:**
Chlorite-rich rocks in footwall and surrounding the sulfides form an alteration zone containing a complex assemblage of barian fluorphlogopite, talc, Mg-chlorite, barite, phengite, quartz, and calcite (Schmidt, 1986).

**Workings/Exploration:**
Explored by surface trenches and pits and diamond drill holes. Patented claims held by Kennecott Exploration. Extensive diamond drilling (more 65 holes) (Nana Development Corporation, written comm., 1997).

**Age:**
Devonian-Mississippian

**Deposit model:**
Kuroko

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**
28a

**Production:** No **Status:** Active

**Production notes:**

**Reserves:**
Indicated reserves of 26 million tons grading 4.0% Cu, 5.5 % Zn, 1% Pb, 1.6 oz/ton (55 g/tonne) Ag, and 0.03oz./ton (0.69 g/tonne)Au (Eakins and others, 1985, p. 6).

**Additional comments:**
Artic is one of several volcanogenic deposits in the Ambler schist belt along the south flank of the Brooks Range. The deposits may be part of a rifted continental margin (Schmidt, 1981, p. 548).

**References:**
Bottge, 1975; Bundtzen and others, 1995; Degenhart and others, 1978; Dillon and others, 1979; Grybeck and Nokleberg, 1979; Hitzman and others, 1986; Mayfield and Grybeck, 1978; Schmidt, 1981; Schmidt, 1983; Schmidt, 1986; Schmidt, 1988; Wiltse, 1975

**Primary reference:** Hitzman and others, 1986

**Reporter:** K.R. Leonard (USGS), R.L. Elliott (USGS), J.M. Schmidt (USGS), S.W. Nelson (USGS retired)

**Reporter affiliation:**

**Last report date:** 4/29/97

# Site: Dead Creek; Steptoes

**Type:** Prospect

**ARDF no.** AR026

**Latitude:** 67.2 **Quadrangle:** AR A-2

**Longitude:** 156.5

**Location description and accuracy:**
Located on ridge north of VABM Riley, east of the Shungnak River in sec. 18, T. 21 N., R. 11 E., Kateel River Meridian. This prospect is shown as locality 41 in Mayfield and Grybeck (1978), but is not correctly located.

**Commodities:**
**Main:** Cu, Pb, Zn **Other:** Ag

**Ore minerals:** Bornite, chalcopyrite, galena, sphalerite

**Gangue minerals:**

**Geologic description:**
This deposit consists of coarse disseminated grains and semi-massive lenses of sulfide minerals hosted by south dipping coarse grained quartz-muscovite schist. The schist is interlayered with greenstone(metabasalt) and locally interbedded with thin quartzite beds.The two ore horizons are complexly deformed to pinch and swell structure and are cut off to the east along strike by a discordant body of greenstone. Some concordant greenstone may be tuffaceous or argillaceous dolomite. This schist belt type volcanogenic Cu-Zn deposit is similar to the Arctic deposit (AR025) (unpublished Bear Creek Exploration Report, 1984).

**Alteration:**

**Workings/Exploration:**
Explored by several diamond drill holes and surface geologic mapping (Nana Development Corporation, written comm., 1997).

**Age:**
Devonian-Mississippian

**Deposit model:**
Kuroko

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**
28a

**Production:** No **Status:** Inactive

**Production notes:**

**Reserves:**

**Additional comments:**
New location based on information provided by J.M. Proffett, 1997. Information from Nana Development Corporation (1997) based on 1984 unpublished Bear Creek Exploration report.

**References:**
Degenhart and others, 1978; Hitzman and others, 1982; Mayfield and Grybeck, 1978; Sichermann and others, 1976

**Primary reference:** Sichermann and others, 1976

**Reporter:** K.R. Leonard (USGS), R.L. Elliott, (USGS), J.M. Schmidt (USGS), S.W. Nelson (USGS retired)

**Reporter affiliation:**

**Last report date:** 4/29/97

## Site: SK

**Type:** Prospect

**ARDF no.** AR027

**Latitude:** 67.24 **Quadrangle:** AR A-2

**Longitude:** 156.51

**Location description and accuracy:**
On ridge west of Peak 4140 and east of Ambler River in T. 21 N., R. 10 E., Kateel River Meridian. Location accurate to within 1000 ft. (300 m).

**Commodities:**
**Main:** Cu, Pb, Zn **Other:**

**Ore minerals:**

**Gangue minerals:**

**Geologic description:**
Prospect hosted in Ambler sequence of metamorphosed Devonian and Mississippian volcanic, volcaniclastic, and sedimentary rocks.

**Alteration:**

**Workings/Exploration:**
Initially drilled by Noranda in 1978 with two holes totaling 400 ft. (130 m). Drilling in 1982 and 1983 by Anaconda extended early drill holes to a total of 1100 ft. (360 m). Property currently (1997) held by Kennecott Exploration Co.

**Age:**
Devonian

**Deposit model:**
Kuroko

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**
28a

**Production:** No **Status:** Inactive

**Production notes:**

**Reserves:**

**Additional comments:**

**References:**
Steve Jones, Kennecott Exploration Co., personnal commun., 1997

**Primary reference:** Steve Jones, Kennecott Exploration Co., personnal commun., 1997

**Reporter:** S.W. Nelson (USGS retired)

**Reporter affiliation:**

**Last report date:** 5/12/97

# Site: Sunshine Creek (CS), Bud Group

**Type:** Prospect

**ARDF no.** AR028

**Latitude:** 67.22 **Quadrangle:** AR A-2

**Longitude:** 156.63

**Location description and accuracy:**
Located on the ridge east of VABM Ruby west of the Shungnak River in T. 21 N., R. 10 E., Kateel River Meridian. Shown as locality 40 in Mayfield and Grybeck (1978) and accurate to within 2000 ft. (600 m).

**Commodities:**
**Main:** Cu, Pb, Zn **Other:**

**Ore minerals:** Chalcopyrite, malachite

**Gangue minerals:** Pyrite

**Geologic description:**
Prospect hosted in Ambler sequence of metamorphosed Devonian and Mississippian volcanic, volcaniclastic, and sedimentary rocks. Ore minerals are concentrated in a felsic tuffaceous sedimentary section of rocks containing numerous basalt sills and flows immediataly above a basal carbonate section (Hitzmann and others, 1986, p. 1592-1618). Two mineralized horizons are identified having a strike length of about 5000 ft (1.6 km) (Nana Development Corp., written commun., 1997).

**Alteration:**

**Workings/Exploration:**
Surface sampling and mapping and 10 drill holes.

**Age:**
Devonian

**Deposit model:**
Kuroko

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**
28a

**Production:** No **Status:** Inactive

**Production notes:**

**Reserves:**

**Additional comments:**

**References:**
Hitzman and others, 1982; Hitzman and others, 1986; Mayfield and Grybeck, 1978; Sichermann and others, 1976; and 1984 unpublished report by Bear Creek Mining

**Primary reference:** Hitzman and others, 1982

**Reporter:** K.R. Leonard (USGS), R.L. Elliott (USGS), J.M. Schmidt (USGS), S.W. Nelson (USGS retired)

**Reporter affiliation:**

**Last report date:** 4/29/97

# Site: Horse Creek; Cliff; Dh, Lost

**Type:** Prospect

**ARDF no.** AR029

**Latitude:** 67.31 **Quadrangle:** AR B-2

**Longitude:** 156.7

**Location description and accuracy:**
Located north of VABM Ruby on ridge between Ambler and Shungnak Rivers in sec. 17, T. 22 N., R. 10 E., Kateel River Meridian. Shown as locality 39 in Mayfield and Grybeck (1978) and accurate to within 2000 ft. (600 m).

**Commodities:**
**Main:** Cu, Pb, Zn **Other:**

**Ore minerals:** Bornite, chalcopyrite, galena, sphalerite

**Gangue minerals:** Calcite, pyrite, quartz, sericite

**Geologic description:**
Pyrite, chalcopyrite, bornite, galena and sphalerite form lenses, stringers, disseminations, and locally massive pods in metamorphosed Devonian-Mississippian volcanic, volcaniclastic, and sedimentary rocks. Sulfide lenses are complexly folded and faulted. Country rocks are interbedded porphyroblastic quartz-muscovite-calcite schist, graphitic schist, greenstone, (some have pillow structure, and some occur as plugs and sills throughout the section), and weakly metamorphosed semischistose graywacke (Nana Development Corp., written comm., 1997). Deposit is reported similar to Artic deposit (AR025).

**Alteration:**

**Workings/Exploration:**
Surface geologic mapping, electromagnetic studies, geochemical sampling, trenching, and eight drill holes.

**Age:**
Devonian

**Deposit model:**
Kuroko

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**
28a

**Production:** No **Status:** Active

**Production notes:**

**Reserves:**

**Additional comments:**
This massive sulfide prospect is in the Ambler schist belt. Nana Develpment Corporation information based on a 1984 unpublished Bear Creek Exploration report.

**References:**
Degenhart and others, 1978; Hitzman and others, 1982; Mayfield and Grybeck, 1978; Sichermann and others, 1976

**Primary reference:** Sichermann and others, 1976

**Reporter:** K.R. Leonard (USGS), R.L. Elliott (USGS), J.M. Schmidt (USGS), S.W. Nelson (USGS retired)

**Reporter affiliation:**

**Last report date:** 4/30/97

# Site: Snow

**Type:** Prospect

**ARDF no.** AR030

**Latitude:** 67.25 **Quadrangle:** AR B-2

**Longitude:** 157

**Location description and accuracy:**
Located on ridge north of the Ambler River in T. 21 N., R. 9 E., Kateel River Meridian. Location accurate to within 2000 ft. (600 m).

**Commodities:**
**Main:** Cu, Pb, Zn **Other:**

**Ore minerals:** Chalcopyrite, galena, sphaledrite

**Gangue minerals:**

**Geologic description:**
This deposit consists of chalcopyrite, galena, and sphalerite hosted in quartz-muscovite-chlorite schist; massive greenstone; intercalated phyllite, limestone, and quartz-muscovite schist; and calcareous schist. The ore minerals and host rocks lie on the south limb of the Kalurivik Arch. Protoliths for the host rocks are interpreted to be Devonian volcanic flows and tuffs intercalated with clastic and chemical sedimentary rocks (unpublished Noranda Report, 1975).

**Alteration:**

**Workings/Exploration:**
Geochemical sampling, 1975.

**Age:**
Devonian

**Deposit model:**
Kuroko

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**
28a

**Production:** No **Status:** Inactive

**Production notes:**

**Reserves:**

**Additional comments:**

**References:**
Unpublished Noranda report, 1975

**Primary reference:** Unpublished 1975 Noranda report

**Reporter:** S.W. Nelson (USGS retired)

**Reporter affiliation:**

**Last report date:** 5/12/97

# Site: Unnamed

**Type:** Occurrence

**ARDF no.** AR031

**Latitude:** 67.28 **Quadrangle:** AR B-3

**Longitude:** 157.03

**Location description and accuracy:**
Located on ridge above head of Naniratkohort Creek in T. 22 N., R. 8 E., Kateel River Meridian. Shown as locality 38 in Mayfield and Grybeck and accurate to within 2000 ft. (600 m).

**Commodities:**
**Main:** Cu **Other:** Zn

**Ore minerals:** Malachite

**Gangue minerals:**

**Geologic description:**
Malachite stain in small marble outcrop in saddle. Local high Cu and Zn stream sediment anomaly nearby (Ellerseick, 1978).

**Alteration:**

**Workings/Exploration:**

**Age:**

**Deposit model:**
Kuroko ?

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**
28a ?

**Production:** No **Status:** Inactive

**Production notes:**

**Reserves:**

**Additional comments:**
Cu showing in area of known Ambler sequence-type Cu-Zn deposits.

**References:**
Ellerseick, 1978; Hitzman and others, 1982; Mayfield and Grybeck, 1978

**Primary reference:** Mayfield and Grybeck, 1978

**Reporter:** K.R. Leonard (USGS), R.L. Elliott (USGS), J.M. Schmidt (USGS)

**Reporter affiliation:**

**Last report date:** 10/26/92

# Site: Sleet Creek

**Type:** Prospect

**ARDF no.** AR032

**Latitude:** 67.28 **Quadrangle:** AR B-3

**Longitude:** 157.19

**Location description and accuracy:**
Located on ridge near VABM Sleet in T. 22 N., R. 8 E., Kateel River Meridian. Shown as locality 37 in Mayfield and Grybeck (1978) and is accurate to within 2000 ft. (600 m).

**Commodities:**
**Main:** Cu, Zn **Other:**

**Ore minerals:** Malachite, unknown zinc mineral

**Gangue minerals:**

**Geologic description:**
Malachite staining in schist; probably an Ambler sequence volcanogenic deposit similar to Smucker (AR033) (Mayfield and Grybeck, 1978).

**Alteration:**

**Workings/Exploration:**

**Age:**

**Deposit model:**
Kuroko ?

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

**Production:** No **Status:** Inactive

**Production notes:**

**Reserves:**

**Additional comments:**
Zn listed as a resource in reference, but no mention of any Zn minerals.

**References:**
Hitzman and others, 1982; Mayfield and Grybeck, 1978

**Primary reference:** Mayfield and Grybeck, 1978

**Reporter:** K.R. Leonard (USGS), R.L. Elliott (USGS), J.M. Schmidt (USGS)

**Reporter affiliation:**

**Last report date:** 10/26/92

# Site: Smucker, Charlie, Patti, Puzzle, Ambler 4-B

**Type:** Prospect

**ARDF no.** AR033

**Latitude:** 67.292 **Quadrangle:** AR B-3

**Longitude:** 157.167

**Location description and accuracy:**
Located on ridge east of VABM Sleet in T. 22 N., R. 8 E., Kateel River Meridian. Accurately located to within 300 ft. (100 m) and shown as locality 36 in Mayfield and Grybeck (1978).

**Commodities:**
**Main:** Ag, Cu, Pb, Zn **Other:** Au

**Ore minerals:** Chalcopyrite, galena, owyheeite, sphalerite

**Gangue minerals:** Calcite, chlorite, muscovite, pyrite, quartz

**Geologic description:**
Layered sulfide zone 9 ft to 27 ft. (3 m to 9 m) thick, continous for at least 6000 ft (2000 m) along strike, consists of banded, fine to medium grained pyrite, sphalerite, galena, chalcopyrite and minor owyheeite in a silica-calcite-pyrite matrix. The country rocks are characteristic of the Devonian-Mississippian Ambler sequence and consist dominantly of well-foliated porphyroblastic quartz-feldspar-muscovite-chlorite schist interlayered with quartz-muscovite-chlorite phyllite, graphitic phyllite, calcite-mica schist and marble. Mineralized zone is repeated by complex folding (Nana Development Corp., written commun., 1997).

**Alteration:**
No hydrothermal alteration of wall rock evident.

**Workings/Exploration:**
Surface geologic mapping, geochemical sampling (soil grids), electromagnetic measurements, magnetometer measurements, and eight drill holes by 1984 (Nana Development Corp., written commun., 1997). According to Mayfield and Grybeck (1978) two drill samples 2400 ft (820 m) apart intersected layered sulfide zones 9 ft. to 27 ft. (3 m to 9 m) thick assaying 100 g/ton Ag, 2-8% Zn and 1-1.6% Pb. Grades from drill samples indicated 3.8% Zn, 1.2 to 1.6% Pb, 69-514 g/ton Ag.

**Age:**
Devonian

**Deposit model:**
Kuroko

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**
28a

**Production:** No **Status:** Active

**Production notes:**

**Reserves:**
Hitzman and others (1986) report greater than eight million metric tons grading 0.8% Cu, 6.8% Zn, 2.3% Pb, 200 g/ton Ag. Bundzten (1995) reported 'significant' tonnage grading 1.5% Pb, 5%-10% Zn, 103-343 g/ton Ag, and minor Au.

**Additional comments:**

**References:**

Bear Creek Mining Company, 1984, unpublished report; Bundzten and others, 1995; Eakins and others ,1985; Hitzman and others, 1982; Hitzman and others, 1986; Mayfield and Grybeck, 1978

**Primary reference:** Hitzman and others, 1986

**Reporter:** K.R. Leonard (USGS), R.L. Elliott (USGS), J.M. Schmidt (USGS), S.W. Nelson (USGS retired)

**Reporter affiliation:**

**Last report date:** 5/4/97

# Site: Unnamed

**Type:** Occurrence

**ARDF no.** AR034

**Latitude:** 67.31 **Quadrangle:** AR B-3

**Longitude:** 157.19

**Location description and accuracy:**
Location is on ridge north of VABM Sleet in T. 22 N., R. 8 W., Kateel River Meridian. Shown as locality 35 in Mayfield and Grybeck (1978) and accurate to within 2000 ft. (600 m).

**Commodities:**
**Main:** Cu **Other:**

**Ore minerals:** Malachite

**Gangue minerals:**

**Geologic description:**
Malachite staining on discontinuous lens of marble.

**Alteration:**

**Workings/Exploration:**

**Age:**

**Deposit model:**

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

**Production:** No **Status:** Inactive

**Production notes:**

**Reserves:**

**Additional comments:**
Minor Cu showing in area of known Ambler sequence volcanogenic Cu-Zn deposits.

**References:**
Mayfield and Grybeck, 1978

**Primary reference:** Mayfield and Grybeck, 1978

**Reporter:** K.R. Leonard (USGS), R.L. Elliott (USGS), J.M. Schmidt (USGS)

**Reporter affiliation:**

**Last report date:** 10/26/92

# Site: Cobre

**Type:** Prospect

**ARDF no.** AR035

**Latitude:** 67.38 **Quadrangle:** AR B-3

**Longitude:** 157.2

**Location description and accuracy:**
Located on ridge west of Kalurivik Creek near Peak 3430 in sec. 24, T. 23 N., R. 8 E., Kateel River Meridian. Location is accurate to within 1000 ft. (300 m).

**Commodities:**
**Main:** Cu, Pb, Zn **Other:** Ag, Co

**Ore minerals:** Chalcopyrite

**Gangue minerals:**

**Geologic description:**
Bedding-controlled disseminated chalcopyrite deposit up to 6 ft (3 m) thick in metaquartzite, quartz-mica schist, quartz-chlorite schist. and locally marble. The copper-bearing beds are estimated to lie 4000 m stratigraphically below the Smucker rhyolite (Devonian). The host rocks could therefore be early Paleozoic or late PreCambrian. The copper-bearing rocks are interlayered with marbles and lie about 60 m stratigraphically above a stromatolite-bearing horizon. Other stromatolites are found along the ridge 7800 ft (2600 m) to the north, in a faulted syncline.

**Alteration:**

**Workings/Exploration:**
Geologic mapping and some geochemical sampling. Claims staked in 1979 by Anaconda. One six foot (2 m) chip sample ran 0.34% Cu, 10 ppm Pb, 9 ppm Zn, 9 ppm Co. Two float samples ran 0.7% and 0.8 % Cu, 40 and 29 ppm Pb, 18 and 14 ppm Zn, and 3 and 2 ppm Co. A sample from a vein in marble ran 4700 ppm Pb, 760 ppm Zn, 4.9 ppm Ag (unpublished Anaconda notes).

**Age:**
Early Paleozoic ?

**Deposit model:**
Kuroko ?

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**
28a

**Production:** No **Status:** Inactive

**Production notes:**

**Reserves:**

**Additional comments:**
Discovered by Anaconda geologist in 1979.

**References:**
Unpublished Anaconda notes from 1979.

**Primary reference:** Unpublished Anaconda notes from 1979.

**Reporter:** S.W. Nelson (USGS retired)

**Reporter affiliation:**

**Last report date:** 5/12/97

# Site: Agnes Creek

**Type:** Prospect

**ARDF no.** AR036

**Latitude:** 67.23 **Quadrangle:** AR A-3

**Longitude:** 157.49

**Location description and accuracy:**
Located on Agnes Creek southeast of Akillyik Mountain in T. 21 N., R. 6 E., Kateel River Meridian. Shown as locality 16 in Mayfield and Grybeck (1978) and is accurate to within 2000 ft. (600 m).

**Commodities:**
**Main:** Au **Other:**

**Ore minerals:** Gold

**Gangue minerals:**

**Geologic description:**

**Alteration:**

**Workings/Exploration:**

**Age:**

**Deposit model:**
Placer

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**
39a

**Production:** Yes, small **Status:** Inactive

**Production notes:**
No significant production (Cobb, 1973, p. 58)

**Reserves:**

**Additional comments:**

**References:**
Brooks, 1925; Cobb, 1973; Mayfield and Grybeck, 1978; Smith, 1933

**Primary reference:** Cobb, 1973

**Reporter:** K.R. Leonard (USGS), R.L. Elliott (USGS), J.M. Schmidt (USGS), S.W. Nelson (USGS retired)

**Reporter affiliation:**

**Last report date:** 5/6/97

# Site: Unnamed

**Type:** Occurrence

**ARDF no.** AR037

**Latitude:** 67.42 **Quadrangle:** AR B-1

**Longitude:** 156.28

**Location description and accuracy:**
Located on ridge southeast of Shishakshinovik Pass in T. 23 N., R. 12 E., Kateel River Meridian. Shown as location 52 in Mayfield and Grybeck (1978). Accurate to within 2000 ft. (600 m).

**Commodities:**
**Main:** Ag, Mo, Pb, Zn **Other:**

**Ore minerals:** Galena, molybdenite, sphalerite

**Gangue minerals:**

**Geologic description:**
Minor amounts ofgalena, sphalerite and molybdenite in granite near contact. Deposit is 1. 5 mi. (2.4 km) long and up to 20 ft. (6 m) thick. Granite intrudes sequence of limestone, dolomite, shale, graphite schist, and quartz-chlorite schist; it probably is an apophysis of the Shishakshinovik pluton ( Mayfield and Grybeck, 1978).

**Alteration:**

**Workings/Exploration:**
Surface workings and high geochem anomalies in Pb, Zn and Mo Mayfield and Grybeck (1978). One float boulder found in drainage contained 5% galena, 10%-15% pyrite, and 3% sphalerite. Degenhart, (1978, p. 391) reported several analyses of samples: sample BM 1230 contained 630 ppm Pb and 400 ppm Zn; a 900 ft (305 m) chip sample of granite (BM 1226) contained 2% Pb, 1.65% Zn, and 3 oz./ton (102 g/ton) Ag. Other mineralized float samples observed in the area.

**Age:**

**Deposit model:**
Skarn

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

**Production:** No **Status:** Inactive

**Production notes:**

**Reserves:**

**Additional comments:**

**References:**
Degenhart and others, 1978; Mayfield and Grybeck, 1978

**Primary reference:** Mayfield and Grybeck, 1978

**Reporter:** K.R. Leonard (USGS), R.L. Elliott (USGS), J.M. Schmidt (USGS)

**Reporter affiliation:**

**Last report date:** 6/30/92

# Site: Unnamed

**Type:** Prospect

**ARDF no.** AR038

**Latitude:** 67.42 **Quadrangle:** AR B-1

**Longitude:** 156.32

**Location description and accuracy:**
Located south of Shishakshinovik Pass in T. 23 N., R. 11 E., Kateel River Meridian. Location accurate to within 2000 ft. (600 m) and shown as locality 51 in Mayfield and Grybeck (1978).

**Commodities:**
**Main:** Cu, Pb **Other:** Au

**Ore minerals:** Chalcopyrite, galena

**Gangue minerals:**

**Geologic description:**
Numerous small quartz veins and veinlets carrying chalcopyrite and galena in quartzose rocks in contact aureole of granitic intrusive (Mayfield and Grybeck, 1978). Selected specimens from this occurrence were reported by Berg and Cobb (1967, p.105-106) to contain 9.81% Cu and 27.73% Pb, as well as minor amounts of Au and Ag; they also reported tetrahedrite in float.

**Alteration:**

**Workings/Exploration:**

**Age:**

**Deposit model:**
Skarn

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

**Production:** No **Status:** Inactive

**Production notes:**

**Reserves:**

**Additional comments:**
Prospect is north of Shishakshinovik Pass and within Gates of the Arctic National Park.

**References:**
Berg and Cobb, 1967; Mayfield and Grybeck, 1978; U.S. Bureau of Mines, 1973

**Primary reference:** Mayfield and Grybeck, 1978

**Reporter:** K.R. Leonard (USGS), R.L. Elliott (USGS), J.M. Schmidt (USGS)

**Reporter affiliation:**

**Last report date:** 10/26/92

# Site: Unnamed

**Type:** Occurrence

**ARDF no.** AR039

**Latitude:** 67.42 **Quadrangle:** AR B-1

**Longitude:** 156.38

**Location description and accuracy:**
Located southwest of Shishakshinovik Pass in T. 23 N., R. 11 E., Kateel River Meridian. Shown as locality 80 by Mayfield and Grybeck (1978). Location accurate to within 2000 ft. (600 m).

**Commodities:**
**Main:** Cu, U **Other:**

**Ore minerals:** Metatorbernite (hydrated copper uranyl phosphate)

**Gangue minerals:**

**Geologic description:**
Metatorbernite coating quartzite talus from south side of cirque basin.

**Alteration:**

**Workings/Exploration:**

**Age:**

**Deposit model:**

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

**Production:** No **Status:** Inactive

**Production notes:**

**Reserves:**

**Additional comments:**

**References:**
Mayfield and Grybeck, 1978

**Primary reference:** Mayfield and Grybeck, 1978

**Reporter:** K.R. Leonard (USGS), R.L. Elliott (USGS), J.M. Schmidt (USGS)

**Reporter affiliation:**

**Last report date:** 10/26/92

## Site: Unnamed

**Type:** Occurrence

**ARDF no.** AR040

**Latitude:** 67.39 **Quadrangle:** AR B-1

**Longitude:** 156.44

**Location description and accuracy:**
South of Peak 4765 in T. 23 N., R. 11 E., Kateel River Meridian. Shown as locality 46 in Mayfield and Grybeck (1978). Location accurate to within 2000 ft. (600 m).

**Commodities:**
**Main:** Pb **Other:**

**Ore minerals:** Galena

**Gangue minerals:** Magnetite, pyrite, quartz

**Geologic description:**
Galena, pyrite and magnetite in float sample of quartz vein.

**Alteration:**

**Workings/Exploration:**

**Age:**

**Deposit model:**

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

**Production:** No **Status:** Inactive

**Production notes:**

**Reserves:**

**Additional comments:**

**References:**
Mayfield and Grybeck, 1978

**Primary reference:** Mayfield and Grybeck, 1978

**Reporter:** K.R. Leonard (USGS), R.L. Elliott (USGS), J.M. Schmidt (USGS)

**Reporter affiliation:**

**Last report date:** 10/26/92

# Site: Unnamed

**Type:** Prospect

**ARDF no.** AR041

**Latitude:** 67.4 **Quadrangle:** AR B-1

**Longitude:** 156.49

**Location description and accuracy:**
Location is east of Ulaneak Creek and southwest of Shishakshinovik Pass in T. 23 N., R. 11 E., Kateel River Meridian. Shown as locality 47 in Mayfield and Grybeck (1978) and is accurate to within 2000 ft. (600 m).

**Commodities:**
**Main:** Cu, Pb **Other:** Au

**Ore minerals:** Chalcopyrite, galena

**Gangue minerals:**

**Geologic description:**
Numerous small quartz veins and veinlets carrying chalcopyrite and galena in quartzose rocks in contact aureole of granitic intrusive.

**Alteration:**

**Workings/Exploration:**
Claims staked in 1974.

**Age:**

**Deposit model:**
Skarn

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

**Production:** No **Status:** Inactive

**Production notes:**

**Reserves:**

**Additional comments:**

**References:**
Mayfield and Grybeck, 1978; U.S. Bureau of Mines, 1973

**Primary reference:** Mayfield and Grybeck, 1978

**Reporter:** K.R. Leonard (USGS), R.L. Elliott (USGS), J.M. Schmidt (USGS)

**Reporter affiliation:**

**Last report date:** 10/26/92

# Site: Unnamed

**Type:** Prospect

**ARDF no.** AR042

**Latitude:** 67.44 **Quadrangle:** AR B-1

**Longitude:** 156.45

**Location description and accuracy:**
Location east of Ulaneak Creek and west of Shishakshinovik Pass in T. 24 N., R. 11 E., Kateel River Meridian. Shown as locality 47 in Mayfield and Grybeck (1978). Location accurate to within 2000 ft. (600 m).

**Commodities:**
**Main:** Cu, Pb **Other:** Au

**Ore minerals:** Chalcopyrite, galena

**Gangue minerals:**

**Geologic description:**
Numerous small quartz veins and veinlets carrying chalcopyrite and galena, in quartzose rocks in contact aureole of granitic intrusive.

**Alteration:**

**Workings/Exploration:**
Claims staked in 1974.

**Age:**

**Deposit model:**
Skarn

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

**Production:** No **Status:** Inactive

**Production notes:**

**Reserves:**

**Additional comments:**
Area contains several Cu-Pb showings associated with contact zone of granitic intrusive.

**References:**
Mayfield and Grybeck, 1978; U.S. Bureau of Mines, 1973

**Primary reference:** Mayfield and Grybeck, 1978

**Reporter:** K.R. Leonard (USGS), R.L. Elliott (USGS), Schmidt (USGS), S.W. Nelson (USGS retired)

**Reporter affiliation:**

**Last report date:** 4/29/97

# Site: Unnamed

**Type:** Occurrence

**ARDF no.** AR043

**Latitude:** 67.41 **Quadrangle:** AR B-2

**Longitude:** 156.59

**Location description and accuracy:**
Located on ridge north of Ulaneak Creek in T. 23 N., R. 10 E., Kateel River Meridian. Shown as locality 48 in Mayfield and Grybeck (1978) and accurate to within 2000 ft. (600 m).

**Commodities:**
**Main:** Cu **Other:**

**Ore minerals:** Bornite, chalcopyrite, cuprite

**Gangue minerals:** Pyrite, quartz

**Geologic description:**
18 ft (6 m) thick quartz vein carrying bornite, chalcopyrite, cuprite and pyrite; occurrence is in limestone in saddle on ridge near contact with granite.

**Alteration:**

**Workings/Exploration:**
Surface

**Age:**

**Deposit model:**
Skarn?

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

**Production:** No **Status:** Inactive

**Production notes:**

**Reserves:**

**Additional comments:**

**References:**
Mayfield and Grybeck, 1978

**Primary reference:** Mayfield and Grybeck, 1978

**Reporter:** K.R. Leonard (USGS), R.L. Elliott (USGS), J.M. Schmidt (USGS)

**Reporter affiliation:**

**Last report date:** 10/26/92

# Site: Unnamed

**Type:** Prospect

**ARDF no.** AR044

**Latitude:** 67.41 **Quadrangle:** AR B-2

**Longitude:** 156.65

**Location description and accuracy:**
Location is on ridge north of Ulaneak Creek in T. 23 N., R. 10 E., Kateel River Meridian. Shown as locality 49 in Mayfield and Grybeck (1978) and is accurate to within 2000 ft. (600 m).

**Commodities:**
**Main:** Cu, Pb **Other:** Au

**Ore minerals:** Chalcopyrite, galena

**Gangue minerals:**

**Geologic description:**
Numerous small quartz veins and veinlets carrying chalcopyrite and galena in quartzose rocks in contact aureole of granitic intrusive.

**Alteration:**

**Workings/Exploration:**

**Age:**

**Deposit model:**
Skarn

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

**Production:** No **Status:** Inactive

**Production notes:**

**Reserves:**

**Additional comments:**
One of serveral claim groups in the area on Cu-Pb showings associated with the contact zone of a granitic intrusive.

**References:**
Mayfield and Grybeck, 1978; U.S. Bureau of Mines, 1973

**Primary reference:** Mayfield and Grybeck, 1978

**Reporter:** K.R. Leonard (USGS), R.L. Elliott (USGS), J.M. Schmidt (USGS)

**Reporter affiliation:**

**Last report date:** 10/26/92

# Site: Unnamed; Cutler River

**Type:** Occurrence

**ARDF no.** AR045

**Latitude:** 67.42 **Quadrangle:** AR B-4

**Longitude:** 157.58

**Location description and accuracy:**
Located near headwaters of the Cutler River in T. 23 N., R. 6 E., Kateel River Meridian. Shown as locality 8 in Mayfield and Grybeck (1978) and is accurate to within 2000 ft. (600 m).

**Commodities:**
**Main:** Ti **Other:**

**Ore minerals:** Ilmenite

**Gangue minerals:**

**Geologic description:**
Small amount of ilmenite bearing quartz rubble from host rock consisting of felsic orthogneiss and quartzite (Mayfield and Grybeck, 1978).

**Alteration:**

**Workings/Exploration:**

**Age:**

**Deposit model:**

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

**Production:** No **Status:** Inactive

**Production notes:**

**Reserves:**

**Additional comments:**

**References:**
Mayfield and Grybeck, 1978

**Primary reference:** Mayfield and Grybeck, 1978

**Reporter:** K.R. Leonard (USGS), R.L. Elliott (USGS), J.M. Schmidt (USGS)

**Reporter affiliation:**

**Last report date:** 10/26/92

# Site: Unnamed

**Type:** Occurrence

**ARDF no.** AR046

**Latitude:** 67.46 **Quadrangle:** AR B-5

**Longitude:** 158.13

**Location description and accuracy:**
Located in the Baird Mountains near the headwaters of Akillik River in T. 24 N., R. 3 E., Kateel River Meridian. Shown as locality 7 in Mayfield and Grybeck (1978) and is accurate to within 2000 ft. (600 m).

**Commodities:**
**Main:** Pb, Sb **Other:**

**Ore minerals:** Boulangerite

**Gangue minerals:**

**Geologic description:**
Boulangerite ($Pb_5Sb_4S_{11}$) in reddish - weathering dolomite.

**Alteration:**

**Workings/Exploration:**

**Age:**

**Deposit model:**

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

**Production:** No **Status:** Inactive

**Production notes:**

**Reserves:**

**Additional comments:**

**References:**
Mayfield and Grybeck, 1978

**Primary reference:** Mayfield and Grybeck, 1978

**Reporter:** K.R. Leonard (USGS), R.L. Elliott (USGS), J.M. Schmidt (USGS)

**Reporter affiliation:**

**Last report date:** 10/26/92

# Site: Kalvich Area

**Type:** Occurrence

**ARDF no.** AR047

**Latitude:** 67.56 **Quadrangle:** AR C-5

**Longitude:** 158.2

**Location description and accuracy:**
Located in the Baird Mountains on ridge near Peak 3475 in T. 25 N., R. 3 E., Kateel River Meridian. Shown as locality 6 in Mayfield and Grybeck (1978) and is accurate to within 2000 ft. (600 m).

**Commodities:**
**Main:** F, Pb **Other:** Cu, Mo, Sn, W, Zn

**Ore minerals:** Galena, fluorite, malachite

**Gangue minerals:**

**Geologic description:**
Disseminated pyrite, galena, fluorite and malachite in Kalvich pluton along contact zone. Deposit is 1 mi (1.6 km) in strike length. Visual estimate of 1% galena and 1% fluorite in granitic rock along north margin of pluton. About 8 sq. mi. (13 sq km0 of the surrounding area is geochemically anomalous in Pb and Zn. n. The Kalvich pluton is in contact with black siltstone interbedded with marble and quartz-mica schist to the north and east and with gray to black marble of the Skajit limestone to the south and west. The northern margin of the pluton is a migmatitic contact zone containing moderately anomalous Pb, Zn, Mo, Sn and W (Degenhart and others, 1978, p. 340-350).

**Alteration:**

**Workings/Exploration:**
A representative bedrock chip sample from a 100 ft. by 7 ft. (33 m x 2 m) area of highly foliated fine grained intrusive rock yielded 86 ppm Cu, 2000 ppm Pb, 94 ppm Zn, 53 ppm Mo, 14 ppm Ag, 34 ppm Sn, 1400 ppm F (Degenhart and others, 1978, p. 340-350).

**Age:**

**Deposit model:**
Skarn

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

**Production:** No **Status:** Inactive

**Production notes:**

**Reserves:**
The possibility of even a small tonnage of economic grade material being discovered is remote.

**Additional comments:**
This occurrence is one of several small skarn zones at granitic contacts through out the Ambler River quadrangle (Degenhart and others, 1978). Located in the Noatak National Preserve.

**References:**
Degenhart and others, 1978; Mayfield and Grybeck, 1978

**Primary reference:** Degenhart and others, 1978

**Reporter:** K.R. Leonard (USGS), R.L. Elliott (USGS), J.M. Schmidt (USGS)

**Reporter affiliation:**

**Last report date:** 10/26/92

# Site: Kaluich Creek

**Type:** Occurrence

**ARDF no.** AR048

**Latitude:** 67.64 **Quadrangle:** AR C-5

**Longitude:** 158.37

**Location description and accuracy:**
Located near the headwaters of Kaluich Creek in T. 26 N., R. 2 E., Kateel River Meridian. Shown as locality 2 in Mayfield and Grybeck (1978) and is accurate to within 2000 ft. (600 m).

**Commodities:**
**Main:** Cu **Other:** Ag, Ba, Mo, V

**Ore minerals:** Malachite

**Gangue minerals:** Quartz

**Geologic description:**
Small malachite-stained quartz vein in iron-rich black phyllite which is geochemically anomalous in Ag, Ba, Mo and V in a zone extending 2.5 km along strike (Mayfield and Grybeck, 1978). This type of copper mineralization in black metapelite containing anomalous Ag-Ba-Mo-V may be related to dewatering of a large Paleozoic? clastic basin (Schmidt and Werdon, 1993), and occurs throughout this part of the Brooks Range ( Kurtak and others, 1995; Schmidt, 1997, p. 35-65).

**Alteration:**

**Workings/Exploration:**

**Age:**

**Deposit model:**
Shale-hosted? (Schmidt and Werdon, 1993, p. 143)

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

**Production:** No **Status:** Inactive

**Production notes:**

**Reserves:**

**Additional comments:**
Located within the Noatak National Preserve.

**References:**
Kurtak and others, 1995; Mayfield and Grybeck, 1978; Schmidt, 1997; Schmidt and Werdon, 1993

**Primary reference:** Mayfield and Grybeck, 1978

**Reporter:** K.R. Leonard (USGS), R.L. Elliott (USGS), J.M. Schmidt (USGS), S.W. Nelson (USGS retired)

**Reporter affiliation:**

**Last report date:** 5/7/97

# Site: Malfiatti

**Type:** Prospect

**ARDF no.** AR049

**Latitude:** 67.53 **Quadrangle:** AR C-6

**Longitude:** 158.99

**Location description and accuracy:**
Located near the headwaters of Akiak Creek in T. 25 N., R. 2 W., Kateel River Meridian. Shown as locality 5 in Mayfield and Grybeck (1978) and accurate to within 2000 ft. (600 m).

**Commodities:**
**Main:** Cu **Other:**

**Ore minerals:** Unknown copper minerals

**Gangue minerals:**

**Geologic description:**
Old copper prospect at limestone-schist contact (Brooks, 1914, p. 72).

**Alteration:**

**Workings/Exploration:**

**Age:**

**Deposit model:**

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

**Production:** No **Status:** Inactive

**Production notes:**

**Reserves:**

**Additional comments:**
Minor occurrence located within Kobuk Valley National Park.

**References:**
Berg and Cobb, 1967; Brooks, 1914; Degenhart and others, 1978; Mayfield and Grybeck, 1978

**Primary reference:** Brooks, 1914

**Reporter:** K.R. Leonard (USGS), R.L. Elliott (USGS), J.M. Schmidt (USGS), S.W. Nelson (USGS retired)

**Reporter affiliation:**

**Last report date:** 5/8/97

# Site: Unnamed

**Type:** Occurrence

**ARDF no.** AR050

**Latitude:** 67.61 **Quadrangle:** AR C-6

**Longitude:** 158.79

**Location description and accuracy:**
Located on ridge at the north end of the Akiak Mountains near the headwaters of the Hunt River in T. 26 N., R. 1 W., Kateel River Meridian. Shown as locality 4 in Mayfield and Grybeck (1978) and is accurate to within 2000 ft. (600 m).

**Commodities:**
**Main:** Cu **Other:**

**Ore minerals:** Malachite

**Gangue minerals:**

**Geologic description:**
90 ft (30 m) rusty zone containing quartz rubble stained by small amounts malachite.

**Alteration:**
Fe and Cu staining

**Workings/Exploration:**

**Age:**

**Deposit model:**

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

**Production:** No **Status:** Inactive

**Production notes:**

**Reserves:**

**Additional comments:**
Located within Kobuk Valley National Park.

**References:**
Mayfield and Grybeck, 1978

**Primary reference:** Mayfield and Grybeck, 1978

**Reporter:** K.R. Leonard (USGS), R.L. Elliott (USGS), J.M. Schmidt (USGS)

**Reporter affiliation:**

**Last report date:** 10/26/92

# Site: Natmotirak Creek

**Type:** Occurrence

**ARDF no.** AR051

**Latitude:** 67.69 **Quadrangle:** AR C-6

**Longitude:** 158.89

**Location description and accuracy:**
Located along Natmotirak Creek in T. 26 N., R. 1 W., Kateel River Meridian. Shown as locality 3 in Mayfield and Grybeck (1978) and is accurate to within 2000 ft. (600 m).

**Commodities:**
**Main:** Cu **Other:** Ag

**Ore minerals:** Chalcopyrite, malachite

**Gangue minerals:** Quartz

**Geologic description:**
Visible chalcopyrite and malachite in less than 3 ft. (1 m) wide quartz vein cutting limestone (Mayfield and Grybeck, 1978). Occurrence could be similar to several other sediment-hosted occurrences in the Brooks Range that formed from the dewatering of a large sedimentary basin (Schmidt, 1997, p. 35-65; Schmidt and Werdon, 1993, p. 143).

**Alteration:**

**Workings/Exploration:**
10 ppm Ag in one rock sample (Mayfield and Grybeck, 1978).

**Age:**
Paleozoic?

**Deposit model:**
Sediment-hosted Pb-Zn ?

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

**Production:** No **Status:** Inactive

**Production notes:**

**Reserves:**

**Additional comments:**
Located within Noatak National Preserve.

**References:**
Mayfield and Grybeck, 1978; Schmidt, 1997; Schmidt and Werdon, 1993

**Primary reference:** Mayfield and Grybeck, 1978

**Reporter:** K.R. Leonard (USGS), R.L. Elliott (USGS), J.M. Schmidt (USGS), S.W. Nelson (USGS retired)

**Reporter affiliation:**

**Last report date:** 5/8/97

# Site: Nanielik Creek

**Type:** Occurrence

**ARDF no.** AR052

**Latitude:** 67.92 **Quadrangle:** AR D-6

**Longitude:** 158.87

**Location description and accuracy:**
Located on hill just east of Nanielik Creek in T. 29 N., R. 1 W., Kateel River Meridian. Shown as locality 1 in Mayfield and Grybeck (1978) and accurate to within 2000 ft. (600 m).

**Commodities:**
**Main:** Ba **Other:** Pb, Zn

**Ore minerals:** Barite, galena?, sphalerite?

**Gangue minerals:**

**Geologic description:**
Three foot (1 m) thick vein of barite in limestone. Vein and nearby Fe-rich soil contained 1000 ppm Pb and 5000 ppm Zn (Mayfield and Grybeck, 1978). Occurrence could be similar to several other sediment-hosted occurrences in the Brooks Range that formed from the dewatering of a large Paleozoic? sedimentary basin (Schmidt, 1997, p. 35-65; Schmidt and Werdon, 1993, p. 143).

**Alteration:**

**Workings/Exploration:**

**Age:**
Paleozoic?

**Deposit model:**
Sediment-hosted Pb-Zn?

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

**Production:** No **Status:** Inactive

**Production notes:**

**Reserves:**

**Additional comments:**
Located within Noatak National Preserve.

**References:**
Mayfield and Grybeck, 1978; Schmidt, 1997; Schmidt and Werdon, 1993

**Primary reference:** Mayfield and Grybeck, 1978

**Reporter:** K.R. Leonard (USGS), R.L. Elliott (USGS), J.M. Schmidt (USGS), S.W. Nelson (USGS retired)

**Reporter affiliation:**

**Last report date:** 5/8/97

# Site: Unnamed

**Type:** Occurrence

**ARDF no.** AR053

**Latitude:** 67.58 **Quadrangle:** AR C-1

**Longitude:** 156.01

**Location description and accuracy:**
Located on eastern edge of the Ambler River quadrangle south of Peak 6311 in T. 25 N., R. 13 E., Kateel River Meridian. Shown as locality 54 in Mayfield and Grybeck (1978) and accurate to within 1000 ft. (300 m).

**Commodities:**
**Main:** Cu, Zn **Other:**

**Ore minerals:**

**Gangue minerals:**

**Geologic description:**
Thin pyritic layers parallel the foliation in black phyllite. Sulfide zone traced for 2.5 mi (4 km) to the south.

**Alteration:**

**Workings/Exploration:**
Highest values in stream sediment geochemical samples are 290 ppm Cu and 450 ppm Zn (Ellerseick, 1978).

**Age:**

**Deposit model:**

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

**Production:** No **Status:** Inactive

**Production notes:**

**Reserves:**

**Additional comments:**
Located within Gates of the Arctic National Park.

**References:**
Ellerseick, 1978; Mayfield and Grybeck, 1978

**Primary reference:** Mayfield and Grybeck, 1978

**Reporter:** S.W. Nelson (USGS retired)

**Reporter affiliation:**

**Last report date:** 5/12/97

# Site: Unnamed

**Type:** Occurrence

**ARDF no.** AR054

**Latitude:** 67.59 **Quadrangle:** AR C-1

**Longitude:** 156.18

**Location description and accuracy:**
Located on ridge west of the headwaters of Komakak Creek in T. 25 N., R. 12 E., Kateel River Meridian. Shown by Mayfield and Grybeck (1978) as locality 55 and accurate to within 2000 ft. (600 m).

**Commodities:**
**Main:** Cu **Other:**

**Ore minerals:** Chalcopyrite, malachite

**Gangue minerals:**

**Geologic description:**
Rare massive sulfide samples containing chalcopyrite and malachite weathering from dolomite near contact with quartzite.

**Alteration:**

**Workings/Exploration:**

**Age:**

**Deposit model:**
Kipushi (?)

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**
32c

**Production:** No **Status:** Inactive

**Production notes:**

**Reserves:**

**Additional comments:**
Located within Gates of the Arctic National Park.

**References:**
Mayfield and Grybeck, 1978

**Primary reference:** Mayfield and Grybeck, 1978

**Reporter:** K.R. Leonard (USGS); R.L. Elliott (USGS); J.M. Schmidt (USGS); S.W. Nelson (USGS retired)

**Reporter affiliation:**

**Last report date:** 4/28/97

# Site: Unnamed

**Type:** Occurrence

**ARDF no.** AR055

**Latitude:** 67.53 **Quadrangle:** AR C-1

**Longitude:** 156.44

**Location description and accuracy:**
Location northwest of Blind Pass Mountain in T. 25 N., R. 11 E., Kateel River Meridian. Shown in Mayfield and Grybeck (1978) as locality 57 and is accurate to within 2000 ft. (600 m).

**Commodities:**
**Main:** Cu **Other:**

**Ore minerals:** Azurite, malachite

**Gangue minerals:** Pyrite, quartz

**Geologic description:**
Malachite, azurite and pyrite in quartz vein.

**Alteration:**

**Workings/Exploration:**

**Age:**

**Deposit model:**

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

**Production:** No **Status:** Inactive

**Production notes:**

**Reserves:**

**Additional comments:**
Located within Gates of the Arctic National Park.

**References:**
Mayfield and Grybeck, 1978

**Primary reference:** Mayfield and Grybeck, 1978

**Reporter:** K.R. Leonard (USGS), R.L. Elliott (USGS), J.M. Schmidt (USGS)

**Reporter affiliation:**

**Last report date:** 10/26/92

# Site: Ambler River Headwaters

**Type:** Occurrence

**ARDF no.** AR056

**Latitude:** 67.59 **Quadrangle:** AR C-2

**Longitude:** 156.52

**Location description and accuracy:**
Location is near headwaters of the Ambler River and south of Nakmaktuak Pass in T. 25 N., R. 10 E., Kateel River Meridian. Shown as locality 60 in Mayfield and Grybeck (1978) and accurate to within 2000 ft. (600 m).

**Commodities:**
**Main:** Cu **Other:**

**Ore minerals:** Azurite, chalcopyrite, malachite

**Gangue minerals:**

**Geologic description:**
Malachite, azurite and chalcopyrite in quartz veins cutting marble near contact with phyllite; traceable for at least 50 m.

**Alteration:**

**Workings/Exploration:**

**Age:**

**Deposit model:**
Polymetallic vein?

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**
19a?

**Production:** No **Status:** Inactive

**Production notes:**

**Reserves:**

**Additional comments:**
Other occurrences nearby consist of malachite in quartz veins cutting marble at a thrust contact and of malachite in conglomerate.

**References:**
Mayfield and Grybeck, 1978

**Primary reference:** Mayfield and Grybeck, 1978

**Reporter:** K.R. Leonard (USGS), R.L. Elliott (USGS), J.M. Schmidt (USGS)

**Reporter affiliation:**

**Last report date:** 10/26/92

# Site: Unnamed

**Type:** Occurrence

**ARDF no.** AR057

**Latitude:** 67.55 **Quadrangle:** AR B-3

**Longitude:** 156.61

**Location description and accuracy:**
Located near headwaters of the Ambler River in T. 25 N., R. 10 E., Kateel River Meridian. Shown as locality 58 in Mayfield and Grybeck (1978) and accurate to within 3000 ft. (1000 m).

**Commodities:**
**Main:** Cu, Pb, Zn **Other:** Zr

**Ore minerals:**

**Gangue minerals:**

**Geologic description:**
Finely disseminated black minerals in 6 ft. (2 m) thick granitic dike cutting calcareous schist.

**Alteration:**

**Workings/Exploration:**
Sample analysis indicated 200 ppm Cu, 200 ppm Pb, 2000 ppm Zn, 1000 ppm Zr.

**Age:**

**Deposit model:**
Skarn?

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

**Production:** No **Status:** Inactive

**Production notes:**

**Reserves:**

**Additional comments:**
Located in Gates of the Arctic National Park.

**References:**
Mayfield and Grybeck, 1978

**Primary reference:** Mayfield and Grybeck, 1978

**Reporter:** S.W. Nelson (USGS retired)

**Reporter affiliation:**

**Last report date:** 5/12/97

# Site: Unnamed

**Type:** Occurrence

**ARDF no.** AR058

**Latitude:** 67.62 **Quadrangle:** AR C-3

**Longitude:** 157.22

**Location description and accuracy:**
Located on hill on the west side of Imelyak River in T. 26 N., R. 7 E, Kateel River Meridian. Shown as locality 76 in Mayfield and Grybeck (1978) and is accurate to within 2000 ft. (600 m).

**Commodities:**
**Main:** Cu **Other:**

**Ore minerals:** Azurite, chalcopyrite, malachite

**Gangue minerals:**

**Geologic description:**
Malachite, azurite and chalcopyrite in small pods and on fracture surfaces in quartz conglomerate below horizontal thrust fault. May part of a suite of sedimentary rock-hosted base-metal deposits in the Brooks Range; see for example Schmidt (1997, p. 35-65) and Schmidt and Werdon (1993, p. 143).

**Alteration:**

**Workings/Exploration:**

**Age:**

**Deposit model:**
Polymetallic vein? see Schmidt, 1996; Schmidt and Werdon, 1993

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**
19a?

**Production:** No **Status:** Inactive

**Production notes:**

**Reserves:**

**Additional comments:**
Located on lands within the Noatak National Preserve.

**References:**
Mayfield and Grybeck, 1978; Schmidt, 1997; Schmidt and Werdon, 1993

**Primary reference:** Mayfield and Grybeck, 1978

**Reporter:** K.R. Leonard (USGS), R.L. Elliott (USGS), J.M. Schmidt (USGS), S.W. Nelson (USGS)

**Reporter affiliation:**

**Last report date:** 5/6/97

# Site: Imelyak River

**Type:** Occurrence

**ARDF no.** AR059

**Latitude:** 67.64 **Quadrangle:** AR C-3

**Longitude:** 157.22

**Location description and accuracy:**
Located near the head of the Imelyak River at approximately 2000 ft. (600 m) elevation in T. 26 N., R. 7 E., Kateel River Meridian. Shown as locality 75 in Mayfield and Grybeck (1978) and accurate to within 2000 ft. (600 m).

**Commodities:**
**Main:** Ba, Cu, Pb, Zn, **Other:**

**Ore minerals:** Azurite, barite, galena, malachite, sphalerite

**Gangue minerals:**

**Geologic description:**
Sphalerite and galena in shear zone less than 3 ft. (1 m) wide in limestone; and malachite, azurite, and barite vein less than 6 ft. (2 m) wide cutting limestone. Occurrence may be related to other sedimentary rock-hosted mineral occurrences in the Brooks Range; see for example Schmidt (1997, p.35-65) and Schmidt and Werdon (1993, p. 143).

**Alteration:**

**Workings/Exploration:**

**Age:**

**Deposit model:**
Polymetallic vein? (see Schmidt and Werdon, 1993, p. 143)

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**
19a?

**Production:** No **Status:** Inactive

**Production notes:**

**Reserves:**

**Additional comments:**
Located on land within the Noatak National Preserve.

**References:**
Mayfield and Grybeck, 1978; Schmidt, 1997; Schmidt and Werdon, 1993

**Primary reference:** Mayfield and Grybeck, 1978

**Reporter:** K.R. Leonard (USGS), R.L. Elliott (USGS), J.M. Schmidt (USGS), S.W. Nelson (USGS retired)

**Reporter affiliation:**

**Last report date:** 5/6/97

# Site: Tunukuchiak Creek

**Type:** Occurrence

**ARDF no.** AR060

**Latitude:** 67.7 **Quadrangle:** AR C-2

**Longitude:** 156.5

**Location description and accuracy:**
Arbitrary point chosen on Tunukuchiak Creek at 2000 ft. (600 m) elevation in T. 27 N. R. 10 E., Kateel River Meridian. Accurate to within 1 mi. (1.6 km) along creek.

**Commodities:**
**Main:** Au **Other:**

**Ore minerals:** Gold

**Gangue minerals:**

**Geologic description:**
Placer gold reported (Degenhart and others, 1978, p. 131) in setting similar to Midas Creek (AR061).

**Alteration:**

**Workings/Exploration:**
Surface placer

**Age:**

**Deposit model:**
Placer

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**
39a

**Production:** No **Status:** Inactive

**Production notes:**

**Reserves:**

**Additional comments:**
Located within Gates of the Arctic National Park.

**References:**
Degenhart and others, 1978

**Primary reference:** Degenhart and others, 1978

**Reporter:** K.R. Leonard (USGS), R.L. Elliott (USGS), J.M. Schmidt (USGS)

**Reporter affiliation:**

**Last report date:** 10/26/92

# Site: Midas Creek

**Type:** Occurrence

**ARDF no.** AR061

**Latitude:** 67.85 **Quadrangle:** AR D-1

**Longitude:** 156.22

**Location description and accuracy:**
Location is on Midas Creek at approximately 2800 ft. (700 m) elevation in T. 28 N., R. 12 E., Kateel River Meridian. Location shown as locality 63 in Mayfield and Grybeck (1978), and is accurate to within 2000 ft. (600 m).

**Commodities:**
**Main:** Au **Other:**

**Ore minerals:** Gold

**Gangue minerals:**

**Geologic description:**
Subeconomic concentration of small particles of gold in lower course of Midas Creek. Gravel in upper course of Midas Creek is not auriferous (Degenhart and others, 1978, p. 377-379).

**Alteration:**

**Workings/Exploration:**
U.S. Bureau of Mines sampling program ( Degenhart and others, 1978, p. 378, 381-382, and fig. 20) showed the following: Sample BM 668: piece of quartz in stream float contained 7.2 ppm Ag and 145 ppb Au. No bedrock source found; Sample BM 677: stream silt sample contained 510 ppb Au; Sample BM 678: stream silt sample contained 50 ppb Au.

**Age:**

**Deposit model:**
Stream placer

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**
39a

**Production:** Unknown **Status:** Inactive

**Production notes:**

**Reserves:**
No significant production or potential (Degenhart and others 1978).

**Additional comments:**
Located within Gates of the Arctic National Park.

**References:**
Brooks, 1925; Cobb. 1973; Degenhart and others, 1978; Mayfield and Grybeck, 1978; Smith, 1911; Smith and Mertie, 1930

**Primary reference:** Degenhart and others, 1978

**Reporter:** K.R. Leonard (USGS); R.L. Elliott (USGS); J.M. Schmidt (USGS); S.W. Nelson (USGS retired)
**Reporter affiliation:**

**Last report date:** 4/28/97

# Site: Ningyoyak Creek, EXP Prospect

**Type:** Prospect

**ARDF no.** AR062

**Latitude:** 67.88 **Quadrangle:** AR D-1

**Longitude:** 156.31

**Location description and accuracy:**
Located on ridge just north of Ningyoyak Creek in T. 29 N., R. 11 E., Kateel River Meridian. Location accurate to within 2000 ft. (600 m). Shown as locality 64 in Mayfield and Grybeck (1978).

**Commodities:**
**Main:** Cu **Other:**

**Ore minerals:** Chalcopyrite, malachite

**Gangue minerals:** Calcite, quartz

**Geologic description:**
Malachite and chalcopyrite in quartz-carbonate stringers (veins). Deposit crops out within an area 100 ft. by 75 ft. (30 m by 15 m), and is known depth to a depth of 10 ft (3 m)( Degenhart and others, 1978, p. 373-377).

**Alteration:**

**Workings/Exploration:**
Surface workings including trenching. Two rock samples reported by Degenhart and others (1978, p. 381-382), to assay 0.14% and 0.44% Cu respectively.

**Age:**

**Deposit model:**
Polymetallic vein (Schmidt and Werdon, 1993)

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**
19a?

**Production:** No **Status:** Inactive

**Production notes:**

**Reserves:**

**Additional comments:**

**References:**
Degenhart and others, 1978; Mayfield and Grybeck, 1978; Schmidt and Werdon, 1993

**Primary reference:** Mayfield and Grybeck, 1978

**Reporter:** K.R. Leonard (USGS), R.L. Elliott (USGS), J.M. Schmidt (USGS), S.W. Nelson (USGS retired)

**Reporter affiliation:**

**Last report date:** 4/28/97

# Site: Kav

**Type:** Occurrence

**ARDF no.** AR063

**Latitude:** 67.81 **Quadrangle:** AR D-2

**Longitude:** 156.76

**Location description and accuracy:**
Located west of Kavachurak Creek at approximately 2000 ft. (600 m) elevation in T. 28 N., R 9 E., Kateel River Meridian. Shown as locality 71 in Mayfield and Grybeck (1978) and accurate to within 2000 ft. (600 m).

**Commodities:**
**Main:** Ag, Cu, Sb **Other:**

**Ore minerals:** Azurite, chalcopyrite, malachite, tennantite, tetrahedrite

**Gangue minerals:**

**Geologic description:**
Four occurrences of Cu-Ag mineralization over 0.15 sq. mi. (200 m sq.) area. Most interesting occurrence is a fan-shaped area of mineralized talus ranging from 5 ft. to 10 ft. (1.3 m to 3 m) wide over a slope distance of 300 ft. (100 m) that consists of dolomite breccia containing masses of tetrahedrite, tennantite, chalcopyrite, malachite and azurite, mixed with fragments of quartz-vein material containing chalcopyrite. Other three occurrences are quartz veins generally 0.5 to 6 in. (1 cm to 12 cm) wide (one vein 1.5 ft. (0.3 m) wide) having strike lengths up to 75 ft. (15 m), and quartz stringer zones 40 ft. to 100 ft. (10.5 m to 30 m) wide, carrying tetrahedrite, chalcopyrite and malachite. Host rock is brecciated dolomite overlain by limestone and underlain by limestone, marble, and a sequence of phyllites; dolomite breccia forms prominent rust-colored hills (Degenhart and others, 1978, p.351-371).

**Alteration:**
Fe-staining

**Workings/Exploration:**
Two samples representative of mineralized dolomite breccia contained 18.6% Cu over 36 ft. (12 m) length, and 33.8% Cu over 50 ft. (17 m) length. One 4 to 6 in. (8 cm to 12 cm) wide quartz vein assayed 6.2% Cu, 0.62% Zn, 4.9 oz/ton (152g/ton) Ag, and 3.2% Sb. Another 40 ft. (13 m) chip sample across a stringer zone assayed 0.8% Cu, 0.48 oz/ton (15g/ton) Ag (Degenhart and others, 1978, p. 351-371).

**Age:**

**Deposit model:**
Kipushi?

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**
32c?

**Production:** No **Status:** Inactive

**Production notes:**

**Reserves:**

**Additional comments:**
Three minor occurrences of malachite are present along the north slope of the mountain immediately southwest of Kav occurrence. All occurrences are located within Noatak National Preserve.

**References:**
Degenhart and others, 1978; Mayfield and Grybeck, 1978

**Primary reference:** Degenhart and others, 1978

**Reporter:** K.R. Leonard (USGS), R.L. Elliott (USGS), J.M. Schmidt (USGS)

**Reporter affiliation:**

**Last report date:** 10/26/92

# Site: Unnamed

**Type:** Occurrence

**ARDF no.** AR064

**Latitude:** 67.84 **Quadrangle:** AR D-2

**Longitude:** 156.81

**Location description and accuracy:**
Located near the mouth of Kavachurak Creek at 600 m elevation in T 28 N., R 9 E., Kateel River Meridian. Shown as locality 70 in Mayfield and Grybeck and accurate to within 2000 ft. (600 m).

**Commodities:**
**Main:** Cu, Pb, Zn **Other:** Mo, V

**Ore minerals:** Galena, malachite, sphalerite

**Gangue minerals:**

**Geologic description:**
Sphalerite, galena and malachite in small quartzite outcrop. Nearby black pyritiferous phyllite contains 1000 ppm V and 70 ppm Mo.

**Alteration:**

**Workings/Exploration:**

**Age:**

**Deposit model:**
Polymetallic vein? (see Schmidt and Werdon, 1993, p. 143)

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**
19a?

**Production:** No **Status:** Inactive

**Production notes:**

**Reserves:**

**Additional comments:**
Occurrence is within Noatak National Preserve.

**References:**
Mayfield and Grybeck, 1978; Schmidt and Werdon, 1993

**Primary reference:** Mayfield and Grybeck, 1978

**Reporter:** K.R. Leonard (USGS), R.L. Elliott (USGS), J.M. Schmidt (USGS)

**Reporter affiliation:**

**Last report date:** 10/26/92

# Site: Unnamed

**Type:** Occurrence

**ARDF no.** AR065

**Latitude:** 67.87 **Quadrangle:** AR D-3

**Longitude:** 157.04

**Location description and accuracy:**
Located in pass between small, unnamed hills south of the Noatak River in T. 29 N., R. 8 E., Kateel River Meridian. Shown as locality 67 in Mayfield and Grybeck (1978) and is accurate to within 2000 ft. (600 m).

**Commodities:**
**Main:** Cu **Other:**

**Ore minerals:** Azurite, chalcopyrite, malachite

**Gangue minerals:**

**Geologic description:**
Chalcopyrite, malachite and azurite coat fracture surfaces in quartzite. Nearby occurrences include a small gossan on limestone-phyllite outcrop that contains 1800 ppm Cu and 5 ppm Ag, and a small, malachite-bearing quartz vein that cuts marble.

**Alteration:**

**Workings/Exploration:**

**Age:**

**Deposit model:**
Polymetallic vein? (see Schmidt and Werdon, 1993, p. 143)

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**
19a?

**Production:** No **Status:** Inactive

**Production notes:**

**Reserves:**

**Additional comments:**
Occurrence is within Noatak National Preserve.

**References:**
Mayfield and Grybeck, 1978; Schmidt and Werdon, 1993

**Primary reference:** Mayfield and Grybeck, 1978

**Reporter:** K.R. Leonard (USGS), R.L. Elliott (USGS), J.M. Schmidt (USGS), S.W. Nelson (USGS retired)

**Reporter affiliation:**

**Last report date:** 5/4/97

## References Cited

Anderson, Eskill, 1945, Asbestos and jade occurrences in the Kobuk River region, Alaska: Alaska Territorial Department of Mines Pamphlet 3-R, 48 p.

Anderson, Eskill, 1947, Mineral occurrences other than gold deposits in northwest Alaska: Alaska Territorial Department of Mines Pamphlet 5-R, 48 p.

Berg, H.C., and Cobb, E.H., 1967, Metalliferous lode deposits of Alaska: U.S. Geological Survey Bulletin 1246, 254 p.

Bernstein, L.R., and Cox, D.P., 1986, Geology and sulfide mineralogy of the Number One ore body, Ruby Creek copper deposit, Alaska: Economic Geology, v. 81, p. 1675-1689.

Bliss, J.D, ed., 1992, Developments in deposit mineral deposit modeling: U.S. Geological Survey Bulletin 2004, 168 p.

Bottge, R.G., 1975, Impact of a natural gas pipeline on mineral and energy development in Alaska: U.S. Bureau of Mines Open File Report 20-75.

Brooks, A.H., 1914, The Alaska mining industry in 1913: U.S. Geological Survey Bulletin 592, p. 45-74.

Brooks, A.H., 1925, Alaska's mineral resources and production, 1923: U.S. Geological Survey Bulletin 773, p. 3-52.

Brosge', W.P., Reiser, H.N., and Tailleur, I.L., 1967, Copper analyses of selected samples, southwestern Brooks Range, Alaska: U.S. Geological Survey Open-File Report 274, 1 sheet.

Bundtzen, T.K., Swainbank, R.C., Clough, A.H., Henning, M.W., Charlie, K.M., 1995, Alaska's Mineral Industry: Alaska Division of Geological and Geophysical Surveys Special Report 50, 72 p.

Cobb, E.H., 1972, Metallic mineral resources map of Ambler River quadrangle, Alaska: U.S. Geological Survey Miscellaneous Field Studies Map MF 454, 1 sheet. scale 1:250,000.

Cobb, E.H., 1973, Placer deposits of Alaska: U.S. Geological Survey Bulletin 1374, 213p.

Cobb, E.H., 1975, Summary of references to mineral occurrences (other than mineral fuels and construction materials) in northern Alaska: U.S. Geological Survey Open-File Report 75-628.

Cobb, E.H., and Mayfield, C.F., 1981, Summaries of data on lists of references to metallic and selected nonmetallic mineral occurrences in the Ambler River quadrangle, Alaska: U.S. Geological Survey Open-File Report 81-570A, 13p.

Cox, D.P., and Singer, D.A., 1986, Mineral deposit models: U.S. Geological Survey Bulletin 1693, 379 p.

Degenhart, C.E., Griffs, R.J., McQuat, J.F., and Bigelow, C.G., 1978, Mineral studies of the western Brooks Range: U.S. Bureau of Mines Open File Report 103-78, 588p.

Dillon, J.T., Pessel, G.H., Chen, J.H., and Veach, N.C., 1979, Tectonic and economic significance of late Devonian and late Proterozoic U-Pb zircon ages from Brooks Range, Alaska in Short Notes on Alaskan Geology, 1978: Alaska Division of Geological and Geophysical Surveys, Geologic Report 61, p. 36-41.

Eakins, G.R., Bundtzen, T.K., Lueck, L.L. Green, C.B., Gallagher, J.L., and Robinson, M.S., 1985, Alaska mineral industry 1984: Alaska Division of Geological and Geophysical Surveys, Special Report 38, 57p.

Ellerseick, I.F., 1978, Analytical results for stream sediment geochemical samples Ambler River quadrangle, Alaska: U.S. Geological Survey Open-File Report 120 C, 6 sheets.

Fritts, C.E., 1970, Geology and geochemistry of the Cosmos Hills, Ambler River and Shungnak quadrangles, Alaska: Alaska Division of Mines and Geology Report 39, 69 p.

Gilbert, W.G., Wiltse, M.A., Carden, J.R., Forbes, R.B., and Hackett, S.W., 1977, Geology of Ruby ridge, southwestern Brooks Range, Alaska: Alaska Division of Geological and Geophysical Surveys, Geologic Report 58, 16 p.

Heide, H.E., Wright, W.S., and Rutledge, F.A., 1949, Investigations of the Kobuk River asbestos deposits, Kobuk district, northwest Alaska: U.S. Bureau of Mines Report of Investigations RI 4414, 25 p.

Grybeck, Donald, and Nokleberg, W.J., 1979, Metallogeny of the Brooks Range, Alaska, in Johnson, K.M., and Williams, J.R., eds., The United States Geological Survey in Alaska: Accomplishments during 1978: U.S. Geological Survey Circular 804-B, p. B19-B22.

Hitzman, M.W., 1986, Geology of the Ruby Creek copper deposit, southwestern Brooks Range, Alaska: Economic Geology, vol. 81, p. 1644-1674.

Hitzman, M.W., Proffett, J.M., Schmidt, J.M., and Smith, T.E., 1986, Geology and mineralization of the Ambler District, northwestern Alaska: Economic Geology, v. 81, p. 1592-1618.

Hitzman, M.W., Smith, T.E., and Proffett, J.M., Jr., 1982, Bedrock geology of the Ambler district, southwestern Brooks Range, Alaska: Alaska Division of Geological and Geophysical Surveys Geologic Report 75, 2 sheets, scale 1:100,000.

Kurtak, J.M., Hicks, R.W., Werdon, M.B., Meyer, M.P., and Mull, C.G., 1995, Mineral investigations in the Colville mining district and southern National Petroleum Reserve in Alaska: U.S. Bureau of Mines Open-File Report 8-95, 180 p.

Matzko, J.J., and Freeman, V.L., 1963, Summary of reconnaissance for uranium in Alaska, 1955: U.S. Geological Survey Bulletin 1155, p. 33-49.

Mayfield, C.F., and Grybeck, Donald, 1978, Mineral occurrences and resources map of the Ambler River quadrangle, Alaska: U.S. Geological Survey Open-File Map 78-120 I, 1 sheet, scale 1:250,000.

Reed. Irving, 1931, Report on the placer deposits of the upper Kobuk goldfields: Alaska Territorial Department of Mines, unpublished report, 33 p.

Runnels, D.D., 1969, The mineralogy and sulfur isotopes of the Ruby Creek copper prospect, Bornite, Alaska: Economic Geology, v. 64, p. 75-90.

Schmidt, J.M., 1981, Volcanogenic massive sulfide deposition in a rifted continental margin: the Arctic Camp deposit, southwestern Brooks Range, Alaska [abs.]: Geological Society of America Annual Meeting, Program with Abstracts, v. 13, p. 548.

Schmidt, J.M., 1983, Geology and geochemistry of the Arctic prospect, Ambler district, Alaska: unpublished Ph.D. dissertation, Stanford University, 253 p.

Schmidt, J.M., 1986, Stratigraphic setting and mineralogy of the Arctic volcanogenic massive sulfide prospect, Ambler District, Alaska: Economic Geology, vol. 81, p. 1619-1643.

Schmidt, J.M., 1988, Mineral and whole-rock compositions of seawater-dominated hydrothermal alteration at the Arctic volcanogenic massive sulfide prospect, Alaska: Economic Geology, v. 83, p. 822-842.

Schmidt, J.M., 1997, Shale-hosted Zn-Pb-Ag and barite deposits of Alaska, in Goldfarb, R.J., and Miller, L.D., eds., Mineral deposits of Alaska: Economic Geology Monograph 9, p. 35-65.

Schmidt, J.M., and Werdon, M.B., 1993, Clastic-hosted stratiform, vein/breccia and disseminated Zn-Pb-Ag deposits of the northwestern Brooks Range, Alaska: are they different expressions of dewatering of the same source basin? [abs.]: Geological Society of America, Abstracts with Programs, v. 24, p. 143.

Sichermann, H.A., Russell, R.H., and Fikkan, P.R., 1976, The geology and mineralization of the Ambler district, Alaska: unpublished address to the Pacific Northwest Metals and Minerals Convention, American Institute of Mining Engineering, Cour d'Alene, Idaho, April 9, 22 p.

Smith. P.S., 1911, The Alatna-Noatak region: U.S. Geological Survey Bulletin 520, p. 315-338.

Smith. P.S., 1913, The Noatak-Kobuk region, Alaska: U.S. Geological Survey Bulletin 536, 157p.

Smith, P.S., 1934, Mineral industry of Alaska in 1933: U.S. Geological Survey Bulletin 864-A, 94 p.

Smith, P.S., and Eakin, H.M., 1911, The Shungnak region, Kobuk Valley: U.S. Geological Survey Bulletin 480, p. 271-305.

Smith, P.S., and Mertie, J.B., Jr., 1930, Geology and mineral resources of northwestern Alaska: U.S. Geological Survey Bulletin 815, 315 p.

U.S. Bureau of Mines, 1973, Overlays showing mineral deposit locations, principal minerals, and number and type of claims: 153 sheets.

U.S. Geological Survey, 1996, Descriptions of the fields used to report brief descriptions of mines, prospects, and mineral occurrences in Alaska and Hawaii: U.S. Geological Survey Open-File Report 96-79, 5 p.

Wiltse, M.A., 1975, Geology of the Arctic Camp prospect, Ambler River quadrangle, Alaska: Alaska Division of Geological and Geophysical Surveys, Open File Report 60, 43 p., 1 sheet.