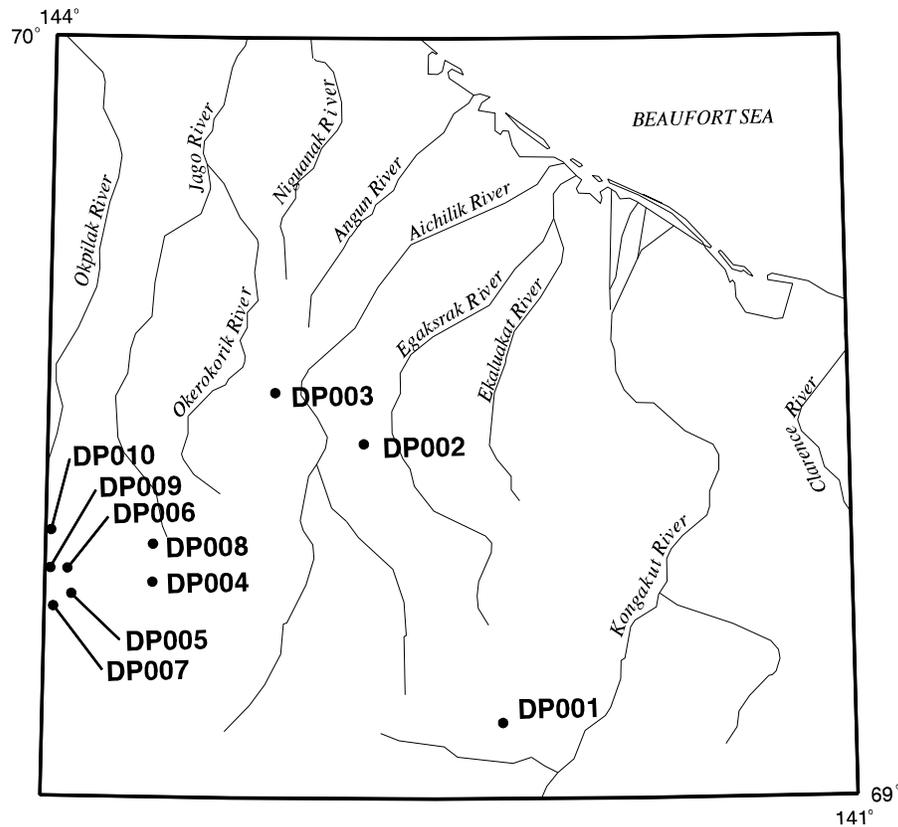


Demarcation Point quadrangle

This publication is one in the series, the Alaska Resource Data File (ARDF) of the U.S. Geological Survey. The ARDF is an information file on mines, prospects, and mineral occurrences in Alaska exclusive of sand and gravel, coal, and oil and gas. Description of the mineral occurrences shown on the accompanying figure follow. See U.S. Geological Survey (1996) for description of the information content of each field in the records.



Distribution of mineral occurrences in the Demarcation Point 1:250,000-scale quadrangle, Alaska

The Demarcation Point quadrangle contains 10 known mineral occurrences. No mineral production is known from the quadrangle. The closest known mineral production is a placer-gold mine about 30 kilometers (20 mi) east of the quadrangle at Sheep Creek in the Yukon Territory. The mine at Sheep Creek was purchased by Parks Canada and is part of a national park that incorporates most of the land adjacent to the quadrangle in Canada.



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



Most of the mineral occurrences in the Demarcation Point quadrangle were reported from USGS mapping activities prior to 1975. Little work on mineral resources has been carried out in the quadrangle since establishment of the Arctic National Wildlife Refuge. The Refuge incorporates most the quadrangle and all the mountainous area within the quadrangle. Nearly all the area prospective for lode deposits in the quadrangle is in wilderness status and hence unavailable for claiming or leasing which likely explains the apparent lack of industry activity.

Updates to the file are based mainly on improved understanding of framework geology. A comprehensive geologic map of the quadrangle (Reiser and others, 1980) and subsequent work has added much to the structural geology and stratigraphy of this remote and little-studied quadrangle since the mineral occurrences were first reported.

This and related reports are accessible through the USGS World Wide Web site <http://www-mrs-ak.wr.usgs.gov/ardf>. Comments or information regarding corrections or missing data, or requests for digital retrievals should be directed to the author(s) of this compilation.

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Site: Bathtub Ridge**Type:** Occurrence**ARDF no.** DP001**Latitude:** 69.1**Quadrangle:** DP A-3**Longitude:** 142.3**Location description and accuracy:**

Locality 10 of Grybeck (1977, p. 42). Accurate to within 900 meters (3,000 ft).

Commodities:**Main:** Mn**Other:****Ore minerals:** Manganese minerals, pryrolusite(?), psilomelane(?), rhodochrosite(?)**Gangue minerals:****Geologic description**

Roughly 53 meters (175 ft) of highly manganiferous beds crop out in the middle of the pebble-shale member of the Lower Cretaceous Kongakut Formation, which is 158 meters (520 ft) thick at this locality. This manganiferous section is black, with small pellets and thin beds of sedimentary manganese carbonates; exact chemical composition of this interval is not known. The term Kongakut Formation is no longer widely used; the interval described here is currently referred to as the pebble shale unit and is widely recognized in the subsurface of northern Alaska. The pebble shale unit depositionally overlies the Kemik Sandstone of Early Cretaceous age. At Bathtub Ridge the pebble shale unit depositionally underlies siltstone (see Bird and Molenaar, 1987, Figure 5.6 A), whereas north of Bathtub Ridge, the pebble shale unit depositionally underlies shales of Early Cretaceous age, some of which are radioactive and tuffaceous.

Alteration:**Workings/Exploration:**

Analysis of samples indicated about 5% Mn.

Age:

Age of the host rocks is Early Cretaceous.

Deposit model:

Sedimentary Mn

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

34b

Production: No**Status:** Inactive**Production notes:****Reserves:****Additional comments:****References:**

Barker, 1978 (USBM OF 63-78), p. 21; Bird and Molenaar, 1987; Cobb and others, 1981 (OFR 81-767B), p. A14; Detterman and others, 1975 (P 886), p. 23-24; Grybeck, 1977 (OF 77-166C), p. 42

Primary reference: Detterman and others, 1975.**Reporter:** Powers, M.T. (Huber, D.F.); Kelley, J.S.**Reporter affiliation:** USGS**Last report date:** 9/13/96

Site: Unnamed**Type:** Occurrence**ARDF no.** DP002**Latitude:** 69.47**Quadrangle:** DP B-4**Longitude:** 142.82**Location description and accuracy:**

Locality 17 of Brosge' and Reiser (1976) and locality 9 of Grybeck (1977, p. 42). Accurate to within 1,500 meters (5,000 ft).

Commodities:**Main:** Cu**Other:****Ore minerals:** Chalcopyrite**Gangue minerals:** Quartz**Geologic description:**

Chalcopyrite is present in quartz veins in mafic volcanic rocks. These observations were likely made in rocks mapped as Precambrian volcanoclastic rocks of Redwacke Creek (Reiser and others, 1980). Potassium-argon dating of these rocks indicates Early Jurassic to Late Triassic ages which are not consistent with mapped field relations (Reiser and others, 1980).

Alteration:**Workings/Exploration:****Age:**

Unknown

Deposit model:

Mafic-hosted Cu

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992)**Production:** No**Status:** Inactive**Production notes:****Reserves:****Additional comments:**

Marker beds used in detailed mapping along the U.S.-Canada border consist of volcanoclastic rocks that are Ordovician or Cambrian in age and likely stratigraphically equivalent to the Whale Mountain volcanics that contain a Late Cambrian fauna in their basal part (Kelley and others, 1992). Although the age of the volcanoclastic rocks of Redwacke Creek is uncertain and presumed to be Precambrian by Reiser and others (1980), work by Lane and others (1995) and Kelley and others (1992) raises the possibility that the volcanoclastic rocks that have reported mineralization are Cambrian to Ordovician in age. If so, the mineralization in them is not akin to mineralization in Precambrian volcanics in the Sadlerochit and Shublik Mountains.

References:

Cobb and others, 1981 (OFR 81-767B), p. A13; Brosge' and Reiser, 1976 (OF 76-539), loc. 17; Grybeck, 1977 (OF 77-166C), p. 42; Kelley and others, 1995; Reiser and others, 1980; Kelley and others, 1992; Lane and others, 1995

Primary reference: Brosge' and Reiser, 1976**Reporter:** Powers, M.T. (Huber, D.F.); Kelley, J.S.**Reporter affiliation:** USGS**Last report date:** 9/13/96

Site: Aichilik River**Type:** Occurrence**ARDF no.** DP003**Latitude:** 69.53**Quadrangle:** DP C-4**Longitude:** 143.15**Location description and accuracy:**

Deposit along the Aichilik River. Accurate to within 1,500 meters (5,000 ft).

Commodities:**Main:** Rare Earth Elements**Other:****Ore minerals:****Gangue minerals:****Geologic description:**

Efflorescent salts coat outcrops of Kingak Shale and accumulate along the margins of ephemeral pools at the foot of cut banks.

Alteration:**Workings/Exploration:**

High yttrium (300 ppm) and ytterbium (15 ppm) found in sample of efflorescent salt that is mainly aluminum sulfate.

Age:

Host rock is Jurassic and Early Cretaceous in age.

Deposit model:

Sedimentary

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992)**Production:** No**Status:** Inactive**Production notes:****Reserves:****Additional comments:**

Sulfosalts similar to those described here are present in outcrops of the Hue Shale, Gamma-ray, and Inoceramus zones (Cretaceous units that lie above the Kingak Shale). Sulfosalt blooms similar to those described here are more abundant in these units than in the Kingak Shale. The Kingak Shale can be difficult to discriminate from these units, especially where these shales are structurally complex and poorly exposed (J.S. Kelley, USGS, personal observation).

References:

Cobb, 1972 (MF-462); Cobb, 1975 (OFR 75-628), p.57; Tourtelot and Tailleux, 1971, p. 33, 61

Primary reference: Cobbs, 1972, MF-462**Reporter:** Powers, M.T. (Huber, D.F.); Kelley, J.S.**Reporter affiliation:** USGS**Last report date:** 9/13/96

Site: Jago River**Type:** Occurrence**ARDF no.** DP004**Latitude:** 69.28**Quadrangle:** DP B-5**Longitude:** 143.6**Location description and accuracy:**

Locality 38 of Brosge' and Reiser (1976) and locality 7 of Grybeck (1977).
Accurate to within 1,500 meters (5,000 ft).

Commodities:**Main:** Cu**Other:****Ore minerals:** Azurite, malachite**Gangue minerals:****Geologic description:**

Malachite and azurite are present in calcareous hornfels adjacent to the Jago stock. The host rock is Cambrian sandstone near the contact with the granite. An isolated stock of granite of Early Devonian age intrudes the Neroukpuk Schist of Leffingwell (1919) near the headwaters of the Jago River; although not so indicated on the geologic map of Reiser and others (1980), this probably is the Jago stock as described here. The same map unit, the Neroukpuk Schist of Leffingwell (1919) was examined along the U.S.-Canada border where it consists of arkosic sandstone in which labile clasts, including most of the potassium feldspar grains, have been altered to white micas, quartz, and other minerals (Kelley and others, 1995). This unit likely is Cambrian in age along the border (Lane and others, 1995) rather than Precambrian as indicated by Reiser and others (1980).

Alteration:**Workings/Exploration:****Age:**

Probably Early Devonian

Deposit model:

Lode; disseminated, possibly skarn

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992)**Production:** No**Status:** Inactive**Production notes:****Reserves:****Additional comments:****References:**

Cobb and others, 1981, p. A13; Brosge' and Reiser, 1976; Grybeck, 1977, p. 42; Kelley and others, 1995; Reiser and others, 1980; Lane and others, 1995.

Primary reference: Brosge' and Reiser, 1976**Reporter:** Powers, M.T. (Huber, D.F.); Kelley, J.S.**Reporter affiliation:** USGS**Last report date:** 9/13/96

Site: Bravo Glacier**Type:** Occurrence**ARDF no.** DP005**Latitude:** 69.27**Quadrangle:** DP B-5**Longitude:** 143.9**Location description and accuracy:**

Locality 35 of Brosge' and Reiser (1976) and locality 5 Grybeck (1977).
Accurate to within 1,500 meters (5,000 ft).

Commodities:**Main:** Ag, Au**Other:****Ore minerals:** Gold**Gangue minerals:** Pyrite**Geologic description:**

Traces of gold and silver are found in the pyritic zone of the granite of the
Okpilak batholith.

Alteration:**Workings/Exploration:****Age:****Deposit model:**

Lode; disseminated

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992)**Production:** No**Status:** Inactive**Production notes:****Reserves:****Additional comments:****References:**

Cobb and others, 1981, p. A14; Brosge' and Reiser, 1976; Grybeck, 1977, p. 42

Primary reference: Brosge' and Reiser, 1976**Reporter:** Powers, M.T. (Huber, D.F.); Kelley, J.S.**Reporter affiliation:** USGS**Last report date:** 9/13/96

Site: Arey Creek Tributary**Type:** Occurrence**ARDF no.** DP006**Latitude:** 69.3**Quadrangle:** DP B-5**Longitude:** 143.92**Location description and accuracy:**

Locality 2 of Grybeck (1977). Accurate to within 1,500 meters (5,000 ft).

Commodities:**Main:** Cu, Pb, Zn(?)**Other:****Ore minerals:** Chalcopyrite, galena, sphalerite(?)**Gangue minerals:** Quartz**Geologic description:**

Galena, sphalerite(?), and chalcopyrite found in highly deformed pods or stringers of vein quartz, and schistose rock a few centimeters (inches) wide follow sheared contacts between granite and quartz monzonite dikes at two localities.

Alteration:**Workings/Exploration:****Age:****Deposit model:**

Lode; Felsic-plutonic related veins

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992)**Production:** No**Status:** Inactive**Production notes:****Additional comments:****References:**

Cobb and others, 1981, p. A13; Grybeck, 1977, p. 42; Sable, 1965, p. 207-208

Primary reference: Grybeck, 1977**Reporter:** Powers, M.T. (Huber, D.F.); Kelley, J.S.**Reporter affiliation:** USGS**Last report date:** 9/13/96

Site: Unnamed**Type:** Occurrence**ARDF no.** DP007**Latitude:** 69.25**Quadrangle:** DP B-5**Longitude:** 143.97**Location description and accuracy:**

Locality 34 of Brosge' and Reiser (1976) and locality 4 of Grybeck (1977).
Accurate to within 900 meters (3,000 ft).

Commodities:**Main:** Mo**Other:****Ore minerals:** Molybdenite**Gangue minerals:****Geologic description:**

Molybdenite is present at contacts of quartz veins with granite of the Okpilak batholith.

Alteration:**Workings/Exploration:****Age:**

Early Devonian(?)

Deposit model:

Lode; Felsic plutonic-related Mo

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992)**Production:** No**Status:** Inactive**Production notes:****Reserves:****Additional comments:****References:**

Cobb and others, 1981, p. A14; Brosge' and Reiser, 1976; Grybeck, 1977, p. 42

Primary reference: Brosge' and Reiser, 1976**Reporter:** Powers, M.T. (Huber, D.F.); Kelley, J.S.**Reporter affiliation:** USGS**Last report date:** 9/13/96

Site: Hubley Creek**Type:** Occurrence**ARDF no.** DP008**Latitude:** 69.33**Quadrangle:** DP B-5**Longitude:** 143.6**Location description and accuracy:**

Accurate to within 1.6 kilometers (1 mi).

Commodities:**Main:** Cu**Other:****Ore minerals:** Chalcopyrite**Gangue minerals:****Geologic description:**

Chalcopyrite found in quartz in sheared zones parallel to bedding in lower part of Neruokpuk Formation. Rocks in this area were mapped as the Neruokpuk Schist of Leffingwell (1919) by Reiser and others (1980). These rocks are likely Cambrian in age (Lane and others, 1995).

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:**

Cobb and others, 1981, p. A13; Grybeck, 1977, p. 42; Lane and others, 1995;
Reiser and others, 1980

Primary reference: Cobb and others, 1981**Reporter:** Schmidt, J.M.; Kelley, J.S.**Reporter affiliation:** USGS**Last report date:** 9/15/96

Site: Unnamed**Type:** Occurrence**ARDF no.** DP009**Latitude:** 69.3**Quadrangle:** DP B-5**Longitude:** 143.98**Location description and accuracy:**

Locality 36 of Brosge' and Reiser (1976). Accurate to within 1.6 kilometers (1 mi).

Commodities:**Main:** F**Other:****Ore minerals:****Gangue minerals:** Fluorite**Geologic description:**

Fluorite is present in greisen in granite of the Okpilak batholith

Alteration:**Workings/Exploration:****Age:****Deposit model:**

Felsic-plutonic related greisen

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992)**Production:****Status:****Production notes:****Reserves:****Additional comments:****References:**

Cobb and others, 1981, p. A14; Grybeck, 1977, p. 42; Brosge' and Reiser, 1976

Primary reference: Brosge' and Reiser, 1976**Reporter:** Schmidt, J.M.; Kelley, J.S.**Reporter affiliation:** USGS**Last report date:** 9/15/96

Site: Unnamed**Type:** Occurrence**ARDF no.** DP010**Latitude:** 69.35**Quadrangle:** DP B-5**Longitude:** 143.98**Location description and accuracy:**

Locality 28 of Brosge' and Reiser (1976). Accurate to within 1.6 kilometers (1 mi).

Commodities:**Main:** F**Other:****Ore minerals:****Gangue minerals:** Fluorite**Geologic description:**

Fluorite is present in small isolated granite body near the Okpilak batholith.

Alteration:**Workings/Exploration:****Age:****Deposit model:**

Felsic plutonic-related F

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992)**Production:****Status:****Production notes:****Reserves:****Additional comments:****References:**

Cobb and others, 1981, p. A14; Grybeck, 1977, p. 42; Brosge' and Reiser, 1976

Primary reference: Brosge' and Reiser, 1976**Reporter:** Schmidt, J.M.; Kelley, J.S.**Reporter affiliation:** USGS**Last report date:** 9/15/96

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