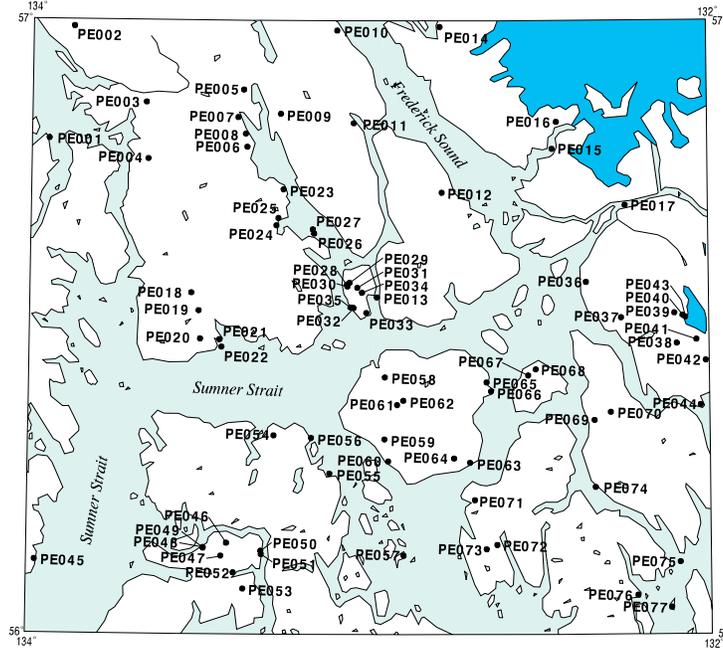


## U.S. Department of the Interior - U.S. Geological Survey

### Petersburg quadrangle

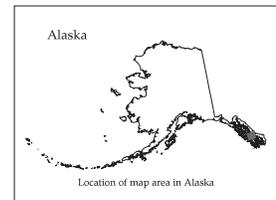
Descriptions of the mineral occurrences shown on the accompanying figure follow. See U.S. Geological Survey (1996) for a description of the information content of each field in the records. The data presented here are maintained as part of a statewide database on mines, prospects and mineral occurrences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



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

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

Donald J. Grybeck and Henry C. Berg  
U.S. Geological Survey  
4200 University Drive  
Anchorage, AK 99508-4667  
(907) 786-7424  
[dgrybeck@usgs.gov](mailto:dgrybeck@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.*



**Site name(s):** Unnamed (near mouth of Port Camden)

**Site type:** Prospects

**ARDF no.:** PE001

**Latitude:** 56.806

**Quadrangle:** PE D-6

**Longitude:** 133.949

**Location description and accuracy:**

Northeastern Kuiu Island. Consists of outcrops of Tertiary sandstone along the shoreline at the end of the peninsula that juts out between the mouth of Kadake Bay and the north end of Port Camden. Commonly referred to as the Port Camden occurrences. Coordinates are approximately the center of the radioactive occurrences. Localities 7 and 8 of Grybeck, Berg, and Karl (1984).

**Commodities:**

**Main:** Th, U

**Other:**

**Ore minerals:** Unidentified radioactive minerals

**Gangue minerals:**

**Geologic description:**

The Tertiary Kootznahoo Formation consists of light brown, poorly sorted, non-marine, dolomitic sandstone that contains clay clasts, carbonized wood fragments, and dolomitic concretions. The sandstone ranges from silty, fine-grained and thin-bedded to medium- and coarse-grained; it is partly conglomeratic, and medium- to thick-bedded. Siderite, magnetite, pyrite, and apatite are present in some lithologies. All carbonized wood fragments show radioactivity when tested in place. Readings range from 2 to 50 times background. One sample yields eU of 1300, plus-or-minus 400 ppm uranium, and gamma eU of 2300, plus-or-minus 700 ppm uranium. Samples from a four-inch-thick bed of fine-grained Tertiary sandstone contained 11 and 12 ppm uranium and up to 30 percent magnetite. (Description summarized from Eakins, 1975; Dickinson, 1979; Dickinson and Campbell, 1982; and Dickinson and Pierson, 1988.)

**Alteration:**

Unknown.

**Age of mineralization:**

Tertiary or younger based on age of the host rock, the Tertiary Kootznahoo Formation.

**Deposit model:**

Sandstone uranium (Cox and Singer, 1986; model 30c)

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

30c

**Production Status** No**Site Status:** Probably inactive**Workings/exploration:**

Block of 30 claims staked in 1976 and active until at least 1981 (U.S. Bureau of Mines, 1980). Little indication of any work since.

**Production notes:**

None

**Reserves:**

None

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

Eakins, 1975; Dickinson, 1979 (USGS OF 79-1427); U.S. Bureau of Mines, 1980; Dickinson and Campbell, 1982; Grybeck, Berg, and Karl, 1984; Dickinson and Pierson, 1988.

**Primary reference:** Dickinson, 1979 (USGS OF 79-1427); Dickinson and Campbell, 1982**Reporter(s):** H.C. Berg (Fullerton, California) and D.J. Grybeck (USGS)**Last report date:** 11/1/98

**Site name(s):** Unnamed (near Gunnuk Creek)

**Site type:** Prospect

**ARDF no.:** PE002

**Latitude:** 56.989

**Quadrangle:** PE D-6

**Longitude:** 133.879

**Location description and accuracy:**

Claims on upper Gunnuk Creek, northwestern Kupreanof Island, about three miles northeast of the town of Kake. Locality 9 of Grybeck, Berg, and Karl (1984). Location known only generally and coordinates are approximately the center of the claims.

**Commodities:**

**Main:** Au

**Other:**

**Ore minerals:**

**Gangue minerals:**

**Geologic description:**

Only information is that four lode claims were staked for gold in 1968; apparently not active since (U. S. Bureau of Mines, 1980; and State of Alaska unpublished Kardex mining claims file).

**Alteration:**

**Age of mineralization:**

**Deposit model:**

Only known to be claims for lode gold.

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

**Production Status** None

**Site Status:** Probably inactive

**Workings/exploration:**

Only information is that four lode claims were staked for gold in 1968; apparently not

active since (U. S. Bureau of Mines, 1980; and State of Alaska unpublished Kardex mining claims file).

**Production notes:**

No record of production and highly unlikely that there was any.

**Reserves:**

**Additional comments:**

**References:**

U.S. Bureau of Mines, 1980; Grybeck, Berg, and Karl, 1984.

**Primary reference:** Grybeck, Berg, and Karl, 1984

**Reporter(s):** H.C. Berg (Fullerton, California) and D.J. Grybeck (USGS)

**Last report date:** 11/1/98

**Site name(s):** Unnamed (near Hamilton Creek)

**Site type:** Occurrence

**ARDF no.:** PE003

**Latitude:** 56.866

**Quadrangle:** PE D-5

**Longitude:** 133.662

**Location description and accuracy:**

As first identified by Dickinson (1979), three samples were collected 'from a road-metal pit located near the center of the southern half of section 6, T. 58 S., R. 75 E, in the Petersburg D-5 quadrangle'. This is just south of Hamilton Creek. The quarry is shown on the current (1993 series) U. S. Forest Service, 1:63,360-scale road map for the quadrangle.

**Commodities:**

**Main:** U

**Other:**

**Ore minerals:** Carbonate fluorapatite

**Gangue minerals:**

**Geologic description:**

A sedimentary uranium deposit associated with chemically precipitated, marine phosphorite that contains carbonate fluorapatite as the uranium-bearing mineral (Dickinson, 1979). Fragments of laminated phosphate rock occur in white calcite veins in a fine grained, light to dark gray, laminated, apatite-bearing silty dolomite. Radioactivity reaches 20 times background in a 0.5 m thick bed. One sample of more highly radioactive rock indicated beta eU of 80, plus-or-minus 24 ppm uranium. Unit poorly exposed. Dickinson (1979) tentatively assigned the dolomite to the Permian Cannery Formation. More recent work by Brew and others (1984) indicates that the Cannery Formation is of Mississippian and Devonian age and by Karl (personal communication, 1998) indicates that the Cannery is probably Mississippian and Permian in age. Brew and others (1984), however, recently assign the rocks in the vicinity of the occurrence to the Permian Pybus Formation, a sequence of limestone, dolomite, and chert that outcrops widely on Kuiu and Kupreanof Islands.

**Alteration:**

**Age of mineralization:**

Permian based on age of host rock.

**Deposit model:**

Sedimentary phosphate (Cox and Singer, 1984; model 34c or 34d)

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

34c or 34d

**Production Status** None

**Site Status:** Probably inactive

**Workings/exploration:**

None apparently; occurrence exposed in a quarry for road metal.

**Production notes:**

None

**Reserves:**

None

**Additional comments:**

Likely that the Pybus Formation elsewhere in the vicinity has beds or lenses of marine phosphorite.

**References:**

Dickinson, 1979 (OF 79-1316); Brew, Ovenshine, Karl, and Hunt, 1984; Grybeck, Berg, and Karl, 1984.

**Primary reference:** Dickinson, 1979 (OF 79-1316)

**Reporter(s):** H.C. Berg (Fullerton, California) and D.J. Grybeck (USGS)

**Last report date:** 11/1/98

**Site name(s):** Unnamed (near Big John Bay)

**Site type:** Prospect

**ARDF no.:** PE004

**Latitude:** 56.774

**Quadrangle:** PE D-5

**Longitude:** 133.655

**Location description and accuracy:**

Group of about 100 claims about two miles south of the head of Big John Bay. Coordinates are for the approximate center of the claims (U. S Bureau of Mines, 1980 and unpublished Alaska Department of Natural Resources Kardex file). Locality 11 of Grybeck, Berg, and Karl (1984).

**Commodities:**

**Main:** Unknown

**Other:**

**Ore minerals:**

**Gangue minerals:**

**Geologic description:**

One hundred claims staked in 1978-1979; apparently not active since then. The country rocks in the area of these claims are Tertiary nonmarine sedimentary rocks, and extrusive and intrusive Quaternary or Tertiary basalt flows and rhyolite (Brew and others, 1984).

**Alteration:**

**Age of mineralization:**

**Deposit model:**

Unknown

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

**Production Status** None

**Site Status:** Probably inactive

**Workings/exploration:**

No record of exploration beyond the staking of the claims themselves.

**Production notes:**

Almost certainly none.

**Reserves:**

**Additional comments:**

**References:**

U.S. Bureau of Mines, 1980; Brew and others, 1984; Grybeck, Berg, and Karl, 1984.

**Primary reference:** U. S. Bureau of Mines, 1980

**Reporter(s):** H.C. Berg (Fullerton, California) and D.J. Grybeck (USGS)

**Last report date:** 11/1/98

**Site name(s): Northern Copper Company; Tower Arm Copper; Portage Bay Copper Company**

**Site type:** Prospect

**ARDF no.:** PE005

**Latitude:** 56.887

**Quadrangle:** PE D-5

**Longitude:** 133.373

**Location description and accuracy:**

Northern Kupreanof Island; on a southern spur of Kupreanof Mountain at an elevation of about 1350 feet in the center of the northern half of section 36, T. 57 S., R. 76 E. Prospect is heavily overgrown and is not easy to locate on the ground. Locality 12 of Grybeck, Berg, and Karl (1984).

**Commodities:**

**Main:** Cu, Zn

**Other:**

**Ore minerals:** Chalcopyrite, magnetite, pyrrhotite, and sphalerite.

**Gangue minerals:**

**Geologic description:**

Mineralization occurs as pods and irregular masses of magnetite, sphalerite, pyrrhotite, and chalcopyrite in a locally garnet-bearing, equigranular, pyroxene-rich porphyritic greenstone associated with minor coarse-grained marble. The older literature identifies the host rock as 'pyroxene granulite', but the lithology of the host rock and the origin of the deposit are enigmatic; the mineralized greenstone appears skarn-like locally. The sulfides are either interstitial to pyroxene in the greenstone or replace massive fine-grained greenstone. Drilling in the late 1970's by AMOCO Minerals (oral communication, 1981) indicate that the greenstone is underlain at shallow depth by green siliceous phyllite, which is in turn underlain by black carbonaceous argillite. Sulfides frequently occur in bands parallel to the compositional layering of the greenstone. Analyses of selected sulfide-bearing samples show major Cu and Zn commensurate with the visible mineralogy, less than 0.05 ppm Au and up to 5 ppm Ag. (Description synthesized from Wright and Wright, 1908, p. 41-142, Buddington, 1923, p. 70-72; Roehm, 1945 [DGGS IR 195-37]; Twenhofel and others, 1949, p. 37-38; personal communications from AMOCO Minerals who drilled the property in the late 1970's; and field work by the reporters that was summarized in Grybeck, Karl, and Berg, 1984.)

Brew and others (1984) mapped the country rocks in the vicinity as part of a regionally

extensive, undifferentiated Mesozoic volcanic unit.

**Alteration:**

Unclear.

**Age of mineralization:**

Unknown.

**Deposit model:**

An enigma, possibly a skarn (but probably not a volcanogenic massive sulfide deposit).

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

**Production Status** No

**Site Status:** Probably inactive

**Workings/exploration:**

Prospect active from 1900 to 1921 with several hundred feet of underground workings, and considerable trenching; a road was built part way to the prospect from the head of Duncan Canal. The prospect was restaked in 1978 and was drilled in 1978 and 1979; the results of this work have not been made public but the drill results were not encouraging (oral communication, AMOCO Minerals, 1980). There has apparently been no further surface work on the property through the summer of 1996.

**Production notes:**

None

**Reserves:**

None

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

Wright and Wright, 1908; Buddington, 1923; Roehm, 1945 (DGGs IR 195-37); Roehm, 1945 (DGGs IR 117-38); Twenhofel and others, 1949; Cobb, 1972 (OF 78-870); Cobb, 1972 (MF-415); Brew and others, 1984; Grybeck, Berg, and Karl, 1984.

**Primary reference:**

**Reporter(s):** H.C. Berg (Fullerton, California) and D.J. Grybeck (USGS)

**Last report date:** 11/1/98

**Site name(s): Taylor Creek****Site type:** Prospect**ARDF no.:** PE006**Latitude:** 56.794**Quadrangle:** PE D-5**Longitude:** 133.362**Location description and accuracy:**

Upper Duncan Canal area, west of the mouth of Towers Arm. Well-known locality about 1.5 miles from the mouth of Taylor Creek. Known to within 100 meters. Locality 13 of Grybeck, Berg, and Karl (1984).

**Commodities:****Main:** Ag, Cu, Pb, Zn**Other:****Ore minerals:** Chalcopyrite, galena, pyrite, sphalerite**Gangue minerals:****Geologic description:**

Irregular masses and disseminated grains of galena, sphalerite, pyrite, and chalcopyrite occur in dolomitic limestone. In the best exposures along Taylor Creek, pervasively disseminated pyrite, galena, and sphalerite occur over an area about 3 m wide by 7 m long in a brecciated zone. This zone occurs in a thinly laminated to phyllitic, light-gray and white, fine-grained dolomitic marble which overlies green crenulated muscovite-chlorite-calcite schist. The mineralization persists for approximately 100 m along the southwest bank of Taylor Creek. Maximum assay values in drill cores and outcrop samples collected by Kerns (1950) were 4.3% Zn, 0.95% Pb, and 1.2 ounces silver per ton. Several origins for the deposit has been suggested, none very convincingly. Spatially and possibly genetically associated with the Duncan Canal-Zarembo belt of massive sulfide mineralization defined by Berg and Grybeck (1980), and Berg (1981).

Brew, Ovenshine, Karl, and Hunt (1984) show that the host rocks are a small sliver of Upper Triassic Hyd Group that consists of felsic and intermediate volcanics, limestone, and argillite. Recent geologic mapping (Sue Karl, oral communication, 1998) indicate that Hyd Group rocks are much more extensive in the area.

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

Unclear; possibly Triassic based on analogy with other massive sulfide deposits in the Duncan-Zarembo belt defined by Berg and Grybeck, 1980.

**Deposit model:**

Tentatively some kind of volcanogenic massive sulfide deposit; possibly a replacement deposit or one that has been remobilized.

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

**Production Status** No

**Site Status:** Active

**Workings/exploration:**

Prospect known since at least 1904. Considerable activity during the 1940's, mainly restricted to surface sampling and some trenching and pitting (Fowler, 1948 [DGGs IR 195-2]; Fowler, 1948 [DGGs IR 117-5]; Roehm, 1946 [DGGs IR 195-41]; and Roehm, 1946 [DGGs IR 117-4]). The property has been intermittently active since. Kerns (1950) reported on extensive diamond drilling carried out by the U. S. Bureau of Mines in 1948 and the 14 trenches they dug on several areas of mineralization. At least one company active on the property in 1998.

**Production notes:**

None

**Reserves:**

None

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

Wright and Wright, 1908; Roehm, 1946 (DGGs IR 195-41); Roehm, 1946 (DGGs IR 117-4); Fowler, 1948 (DGGs IR 195-2); Fowler, 1948 (DGGs IR 117-5); Kerns, 1950; Cobb, 1972 (OF 78-870); Cobb, 1972 (MF-415); Berg and Grybeck, 1980; Berg, 1981; Grybeck, Berg, and Karl, 1984.

**Primary reference:** Kerns, 1950

**Reporter(s):** H.C. Berg (Fullerton, California) and D.J. Grybeck (USGS)

**Last report date:** 11/1/98

**Site name(s): Unnamed (near Towers Arm)****Site type:** Prospects**ARDF no.:** PE007**Latitude:** 56.84**Quadrangle:** PE D-5**Longitude:** 133.37**Location description and accuracy:**

Approximately the center of a large block of at least 492 claims that cover more than 30 square miles around upper Taylor Arm of Duncan Canal. Locality 14 of Grybeck, Berg, and Karl (1984); see that publication and U. S. Bureau of Mines (1980), for an outline of the claim block.

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

Numerous diamond drill holes were drilled widely on the claim block in 1978 and 1979 by AMOCO Minerals (including on the Northern Copper prospect, PE005, from a camp located on the southern end of the peninsula between Towers Arm and the North Arm of Duncan Canal. The target of the exploration was massive-sulfide, base-metal deposits and the drilling was specifically directed to airborne geophysical anomalies. Most if not all of the holes were devoid of significant metal values and only chalcopyrite in minor amounts was found. The geophysical anomalies largely proved to be associated with graphitic layers (oral communication, 1979, AMOCO minerals).

Brew and others (1984) mapped most of the area as undifferentiated Mesozoic rocks. However, recent mapping (Sue Karl, USGS, oral communication, 1998) suggests that some of the area probably includes Triassic Hyd Group rocks.

**Alteration:****Age of mineralization:****Deposit model:**

Unclear if significant mineralization was ever found.

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

**Production Status** No

**Site Status:** Probably inactive

**Workings/exploration:**

Numerous diamond drill holes were drilled widely on the claim block in 1978 and 1979 by AMOCO Minerals (including on the Northern Copper prospect , PE005, from a camp located on the southern end of the peninsula between Towers Arm and the North Arm of Duncan Canal. The target of the exploration was massive-sulfide, base-metal deposits and the drilling was specifically directed to airborne geophysical anomalies. Most if not all of the holes were devoid of significant metal values and the geophysical anomalies largely proved to be associated with graphitic layers (oral communication, 1979, AMOCO minerals).

**Production notes:**

None

**Reserves:**

**Additional comments:**

**References:**

Grybeck, Berg, and Karl, 1984.

**Primary reference:** Grybeck, Karl, and Berg, 1984

**Reporter(s):** H.C. Berg (Fullerton, California) and D.J. Grybeck (USGS)

**Last report date:** 11/1/98

**Site name(s): Ironton Group****Site type:** Prospect**ARDF no.:** PE008**Latitude:** 56.81**Quadrangle:** PE D-5**Longitude:** 133.34**Location description and accuracy:**

Description not entirely clear but the Ironton Group consisted of five claims staked along the shoreline of upper half of Tower Arm, probably on the west shore (Roehm, 1946 [IR 195-41]). Location known only to within two miles of shoreline but likely to be in section 19 or 30, T. 58 S., R. 76 E.

**Commodities:****Main:** Pb, Zn**Other:****Ore minerals:** Galena, pyrite, sphalerite**Gangue minerals:****Geologic description:**

Roehm (1945 [IR 195-41]) describes the prospects as a zone of mineralized schist that outcrops at high tide. Pyrite is disseminated and in narrow thin seams in the schist. Small specks of sphalerite and galena occur in some of the thicker seams. Recent geologic mapping (Sue Karl, oral communication, 1998) indicates that the rocks on the west side of Tower Arm definitely include Devonian schists and may include some of the Triassic Hyd Group that hosts volcanogenic massive-sulfide deposits in the region.

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

Unknown.

**Deposit model:**

Too little information to assign.

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):****Production Status** None

**Site Status:** Active

**Workings/exploration:**

An old obscure prospect that has hardly been mentioned in a half century. However, the area is probably presently under claim in one of the large claim blocks that have staked in the vicinity in the last several years as a result of renewed interest in the Duncan Canal area.

**Production notes:**

None

**Reserves:**

None

**Additional comments:**

**References:**

Roehm, 1946 (IR 195-41).

**Primary reference:** Roehm, 1946 (IR 195-41)

**Reporter(s):** H.C. Berg (Fullerton, California) and D.J. Grybeck (USGS)

**Last report date:** 11/1/98

**Site name(s): Silver Star****Site type:** Prospect**ARDF no.:** PE009**Latitude:** 56.84**Quadrangle:** PE D-4**Longitude:** 133.26**Location description and accuracy:**

About two miles west of Duncan Peaks, Portage Mountain, on Kupreanof Island. On the northwest side of an unnamed creek that flows into upper Duncan Canal, approximately on the boundary of sections 10 and 15 of T. 58 S., R. 77 E. at an elevation of about 400 feet. The prospect could not be located during USGS work in the area in the early 1980's. The location is based on old descriptions and is accurate only to within about a half mile. Locality 15 of Grybeck, Berg, and Karl (1984).

**Commodities:****Main:** Ag, Au**Other:****Ore minerals:** Chalcopyrite, gold, magnetite, and pyrite.**Gangue minerals:** Calcite, quartz**Geologic description:**

As described by Wright and Wright, (1905, p. 60) and Buddington (1923, p. 69), the deposit consists of thin quartz-calcite veins containing chalcopyrite, pyrite, and magnetite. The veins cut pyritic black schist that form bands in gneissoid diorite, slate, and greenstone that have been intruded by diorite and diabase dikes. Samples of the veins continued up to 0.4 ounces of gold per ton and 2 ounces of silver per ton.

As more recently mapping by Brew (1997 [OF 97-156-L]), the rocks in the vicinity consist of Mesozoic semischist and phyllite near a contact with Cretaceous phyllite.

**Alteration:****Age of mineralization:****Deposit model:**

Gold-quartz vein (?) (Cox and Singer, 1986; model 36a)

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

36a?

**Production Status** None

**Site Status:** Inactive

**Workings/exploration:**

Prospect was staked before 1905 and had small amount of exploration prior to 1921. Apparently dormant since; there is no record of recent claim activity and no obvious sign of recent surface activity.

**Production notes:**

Probably none

**Reserves:**

**Additional comments:**

**References:**

Wright and Wright, 1905; Buddington, 1923; Cobb, 1972 (OF 78-870); Cobb, 1972 (MF-415); Grybeck, Berg, and Karl, 1984; Brew, 1997 (USGS OF 97-156-L).

**Primary reference:** Buddington, 1923

**Reporter(s):** H.C. Berg (Fullerton, California) and D.J. Grybeck (USGS)

**Last report date:** 11/1/98

**Site name(s): Unnamed (vicinity Kane Peak)****Site type:** Occurrences**ARDF no.:** PE010**Latitude:** 56.984**Quadrangle:** PE D-4**Longitude:** 133.097**Location description and accuracy:**

Well known mafic-ultramafic body centered about 13 miles north-northwest of Petersburg. Consists of slightly elongate pluton about two and a half square miles in outcrop that extend from just east of Kane Peak northeast to exposures for about a mile along the shoreline southeast of Cape Strait. The coordinates above are approximately the center of the body. Locality 16 and 17 of Grybeck, Berg, and Karl (1984). Often informally referred to as the Kane Peak deposit, or ultramafic complex.

**Commodities:****Main:** Cr?, Fe?, Pt-group?**Other:****Ore minerals:** Chalcopyrite, chromite, magnetite, pentlandite, and pyrrhotite (but see geologic description below)**Gangue minerals:****Geologic description:**

Kane Peak is a classic 'zoned' or Alaska-type mafic-ultramafic complex with a dunite-wehrlite (olivine-clinopyroxene peridotite) core bordered by a hornblende shell about 300 feet thick. About 80% of the body is dunite and wehrlite that grade into one another. Small-scale cumulus layering is present but the body is poorly exposed and its overall structure is uncertain. The body probably has steeply dipping contacts and extends under Frederick Sound to the northeast a half mile or more. The mafic-ultramafic complex intrudes Late Jurassic and Early Cretaceous, metamorphosed pelites of the Semour Canal Formation, and is bordered to the northwest and south by Cretaceous migmatite. The Kane Peak complex has been dated at from 93.4 to 102.0 Ma by K-Ar methods. (The foregoing description is based mainly on Himmelberg and Loney, 1995; but also see Walton, 1951; Taylor, 1967; and Taylor and Noble, 1969, for earlier interpretations of this and other Alaska-type bodies in southeastern Alaska.)

Pyrrhotite, pentlandite, and chalcopyrite are sporadically disseminated through the peridotite; sparse disseminated chromite occurs widely in the dunite; and the hornblende locally contains titaniferous magnetite. Himmelberg and Loney (1995) provide trace metal

content for several metals including Co, Ni, and Cr. However, to date neither the sulfide occurrences nor the published analyses indicate that ore minerals are more than trace or accessory minerals. There are persistent rumors of anomalous Pt-group values in a sample or samples collected somewhere on the body but this may only reflect that the body has been sampled for these elements.

**Alteration:**

None.

**Age of mineralization:**

Late to Early Cretaceous based on 93.4 to 102.0 Ma, K-Ar age dates (Himmelberg and Loney, 1995).

**Deposit model:**

Zoned or Alaska-type ultramafic complex with disseminated, magmatic sulfides and oxides.

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

**Production Status** No

**Site Status:** Undetermined

**Workings/exploration:**

Two claims were staked on the body for Fe in 1960 along the coast near Cape Strait, probably on magnetite-bearing hornblendite that crops out there (U. S. Bureau of Mines, 1980). In addition, the Kane Peak body has repeatedly been visited by geologists over the years as a potential site for Fe, Cu, and Pt-group deposits and for its scientific value. With the possible exception of the claims staked for Fe along Frederick Sound, there is little evidence at present (1998) of anything close to an economic deposit within the complex.

**Production notes:**

None

**Reserves:**

None

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

Walton, 1951; Taylor, 1967; Taylor and Noble, 1969; Cobb, 1972 (OF 78-870); Cobb, 1972 (MF-415); U.S. Bureau of Mines, 1980; Brew and others, 1984; Grybeck, Berg, and Karl, 1984; Himmelberg and Loney, 1995.

**Primary reference:** Taylor and Noble, 1969; Himmelberg, Loney, and Craig, 1995

**Reporter(s):** H.C. Berg (Fullerton, California) and D.J. Grybeck (USGS)

**Last report date:** 11/1/98

**Site name(s):** Unnamed (near Petersburg Creek)

**Site type:** Occurrences

**ARDF no.:** PE011

**Latitude:** 56.833

**Quadrangle:** PE D-4

**Longitude:** 133.047

**Location description and accuracy:**

About three miles west-northwest of Petersburg, south of the estuary at the mouth of Petersburg Creek. Approximate location of two claims staked for radioactive minerals in 1956, and one claim staked nearby for Au, Fe, and Ag in 1960 (U. S. Bureau of Mines, 1980). Locality 18 of Grybeck, Berg, and Karl (1984).

**Commodities:**

**Main:** Ag, Au, Fe, Th, U

**Other:**

**Ore minerals:** Unknown

**Gangue minerals:**

**Geologic description:**

Two claims staked for radioactive minerals in 1956, and one claim staked nearby for Au, Fe, and Ag in 1960. Apparently there has been no further work after the initial staking on these claims and no other mineral deposits are known nearby.

**Alteration:**

**Age of mineralization:**

**Deposit model:**

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

**Production Status**

**Site Status:**

**Workings/exploration:**

Two claims staked for radioactive minerals in 1956, and one claim staked nearby for

Au, Fe, and Ag in 1960. Apparently there has been no further work after the initial staking on these claims and no other mineral deposits are known nearby.

**Production notes:**

**Reserves:**

**Additional comments:**

**References:**

U.S. Bureau of Mines, 1980; Grybeck, Berg, and Karl, 1984.

**Primary reference:** U. S. Bureau of Mines, 1980

**Reporter(s):** H.C. Berg (Fullerton, California) and D.J. Grybeck (USGS)

**Last report date:** 11/1/98

**Site name(s):** Unnamed (on Mitkof Island)

**Site type:** Prospect

**ARDF no.:** PE012

**Latitude:** 56.72

**Quadrangle:** PE C-3

**Longitude:** 132.786

**Location description and accuracy:**

Approximate location of two lode claims staked for Au in 1957 on northeast Mitkof Island. Near or on an unnamed creek in the NE1/4, section 34, T. 59 S., R. 80 E. at an elevation of about 200 feet (U. S. Bureau of Mines, 1980). Locality 19 of Grybeck, Berg, and Karl (1984).

**Commodities:**

**Main:** Au

**Other:**

**Ore minerals:**

**Gangue minerals:**

**Geologic description:**

Approximate location of two lode claims staked for Au in 1957; apparently not active since.

**Alteration:**

**Age of mineralization:**

**Deposit model:**

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

**Production Status**

**Site Status:**

**Workings/exploration:**

Approximate location of two lode claims staked for Au in 1957; apparently not active since.

**Production notes:**

**Reserves:**

**Additional comments:**

**References:**

U.S. Bureau of Mines, 1980; Grybeck, Berg, and Karl, 1984.

**Primary reference:** U. S. Bureau of Mines, 1980

**Reporter(s):** H.C. Berg (Fullerton, California) and D.J. Grybeck (USGS)

**Last report date:** 11/1/98

**Site name(s): Unnamed (on Wrangell Narrows)****Site type:** Prospect**ARDF no.:** PE013**Latitude:** 56.54**Quadrangle:** PE C-3**Longitude:** 132.96**Location description and accuracy:**

As described by Roehm (1945 [IR 195-37]) the location of this site is 'In Wrangell Narrows about 2 3/4 mile north of Point Alexander and 1 1/5 mile due north of Midway rock. Old cut a few feet up from high tide line.' This location is approximately in the vicinity of December Point but the information given is insufficient to determine whether the prospect is on the Woewodski Island side of the Mitkof Island side of Wrangell Narrows. The coordinates for the site are arbitrarily placed in the middle of Wrangell Narrows and the site is probably within a quarter mile of this location.

**Commodities:****Main:** Sb**Other:****Ore minerals:** Pyrite, stibnite**Gangue minerals:****Geologic description:**

The only published information on the site is given by Roehm (1945 [IR 195-37]). Needle-like crystals of stibnite and pyrite occur along fractures in reddish-colored granite. One sample assayed 13.9% Sb and traces of gold and silver.

Brew (1997 [OF 97-156-I]) shows a small Cretaceous diorite pluton that extends across Wrangell Narrows at or in the vicinity of this site; the pluton is bordered on the Mitkof side of the Wrangell Narrows by a large Cretaceous hornblende-diorite pluton and on the Woewodski Island it is surrounded by Mesozoic greenstone and greenschist.

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

Cretaceous or younger if the stibnite-bearing fractures cut the Cretaceous diorite plutons.

**Deposit model:**

Stibnite along fractures.

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

**Production Status** Undetermined.

**Site Status:** Probably inactive

**Workings/exploration:**

A prospect little known in the literature and apparently not active since the 1940's.

**Production notes:**

None

**Reserves:**

**Additional comments:**

**References:**

Roehm, 1945 (IR 195-37).

**Primary reference:** Roehm, 1945 (IR 195-37)

**Reporter(s):** H.C. Berg (Fullerton, California) and D.J. Grybeck (USGS)

**Last report date:** 11/1/98

**Site name(s):** Unnamed (on Thomas Bay)

**Site type:** Prospect

**ARDF no.:** PE014

**Latitude:** 56.99

**Quadrangle:** PE D-3

**Longitude:** 132.792

**Location description and accuracy:**

Small prospect that occurs in outcrop just above the high tide level on the eastern shore-line of Thomas Bay. Near an unnamed point in the NW1/4, section 25, T. 56 S., R. 79 E. Location known to within 100 meters. Locality 20 of Grybeck, Berg, and Karl (1984).

**Commodities:**

**Main:** Au

**Other:** As, Cu, Pb

**Ore minerals:** Arsenopyrite, chalcopyrite, galena, pyrite, and pyrrhotite.

**Gangue minerals:** Quartz

**Geologic description:**

Buddington (1923) indicates that a quartz lode can be traced for about 250 feet; it consists of a sheeted zone at least 12 feet thick that may be as thick as 25-30 feet; about half of the sheeted zone is milky-white quartz and half schist. The quartz veins contain sparse, disseminated pyrite, arsenopyrite, chalcopyrite, pyrrhotite, and galena; specimens of arsenopyrite several inches across are common on the dump. Assays of selected samples show up to 3.85 ppm Au (Grybeck, Karl, and Berg, 1984).

The country rock in the vicinity is Tertiary-Cretaceous biotite schist associated with the Coast Range metamorphic-plutonic complex to the east (Brew and others, 1984).

**Alteration:**

Unknown or minor.

**Age of mineralization:**

Younger than the Cretaceous-Tertiary host rock.

**Deposit model:**

Low sulfide gold-quartz vein (Cox and Singer, 1986; model 36a)

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

36a

**Production Status** No**Site Status:** Probably inactive**Workings/exploration:**

There was some minor development on the prospect prior to 1921 and a claim was active as recently as 1979 (U. S. Bureau of Mines, 1980). Little indication of any surface activity since.

**Production notes:**

None

**Reserves:**

None

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

Buddington, 1923; Cobb, 1972 (OF 78-870); Cobb, 1972 (MF-415); U.S. Bureau of Mines, 1980; Brew and others, 1984; Grybeck, Berg, and Karl, 1984.

**Primary reference:** Buddington, 1923**Reporter(s):** H.C. Berg (Fullerton, California) and D.J. Grybeck (USGS)**Last report date:** 11/1/98

**Site name(s):** Unnamed (on Le Conte Bay)

**Site type:** Occurrence

**ARDF no.:** PE015

**Latitude:** 56.8

**Quadrangle:** PE D-2

**Longitude:** 132.5

**Location description and accuracy:**

Rumor of gold veins in the schist belt of Le Conte Bay were cited by Buddington (1923). But no record that any lode claims have ever been staked in Le Conte Bay nor more recent confirmation of any gold veins in the vicinity. Coordinate cited above were chosen arbitrarily in about the center of Le Conte Bay. Locality 21 of Grybeck, Berg, and Karl (1984).

**Commodities:**

**Main:** Au?

**Other:**

**Ore minerals:**

**Gangue minerals:**

**Geologic description:**

Gold veins were reported in the schist belt prior to 1923 (Buddington, 1923) but without specific details and there is no more recent indication of any deposits in the vicinity nor any lode claims staked in the vicinity of Le Conte Bay.

**Alteration:**

**Age of mineralization:**

**Deposit model:**

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

**Production Status** No

**Site Status:** Inactive

**Workings/exploration:**

Gold veins were reported in the schist belt prior to 1923 (Buddington, 1923) but without specific details and there is no more recent indication of any deposits in the vicinity nor any lode claims staked in the vicinity of Le Conte Bay.

**Production notes:**

None

**Reserves:**

None

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

Buddington, 1923; Cobb, 1972 (OF 78-870); Grybeck, Berg, and Karl, 1984.

**Primary reference:** Grybeck, Berg, and Karl, 1984

**Reporter(s):** H.C. Berg (Fullerton, California) and D.J. Grybeck (USGS)

**Last report date:** 11/1/98

**Site name(s): Dave's Dream****Site type:** Prospect**ARDF no.:** PE016**Latitude:** 56.835**Quadrangle:** PE D-2**Longitude:** 132.447**Location description and accuracy:**

Four claims staked in a glacial valley on an unnamed stream that drains into the north side of Le Conte Bay about 2 1/2 miles west of the terminus of the Le Conte Glacier. The claims are in relatively flat section of the creek, mostly in the SE1/4 of section 14, T. 58 S., R. 82 E. but a portion extends down into the NE1/4, section 23, T. 58 S., R. 82 E. Coordinates are about the center of the claims.

**Commodities:****Main:** Au**Other:****Ore minerals:****Gangue minerals:****Geologic description:**

Four placer gold claims were staked at the site in the mid-70's and there was at least serious prospecting through the late 1990's. The site consists of glacial basin may have served as a natural trap for heavy minerals in a gravel section 60 feet or so thick (oral communication John Kato, U. S. Forest Service, 1998). Currently (1998) the validity of the claims is under dispute and is being contested in the courts.

**Alteration:****Age of mineralization:****Deposit model:**

Placer gold (Cox and Singer, 1986; model 39a)

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

39a

**Production Status** Undetermined.

**Site Status:** Undetermined

**Workings/exploration:**

The claims were staked in the 1970's and were prospected in the 1990's for several years. As of 1998, the validity of the claims is in dispute and is being contested legally.

**Production notes:**

Possibly some gold produced during prospecting at the site.

**Reserves:**

Unknown

**Additional comments:**

Within the Le Conte Wilderness Area.

**References:**

This description.

**Primary reference:** This description

**Reporter(s):** H.C. Berg (Fullerton, California) and D.J. Grybeck (USGS)

**Last report date:** 11/1/98

**Site name(s):** Unnamed (on the Stikine River)

**Site type:** Mines(?)

**ARDF no.:** PE017

**Latitude:** 56.69

**Quadrangle:** PE C-1

**Longitude:** 132.23

**Location description and accuracy:**

Fine placer gold was found on bars of the Stikine River in the 1860's during the early exploration for gold when Russia still owned Alaska and the Hudson Bay Company maintained a trading post at Wrangell near the mouth of the Stikine River (Blake, 1860; Spurr, 1898). However, there is no record of placer claims on the Stikine, no record of placer mining since at least 1900, and no specific locations were cited for the early placer mining. Coordinates are arbitrarily located at about the midpoint of the Alaska section of the Stikine River. Locality 22 of Grybeck, Berg, and Karl (1984).

**Commodities:**

**Main:** Au

**Other:**

**Ore minerals:**

**Gangue minerals:**

**Geologic description:**

Fine placer gold was found on unspecified bars on Stikine River in the 1860's during early exploration for gold in Alaska when Russia still owned Alaska and the Hudson Bay Company maintained a trading post at Wrangell near the mouth of the Stikine River (Blake, 1860, Spurr, 1898). However, there is no record of placer claims on the Stikine nor any record of placer mining since at least 1900.

**Alteration:**

**Age of mineralization:**

**Deposit model:**

Placer gold (Cox and Singer, 1986; model 39a)

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

39a

**Production Status** Yes; small

**Site Status:** Inactive

**Workings/exploration:**

Fine placer gold was found on bars of the Stikine River in the 1860's during early exploration for gold in Alaska. There is no record of claims of significant gold placers in the Stikine or tributaries since before the turn of the century. The diggings are probably best thought of as prospects rather than mines even if small amounts of gold were produced.

**Production notes:**

Probably trivial.

**Reserves:**

None

**Additional comments:**

In view of the many generations of prospectors and others who for more than 100 years have passed along the natural corridor of the Stikine River into the interior of Canada without any further mention of placer gold on the Stikine river, this site should now be considered as little more than a historic artifact.

**References:**

Blake, 1868; Spurr, 1898; Cobb, 1972 (OF 78-870); Cobb, 1972 (MF-415); Grybeck, Berg, and Karl, 1984.

**Primary reference:** Blake, 1868

**Reporter(s):** H.C. Berg (Fullerton, California) and D.J. Grybeck (USGS)

**Last report date:** 11/1/98

**Site name(s):** Unnamed (near Lovelace Creek)

**Site type:** Prospect

**ARDF no.:** PE018

**Latitude:** 56.556

**Quadrangle:** PE C-5

**Longitude:** 133.524

**Location description and accuracy:**

A large block of several hundred claims on southern Kupreanof Island that covers the southeastern one-third of T. 61 S., R. 74 E. (U. S. Bureau of Mines, 1980). The coordinates are about the center of the claim block. Locality 23 of Grybeck, Berg, and Karl (1984); see that report and U.S. Bureau of Mines, 1980, for the outline of the claim block.

**Commodities:**

**Main:** Unknown

**Other:**

**Ore minerals:**

**Gangue minerals:**

**Geologic description:**

No information has been published on the economic geology of the claim block but it is probably related to the large, vivid, orange-yellow altered zone that covers many square miles within the claim block. See PE019 for a description of this altered zone.

**Alteration:**

**Age of mineralization:**

**Deposit model:**

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

**Production Status** No

**Site Status:** Inactive

**Workings/exploration:**

A large block of several hundred claims staked in 1981 and active through at least 1982.

**Production notes:**

None

**Reserves:**

None

**Additional comments:**

**References:**

U.S. Bureau of Mines, 1980; Grybeck, Berg, and Karl, 1984.

**Primary reference:** U. S. Bureau of Mines, 1980

**Reporter(s):** H.C. Berg (Fullerton, California) and D.J. Grybeck (USGS)

**Last report date:** 11/1/98

**Site name(s):** Unnamed (near Kushneahin Lake)

**Site type:** Occurrence

**ARDF no.:** PE019

**Latitude:** 56.527

**Quadrangle:** PE C-5

**Longitude:** 133.502

**Location description and accuracy:**

Location given above is approximately the center of a vivid yellow-orange altered zone on southern Kupreanof Island that extends for at least 1 km along an unnamed creek in section 2, T. 62 S., R. 76 E., and section 35, T. 61 S., R. 76 E.. See also PE018 for a claim block centered on this altered zone. Locality 24 of Grybeck, Berg, and Karl (1984).

**Commodities:**

**Main:** Cu ?, Mo ?

**Other:**

**Ore minerals:**

**Gangue minerals:**

**Geologic description:**

Extensive vivid exposures of yellow-orange altered rhyolite, rhyolite tuff, and rhyolitic glass of Quaternary or Tertiary age outcrop in creek bed and bluffs for at least one-half mile (Brew and others, 1984; Brew, 1997 [OF 97-156-K]). Briefly examined by the USGS in 1982 and 1996. Disseminated pyrite is present locally but no obvious signs of Cu, Mo, or other ore minerals. Several grab samples of the most-altered rhyolite and associated rocks show 5 ppm or less Cu and Mo. The pyrite and host rocks are part of a large felsic igneous system. The surrounding area is heavily wooded but aerial reconnaissance shows widespread evidence of similar iron-stained zones over an area at least several miles in diameter. Although no obvious mineralization has been found to date, the site is included because this altered zone is so large and so prominent and it indicates the presence of a very large felsic hydrothermal system.

**Alteration:**

Pyritization, silicification, and kaolinization (?).

**Age of mineralization:**

Quaternary or Tertiary.

**Deposit model:****Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):****Production Status** None**Site Status:** Inactive**Workings/exploration:**

None other than probable examination by various industry geologists who have worked in the area.

**Production notes:**

None

**Reserves:**

None

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

Grybeck, Berg, and Karl, 1984; Brew and others, 1984; Brew, 1997 (USGS OF 97-156-K).

**Primary reference:** Grybeck, Berg, and Karl, 1984**Reporter(s):** H.C. Berg (Fullerton, California) and D.J. Grybeck (USGS)**Last report date:** 11/1/98

**Site name(s):** Unnamed (near Kushneahin Lake)

**Site type:** Prospect

**ARDF no.:** PE020

**Latitude:** 56.481

**Quadrangle:** PE B-5

**Longitude:** 133.497

**Location description and accuracy:**

Approximate center of a block of 90 lode claims staked on southern Kupreanof in 1973 and active through at least 1979 (U.S. Bureau of Mines, 1980). Locality 25 of Grybeck, Berg, and Karl (1984).

**Commodities:**

**Main:** Unknown

**Other:**

**Ore minerals:**

**Gangue minerals:**

**Geologic description:**

No published description of the claim block. Area characterized by a thick bimodal sequence of Quaternary and Tertiary basalt and rhyolite. (Brew, and others, 1984)

**Alteration:**

**Age of mineralization:**

**Deposit model:**

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

**Production Status**

**Site Status:**

**Workings/exploration:**

Apparently none beyond the staking of the claims.

**Production notes:**

**Reserves:**

**Additional comments:**

**References:**

U.S. Bureau of Mines, 1980; Grybeck, Berg, and Karl, 1984; Brew, Ovenshine, Karl, and Hunt, 1984.

**Primary reference:**

**Reporter(s):** H.C. Berg (Fullerton, California) and D.J. Grybeck (USGS)

**Last report date:** 11/1/98

**Site name(s):** Unnamed (near Totem Bay)

**Site type:** Occurrences

**ARDF no.:** PE021

**Latitude:** 56.48

**Quadrangle:** PE B-5

**Longitude:** 133.44

**Location description and accuracy:**

Coordinates are at the approximate center of a block of nine lode claims on southern Kupreanof Island (U.S. Bureau of Mines, 1980). Locality 26 of Grybeck, Berg, and Karl (1984).

**Commodities:**

**Main:** Th, U

**Other:**

**Ore minerals:**

**Gangue minerals:**

**Geologic description:**

No published description of the claim block. Rocks in the vicinity consist of a thick sequence of Quaternary-Tertiary rhyolite (Brew, 1997 [OF 97-156-G]).

**Alteration:**

**Age of mineralization:**

**Deposit model:**

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

**Production Status** No

**Site Status:** Inactive

**Workings/exploration:**

Nine lode claims staked for radioactive minerals in 1955; apparently no work since on these claims.

**Production notes:**

**Reserves:**

**Additional comments:**

**References:**

U.S. Bureau of Mines, 1980; Grybeck, Berg, and Karl, 1984; Brew and others, 1984; Brew, 1997 (USGS OF 97-156-G).

**Primary reference:** U. S. Bureau of Mines, 1980

**Reporter(s):** H.C. Berg (Fullerton, California) and D.J. Grybeck (USGS)

**Last report date:** 11/1/98

**Site name(s):** Unnamed (near Totem Bay)

**Site type:** Occurrences

**ARDF no.:** PE022

**Latitude:** 56.468

**Quadrangle:** PE B-5

**Longitude:** 133.434

**Location description and accuracy:**

Approximate center of a block of five placer claims on southern Kupreanof Island staked for Au in 1965 and active through 1967 (U.S. Bureau of Mines, 1984). Locality 27 of Grybeck, Berg, and Karl (1984), who also shows the claim outlines.

**Commodities:**

**Main:** Au

**Other:**

**Ore minerals:**

**Gangue minerals:**

**Geologic description:**

**Alteration:**

**Age of mineralization:**

**Deposit model:**

Placer gold (Cox and Singer, 1986; model 39a)

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

39a

**Production Status** Undetermined.

**Site Status:** Probably inactive

**Workings/exploration:**

Approximate center of a block of five placer claims staked for Au in 1965 and active through at least 1967.

**Production notes:**

No record of production.

**Reserves:**

None

**Additional comments:**

**References:**

U.S. Bureau of Mines, 1980; Grybeck, Berg, and Karl, 1984.

**Primary reference:** U. S. Bureau of Mines, 1980

**Reporter(s):** H.C. Berg (Fullerton, California) and D.J. Grybeck (USGS)

**Last report date:** 11/1/98

**Site name(s):** Unnamed (near Indian Point)

**Site type:** Prospect

**ARDF no.:** PE023

**Latitude:** 56.723

**Quadrangle:** PE C-4

**Longitude:** 133.238

**Location description and accuracy:**

Approximate center of block of four lode claims staked in 1977 on southern Kupreanof Island, and active through 1978 (U.S. Bureau of Mines, 1980). Locality 28 of Grybeck, Berg, and Karl (1984).

**Commodities:**

**Main:** Unknown

**Other:**

**Ore minerals:**

**Gangue minerals:**

**Geologic description:**

Approximate center of block of four lode claims staked in 1977 and active through 1978. No other information available.

**Alteration:**

**Age of mineralization:**

**Deposit model:**

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

**Production Status** None

**Site Status:** Probably inactive

**Workings/exploration:**

Approximate center of block of four lode claims staked in 1977 and active through 1978.

**Production notes:**

**Reserves:**

**Additional comments:**

**References:**

U.S. Bureau of Mines, 1980; Grybeck, Berg, and Karl, 1984.

**Primary reference:** U. S. Bureau of Mines, 1980

**Reporter(s):** H.C. Berg (Fullerton, California) and D.J. Grybeck (USGS)

**Last report date:** 11/1/98

**Site name(s):** Unnamed (north of mouth of Castle River)

**Site type:** Occurrence

**ARDF no.:** PE024

**Latitude:** 56.666

**Quadrangle:** PE C-4

**Longitude:** 133.257

**Location description and accuracy:**

Coordinates are at the center of mineralized outcrops that occur discontinuously just above the high tide line for about a mile along the west shore of the large shallow bay at the mouth of the Castle River. Locality 29 of Grybeck, Berg, and Karl (1984). Probably a continuation of the mineral occurrence at PE025 described just to the northeast.

**Commodities:**

**Main:** Ag, Ba, Pb, Zn

**Other:**

**Ore minerals:** Pyrite, sphalerite

**Gangue minerals:**

**Geologic description:**

Outcrops of phyllitic, light greenish gray to cream, felsic metatuff intercalated with muscovite-rich siliceous phyllite occur discontinuously just above the high tide line for about a mile along the edge of a large shallow bay. The metatuff locally contains massive-sulfide layers up to several meters thick with abundant pyrite and sparse sphalerite(?) (Grybeck, Karl, and Berg, 1984). Grab samples of massive sulfide layers and felsic metatuff show up to 700 ppm Pb, 350 ppm Zn, 10 ppm Ag, and 2000 ppm Ba. Probably continuation of the mineralized unit at PE025 just to the northeast and thus Late Triassic in age. This is probably the locality noted by Buddington (1923) that he described as a pyrite layer about 4 feet wide exposed for 50 feet.

Brew (1997 [OF 97-156-J]) shows the deposit as part of a large unit of Mesozoic phyllite and slate with minor conglomerate, limestone, and quartzite. This unit is largely covered by vegetation and probably includes substantial additional Triassic Hyd Group rocks that host the volcanogenic massive sulfide deposits of the Duncan-Zarembo mineral belt (Berg, and Grybeck, 1980; Berg, 1981). Recent mapping by Sue Karl (oral communication, 1998) indicates that the rocks at this site are almost certainly Hyd Group strata that are in contact to the south toward the mouth of the Castle River with Mississippian and Permian argillite and volcanic graywacke of the Cannery Formation.

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

Late Triassic.

**Deposit model:**

Kuroko massive-sulfide deposit model (Cox and Singer, 1986, model 28a); alternately a Sierran Kuroko deposit (Bliss, 1992; 28a1)

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

28a or 28a1

**Production Status** None**Site Status:** Active**Workings/exploration:**

First identified by the USGS in 1979. Nine lode claims staked in the area in 1979 that probably covered this deposit. By 1995, a considerable block of ground several square miles in area was staked on and northwest of this site and PE025 (Department of Natural Resources unpublished Kardex mining claim information system). Informal discussions with industry geologists who worked in the area indicate that they found several to numerous additional occurrences of similar deposits on these claims. An aerial examination of the area in 1996 indicated no obvious signs of surface exploration in the vicinity. In 1998, there was renewed interest in the area encouraged by the geophysical surveys the State of Alaska had flown over the area.

**Production notes:**

None

**Reserves:**

None

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

Buddington, 1923; Berg and Grybeck, 1980; Berg, 1981; Grybeck, Berg, and Karl, 1984; Brew, 1997 (USGS OF 97-156-J).

**Primary reference:** Grybeck, Berg, and Karl, 1984; this description

**Reporter(s):** H.C. Berg (Fullerton, California) and D.J. Grybeck (USGS)

**Last report date:** 11/1/98

**Site name(s): Halobia****Site type:** Prospect**ARDF no.:** PE025**Latitude:** 56.672**Quadrangle:** PE C-4**Longitude:** 133.258**Location description and accuracy:**

The locality is in the intertidal zone at the mouth of a small creek that enters the northern of the large shallow bay at the mouth of the Castle River; the site is in the NE1/4 section 15, T. 60 S., R. 77E. The locality as seen in 1996 was about 250 feet downstream from a log jam at the high tide mark on the creek. Massive sulfide lenses occur in the center of the creek bed but they are not conspicuous. Location of prospect is to within a few yards. Locality 30 of Grybeck, Berg, and Karl (1984).

**Commodities:****Main:** Ag, Pb, Zn**Other:** As, barite, Cu**Ore minerals:** Galena, pyrite, sphalerite**Gangue minerals:****Geologic description:**

Thin lenses of massive sulfides occur in siliceous phyllite that is intercalated with fossiliferous, Upper Triassic, black carbonaceous phyllite; locally garnet-bearing limestone; siltstone; and silvery dark gray muscovite- and quartz-rich phyllite (Berg and Grybeck, 1980; Berg, 1981). The carbonaceous phyllite contains abundant pyrite. The massive sulfide lenses are in several zones 10-12 feet wide and 80-100 feet long. Individual lenses within these zones are up to 1 foot wide and 3 feet long; they contain abundant pyrite and up to 5% galena and sphalerite. Analyses of grab samples show up to 100 ppm Cu, 100 ppm Ag, and 1000 ppm As. Several examples of the fossil Halobia collected in rocks interbedded with the sulfide lenses at the deposit unambiguously date the deposit as Late Triassic. Unpublished work by industry indicated more examples of similar deposits have been found in the claims staked northwest of this prospect (see 'Workings/Description' field). The deposit is part of the Triassic Duncan Canal-Zarembo Canal belt of dismembered, volcanogenic massive-sulfide deposits described by Berg and Grybeck (1980) and Berg (1981).

Brew (1997 [OF 97-156-J]) indicates that the deposit is in a sliver of Triassic Hyd Group rocks that consist mainly of phyllite and slate with minor conglomerate, limestone

and sandstone. However, the Hyd Group rocks are surrounded by a large, poorly-exposed area of undated phyllite, slate, and minor conglomerate, limestone, and quartzite to which Brew assigns a Mesozoic age. This unit is largely covered by vegetation and probably includes substantial additional Triassic Hyd Group rocks that may contain similar deposits. Recent mapping (Sue Karl, oral communication, 1998) indicates that Brew's Mesozoic unit also may include argillite and volcanic graywacke of the Mississippian and Permian Cannery Formation. Also see PE024 which is probably of similar origin if not a continuation of this site.

**Alteration:**

None.

**Age of mineralization:**

Unambiguously Late Triassic as defined by the occurrence of the fossils of Halobia at the site.

**Deposit model:**

Kuroko massive-sulfide deposit model (Cox and Singer, 1986, model 28a); alternately a Sierran Kuroko deposit (Bliss, 1992; 28a1)

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

28a or 28a1

**Production Status** None**Site Status:** Active**Workings/exploration:**

Originally found by the U. S. Geological Survey in 1979 (Berg and Grybeck, 1980). Nine lode claims staked on the deposit in 1979; by 1995, a considerable block of ground several square miles in area was staked on and northwest of the original discovery (Department of Natural Resources unpublished Kardex mining claim information system). Informal discussions with industry geologists who worked in the area indicate that they have identified several to numerous additional occurrences of similar deposits on these claims. (The latitude and longitude of this site are the location of the original discovery.) An aerial examination of the area in 1996 indicated no obvious signs of surface exploration in the vicinity. In 1998, there was renewed interest in the area encouraged by the geophysical surveys the State of Alaska flew over the area in 1997.

**Production notes:**

None

**Reserves:**

None

**Additional comments:**

**References:**

Berg and Grybeck, 1980; Berg, 1981; Grybeck, Berg, and Karl, 1984; Brew, 1997 (USGS OF 97-156-J).

**Primary reference:** Berg and Grybeck, 1980; this description

**Reporter(s):** H.C. Berg (Fullerton, California) and D.J. Grybeck (USGS)

**Last report date:** 11/1/98

**Site name(s): Castle Island****Site type:** Mine**ARDF no.:** PE026**Latitude:** 56.653**Quadrangle:** PE C4**Longitude:** 133.163**Location description and accuracy:**

Location of mine is known precisely. However, the original outcrop of the deposit was little more than a large offshore rock just off the northeast end of 'Castle Island'; that original outcrop has now been completely mined out to below sea level. Note that what is almost universally called Castle Island, i.e. the site of the barite mine, is not identified as such on the USGS 1:63,360-scale topographic map and none of the Castle Islands is specifically labeled as Castle Island on the current (1998) maps. The island that is the site of the mine and is described here is an islet about 650 yards long located about 1,500 ft south-southeast of the Big Castle Island labeled on current topographic maps. Localities 31 and 32 of Grybeck, Berg, and Karl (1984).

**Commodities:****Main:** Barite**Other:** Ag, Cu, Pb, Sn, but none recovered**Ore minerals:** Barite, bornite, chalcopyrite, galena, pyrite, pyrrhotite, sphalerite, tetrahedrite**Gangue minerals:** Common rock-forming minerals interlayered with the barite.**Geologic description:**

The ore body consisted of a Lenticular, massive barite lens about 300 feet long and up to 200 feet thick that extended to a maximum depth of about 150 feet below sea level. The exact stratigraphic relations are unclear because most of the deposit was under salt water. However, examination of unpublished drilling data and cross sections maintained by the mine indicates that the barite lens probably occurred along the trough of a symmetrical open syncline trending about N70W with limbs dipping about 30 to 45 degrees. Drilling also indicated a considerable tonnage of lower grade barite interbedded with 'gray schist,' 'chert,' and 'graphitic schists,' and the possibility of at least one more high-grade barite lens offshore. Mine-run material was massive, white to light gray, almost pure barite that almost invariably contained a percent or so of sulfides as tiny disseminated grains. Assays of the massive barite indicate that it typically contains about 0.5-2% Zn, about 0.5% Pb, a small amount of Cu, and about 1 ounce Ag per ton. Under the reflecting microscope, the sulfides are seen to be sphalerite, galena, pyrite, pyrrhotite, bornite, tetra-

hedrite-tennantite, and chalcopyrite, together with minor amounts of other ore minerals, all as tiny, generally equant grains. Examination of waste dumps provide many samples that show all transitions from massive barite to layered pyrite (-sphalerite -quartz)-barite rock with the other sulfides noted previously disseminated though the rock in minor amount. The association of barite, layered sulfide-barite rocks, schistose metafelsite(?), and black carbonaceous, calcareous phyllite at the mine site indicate that it is part of the Triassic Duncan Canal-Zarembo Canal belt of dismembered, volcanogenic massive-sulfide deposits described by Berg and Grybeck (1980) and Berg (1981). This description is synthesized from Burchard (1914); Buddington (1923); Buddington (1925); unpublished written and oral data from David Carnes, U. S. Bureau of Mines; unpublished field notes by the reporters; and analyses summarized in Grybeck, Berg, and Karl (1984).

The Castle Islands largely -- and the island on which the barite mine occurs specifically -- consist largely of Upper Triassic Hyd Group rocks which are dominantly felsic and intermediate volcanic flows and breccia, limestone and argillite. However, parts of the islands also consist of Devonian limestone and Quaternary basalt whose relationship to the Hyd Group rocks is probably structurally complicated and largely hidden under water (Brew, 1997 [OF 97-156-J]).

**Alteration:**

None obvious.

**Age of mineralization:**

Probably Late Triassic.

**Deposit model:**

Barite facies of a Kuroko massive-sulfide model (Cox and Singer, 1986; model 28a); alternatively a barite facies of a Sierran Kuroko model (Bliss, 1992; model 28a1)

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

28a or 28a1

**Production Status** Yes, medium

**Site Status:** Inactive

**Workings/exploration:**

Deposit known since before World War I. Mined from 1965 to 1980 for barite; the mine was closed and all mining equipment was removed from the property in 1981. The original deposit was originally a small outcrop at the northeast end of the island that was entirely removed by mining. Much of the mining was from an offshore barge that used a dragline to recover ore fragmented by submarine blasting. Essentially, the mine was operated as a submarine open pit from a camp on the island. An earlier phase of drilling and sampling on the original barite outcrop that ultimately resulted in mining the deposit was documented by Race (1963 [PE 117-9]) and Williams and Decker (1932 [IR 117-1]).

At least 22 claims were staked in the vicinity on the surrounding islands and were active from before, probably long before, 1954 to at least 1975.

**Production notes:**

Exact production not systematically reported but total production was about three-quarters of a million tons of barite, most of which was mined from 1968 to 1973 as direct shipping ore. Swainbank and others (1995) indicate total production was 776,390 tonnes (865,000 tons) of raw and refined barite produced from 1963 to 1980.

**Reserves:**

Economic reserves were exhausted by 1980 and the mining plant was then removed. There is potential for lower grade or deeper extensions of the ore body underwater but it is doubtful they can be economically mined with current (1998) technology and economics (oral and written communication with David Carnes, U. S. Bureau of Mines, who was the mining engineer in charge of the mine over most of its life).

**Additional comments:**

Visited briefly by D. Grybeck, USGS, in July, 1996; no sign of mining activity since 1980 or of recent surface exploration. All the mining equipment has been removed from the island and it is now largely covered by alder and brush.

**References:**

Burchard, 1914; Buddington, 1923; Buddington, 1925; Buddington and Chapin, 1929; Race, 1963 (DGGs PE 117-9); Williams and Decker, 1932 (DGGs IR 117-1); Cobb, 1972 (MF-415); Cobb, 1978 (OF 78-870); Karl and others, 1980; Berg and Grybeck, 1980; Berg, 1981; Grybeck, Berg, and Karl, 1984; Swainbank and others, 1995; Brew, 1997 (USGS OF 97-156-J).

**Primary reference:** Grybeck, Berg, and Karl (1984); this description

**Reporter(s):** H.C. Berg (Fullerton, California) and D.J. Grybeck (USGS)

**Last report date:** 11/1/98

**Site name(s):** Unnamed (covering most of Castle Islands)

**Site type:** Prospect

**ARDF no.:** PE027

**Latitude:** 56.66

**Quadrangle:** PE C-4

**Longitude:** 133.167

**Location description and accuracy:**

Coordinates are at the center of a block of 22 claims including and northwest of the Castle Island barite mine (PE026). Comprises most of the Castle Islands. Much of the claimed area is probably underwater, but note that much of the mining at the Castle Island mine itself was carried on underwater.

**Commodities:**

**Main:** Ba

**Other:**

**Ore minerals:** Barite

**Gangue minerals:**

**Geologic description:**

See description of the Castle Island barite mine (PE026) which is within this claim block. The block encompasses potential submarine extensions of the mineralization from that mine or potential for new deposits of that type of mineralization. The geology of the various small islands that comprise the Castle Islands and are covered by this claim block is complicated by faulting. The rocks include Devonian fossiliferous limestone; Triassic Hyd Group felsic and intermediate flows and breccias, limestone, and argillite, that host volcanogenic massive sulfide deposits in the area; and Quaternary basalt (Brew, 1997 [OF 97-156-J]).

**Alteration:**

**Age of mineralization:**

See description of the Castle Island barite mine (PE026) within this claim block.

**Deposit model:**

Barite facies of a Kuroko massive-sulfide model (Cox and Singer, 1986; model 28a); alternatively a barite facies of a Sierran Kuroko model (Bliss, 1992; model 28a1)

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

28a or 28a1

**Production Status** Undetermined.**Site Status:** Active?**Workings/exploration:**

Other than the Castle Island barite mine itself, there is apparently no surface exploration beyond geologic mapping and sampling of outcrops.

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

U.S. Bureau of Mines, 1980; Grybeck, Berg, and Karl, 1984; Brew, 1997 (USGS OF 97-156-J).

**Primary reference:** U. S. Bureau of Mines, 1980**Reporter(s):** H.C. Berg (Fullerton, California) and D.J. Grybeck (USGS)**Last report date:** 11/1/98

**Site name(s): Helen S; Olympic Mining****Site type:** Mine**ARDF no.:** PE028**Latitude:** 56.57**Quadrangle:** PE C-4**Longitude:** 133.066**Location description and accuracy:**

The coordinates are the center of a patented mining claim bounded on the south by tidal flats. The site is on northwestern Woewodski Island about a half mile northwest of the northwest end of Harvey Lake. Several discrete deposits occur on the claim as described below. The mouth of a small creek flowing north beside the large cabin on the shoreline about 100 yards NW of the mouth of Harvey Creek is a convenient point of reference to the different deposits. A quartz vein that has apparently only been pitted occurs in the creek about 100 feet north of the cabin. The old prospect where massive sulfide mineralization occurs is about 150-200 meters up the creek and about 10 meters to the east of it. It has been dug out in recent years. The gold-quartz vein that was mined prior to WW I is another 100 meters north of the massive-sulfide prospect and about 25 meters east of the creek. In 1996, a good trail was maintained from the cabin to the massive-sulfide pit and the old shaft from which the gold quartz vein was mined prior to WW I.

**Commodities:****Main:** Au, Cu, Pb, Zn**Other:** Barite**Ore minerals:** Chalcopyrite, galena, gold, sphalerite**Gangue minerals:** Quartz**Geologic description:**

Located in 1903 or earlier and worked intermittently until at least 1915. A mill was built and at least 650 feet of underground workings were driven on several quartz veins (Buddington, 1923). A small amount of ore with a grade of about 0.177 ounces per ton was milled but total production uncertain and was probably relatively small (from the size of the tailings). Roehm (1945 [IR 195-37]) noted that the ore averaged \$3.66 per ton (without specifying in what years).

There are two distinct type of mineral deposits on the property: auriferous quartz veins and layered massive sulfide mineralization. All the early production was from quartz veins that cut black slate, greenstone, and felsic metavolcanic rocks. At one prospect pit, however, massive sulfides consisting of crudely banded pyrite, pyrrhotite(?), arsenopyrite,

sphalerite, and galena are abundant. Berg and Grybeck (1980) interpreted this deposit as part of the Duncan-Zarembo belt of dismembered, upper Triassic volcanogenic massive sulfide deposits. The quartz veins may be remobilized from the massive sulfide deposits.

Much of the claim consists of Triassic Hyd Group felsic and intermediate flows and breccia and argillite, which has been intruded by Mesozoic gabbro and Cretaceous diorite (Brew, 1997 [OF 97-156-J]).

**Alteration:**

**Age of mineralization:**

The volcanogenic massive sulfides are Triassic.

**Deposit model:**

Gold quartz vein (Cox and Singer, 1986; model 36a); and barite facies of a Kuroko massive-sulfide model (Cox and Singer, 1986; model 28a); or alternatively a barite facies of a Sierran Kuroko model (Bliss, 1992; model 28a1)

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

36a and 28a or 28a1

**Production Status** Yes; small

**Site Status:** Active

**Workings/exploration:**

Small production from gold quartz vein(s) prior to WW I was from two shafts that connected to more than 750 feet of underground workings. Property abandoned in 1916. In 1996, the owner of the patented claim, Phillip Brease of Petersburg is actively exploring it with ground geophysics and by diamond drilling.

**Production notes:**

Some gold production prior to about 1915 that was recovered at a small mill near the shoreline.

**Reserves:**

**Additional comments:**

**References:**

Wright and Wright, 1908; Buddington, 1923; Roehm, 1945 (IR 195-37); Cobb, 1972 (OF 78-870); Cobb, 1972 (MF-415); Berg and Grybeck, 1980; Grybeck, Berg, and Karl, 1984; Brew, 1997 (USGS OF 97-156-J).

**Primary reference:** Grybeck, Berg, and Karl, 1984, and this description

**Reporter(s):** H.C. Berg (Fullerton, California) and D.J. Grybeck (USGS)

**Last report date:** 11/1/98

**Site name(s): Lost Lake****Site type:** Prospect**ARDF no.:** PE029**Latitude:** 56.573**Quadrangle:** PE C-4**Longitude:** 133.058**Location description and accuracy:**

Known to within 100 yards and easily located. The deposit is on the north bank of the small lake, locally named 'Lost Lake' on northwestern Woewodski Island (lake '175' on the USGS 1:63,360-scale topographic map). The deposit is about 25 feet north of the lake; it extends east and west of a small creek that flows to the north from about the center of the lake. Drilling pads and landing sites were still visible in 1996 at the prospect.

**Commodities:****Main:** Ba, Pb, Zn**Other:** Ag, Au?**Ore minerals:** Galena, pyrite, and sphalerite**Gangue minerals:** Quartz**Geologic description:**

A resistant layer of cream- to light-gray colored schist about 10 feet thick dams in the north side of the lake at the prospect. The foliation strikes about N80E to S75E, i.e., roughly parallel to the north side of the lake, and dips about 70-85 S. The schist contains at least two layers of massive sulfides 8 inches to 16 inches thick that consist mainly of sphalerite with moderate amounts of pyrite and sparse galena (unpublished field notes by D. Grybeck, 1996). Analyses of a number of samples of similar(?) schist sampled nearby by Newberry and Brew (1989) indicate that: 1) the schist is derived from basaltic protoliths and were probably subsequently altered, 2) the schist is geochemically analogous to samples from the Greens Creek mine on Admiralty Island; and 3) the deposit is probably Triassic in age.

**Alteration:**

The schists that host the massive sulfide layers are probably hydrothermally altered basalts (Newberry and Brew, 1997).

**Age of mineralization:**

Probably Triassic based on geochemistry of host rocks (Newberry and Brew, 1997), and the deposit's similarity to other deposits in the Triassic, Duncan Canal-Zarembo belt of massive sulfide deposits defined by Berg and Grybeck (1980) and Berg (1981).

**Deposit model:**

Barite facies of a Kuroko volcanogenic massive-sulfide model (Cox and Singer, 1986m, model 29a). Alternatively a barite facies of a volcanogenic Sierran Kuroko model (Bliss, 1992; model 28a1)

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

29a or 28a1

**Production Status** No**Site Status:** Active**Workings/exploration:**

Found in late 1980's and explored or examined by a number of companies since; in 1996 held by Westmin Resources Limited, which has other properties on Woewodski Island. The massive sulfide layer is covered by only a thin layer of vegetation, and has been sampled by several shallow pits. Several drilling sites were obvious at the prospect in 1996 and at least 18 holes are said to have been drilled.

**Production notes:**

None

**Reserves:**

This is probably Westmin's 'Lost Show' deposit on Woewodski Island that Westmin described in 1997 on the Internet at <http://westmin-resources.com/explore.html> as containing 'a geologic reserve of approximately 500,000 tonnes grading 8.1% zinc, 0.6% lead and 77.76 g/t silver'.

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

This description.

**Primary reference:** This description**Reporter(s):** H.C. Berg (Fullerton, California) and D.J. Grybeck (USGS)**Last report date:** 11/1/98

**Site name(s):** Unnamed (along Harvey Creek)

**Site type:** Mine

**ARDF no.:** PE030

**Latitude:** 56.567

**Quadrangle:** PE C-4

**Longitude:** 133.064

**Location description and accuracy:**

This small mine on northwestern Woewodski Island is about 300 yards from the shore-line along the trail that goes from saltwater to the Harvey Lake Forest Service cabin. Locality 34 of Grybeck, Berg, and Karl (1984).

**Commodities:**

**Main:** Au

**Other:**

**Ore minerals:** Arsenopyrite, gold, pyrite

**Gangue minerals:** Quartz

**Geologic description:**

Several narrow quartz veins with rare disseminated pyrite and arsenopyrite cut light greenish gray, felsic metatuff. Said to have been worked in a small way during the Depression in the 1930's (Grybeck, Berg, and Karl, 1984).

**Alteration:**

**Age of mineralization:**

**Deposit model:**

Gold quartz vein (Cox and Singer, 1986; model 36a)

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

36a

**Production Status** Yes; small

**Site Status:** Undetermined

**Workings/exploration:**

Old prospect along the creek said have been worked during the Depression in the 1930's; a small Pelton wheel and hammer mill still remained at the site in the early 1980's.

**Production notes:**

Production uncertain but probably a very small amount of gold recovered during the 1930's.

**Reserves:**

**Additional comments:**

**References:**

Wright and Wright, 1908; Buddington, 1923; Grybeck, Berg, and Karl, 1984.

**Primary reference:** Grybeck, Berg, and Karl, 1984

**Reporter(s):** H.C. Berg (Fullerton, California) and D.J. Grybeck (USGS)

**Last report date:** 11/1/98

**Site name(s): Maid of Mexico; Maid of Texas****Site type:** Mine**ARDF no.:** PE031**Latitude:** 56.565**Quadrangle:** PE C-4**Longitude:** 133.035**Location description and accuracy:**

Accurate to within 100 yards. Well known mine on central Woewodski Island in the SW1/4, SW1/4, section 23, T 61 S, R. 79E. In 1996, a trail was still passable from the center of the north shore of Harvey Lake, north to the mine. The main workings were on the Main of Mexico vein/mine; the Maid of Texas vein is about 100 yards to the southeast.

**Commodities:****Main:** Au**Other:** Ag, Cu, Pb, Zn**Ore minerals:** Chalcopyrite, galena, gold, pyrite, and sphalerite in minor amounts.**Gangue minerals:** Quartz**Geologic description:**

The Main of Mexico vein is about 2-6 feet thick, averaging about 4 feet. It can be traced for at least 2000 feet but the underground working expose only a small portion of it. The vein consists mainly of white quartz with sparse sphalerite, pyrite, galena, chalcopyrite, and free gold. The vein is largely in black carbonaceous argillite associated with pyrite-bearing, calcareous felsic metatuff, felsic dikes, and minor limestone and mudstone. The black carbonaceous unit is overlain(?) by greenstone, greenschist, and marble. Several faults are known in the underground workings. Brew (1997 [OF 97-156-J]) correlates the country rock with the Triassic Hyd Group which typically consists of felsic and intermediate flows and breccia, argillite, and minor limestone.

Nine samples collected by Williams (1954) assayed trace to 0.64 ounces per ton in gold, a trace of silver, 0.20-0.68% lead, and 0.30 to 0.77% Zn. The Maid of Texas vein is parallel to the Maid of Mexico vein and about 100 yards to the southeast (Roehm, 1945 [DGGs IR 195-37]).

The Maid of Mexico vein was explored by more than 1000 feet of underground workings from several adits prior to World War II. Some production resulted, mainly in the 1930's. The property was active in 1979 and the owners had cleaned out the drifts in anticipation of production. However, a visit in 1996 by D. Grybeck suggested that little had

been done since. Williams(1954) noted that the Alaska Department of Mines had seven confidential maps dating from 1933 to 1935 of the underground workings in their files. He noted 130 feet of crosscut from the portal of the mine and 260 feet of drifting on the vein; also several raises and winzes.

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

Triassic or younger based on age of the host rock.

**Deposit model:**

Gold quartz vein (Cox and Singer, 1986; model 36a)

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

36a

**Production Status** Yes**Site Status:** Active?**Workings/exploration:**

Explored by more than 1000 feet of underground workings from several adits prior to World War II. The property was active in 1979 and the owners had cleaned out the drifts in anticipation of production. However, a visit by D. Grybeck in 1996 suggested that little had been done since. Williams(1954) noted that the Alaska Department of Mines had seven confidential maps dating from 1933 to 1935 of the underground workings in their files. He noted 130 feet of crosscut from the portal of the mine and 260 feet of drifting on the vein; also several raises and winzes.

**Production notes:**

Small test shipments were made as early as 1917 and the property produced ore during the 1930's. The remains of a small mill are still present on the property. Production records not available but discussions with the owners in 1979 by the reporters, the size of the dumps, and the amount of underground work indicate that total production was probably more than the 100 ounces of gold and silver reported in the literature (Buddington, 1923).

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

Wright and Wright, 1908; Buddington, 1923; Roehm, 1945 (DGGs IR 195-37); Williams, 1953; Cobb, 1972 (OF 78-870); Cobb, 1972 (MF-415); Berg and Grybeck, 1980; Grybeck, Berg, and Karl, 1984; Brew, 1997 (USGS OF 97-156-J).

**Primary reference:** Williams, 1954; this description

**Reporter(s):** H.C. Berg (Fullerton, California) and D.J. Grybeck (USGS)

**Last report date:** 11/1/98

**Site name(s):** Hattie

**Site type:** Mine

**ARDF no.:** PE032

**Latitude:** 56.532

**Quadrangle:** PE C-4

**Longitude:** 133.046

**Location description and accuracy:**

On southwestern Woewodski Island; known to within 100 yards and easily accessible although the area is heavily overgrown with alder and brush. About 200 yards east of the shoreline near the northwest corner of section 2, T. 61 S., R. 79 E.

**Commodities:**

**Main:** Au

**Other:**

**Ore minerals:** Minor pyrite; rare chalcopyrite, galena, and sphalerite.

**Gangue minerals:** Quartz

**Geologic description:**

White quartz veins along a zone at least 1000 feet long cut pyritic, rusty-weathering, light-greenish gray calcareous metarhyolite that is probably part of the Triassic Hyd Group. The metarhyolite is intruded by Mesozoic epidote-hornblende gabbro and fresh, medium-grained Cretaceous diorite (Brew, 1997 [OF 97-156-J]). The quartz veins contain sparse to rare disseminated pyrite, and rare grains of chalcopyrite, galena, and sphalerite. Gold values uncertain but probably low; the best assay from several samples collected by the USGS on the dump in the early 80's was 0.05 ounces of gold per ton (Grybeck, Berg, and Karl, 1984). Roehm (1945 [IR 195-37]) noted that the deposit had low Ag and Au values.

**Alteration:**

**Age of mineralization:**

**Deposit model:**

Au-quartz vein (Cox and Singer, 1986; model 36a)

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

36a

**Production Status** Yes; small?

**Site Status:** Active?

**Workings/exploration:**

Known since before 1905 and explored by about 500 feet of underground workings from an adit (Wright and Wright, 1908). Moderate-sized dump on property. Roehm (1945 [IR 195-37]) noted that the property consisted of two parallel veins along a brecciated shear zone; levels at 63 and 134 feet were developed through a shaft. The dump is overgrown by trees and there has probably been no underground work of any significance since before WWII. However, the property has repeatedly been visited by geologists over the last several decades in conjunction with the general high level of interest in Woewodski Island, and probably has had considerable surface geologic, geochemical, and geophysical work in the vicinity, if not at this particular deposit.

**Production notes:**

No documented production. There have been persistent rumors of at least a small test ore shipment that was processed nearby at the Helen S mill in the early part of the century.

**Reserves:**

None

**Additional comments:**

**References:**

Wright and Wright, 1905; Wright and Wright, 1908; Roehm, 1945 (IR 195-37); Cobb, 1972 (OF 78-870); Cobb, 1972 (MF-415); Berg and Grybeck, 1980; Grybeck, Berg, and Karl, 1984; Brew, 1997 (OF 97-156-J).

**Primary reference:** Wright and Wright, 1908; this description

**Reporter(s):** H.C. Berg (Fullerton, California) and D.J. Grybeck (USGS)

**Last report date:** 11/1/98

**Site name(s):** Unnamed (in vicinity 'Brushy Creek')

**Site type:** Prospect

**ARDF no.:** PE033

**Latitude:** 56.52

**Quadrangle:** PE C-4

**Longitude:** 133.01

**Location description and accuracy:**

Only general location of work known to be along Brushy Creek, an informal name given to the creek on southern Woewodski Island that drains diagonally to the southwest across section 1, T. 62 S., R. 79 E. Location of area of activity unknown in detail but location of site constrained by the geography to be in about a half to a mile square area in about the center of the section.

**Commodities:**

**Main:** Au, Pb, Zn?

**Other:**

**Ore minerals:**

**Gangue minerals:**

**Geologic description:**

In 1996, Westmin Resources was active in Brushy Creek and planned to drill the following summer (based on field work by D. J. Grybeck, 1996 and on common knowledge of residents in the area). Target likely to be volcanogenic massive sulfide deposit similar to others along the Duncan-Zarembo mineral belt simply on basis of the favorability of the area for such deposits.

**Alteration:**

**Age of mineralization:**

**Deposit model:**

Target probably was volcanogenic massive sulfide deposit.

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

**Production Status** No

**Site Status:** Active

**Workings/exploration:**

In 1996, Westmin Resources was actively exploring in the area and planning to drill the following summer. (Note added in 1998: apparently they did not.)

**Production notes:**

None

**Reserves:**

None

**Additional comments:**

**References:**

**Primary reference:** This description

**Reporter(s):** H.C. Berg (Fullerton, California) and D.J. Grybeck (USGS)

**Last report date:** 11/1/98

**Site name(s): Unnamed (on Woewodski Island)****Site type:** Prospects**ARDF no.:** PE034**Latitude:** 56.557**Quadrangle:** PE C-4**Longitude:** 133.021**Location description and accuracy:**

Site placed somewhat arbitrarily at approximately the center of Woewodski Island; this is a general reference to addition prospects and exploration on Woewodski Island that have not otherwise been described in this data base at sites PE028 to PE033.

**Commodities:****Main:** Au, Pb, Zn, and possibly others**Other:****Ore minerals:** (See geologic description.)**Gangue minerals:****Geologic description:**

Woewodski Island has complex geology that is largely covered by thick vegetation and is further complicated by a prominent structural zone that crosses it and continues north along Duncan Canal. Brew (1997 [OF 97-156-J]) maps the rocks on Woewodski Island as Mesozoic phyllite; Triassic, Hyd Group felsic and intermediate volcanic flows and breccia, limestone, and argillite; Mesozoic gabbro; and Cretaceous diorite, but the exact relationships and distribution of these rocks requires more detailed mapping.

Woewodski Island has lured prospectors since at least the 1920's and there are numerous stories and rumors about people who have prospected there and what they found, many of which cannot be documented or verified well. For instance, it is common knowledge that there was a major drilling program carried out by a private company east of Harvey Lake in the mid-1970's and Williams (1953) mentions a prospect of unstated type somewhere between Harvey Lake and what is now called Harrys Lake. In addition, since the 1970's various parts of the Island have been examined by a succession of companies, including Resource Associates of Alaska, Cominco Exploration, Houston Oil and Minerals Westmin Resources, and others, as well as private individuals. The details of at least some of the work by Houston Oil and Minerals in late 1970's and 1980 have been filed with their notice of assessment work in the Petersburg Records office (Book 10, pages 933-971, and Book 12, pages 687-738). Most of the Island has been staked at one time or another in the last 20 years and sampled geochemically, some areas repeatedly. In other

words, there has been much more work on Woewodski Island, some going back 80 years, than cannot be documented. It is likely that additional mineral occurrences were found as a result of this work, perhaps many more. The details of the types of deposits that were being searched for in specific exploration work are largely undocumented now but in general the search was probably mainly for gold until the 1970's and since then for volcanogenic massive sulfide deposits.

**Alteration:****Age of mineralization:****Deposit model:**

Gold quartz vein (Cox and Singer, 1986; model 36a); and barite facies of a Kuroko massive-sulfide model (Cox and Singer, 1986; model 28a); or alternatively a barite facies of a Sierran Kuroko model (Bliss, 1992; model 28a1)

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

36a and 28a or 28a1

**Production Status** No**Site Status:** Active**Workings/exploration:**

Woewodski Island has lured prospectors since at least the 1920's and there are numerous stories and rumors about people who have prospected there and what they found, many of which cannot be documented or verified well. For instance, it is common knowledge that there was a major drilling program carried out by a private company east of Harvey Lake in the mid-1970's and Williams (1953) mentions a prospect of unstated type somewhere between Harvey Lake and what is now called Harrys Lake. In addition, since the 1970's various parts of the Island have been examined by a succession of companies, including Resource Associates of Alaska, Cominco Exploration, Houston Oil and Minerals, Westmin Resources, and others, as well as private individuals. Most of the Island has been staked at one time or another in the last 20 years and sampled geochemically, some areas repeatedly. In other words, there has been much more work on Woewodski Island, some going back 80 years, than cannot be documented. The details of the types of deposits being searched for are unknown but in general the search was probably mainly for gold until the 1970's and since then for volcanogenic massive sulfide deposits.

**Production notes:**

See the descriptions of individual properties within the area, PE028 to PE033.

**Reserves:****Additional comments:**

**References:**

Williams, 1953; Brew, 1997 (OF 97-156-J).

**Primary reference:** This description (and see PE028 to PE 033)

**Reporter(s):** H.C. Berg (Fullerton, California) and D.J. Grybeck (USGS)

**Last report date:** 11/1/98

**Site name(s): Unnamed (on Butterworth Island)****Site type:** Prospect**ARDF no.:** PE035**Latitude:** 56.533**Quadrangle:** PE C-4**Longitude:** 133.055**Location description and accuracy:**

Prospect long known but not described in the literature; the site can be confidently located at the southeastern tip of Butterworth Island in the channel between Woewodski Island and Kupreanof Island. The deposit extends out into the flat that uncovers at low tide between Butterworth Island the the small unnamed island south of it. Near the northeast corner of section 3, T. 62 S, R. 79 E. Called the 'Mad Dog' outcrop by Houston Oil and Minerals in 1980 (Book 12, pages 687-738, Recorder's Office, Petersburg Recording District).

**Commodities:****Main:** Ag, Pb, Zn**Other:****Ore minerals:** Galena galena, pyrite, and sphalerite**Gangue minerals:****Geologic description:**

A prospect known since the late 1970's but not well documented. Consists of volcanogenic massive sulfide layers in Triassic Hyd Group rocks analogous to other similar deposits in the Duncan-Zarembo mineral belt as defined by Berg and Grybeck (1980) and Berg (1981).

Brew (1997 [OF 97-156-J]) maps the rocks in the vicinity as Cretaceous diorite and Mesozoic volcanic rocks but recent mapping by Karl (oral communication, 1998) indicates that at least some Triassic Hyd Group rocks are exposed at the southeast end of Butterworth Island.

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

Probably Triassic based on analogy with other volcanogenic massive sulfide deposits in the area.

**Deposit model:**

Barite facies of a Kuroko volcanogenic massive-sulfide model (Cox and Singer, 1986m, model 28a). Alternatively a barite facies of a volcanogenic Sierran Kuroko model (Bliss, 1992, model 28a1)

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

28a or 28a1

**Production Status** None

**Site Status:** Active?

**Workings/exploration:**

Has been known since at least the late 1970's and has been examined and sampled by a succession of companies. Houston Oil and Minerals documented their 1980 work at the site with their annual report of assessment on the claims they held on the deposit (Book 12, pages 687-738, Recorder's Office, Petersburg Recording District) but there is little public record of more recent work.

**Production notes:**

None

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

Berg and Grybeck, 1980; Berg, 1981; Brew, 1997 (OF 97-156-J).

**Primary reference:** This description

**Reporter(s):** H.C. Berg (Fullerton, California) and D.J. Grybeck (USGS)

**Last report date:** 11/1/98

**Site name(s):** Alaska Garnet; Wrangell Garnet

**Site type:** Mine

**ARDF no.:** PE036

**Latitude:** 56.574

**Quadrangle:** PE C-2

**Longitude:** 132.361

**Location description and accuracy:**

A famous Alaska mineral locality known since the early 1900's that has long been mined for garnet specimens. Mine site is at an elevation of from about 50 to 200 feet and about 1000 feet from the shoreline in the north-central portion of section 19, T 61 S, R 83 E.; it can be reached by a well marked trail along Garnet Creek from a landing on the Stikine River. Currently (1998) the property is owned by the Boy Scouts in Wrangell and permission to enter it should be obtained from them. Location of mine is known to within 100 m.

**Commodities:**

**Main:** Garnet

**Other:**

**Ore minerals:** Garnet

**Gangue minerals:**

**Geologic description:**

The country rocks in the area of this deposit are Cretaceous pelitic schist and hornfels intruded by Eocene tonalite and granodiorite (Brew and others, 1984). The deposit consists of dark red, euhedral to subhedral almandine garnet crystals up to 3 cm in diameter disseminated in several layers of quartz-biotite schist up to 10 or more feet thick.

**Alteration:**

**Age of mineralization:**

Almandine garnet formed during Cretaceous metamorphism.

**Deposit model:**

Metamorphic garnet

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

**Production Status** Yes

**Site Status:** Active

**Workings/exploration:**

Currently (1998) being mined from small surface pits as it has been for decades.

**Production notes:**

This site is a classic Alaska mineral locality that is known worldwide. The garnet is unsuitable for faceting as a gemstone, but it has been mined on a modest scale for decades for mineralogical specimens and will probably continue to be indefinitely. Wrangell garnets are a staple of tourist and rock shops throughout Alaska and have been widely exported as well. The garnet has been considered for use as an industrial abrasive and there may have been some minor production or at least test shipments as an abrasive and for foundry powder prior to WW II. The deposit's relatively low grade, limited extent, and lack of a nearby market, however, suggest that production of this garnet as a high-volume industrial mineral is unlikely in the foreseeable future.

**Reserves:**

Large as a source of mineralogical specimens. Bressler (1950) indicates the resources as abrasive to be about 11,900 tons of garnet in about 238,340 tons (1,125,000 cubic yards) of rock .

**Additional comments:**

**References:**

Wright and Wright, 1908; Brooks, 1911; Brooks, 1913; Bressler, 1950; Cobb, 1978 (OF 78-870); Brew and others, 1984; Grybeck, Berg, and Karl, 1984.

**Primary reference:** Bressler, 1950

**Reporter(s):** H.C. Berg (Fullerton, California) and D.J. Grybeck (USGS)

**Last report date:** 11/1/98

**Site name(s):** Unnamed (near Crittenden Creek)

**Site type:** Prospect

**ARDF no.:** PE037

**Latitude:** 56.52

**Quadrangle:** PE C-1

**Longitude:** 132.26

**Location description and accuracy:**

Location known only from claim records (U.S. Bureau of Mines, 1980) and probably is at least generally correct. Single placer claim staked in Crittenden Creek somewhere in section 2 or 11, T. 62 S, R. 84 E.

**Commodities:**

**Main:** Au?

**Other:**

**Ore minerals:**

**Gangue minerals:**

**Geologic description:**

A single placer claim was staked in 1974-1975 but apparently has not been active since (U.S. Bureau of Mines, 1980). Country rock in vicinity is Tertiary-Cretaceous biotite schist (Brew, 1997 [OF 97-156-H]). No other deposits are nearby.

**Alteration:**

**Age of mineralization:**

**Deposit model:**

Gold placer?

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

**Production Status** Undetermined.

**Site Status:** Probably inactive

**Workings/exploration:**

A single placer claim was staked in 1974-1975 but apparently has not been active since.

**Production notes:**

**Reserves:**

**Additional comments:**

**References:**

U.S. Bureau of Mines, 1980; Grybeck, Berg, and Karl, 1984; Brew, 1997 (OF 97-156-H).

**Primary reference:** U. S. Bureau of Mines, 1980

**Reporter(s):** H.C. Berg (Fullerton, California) and D.J. Grybeck (USGS)

**Last report date:** 11/1/98

**Site name(s):** Lake; Margery Group

**Site type:** Mine

**ARDF no.:** PE038

**Latitude:** 56.474

**Quadrangle:** PE B-1

**Longitude:** 132.095

**Location description and accuracy:**

Location known accurately as shown in Gault and others (1953). About two miles east of the east end of Virginia Lake at an elevation of about 1200 feet. The site is shown on current (1998) 1:63,360-scale topographic maps. Locality 40 of Grybeck, Berg, and Karl (1984).

**Commodities:**

**Main:** Ag, Pb, Zn

**Other:**

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

**Gangue minerals:** Calcite, quartz

**Geologic description:**

Quartz-calcite veins, breccia fillings, and stringer 'veins' occur along a prominent fault zone 10-20 feet thick that cuts dark-colored phyllite and slate, quartzite, chlorite schist, and biotite schist west of a large Cretaceous biotite tonalite to granodiorite pluton (Brew, 1997 [OF 97-156-C]). The veins contain galena, sphalerite, pyrite, and chalcopyrite in a quartz-carbonate gangue (Gault and others, 1953). Average grade of seven mineralized samples is about 1% Pb, 1% Zn, and 0.12 ounces Ag per ton.

**Alteration:**

**Age of mineralization:**

**Deposit model:**

Polymetallic vein?

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

**Production Status** Yes; small

**Site Status:** Inactive

**Workings/exploration:**

First staked in about 1900; considerable surface trenching and 200-250 feet of underground workings from three adits (Gault and others, 1953). Apparently no or little active exploration since at least the early 1950's. Claims active intermittently to at least 1978 (U.S. Bureau of Mines, 1980).

**Production notes:**

One ton of ore shipped to smelter in 1920 (Gault and others, 1953).

**Reserves:**

**Additional comments:**

**References:**

Wright and Wright, 1905; Wright and Wright, 1908; Buddington, 1923; Gault and others, 1953; Cobb, 1972 (MF-415); U.S. Bureau of Mines, 1980; Grybeck, Berg, and Karl, 1984; Brew, 1997 (OF 97-156-C).

**Primary reference:** Gault and others, 1953 (p. 41-46)

**Reporter(s):** H.C. Berg (Fullerton, California) and D.J. Grybeck (USGS)

**Last report date:** 11/1/98

**Site name(s):** Unnamed (near Porterfield Creek)

**Site type:** Occurrences

**ARDF no.:** PE039

**Latitude:** 56.519

**Quadrangle:** PE C-1

**Longitude:** 132.086

**Location description and accuracy:**

Sixteen placer claims known only generally to be along Porterfield in sections 1, 2 and 11, T. 62 S., R. 85 E. Coordinates are approximately the center of the claim block (U.S. Bureau of Mines, 1980).

**Commodities:**

**Main:** Sn

**Other:**

**Ore minerals:** Cassiterite

**Gangue minerals:**

**Geologic description:**

Sixteen placer claims staked for Sn; active from 1965 to 1967 but apparently not since (U.S. Bureau of Mines, 1980). Note that a viable source for placer tin has been documented in the Ag-Sn-Pb-Zn layered skarn deposit in upper Groundhog Basin (PE040).

**Alteration:**

**Age of mineralization:**

**Deposit model:**

Placer tin (Cox and Singer, 1986; model 39e)

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

39e

**Production Status** None

**Site Status:** Undetermined

**Workings/exploration:**

Sixteen placer claims staked for Sn; active from 1965 to 1967 but apparently not since.

**Production notes:**

Probably none

**Reserves:**

**Additional comments:**

**References:**

U.S. Bureau of Mines, 1980; Grybeck, Berg, and Karl, 1984.

**Primary reference:**

**Reporter(s):** H.C. Berg (Fullerton, California) and D.J. Grybeck (USGS)

**Last report date:** 11/1/98

**Site name(s): Groundhog Basin****Site type:** Prospects**ARDF no.:** PE040**Latitude:** 56.515**Quadrangle:** PE C-1**Longitude:** 132.062**Location description and accuracy:**

Coordinates are for the approximate center of a group of prospects, adits, and occurrences in an area about 1/4 mile long in upper Groundhog Basin. The site is in the NW1/4, section 7, T. 62 S., R. 86 E. between an elevation of 2,000 and 2,500 feet. Gault and other (1953) includes an excellent detailed geologic map of the site.

**Commodities:****Main:** Ag, Pb, Sn, Zn**Other:** Au, Cu, Mo, Sn**Ore minerals:** Arsenopyrite, cassiterite, chalcopyrite, cubanite(?), fluorite, galena, magnetite, pyrrhotite, sphalerite, tetrahedrite-tennantite**Gangue minerals:** Quartz, pyroxene, and various calcsilicate skarn minerals**Geologic description:**

The country rocks in the area of the prospects include Tertiary to Cretaceous biotite schist, biotite-garnet-quartz schist, quartzofeldspathic gneiss, and minor marble and calcsilicate gneiss (Brew, 1997 [OF 97-156-H]). The metamorphic rocks near the prospects are cut by several large Tertiary felsic dikes and sills that have been dated elsewhere at about 20 m.y. (see PE043), and by a large Cretaceous tonalite pluton that intrudes the metamorphic section less than 3,000 feet west of the Groundhog Basin deposits. The deposits are also genetically related to a zinnwaldite 'tin' granite plug nearby (Newberry and Brew, 1989).

Four distinct steeply-dipping 'ore beds' have been defined, the most extensive of which is 4 feet thick and extends horizontally for about 3,700 feet through a vertical distance of about 1,500 feet (Gault and others, 1953). The ore beds consist of a) masses of ore minerals up to several feet thick, mainly of sphalerite, pyrite, pyrrhotite, galena, chalcopyrite, magnetite, and cubanite(?); and b) layers containing the same assemblage of ore minerals disseminated through the metamorphic host rock. The ore beds are interlayered with steeply-dipping, medium- to high-grade pelitic and quartzofeldspathic schist and gneiss, and locally with banded calcsilicate gneiss. Garnet, pyroxene, and epidote are common near the ore beds, and locally form skarns.

Newberry and Brew (1989) identified tin as cassiterite as a major constituent of the ore beds and has classified the deposits as Ag-Sn-Pb-Zn skarns that replace calcareous beds in the schist and gneiss. They also genetically tie the skarns to a 15-17 Ma, zinnwaldite 'tin' granite that crops out north of the deposits. Near this zinnwaldite granite, massive sulfide samples commonly contain several percent tin and selected samples contain up to 18%. The sequence of depositional events is: 1) formation of pervasive albite-zinnwaldite gneiss in the cupola of an evolving granite with formation of pyroxene-garnet in adjacent biotite schist and mafic dikes; 2) lower temperature zinnwaldite-sphalerite-cassiterite veins in the granite and formation of the Ag-Sn-Pb-Zn ore bodies in Groundhog Basin by replacement of calcareous layers in the schist and gneiss; and 3) peripheral sphalerite-galena-fluorite veins as distal, lower temperature manifestation of the granite-related hydrothermal system.

The molybdenite-fluorite deposits that overlap this site are described separately at PE043; they are almost certainly related to the Tertiary felsic dikes and sills here and may well be part of the same series of events that formed the zinnwaldite 'tin' granite described by Newberry and Brew (1989).

**Alteration:**

Deposits associated with formation of pyroxene-epidote-garnet skarn.

**Age of mineralization:**

15-17 Ma based on genetic tie to a dated zinnwaldite 'tin' granite nearby (Newberry and Brew, 1989).

**Deposit model:**

Banded Ag-Sn-Pb-Zn skarn (Cox and Singer, 1986; model 14c)

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

14c

**Production Status** No**Site Status:** Active**Workings/exploration:**

The deposits were discovered in 1904 and were extensively explored, mainly in 1916-1917 and the early 1940's by surface trenching, about 450 feet of underground workings from four adits, and at least 600 feet of diamond drill holes. Claims are still active on the property in 1998.

**Production notes:**

No record of production.

**Reserves:**

Gault and others (1943, p. 23-27), document various attempts to define the ore reserves and resources of the deposit and to quantify the size and grade of certain portions of the

'ore beds.' They conclude, however, that there is insufficient information to justify making detailed estimates of the ore reserves in Groundhog Basin. However, in summary, they state, '...it appears reasonably certain that several hundred thousand tons each of solid and disseminated ore are present.' The solid ore contains about 8 percent of zinc, 1.5 percent of lead, and 1.5 ounces of silver per ton. The disseminated ore contains about 2.5 percent of zinc and 1 percent of lead.

Newberry and Brew (1989) have estimated the deposit contains about 1 million tonnes of ore containing 0.8% tin but emphasize the great uncertainty in the estimate.

**Additional comments:**

Gault and other (1953) provide detailed maps of the underground workings as well as a detailed surface geologic map that covers Groundhog Basin and extends southward to Glacier Basin.

**References:**

Wright and Wright, 1908; Buddington, 1923; Gault and others, 1953; Cobb, 1972 (MF-415); Cobb, 1978 (OF 78-870); Brew and others, 1984; Grybeck and others, 1984; Newberry and Brew, 1989; Brew, 1997 (OF 97-156-H).

**Primary reference:** Gault and others, 1953; Newberry and Brew, 1989

**Reporter(s):** H.C. Berg (Fullerton, California) and D.J. Grybeck (USGS)

**Last report date:** 11/1/98

**Site name(s): Unnamed (in Glacier Basin)****Site type:** Prospects**ARDF no.:** PE041**Latitude:** 56.48**Quadrangle:** PE B-1**Longitude:** 132.037**Location description and accuracy:**

Coordinates are for approximately the center of an elongated mineralized area of about 1 1/2 square mile in area that extends from Marsha Peak southeast to Glacier Basin. The area comprise most of the eastern half of sec. 19 and the western half of section 20, T. 62 S., R. 86 E.; it includes several small mineral occurrences and two prospect that are mapped in detail on Plate 9 of Gault and others (1953).

**Commodities:****Main:** Pb, Zn**Other:** Mo?**Ore minerals:** Sphalerite, galena**Gangue minerals:** Fluorite, quartz**Geologic description:**

The prospects contain two distinct types of deposits that may be genetically related (Gault and others, 1953; Newberry and Brew, 1989). The first consists of small, discontinuous, banded galena-sphalerite-magnetite lenses probably continuous with those in Groundhog Basin (PE040). These deposits are relatively small and scattered as compared to those in Groundhog Basin, but are essentially the same in mineralogy and origin. They occur as layers in the gneiss and schist that locally includes interlayered amphibolite, marble, and calcsilicate units. These are interpreted as replacement deposits with skarn affinities. The second type of deposit consists of quartz-fluorite veins with galena that are exposed in two small adits where they cut a Tertiary rhyolite sill. Several other rhyolite bodies are nearby; most are conformable with the foliation of the metamorphic rocks. The rhyolite sills and dikes are probably cogenetic with the 20 m.y. or younger bodies associated with the Mo deposits in the area (see PE043) and/or with the 15-17 Ma zinnwaldite 'tin' granite associated with the Groundhog Basin deposits. Newberry and Brew (1989) provide analytical data for the tin content of several sulfide-rich occurrences within this site. The tin content is distinctly lower than ore samples from Groundhog Basin and their conclusion is that the Glacier Basin deposits are further from the source of the hydrothermal fluids that formed them, i.e. from the zinnwaldite 'tin' granite at the

north end of Groundhog Basin.

**Alteration:**

Deposits associated with development of pyroxene-epidote-garnet skarn.

**Age of mineralization:**

15-20 Ma (see geologic description).

**Deposit model:**

Banded Ag-Sn-Pb-Zn skarn (Cox and Singer, 1986; model 14c); fluorite-galena vein

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

14c

**Production Status****Site Status:****Workings/exploration:**

The deposits have been known since 1899 and two old adits with an aggregate length of about 82 feet of underground workings have been driven on galena-rich veins that cut a rhyolite sill. Several shallow pits have also been dug on various sulfide occurrences within the area, but none appears to have exposed anything of significant size.

**Production notes:**

None

**Reserves:**

None

**Additional comments:**

Gault and others, (1953) provide detailed maps of the underground workings as well as a detailed surface geologic map that covers Groundhog Basin and extends southward to Glacier Basin to include this site.

**References:**

Wright and Wright, 1908; Gault and others, 1953; Cobb, 1972 (OF 78-870); Cobb, 1972 (MF-415); Grybeck, Berg, and Karl, 1984; Newberry and Brew, 1989; Brew, 1997 (OF 97-156-C).

**Primary reference:** Gault and others, 1953

**Reporter(s):** H.C. Berg (Fullerton, California) and D.J. Grybeck (USGS)

**Last report date:** 11/1/98

**Site name(s): Berg Basin****Site type:** Prospect**ARDF no.:** PE042**Latitude:** 56.446**Quadrangle:** PE B-1**Longitude:** 132.01**Location description and accuracy:**

A well documented, seemingly well-defined site at an elevation of about 1800 feet on a unnamed south-flowing tributary to the north end of Berg Creek. However, an extended ground and air search for the prospect by D. J. Grybeck of the USGS and Jan Still of BLM in 1996 failed to find it. Possibly now covered by an avalanche or hidden in the thick vegetation. Coordinates are based on older references and apparently are accurate to within several hundred meters; probably somewhere in the SW1/4, section 33, T. 63 S., R. 83 E.

**Commodities:****Main:** Ag, Au, Pb, Zn**Other:** Cu**Ore minerals:** Chalcopyrite, galena, native gold, pyrite, sphalerite**Gangue minerals:** Quartz**Geologic description:**

The country rocks in the area of this prospect are biotite schist and subordinate marble and calcsilicate rocks that are intruded by Eocene tonalite and granodiorite and by younger dikes and sills of rhyolite, basalt, and pegmatite (Brew and others, 1984).

The deposit consists of a stockwork of quartz veinlets carrying pyrite, galena, and sphalerite, and of sporadic small masses of sphalerite and galena (Gault and others, 1953). Some of the veins contain moderate values of gold and silver. The small sulfide masses occur in a composite basaltic dike, in thin breccia zones along the contacts of basalt and rhyolite dikes and sills, along contacts of basalt dikes with schist near rhyolite, and disseminated in the rhyolite. One diamond drill hole intersected 5 feet of solid and disseminated galena. No galena or sphalerite have been found except where basaltic dikes are associated with rhyolite sills and dikes. The galena contains up to 28 ounces of silver per ton. A quartz vein reported to carry about 0.68 ounces of gold per ton crops out at the surface but could not be found in the underground workings.

The Berg Basin prospect is along the southern extension of the belt that includes the deposits in Glacier Basin (PE041) and Groundhog Basin (PE040) to the north.

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

The age of the deposit is inferred to be mid-Cenozoic, based on its spatial and apparently genetic association with dikes and sills that cut the Eocene tonalite.

**Deposit model:**

Polymetallic veins? (Cox and Singer, 1986; model 22c)

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

22c?

**Production Status** Undetermined.

**Site Status:** Undetermined

**Workings/exploration:**

Discovered in 1907. Explored by several surface pits, a tunnel about 800 feet long, and several hundred feet of diamond drilling in 1947-1948. Fowler (1950) indicates that seven men were working at the property then but apparently there has been no work since.

**Production notes:**

Probably none

**Reserves:**

None

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

Chapin, 1918; Buddington, 1923; Fowler, 1950 (IR 195-6); Gault and others, 1953; Cobb, 1978 (OF 78-870); Cobb, 1972 (MF-415); Brew and others, 1984; Grybeck, Berg, and Karl, 1984.

**Primary reference:** Gault and others, 1953

**Reporter(s):** H.C. Berg (Fullerton, California) and D.J. Grybeck (USGS)

**Last report date:** 11/1/98

**Site name(s):** Camp Six; Huff's Prospect; Nelson Glacier; Whistlepig

**Site type:** Prospects

**ARDF no.:** PE043

**Latitude:** 56.512

**Quadrangle:** PE C-1

**Longitude:** 132.054

**Location description and accuracy:**

The coordinates are for the approximate center of a two-square-mile area of molybdenum prospects and drill sites that extends from near the junction of Groundhog Basin with Porterfield Creek, to the vicinity of Peak 4362, and then continues some uncertain distance under Nelson Glacier.

**Commodities:**

**Main:** Mo

**Other:**

**Ore minerals:** Molybdenite

**Gangue minerals:** Fluorite, quartz, topaz

**Geologic description:**

The country rocks in the area of the prospects include Tertiary to Cretaceous biotite schist, biotite-garnet-quartz schist, quartzofeldspathic gneiss, and minor marble and calcsilicate gneiss (Brew, 1997 [OF 97-156-H]). The schist and paragneiss are intruded by a swarm of variously oriented rhyolite sills and dikes up to several hundred feet thick. Unpublished K-Ar radiometric dates on samples collected by an exploration company in the 1980's indicate that the rhyolite is no older than 20 m.y. Locally, the rhyolite displays prominent igneous brecciation. A few quartz veins are also present, and a large Cretaceous tonalite pluton that intrudes the metamorphic section to the east. The deposits may also be genetically related to a 15-17 Ma zinnwaldite 'tin' granite plug at the north end of the site (Newberry and Brew, 1989). The area also is transected by the Coast Range megalineament, a prominent northwest-trending topographic depression that has been traced for the length of southeastern Alaska.

Almost no information has been published on the Mo exploration in this area and this description is largely pieced together from informal discussions with a number of involved parties. At least two major companies and a number of individual prospectors have explored the area. A mineral subsidiary of a large oil company established a large camp in the late 70's on the ridge about a mile southwest of Peak 4362 and drilled a number of holes in the vicinity, some through the ice of Nelson Glacier. AMAX Exploration

had a camp for several years in the mid-80's near the mouth of Groundhog Basin creek and drilled a number of deep diamond drill holes stretching from the vicinity of that camp (in about the center of section 1, T. 62 S, R. 86 E.) to at least the prominent cirque at the head of Groundhog Basin Creek (in section 7); this included several holes on the east side of Groundhog Basin creek among the base-metal 'ore beds' of the Groundhog Basin deposit (see PE040). A block of 295 claims was staked in 1963 (U. S. Bureau of Mines, 1980) and much or all of the area was probably covered by claims well into the 1980's. There has been little or no drilling in the area since the mid-80's. Some claims are probably still active in 1998 and there has been occasional prospecting by various companies and individual prospectors to the present (1998).

Despite extensive exploration for molybdenite, and the widespread felsic dikes and sills, apparently little molybdenite has been found at the surface in the prospect area. An exception is at 'Huff's Adit,' at an elevation of about 3,500 feet on the wall of the cirque at the head of Groundhog Basin creek, where molybdenite can be found on the dump. Fluorite and topaz are not uncommon throughout the area, but rarely are present in quantity. Apparently the model for the exploration programs was to test for a deep molybdenum orebody; many of the drill holes reportedly were very deep.

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

15-20 Ma (see geologic description).

**Deposit model:**

Climax Mo? (Cox and Singer, 1986; model 16)

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

16

**Production Status** No**Site Status:** Active?**Workings/exploration:**

Almost no information has been published on the Mo exploration in this area and this description is largely pieced together from informal discussions with a number of involved parties. At least two major companies and a number of individual prospectors have explored the area. A mineral subsidiary of a large oil company established a large camp in the late 70's on the ridge about a mile southwest of Peak 4362 and drilled a number of holes in the vicinity, some through the ice of Nelson Glacier. AMAX Exploration had a camp for several years in the mid-80's near the mouth of Groundhog Basin creek and drilled a number of deep diamond drill holes stretching from the vicinity of that camp (in about the center of section 1, T. 62 S, R. 86 E.) to at least the prominent cirque at the head of Groundhog Basin Creek (in section 7); this included several holes on the east side of Groundhog Basin creek among the base-metal 'ore beds' of the Groundhog Basin deposit (see PE040). A block of 295 claims was staked in 1963 (U. S. Bureau of Mines,

1980). There has been little or no drilling in the area since the mid-80's. Some claims are probably still held in 1998 and there has been occasional prospecting by various companies and individual prospectors to the present (1998).

**Production notes:**

None

**Reserves:****Additional comments:**

'Camp Six' was the name used for the exploration camp that was active in the late 1970's on the ridge about a mile southwest of Peak 4362 ; in descriptions of the exploration drilling, the property was often referred to as the Nelson Glacier prospect. The name 'Whistlepig' is a name commonly given to this prospect in 1998. Huff's Prospect is the name of the prospect and adit high on the wall of the prominent cirque at the northeast end of Groundhog Basin creek. The prospect is at an elevation of about 3600 feet in about the center of the west half of sec. 7, T. 62 S., R. 85 E.; it was found by Bill Huff, a prospector, probably in the 1970's.

**References:**

U.S. Bureau of Mines, 1980; Brew and others, 1984; Grybeck, Berg, and Karl, 1984; Newberry and Brew, 1989; Brew, 1997 (OF 97-156-H).

**Primary reference:** Grybeck, Berg, and Karl, 1984

**Reporter(s):** H.C. Berg (Fullerton, California) and D.J. Grybeck (USGS)

**Last report date:** 11/1/98

**Site name(s):** Unnamed (near Berg Bay)

**Site type:** Occurrences

**ARDF no.:** PE044

**Latitude:** 56.36

**Quadrangle:** PE B-1

**Longitude:** 132.017

**Location description and accuracy:**

Five claims staked in 1920 at sea level near Berg Bay and apparently not active since (U. S. Bureau of Mines, 1980). Location known only generally.

**Commodities:**

**Main:** Unknown

**Other:**

**Ore minerals:** Unknown

**Gangue minerals:**

**Geologic description:**

The rocks in the area consist of Tertiary-Cretaceous biotite schist, marble and calcisilicate gneiss (Brew, 1997 [OF 97-156-C]). No other deposits nearby.

**Alteration:**

**Age of mineralization:**

**Deposit model:**

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

**Production Status**

**Site Status:**

**Workings/exploration:**

Five claims staked in 1920 and apparently not active since (U.S. Bureau of Mines, 1980).

**Production notes:**

**Reserves:**

**Additional comments:**

**References:**

U.S. Bureau of Mines, 1980; Grybeck, Berg, and Karl, 1984; Brew, 1997 (OF 97-156-C).

**Primary reference:**

**Reporter(s):** H.C. Berg (Fullerton, California) and D.J. Grybeck (USGS)

**Last report date:** 11/1/98

**Site name(s):** Unnamed (near Point St. Albans)

**Site type:** Occurrence

**ARDF no.:** PE045

**Latitude:** 56.11

**Quadrangle:** PE A-6

**Longitude:** 133.957

**Location description and accuracy:**

Location known to within 100 meters. Veins are exposed on a bedrock bench exposed in the intertidal zone near Point St. Albans. Site is about 350 yards southwest of triangulation station 'June' show on the current (1968) 1:63,360 topographic map. Locality 49 of Grybeck, Berg, and Karl (1984).

**Commodities:**

**Main:** Ag, Pb, Zn

**Other:** Sb

**Ore minerals:** Arsenopyrite, berthierite (FeSb<sub>2</sub>S<sub>4</sub>), galena, pyrite, and sphalerite

**Gangue minerals:** Quartz

**Geologic description:**

Several quartz-calcite veins and lenses up to 6 feet thick and up to a hundred feet long, exposed in rocks exposed in the intertidal zone, contain abundant sphalerite, galena, pyrite, arsenopyrite, and berthierite (FeSb<sub>2</sub>S<sub>4</sub>) (Grybeck, Berg, and Karl, 1984). The veins cut the periphery of a Cretaceous hornblende diorite pluton, which intrudes turbidite of the Silurian Bay of Pillars Formation (Brew, and others, 1984). Selected samples of the veins contain up to 0.5 ppm Au, 300 ppm Ag, 360 ppm Cu, and about 2% Pb and 14% Zn.

**Alteration:**

None or minor.

**Age of mineralization:**

Veins cut Cretaceous hornblende diorite.

**Deposit model:**

Polymetallic vein (Cox and Singer, 1986; model 22c)

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

22c

**Production Status****Site Status:****Workings/exploration:**

First noted by Houston and others (1958, p. 24) in their work on the uranium resources of Alaska; they provide little information about the veins other than they contain less than 0.0001 equivalent uranium and sphalerite. A claim had been staked on the deposits in 1954 but apparently it has not been active since (U.S. Bureau of Mines, 1980). The description of this site is largely based on field work in the early 1980's during a mineral resource assessment of the Petersburg quadrangle (Grybeck, Karl, and Berg, 1984).

**Production notes:**

None

**Reserves:**

None

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

Houston and others, 1958; Cobb, 1972 (OF 78-870); Cobb, 1972 (MF-415);  
U.S. Bureau of Mines, 1980; Brew and others, 1984; Grybeck, Berg, and Karl, 1984.

**Primary reference:** Grybeck, Berg, and Karl, 1984

**Reporter(s):** H.C. Berg (Fullerton, California) and D.J. Grybeck (USGS)

**Last report date:** 11/1/98

**Site name(s):** Lillie; and unnamed (south of Dry Pass)

**Site type:** Prospects

**ARDF no.:** PE046

**Latitude:** 56.15

**Quadrangle:** PE A-5

**Longitude:** 133.414

**Location description and accuracy:**

Prospects, occurrences, and claims in an area of several square miles on northern Kosciusko Island, south of Dry Pass. Coordinates are for the approximate center of activity. Locality 50 and 51 of Grybeck, Berg, and Karl (1984).

**Commodities:**

**Main:** Cu, Mo, Pb, W

**Other:**

**Ore minerals:** Chalcopyrite, galena, magnetite, molybdenite, powellite, pyrite, pyrrhotite, scheelite

**Gangue minerals:** Calcsilicate minerals, marble, quartz

**Geologic description:**

Several mineral deposits occur near the contact of a Cretaceous quartz monzonite pluton bordered by Cretaceous marble metamorphosed from Silurian Heceta Limestone (Brew, and others, 1984); all the deposits are probably related to this contact zone. At the Lillie prospect (Denny, 1961; Herreid and Kaufman, 1964) a band of tactite about 100 feet wide in diorite contains joint coatings and disseminated irregular masses, less than a half-inch in diameter, of molybdenite and subordinate powellite, chalcopyrite, pyrite, and magnetite. At another unnamed occurrence, a band of magnetite about 3 feet wide follows the contact between a diorite dike and marble. At another, samples of hornfels, marble, and diorite collected from a dump outside a short caved adit contain variable amounts of magnetite, molybdenite, chalcopyrite, pyrrhotite, pyrite, and galena. Quartz veins near the adit contain scheelite and a 5-foot chip sample of the vein contained 1.4% WO<sub>3</sub>. Quartz-rich rock near a marble-diorite contact also carry disseminated scheelite. These and additional showings of molybdenite, pyrite, and chalcopyrite in the contact zone of the pluton suggest the possibility of a porphyry copper or molybdenum deposit as well as more contact metamorphic deposits in the vicinity. Also see 'Workings/exploration'.

**Alteration:**

Contact metamorphic/metasomatic alteration with development of calcsilicate minerals

in marble at periphery of the pluton at Dry Pass.

**Age of mineralization:**

Cretaceous based on probable genetic relationship to nearby pluton.

**Deposit model:**

Various types of skarn deposits (Cox and Singer, 1986; models 14a, 18a, 18b, 18c, and 18d).

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

14a, 18a, 18b, 18c, and 18d

**Production Status** None

**Site Status:** Active?

**Workings/exploration:**

Old prospects and occurrences on which little recent work apparently has been done beyond minor surface exploration and a short adit (said to be 100 feet long). Twenty-seven lode claims were staked in the area in 1961 (U. S. Bureau of Mines, 1980) and an even bigger block is shown on the 1995 Alaska land status map. Extent and type of work done on these claims in recent years is unknown.

**Production notes:**

None

**Reserves:**

None

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

Denny, 1961; Herreid and Kaufman, 1964; Cobb, 1972 (OF 78-870); Cobb, 1972 (MF-415); U.S. Bureau of Mines, 1980; Brew and others, 1984; Grybeck, Berg, and Karl, 1984.

**Primary reference:** Herreid and Kaufman, 1964

**Reporter(s):** H.C. Berg (Fullerton, California) and D.J. Grybeck (USGS)

**Last report date:** 11/1/98

**Site name(s):** Unnamed (near Shakan)

**Site type:** Prospect

**ARDF no.:** PE047

**Latitude:** 56.133

**Quadrangle:** PE A-5

**Longitude:** 133.43

**Location description and accuracy:**

Coordinates are for approximately the center of block of twenty-seven lode claims south of Dry Pass staked in 1961 and active through at least 1973 (U.S. Bureau of Mines, 1980).

**Commodities:**

**Main:** Cu, Fe, Mo

**Other:**

**Ore minerals:**

**Gangue minerals:**

**Geologic description:**

Rocks in the area consist of a Cretaceous quartz monzonite pluton in contact with marble metamorphosed from Silurian Heceta Limestone and biotite-quartz-hornfels metamorphosed from Silurian graywacke and mudstone of the Bay of Pillars Formation (Brew, and others, 1984). The claims are probably related to this contact. Also see PE046 for specific deposits within this claim block.

**Alteration:**

**Age of mineralization:**

**Deposit model:**

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

**Production Status**

**Site Status:**

**Workings/exploration:**

Block of twenty-seven lode claims staked in 1961 and active through at least 1973 (U.S. Bureau of Mines, 1980). Also see PE046 for prospects and occurrences within this claim block.

**Production notes:**

**Reserves:**

**Additional comments:**

**References:**

U.S. Bureau of Mines, 1980; Brew and others, 1984; Grybeck, Berg, and Karl, 1984; Maas, Bittenbender, and Still, 1995.

**Primary reference:** U. S. Bureau of Mines, 1980

**Reporter(s):** H.C. Berg (Fullerton, California) and D.J. Grybeck (USGS)

**Last report date:** 11/1/98

**Site name(s):** Shakan; Alaska Treadwell Mining Co.

**Site type:** Prospect

**ARDF no.:** PE048

**Latitude:** 56.135

**Quadrangle:** PE A-5

**Longitude:** 133.458

**Location description and accuracy:**

The Shakan molybdenum prospect (also known as the Alaska Treadwell Mining Co), is near the east end of Shakan Strait on northern Kosciusko Island. This well known prospect is on the east side of Shakan Creek at an elevation of about 600 feet, just north of the center of section 23, T. 66 S., R. 77 E.

**Commodities:**

**Main:** Mo

**Other:** Cu, Zn

**Ore minerals:** Chalcopyrite, molybdenite, pyrite, pyrrhotite, sphalerite

**Gangue minerals:** Albite, quartz

**Geologic description:**

The country rocks in the vicinity consist of Cretaceous biotite-quartz hornfels altered from Silurian graywacke turbidite of the Bay of Pillars Formation and a large Cretaceous diorite pluton that intrudes the bedded rocks (Brew and others, 1984).

The Shakan molybdenum deposit is at or near the contact between the pluton and the hornfels and probably is genetically related to the emplacement of this pluton. The deposit is a sulfide-bearing fault-breccia zone 1-10 feet thick associated with hornblende diorite pegmatite; the zone contains abundant pyrrhotite, molybdenite, and chalcopyrite, with minor sphalerite and pyrite, in quartz-albite gangue.

**Alteration:**

**Age of mineralization:**

Probably Cretaceous based on age of associated pluton.

**Deposit model:**

Molybdenite associated with pegmatite dike along fault zone.

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

**Production Status** None

**Site Status:** Probably inactive

**Workings/exploration:**

The Shakan molybdenum prospect was discovered in 1917 and developed by a 570 foot tunnel and 14 surface cuts during and immediately after World War I (Chapin, 1919). Little or no subsequent exploration work on it beyond cursory examinations by passing geologists, although it was examined at some length by government geologist during World War II (Twenhofel and others, 1946; Smith, 1942, Thorne, 1943).

**Production notes:**

None

**Reserves:**

Smith (1942) estimated the resources of the Shakan molybdenum prospect to be 10,000-20,000 tons of rock containing about 1.5% MoS<sub>2</sub>.

**Additional comments:**

**References:**

Chapin, 1919; Hess, 1924; Smith, 1942; Thorne, 1943; Twenhofel and others, 1946; Gooch, 1964; Cobb, 1978 (OF 78-870); Cobb, 1972 (MF-415); Grybeck, Berg, and Karl, 1984; Brew, Ovenshine, Karl, and Hunt, 1984; Coldwell, 1990; Maas, Bittenbender, and Still, 1995.

**Primary reference:** Smith, 1942; Twenhofel and others, 1946

**Reporter(s):** H.C. Berg (Fullerton, California) and D.J. Grybeck (USGS)

**Last report date:** 11/1/98

**Site name(s):** Castle and Company

**Site type:** Mine?

**ARDF no.:** PE049

**Latitude:** 56.135

**Quadrangle:** PE A-5

**Longitude:** 133.458

**Location description and accuracy:**

The location of this deposit is only generally known from an old reference (Brooks, 1902), which indicates that it is near the Shakan molybdenum deposit on northern Kosciusko Island (PE048). The exact location of the mine is uncertain but coordinates of the site are probably accurate to within a km. Included in locality 52 of Grybeck, Berg, and Karl (1984).

**Commodities:**

**Main:** Au

**Other:**

**Ore minerals:** Pyrite

**Gangue minerals:** Quartz

**Geologic description:**

The country rocks in the area of this locality are Cretaceous hornfels in contact with a large Cretaceous diorite pluton (Brew and others, 1984). The deposit, which may be near the contact is a quartz vein reported to carry auriferous pyrite (Brooks, 1902). The deposit was discovered in 1898 and a small stamp mill was installed but no production is reported and no work of note has apparently taken place since the early 1900's.

**Alteration:**

**Age of mineralization:**

**Deposit model:**

Gold quartz vein (Cox and Singer, 1986; model 36a)

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

36a

**Production Status** Undetermined.

**Site Status:** Inactive

**Workings/exploration:**

A small stamp mill was installed on a quartz vein discovered in 1898 but no work of note has taken place since the early 1900's and little information is available about the deposit (Brooks, 1902). Since 1902, the only information that has been published on it as a few minor, secondary references.

**Production notes:**

A little gold may have been produced from an auriferous quartz vein early in the century (Brooks, 1902).

**Reserves:**

**Additional comments:**

**References:**

Brooks, 1902; Cobb, 1972 (MF-415); Cobb, 1978 (OF 78-870); Grybeck, Berg, and Karl, 1984; Brew and others, 1984.

**Primary reference:** Brooks, 1902

**Reporter(s):** H.C. Berg (Fullerton, California) and D.J. Grybeck (USGS)

**Last report date:** 11/1/98

**Site name(s):** Unnamed (near El Capitan Passage)

**Site type:** Prospect

**ARDF no.:** PE050

**Latitude:** 56.134

**Quadrangle:** PE A-4

**Longitude:** 133.291

**Location description and accuracy:**

Approximate center of two claims staked in 1962 near the northeast end of Kosciusko Island (U.S. Bureau of Mines, 1980). Locality 53 of Grybeck, Karl, and Berg, 1984. May be the claims on the El Cap gold vein described as PE051.

**Commodities:**

**Main:** Ag, Au, Pb

**Other:**

**Ore minerals:**

**Gangue minerals:**

**Geologic description:**

No details are known beyond the presence of the claims.

**Alteration:**

**Age of mineralization:**

**Deposit model:**

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

**Production Status**

**Site Status:**

**Workings/exploration:**

Two claims staked for gold, lead, and silver in 1962; active through 1967 but apparently not since (U. S. Bureau of Mines, 1984).

**Production notes:**

**Reserves:**

**Additional comments:**

**References:**

U.S. Bureau of Mines, 1980; Grybeck, Berg, and Karl, 1984; Maas, Bittenbender, and Still, 1995.

**Primary reference:** U. S. Bureau of Mines, 1980

**Reporter(s):** H.C. Berg (Fullerton, California) and D.J. Grybeck (USGS)

**Last report date:** 11/1/98

**Site name(s): El Cap Gold****Site type:** Prospect**ARDF no.:** PE051**Latitude:** 56.13**Quadrangle:** PE A-4**Longitude:** 133.291**Location description and accuracy:**

The dump on this prospect is less than 100 feet from the shoreline on El Capitan passage, just north of the mouth of Tokhini Creek, northeast Kosciusko Island. Located to within 100 feet in section 23, T. 66 S., R. 78 E.

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

A gold-quartz-calcite veins occurs along faults in Silurian greenschist the veins roughly parallel a limestone-greenschist contact to the southwest of the prospect (Brew, and others, 1984). Two steeply dipping veins are exposed, the longer of which extends for about 500 feet with a maximum thickness of about 3 feet (Maas, Bittenbender, and Still, 1995). Visible gold is present in the veins but apparently there are few other ore minerals present. The gold values are erratic. Sampling showed gold values up to 2,027 ppm (59.0 ounces per ton) but most values were lower, and silver values only reached a maximum of 50.0 ppm.

**Alteration:**

None noted.

**Age of mineralization:**

Unknown.

**Deposit model:**

Low-sulfide gold-quartz vein (Cox and Singer, 1986, model 36a)

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

36a

**Production Status** No**Site Status:** Active**Workings/exploration:**

Maas, Bittenbender, and Still (1995) state that the deposit was originally found in 1962 but the claims allowed to lapse; the property was restaked in 1967. It has been active since. Property developed by eight trenches and a short adit. A mineral survey has been done on the property with intent to patent it. A map of the property is in Maas, Bittenbender, and Still (1995).

**Production notes:**

Probably none.

**Reserves:**

In view of the limited amount of data, reserve calculations were considered unwarranted by Maas, Bittenbender, and Still, (1995) who sampled the property.

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

Brew and others, 1984; Maas, Bittenbender, and Still, 1995.

**Primary reference:** Maas, Bittenbender, and Still, 1995**Reporter(s):** H.C. Berg (Fullerton, California) and D.J. Grybeck (USGS)**Last report date:** 11/1/98

**Site name(s):** Unnamed (near Devilfish Bay)

**Site type:** Prospect

**ARDF no.:** PE052

**Latitude:** 56.085

**Quadrangle:** PE A-5

**Longitude:** 133.389

**Location description and accuracy:**

Prospect near the head of Devilfish Bay, northwest Kosciusko, in the NW1/4, section 8, T. 67 S., R. 78 E.

**Commodities:**

**Main:** Cu, Mo, U

**Other:**

**Ore minerals:** Chalcopyrite, magnetite, and molybdenite

**Gangue minerals:** Calcsilicate minerals in tactite

**Geologic description:**

Magnetite, chalcopyrite, and minor molybdenite occur in tactite at contact between a Cretaceous quartz monzonite pluton and Cretaceous hornfels formed from calcareous graywacke of the Silurian Bay of Pillars Formation (Herreid and Kaufman, 1964, p. 4; Eakins, 1975, p. 54-57; and Brew and others, 1984). One sample of the tactite contained 8 ppm equivalent uranium.

**Alteration:**

Calcsilicate minerals associated with intrusion of quartz monzonite into calcareous rocks.

**Age of mineralization:**

Related to intrusion of Cretaceous quartz monzonite pluton.

**Deposit model:**

Cu-Mo skarn with uranium?(Cox and Singer, 1986; model 18b)

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

18b

**Production Status** No

**Site Status:** Probably inactive

**Workings/exploration:**

Only work noted in 1975 was a single, hand-dug pit; little indication of any work since. But see PE053 for several blocks of claims staked around this prospect and active through at least 1981.

**Production notes:**

None

**Reserves:**

None

**Additional comments:**

**References:**

Herreid and Kaufman, 1964; Eakins, 1975; Cobb, 1972 (OF 78-870); Cobb, 1972 (MF-415); Brew and others, 1984; Grybeck, Berg, and Karl, 1984; Maas, Bittenbender, and Still, 1995.

**Primary reference:** Herreid and Kaufman, 1964

**Reporter(s):** H.C. Berg (Fullerton, California) and D.J. Grybeck (USGS)

**Last report date:** 11/1/98

**Site name(s):** Unnamed (near Devilfish Bay)

**Site type:** Prospects

**ARDF no.:** PE053

**Latitude:** 56.074

**Quadrangle:** PE A-5

**Longitude:** 133.367

**Location description and accuracy:**

Coordinates for approximate center of two large, overlapping claim blocks that total 63 claims; active from at least 1969 to 1981 (U. S. Bureau of Mines, 1980). General location is south of Devilfish Bay, northeastern Kosciusko Island. Locality 55 of Grybeck, Berg, and Karl (1984).

**Commodities:**

**Main:** Au ?

**Other:**

**Ore minerals:**

**Gangue minerals:**

**Geologic description:**

Two large overlapping claim blocks staked in area. Block of nine claims staked in 1969 but apparently not active since. Block of 54 claims for unstated commodities staked in 1978 and active through at least 1981 (U.S. Bureau of Mines, 1980). No other information has been published, but see PE052 for a prospect within the site.

The geology of the area is dominated by the contact of Cretaceous quartz monzonite pluton with Cretaceous hornfels formed from graywacke of the Silurian Bay of Pillars Formation (Brew and others, 1984).

**Alteration:**

**Age of mineralization:**

**Deposit model:**

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

**Production Status** No

**Site Status:** Probably inactive

**Workings/exploration:**

Two large overlapping claim blocks staked in area. Block of nine claims staked in 1969 but apparently not active since. Block of 54 claims for unstated commodities staked in 1978 and active through at least 1981 (U.S. Bureau of Mines, 1980). No other information has been published, but see PE052 for a prospect within the claim blocks.

**Production notes:**

None

**Reserves:**

None

**Additional comments:**

**References:**

U.S. Bureau of Mines, 1980; Brew and others, 1984; Grybeck, Berg, and Karl, 1984.

**Primary reference:** Grybeck, Berg, and Karl, 1984

**Reporter(s):** H.C. Berg (Fullerton, California) and D.J. Grybeck (USGS)

**Last report date:** 11/1/98

**Site name(s):** Unnamed (near Bell Island)

**Site type:** Prospect

**ARDF no.:** PE054

**Latitude:** 56.324

**Quadrangle:** PE B-4

**Longitude:** 133.279

**Location description and accuracy:**

Center of a single placer mining claim near the mouth of Pine Creek, about a mile east of the north tip of Bell Island, northern Prince of Wales Island. The location is known to within a few hundred yards. Locality 56 of Grybeck, Berg, and Karl (1984).

**Commodities:**

**Main:** Au

**Other:**

**Ore minerals:**

**Gangue minerals:**

**Geologic description:**

A gold placer indicated only by the presence of a claim located here in 1967. There is no record of production or of further work on the property and no other lode or placer gold deposits nearby. The rocks in the vicinity consist of Silurian Hecate Limestone and associated polymictic conglomerate (Brew, 1997 [OF 97-156-F]).

**Alteration:**

**Age of mineralization:**

**Deposit model:**

Placer gold (Cox and Singer, 1986; model 39a)

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

39a

**Production Status** Undetermined.

**Site Status:** Probably inactive

**Workings/exploration:**

A single placer gold claim was staked in 1967 but apparently has not been active since.  
No other confirmation of gold values and no other mineral deposits nearby.

**Production notes:**

None

**Reserves:**

None

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

U.S. Bureau of Mines, 1980; Grybeck, Berg, and Karl, 1984; Brew, 1997 (OF 97-156-F).

**Primary reference:** U.S. Bureau of Mines, 1980

**Reporter(s):** H.C. Berg (Fullerton, California) and D.J. Grybeck (USGS)

**Last report date:** 11/1/98

**Site name(s): Paystreak Vein; Marker Vein****Site type:** Prospects**ARDF no.:** PE055**Latitude:** 56.262**Quadrangle:** PE B-4**Longitude:** 133.115**Location description and accuracy:**

Several radioactive and non-radioactive REE-bearing carbonate veins occur along the shoreline of Pitcher Island in an area about 500 feet by 100 feet that comprises the north-eastern two-thirds of the island. Pitcher Island is about 3.3 miles south, southwest of the mouth of Salmon Bay on northeastern Prince of Wales Island. (Pitcher Island is not named on the current (1998) USGS 1,63,360-scale topographic map, but is identified as such in Houston and others, 1950.) Locality 57 of Grybeck, Berg, and Karl (1984). See also PE056, a similar deposit nearby.

**Commodities:****Main:** U, Th, REE**Other:** Mo**Ore minerals:** Bastnaesite, chalcopyrite, red and specular hematite, magnetite, marcasite, monazite, parisite, pyrite, thorite, zircon**Gangue minerals:** Apatite, chalcedony, chert, dolomite-ankerite, chlorite, epidote, alkali feldspar, fluorite, garnet, kaolinite, muscovite, quartz, sericite, topaz**Geologic description:**

Two steeply dipping, radioactive carbonate-hematite veins--the Paystreak and Marker veins--are exposed along the shoreline on the northeast end of Pitcher Island (Houston and others, 1958). They each are exposed for about 100 feet, and the largest, the Pitcher vein, is about 2-4 feet thick. The veins consist dominantly of a carbonate of the dolomite-ankerite series, with up to 10% alkalic feldspar, and hematite. The radioactive mineral have not fully been defined but the veins contain small to rare amounts of pyrite magnetite, quartz and chalcedony, chlorite, parisite, bastnaesite, muscovite, fluorite, radioactive apatite, monazite, thorite, zircon, and minute amounts of several other minerals. The only uranium bearing minerals that have been identified are thorite, monazite, zircon, and apatite in trace amounts. Only traces of REE are present in the radioactive veins. The maximum radioactivity of the veins as measured by the USGS is 0.095 eU; the average for the Paystreak vein is 0.03 eU and the highest uranium content is 0.3%.

There are also three (relatively) non-radioactive, REE-carbonate veins that can be traced

along the shoreline on either side of Pitcher Island for up to 300 feet (Houston and others, 1958). They range in size from several inches to as thick as 10 feet. They consistently strike northeast and have steep dips to the southeast. They carry many of the same minerals as the radioactive veins but contain parisite as the main REE-bearing mineral. These rare-earth carbonate veins contain an average of 0.79% combined rare-earth oxides; one high-grade grab sample from a similar vein nearby (PE056) contains about 5% rare-earth oxides. The radioactive carbonate veins and the REE-carbonate veins are probably genetically related and share much of the same mineralogy. Grab samples of veins and felsic dikes taken during USGS work in the early 1980's commonly contain more than 1000 ppm La, and several contain 1000 ppm Mo (Grybeck, Karl, and Berg, 1984).

Recent work by Warner (1989) to define the columbium potential of the deposit indicates the Paystreak vein contains a weighted average of 1670 ppm Th and 0.13% REE across a width of 2.6 feet over a length of 180 feet. The host rock for both types of veins is a Silurian sedimentary sequence mainly of volcanoclastic graywacke, argillitic turbidites, and minor limestone that is widespread on the northeast corner of Prince of Wales Island (Brew, 1997 [OF 97-156-F]).

**Alteration:**

The Silurian host rock adjacent to both the radioactive carbonate and the REE-carbonate veins are commonly marked by alteration zones a few inches thick adjacent to them marked by dark red by hematitic alteration. The alteration is somewhat more intense adjacent to the radioactive veins.

**Age of mineralization:**

Unknown other than host rock is Silurian.

**Deposit model:**

Radioactive carbonate veins and REE-carbonate veins

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

**Production Status** None

**Site Status:** Probably inactive

**Workings/exploration:**

At least 34 claims were staked on the veins in 1951 and 1952 and some were restaked in 1977 (U.S. Bureau of Mines, 1980). There has been little interest or work on these occurrences in recent years because of the relatively depressed market for radioactive commodities.

**Production notes:**

None

**Reserves:**

Houston and others (1958) calculated that the Paystreak vein contained 'about 70

pounds of thorium or 80 pounds of thorium dioxide per foot of depth for the 100-foot section of the vein sampled'. (They considered that most of the radioactivity was due to thorium).

Warner (1989) indicates that the veins at this site and similar veins nearby at Salmon Bay (PE056) 'contain combined indicated reserves of approximately 340,000 lb Cb, 2.2 MMlb REE, minimal estimate, and 11,700 lb Th within approximately 763,000 st of rock.'

**Additional comments:**

**References:**

Glover, 1951; White and others, 1952; Wedow and others, 1953; Houston and others, 1958; Overstreet, 1967; Eakins, 1975; Cobb, 1972 (OF 78-870); Cobb, 1972 (MF-415); U.S. Bureau of Mines, 1980; Grybeck, Berg, and Karl, 1984; Warner, 1989; Brew, 1997 (OF 97-156-F).

**Primary reference:** Houston and others, 1958

**Reporter(s):** H.C. Berg (Fullerton, California) and D.J. Grybeck (USGS)

**Last report date:** 11/1/98

**Site name(s): Unnamed (near Salmon Bay)****Site type:** Prospects**ARDF no.:** PE056**Latitude:** 56.32**Quadrangle:** PE B-4**Longitude:** 133.169**Location description and accuracy:**

Coordinates are approximately the center of several sites that extend along the shoreline from about the mouth of Salmon Bay to Point Colpoys on northeastern Prince of Wales Island; in sections 11 to 13, and 19 to 24, T. 64 S., R. 78 E.

**Commodities:****Main:** REE, Th, U**Other:** Mo**Ore minerals:** Bastnaesite, chalcopyrite, monazite, parisite, thorite**Gangue minerals:** Mainly chert, dolomite-ankerite, alkali feldspar, and quartz,**Geologic description:**

Steeply-dipping, locally highly radioactive, carbonate veins occur at three localities in hematitically altered, hornfelsed Silurian graywacke. The graywacke is cut by deformed and sheared felsic dikes and undeformed basalt dikes (Brew, 1997 [OF 97-156-F]). The veins contain fluorite, monazite, and a variety of rare-earth fluocarbonate minerals, some of which are highly radioactive (Houston and others, 1953; Eakins, 1975, and Grybeck, Berg, and Karl, 1984). The veins are up to four feet thick but most are thinner and can be only traced for a few hundred feet where they disappear under vegetation or under water.

The ore mineralogy of the veins varies greatly and includes red hematite, specular hematite, magnetite, pyrite, marcasite, chalcopyrite, thorite, monazite, zircon, parisite, and bastnaesite. Gangue minerals are mainly dolomite-ankerite, with varying amounts of alkali feldspar, chert, quartz, chalcedony, chlorite, epidote, sericite, kaolinite, fluorite, muscovite, apatite, topaz, and garnet. The maximum radioactivity of the veins as measured by the USGS is 0.095 eU; the average is 0.03 eU and the highest uranium content is 0.3% (Houston and others, 1958). The rare-earth carbonate veins contain an average of 0.79% combined rare-earth oxides; one high-grade grab sample contained about 5% rare-earth oxides. Only trace of the rare earths are present in the radioactive veins. Grab samples of veins and felsic dikes taken during USGS work in the early 1980's commonly contain more than 1000 ppm La, and several contain 1000 ppm Mo (Grybeck, Berg, and Karl, 1984).

Warner (1989) sampled several veins at this site to assess their columbium potential. A vein just south of Bay Point contains 0.2% REE across a width of 8.0 feet and a length of 1,300 feet. A vein at Bay Point contains 850 ppm Cb across a width of 3.4 feet and a length of 1,200 feet.

Also see PE055 for a description of very similar if not identical veins to the south on Pitcher Island.

**Alteration:**

The Silurian host rock adjacent to both the radioactive carbonate and the REE-carbonate veins are commonly marked by alteration zones a few inches thick adjacent to them marked by dark red by hematitic alteration. The alteration is somewhat more intense adjacent to the radioactive veins.

**Age of mineralization:**

Unknown other than host rock is Silurian.

**Deposit model:**

Uranium and REE carbonate veins

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):****Production Status****Site Status:****Workings/exploration:**

At least 34 claims were staked on the veins in 1951 and 1952 and some were restaked in 1977 (U.S. Bureau of Mines, 1980). There has been little interest or work on these occurrences in recent years because of the relatively depressed market for radioactive elements.

**Production notes:**

None

**Reserves:**

Warner (1989) indicates that the veins at this site and similar veins nearby on Pitcher Island (PE055) 'contain combined indicated reserves of approximately 340,000 lb Cb, 2.2 MMlb REE, minimal estimate, and 11,700 lb Th within approximately 763,000 st of rock.'

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

Glover, 1951; White and others, 1952; Wedow and others, 1953; Houston and others, 1958; Overstreet, 1967; Eakins, 1975; Cobb, 1972 (OF 78-870); Cobb, 1972 (MF-415); U.S. Bureau of Mines, 1980; Grybeck, Berg, and Karl, 1984; Warner, 1989; Brew, 1997 (OF 97-156-F).

**Primary reference:** Houston and others, 1958

**Reporter(s):** H.C. Berg (Fullerton, California) and D.J. Grybeck (USGS)

**Last report date:** 11/1/98

**Site name(s): Unnamed (on Blashke Islands)****Site type:** Occurrence**ARDF no.:** PE057**Latitude:** 56.122**Quadrangle:** PE A-3**Longitude:** 132.888**Location description and accuracy:**

Occurrence is a mafic-ultramafic intrusive complex about 2 miles in diameter that forms the southern half of the Blashke Islands. Coordinates are for the approximate center of the intrusion. Locality is easily accessible by water and the rocks of the complex are well exposed along the coast and in the internal waterways between the islands.

**Commodities:****Main:** Cr, Cu, Ni, Platinum-group elements**Other:****Ore minerals:** Chalcopyrite, chromite, Pt-group minerals**Gangue minerals:****Geologic description:**

The site is a classic Early Cretaceous, zoned or Alaska-type mafic-ultramafic intrusive complex about 2 miles in diameter whose circular form is reflected in the arcuate pattern of the islands themselves. The body has long been known and has best been described in detail by Kennedy and Walton (1946), Walton (1951), Himmelberg and others (1946), and Himmelberg and Loney (1995) as follows. The complex consists of a large central core of dunite surrounded by successive shells of wehrlite, olivine clinopyroxenite, and gabbro. The concentric geometry of the body suggests that it is a steeply dipping to sub-vertical cylinder; it is essentially undeformed. The complex intrudes Early Silurian-Devonian Descon Formation that consists mainly of graywacke, with conglomerate, limestone, shale, and volcanic rocks. The contact of the intrusive complex is marked by a hornfelsed zone about 300-700 feet wide.

As described by Kennedy and Walton, (1946), chromite is a sparse, but ubiquitous accessory mineral in the dunite core. Disseminated sulfides, mainly pyrrhotite and chalcopyrite, occur near the boundary between pyroxenite and gabbro. There is a large aggregate tonnage of material containing 1%-2% sulfides. Analyses of the more sulfide-rich gabbro indicate as much as 0.016% Cu, 0.05% Ni, and less than 0.1 ounce per ton Pt-group elements. Other rock analyses show 0.004 ounces per ton Au, 0.04 ounces per ton Pd, and a trace of Pt. Rock samples collected by Clark and Greenwood (1972) contained

an average of 0.011 ppm of both Pt and Pd with maxima of 0.020 ppm of each.

**Alteration:**

None other than hornfelsing of the country rock adjacent to the complex.

**Age of mineralization:**

The complex is Late Cretaceous; K-Ar ages from 93.4 to 102.0 Ma (Himmelberg and Loney, 1995).

**Deposit model:**

Alaskan or Zoned type mafic-ultramafic complex; portions may have PGE potential (Cox and Singer, 1986; model 9)

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

9

**Production Status** None**Site Status:** Probably inactive**Workings/exploration:**

Apparently no claims have ever been staked on this occurrence. This is not surprising considering that the highest elevation is about 120 feet and that most of the complex is barely above sea level and within a few hundred yards of the ocean. The complex has been visited by generations of geologists as a classic, easily accessible example of an Alaska-type mafic-ultramafic complex; inevitably it has been sampled for the metal suite that is often associated with such rocks, e.g. Cu, Ni, Co, Cr, and PGE. However, the metal content of samples from the body have so far proved consistently low, reflecting the geochemical background in these types of rocks rather than anything close to an economic concentration. The Bureau of Land Management (Mass, Bittenbender, and Still, 1995) recently indicated that the complex has low economic potential.

**Production notes:**

None

**Reserves:**

There are no economic reserves; however, there are many occurrences of ore minerals and metals of economic interest (Kennedy and Walton, 1946). Chromite is a sparse, but ubiquitous accessory mineral in the dunite core. Disseminated sulfides, mainly pyrrhotite and chalcopyrite, occur near the boundary between pyroxenite and gabbro. There is a large aggregate tonnage of material containing 1%-2% sulfides. Analyses of the more sulfide-rich gabbro indicate as much as 0.016% Cu, 0.05% Ni, and less than 0.1 ounce per ton Pt-group elements. Other rock analyses show 0.004 ounces per ton Au, 0.04 ounces per ton Pd, and a trace of Pt. Rock samples collected by Clark and Greenwood (1972) contained an average of 0.011 ppm of both Pt and Pd with maxima of 0.020 ppm of each.

**Additional comments:**

**References:**

Kennedy and Walton, 1946; Walton, 1951; Taylor, 1967; Clark and Greenwood, 1972; Cobb, 1972 (MF 415); Cobb, 1978 (OF 78-870); Himmelberg and others, 1986; Himmelberg and Loney, 1995; Mass, Bittenbender, and Still, 1995.

**Primary reference:** Kennedy and Walton, 1946; Himmelberg and Loney, 1995

**Reporter(s):** H.C. Berg (Fullerton, California) and D.J. Grybeck (USGS)

**Last report date:** 11/1/98

**Site name(s): Frenchie; BP Adit****Site type:** Prospect**ARDF no.:** PE058**Latitude:** 56.419**Quadrangle:** PE B-3**Longitude:** 132.953**Location description and accuracy:**

Prospect is at an elevation of less than 100 feet on the south bank of an unnamed creek on NW Zarembo Island, about one-half mile south of the head of St. John Harbor. Location of prospect known to within 100 yards in the SE1/4, section 8, T. 63 S., R. 80 E. Localities 59 and 60 of Grybeck, Berg, and Karl (1984).

**Commodities:****Main:** Au, Cu, Pb, Zn**Other:** Ba**Ore minerals:** Galena, pyrite, sphalerite**Gangue minerals:****Geologic description:**

Although first described as a gold prospect by Buddington in 1923, this prospect remained largely unrecognized as a volcanogenic massive-sulfide deposit until work by the USGS in the early 1980's relocated the prominent outcrop along the creek bank that consists mainly of thick layers of pyrite (Berg and Grybeck, 1980; Berg, 1981; Grybeck, Berg, and Karl, 1984). The pyrite zone has an aggregate thickness of about 15 feet and extends for at least 600 feet along the creek bank. One layer about 4 feet thick consists of 50-75% massive sulfides in a siliceous matrix. The sulfides are chiefly pyrite, accompanied by minor sphalerite, chalcopyrite, and galena that form lenses, bands, and knots in the massive pyrite. Grab samples of the massive pyrite layer show 0.20 to 5.50 ppm Au, up to 2% Cu, 1% Zn, 1% Pb, 20 ppm Ag, and more than 5000 ppm Ba. The massive pyrite layers are interbedded with reddish and greenish gray siliceous metavolcanic rocks. The footwall is muscovite phyllite and minor black limestone; the hanging wall is light greenish gray phyllitic to schistose rhyolite tuff(?). All are intruded by Tertiary(?) andesite dikes. Interpreted by Berg and Grybeck (1980) and Berg (1981) as a Triassic volcanogenic massive-sulfide deposit, one of several in a belt that extends along Duncan Canal to Zarembo Island.

Regional mapping by Brew (1997 [OF 97-156-E]) and more recent mapping by Karl (oral communications, 1998) confirm that the prospect is in rocks of the Triassic Hyd

Group that contain the volcanogenic massive sulfide deposits of the Duncan-Zarembo mineral belt.

**Alteration:**

**Age of mineralization:**

Late Triassic as part of the Duncan-Zarembo mineral belt defined by Berg and Grybeck (1980) and Berg (1981).

**Deposit model:**

Kuroko volcanogenic massive sulfide deposit (Singer and Cox, 1986; model 28a ), or Sierran Kuroko volcanogenic massive sulfide deposit (Bliss, 1992; model 28a1)

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

28a or 28a.1

**Production Status** None

**Site Status:** Active

**Workings/exploration:**

Although first described in 1923, it was largely forgotten prior to 1980. Since then, the property has repeatedly been staked and drilled by industry. A block of 34 claims roughly centered on the prospect staked in 1978; these claims were active through at least 1982, and these or other claim blocks probably have been active since. The property has been drilled several times since then, most recently by Westmin Resources in 1996.

**Production notes:**

None

**Reserves:**

**Additional comments:**

**References:**

Buddington, 1923; Berg and Grybeck, 1980; Berg, 1981; Grybeck, Berg, and Karl, 1984; Brew, 1997 (OF 97-156-E).

**Primary reference:** Grybeck, Berg, and Karl, 1984

**Reporter(s):** H.C. Berg (Fullerton, California) and D.J. Grybeck (USGS)

**Last report date:** 11/1/98

**Site name(s):** Unnamed (near Snow Passage)

**Site type:** Prospect

**ARDF no.:** PE059

**Latitude:** 56.318

**Quadrangle:** PE B-3

**Longitude:** 132.954

**Location description and accuracy:**

Coordinates are the approximate center of a block of at least 10 claims on southwestern Zarembo Island; they were staked in 1981 and active through at least 1982. Block centered in the SE1/4, section 17, T. 64 S., R. 80 E. (U. S. Bureau of Mines, 1980). Locality 61 of Grybeck, Berg, and Karl (1984).

**Commodities:**

**Main:** Unknown

**Other:**

**Ore minerals:**

**Gangue minerals:**

**Geologic description:**

Only specific information is that a block of at least 10 claims was staked in 1981 and active through at least 1982 (U. S. Bureau of Mines, 1980). The regional geology in the area as mapped by Brew (1997 [OF 97-156-E]) consists of Tertiary to Quaternary rhyolite, rhyodacite, and related siliceous extrusive and intrusive rocks. However, the rocks are poorly exposed and have not been not mapped in detail; the area probably includes a variety of rock of different ages and lithology.

**Alteration:**

**Age of mineralization:**

**Deposit model:**

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

**Production Status** No

**Site Status:** Undetermined

**Workings/exploration:**

Only specific information is that a block of at least 10 claims was staked in 1981 and active through at least 1982.

**Production notes:**

None

**Reserves:**

None

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

U.S. Bureau of Mines, 1980; Grybeck, Berg, and Karl, 1984; Brew, 1997 (OF 97-156-E).

**Primary reference:** U. S. Bureau of Mines, 1980

**Reporter(s):** H.C. Berg (Fullerton, California) and D.J. Grybeck (USGS)

**Last report date:** 11/1/98

**Site name(s): Unnamed (along Snow Passage)****Site type:** Occurrence**ARDF no.:** PE060**Latitude:** 56.282**Quadrangle:** PE B-3**Longitude:** 132.943**Location description and accuracy:**

Accurately known to within 300 feet in the NW1/4, section 33, T. 64 S., R. 80 E on the western side of Zarembo Island. Well-exposed locality along the wave-scoured rocky coastline on the east side of Snow Passage, Clarence Strait.

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

Sparse fluorite occurs in Tertiary-Quaternary rhyolite over an area at least 300 feet long along the coast. The fluorite occurs as fillings in narrow, vuggy fracture zones, coating chalcedony- or quartz-encrusted fragments in breccia zones, and as geode-like bodies commonly called 'thundereggs' (Buddington, 1923). For pictures of the latter and a detailed study of their REE content and mineralogy see Philpotts and Evans (1992). Although mineralogically interesting, the site as now known is little more than a mineral occurrence. The origin of the fluorite is unclear but the simplest interpretation is that it formed during a degassing phase of the emplacement of the rhyolite in which it occurs.

**Alteration:**

Fluorite possible formed during a degassing stage of the cooling of the rhyolite hostrock.

**Age of mineralization:**

Tertiary or Quaternary; fluorite veins and fills breccia in Tertiary or Quaternary rhyolite and is either later than or part of the cooling history and emplacement of the rhyolite.

**Deposit model:**

Fluorite in rhyolite.

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

**Production Status** No

**Site Status:** Probably inactive

**Workings/exploration:**

Long known in good exposures along the coast; no record of any exploration otherwise.

**Production notes:**

As now known, appears to be no more than an interesting mineralogical occurrence.

**Reserves:**

**Additional comments:**

**References:**

Buddington, 1923; Cobb, 1972 (OF 78-870); Grybeck, Berg, and Karl, 1984; Philpotts and Evans, 1992.

**Primary reference:** Philpotts and Evans, 1995

**Reporter(s):** H.C. Berg (Fullerton, California) and D.J. Grybeck (USGS)

**Last report date:** 11/1/98

**Site name(s):** Hydropit**Site type:** Occurrence**ARDF no.:** PE061**Latitude:** 56.374**Quadrangle:** PE B-3**Longitude:** 132.917**Location description and accuracy:**

Location known exactly and easily found; deposit exposed in a rock quarry adjacent to a logging road on central Zarembo Island. Site in the SW1/4, section 27, T. 63 S., R. 80 E. Locality 63 of Grybeck, Berg, and Karl (1984).

**Commodities:****Main:** Cu, Pb, Zn**Other:****Ore minerals:** Arsenopyrite, bornite, chalcopyrite, galena, magnetite, and sphalerite.**Gangue minerals:** Quartz**Geologic description:**

The country rock is a Tertiary alkalic granite well exposed in a rock quarry; the intrusive is cut by sperulitic felsic dikes which are in turn cut by andesite dikes (Brew, 1997 [OF 97-156-E]).

The mineralization consists of quartz veinlets and lenses an inch or so thick in an altered shear zone about 4 feet wide that cuts the granite. The quartz vein material contains a few percent of ore minerals including chalcopyrite, bornite, galena, sphalerite, arsenopyrite, and magnetite. On analysis, selected high-grade grab sample show major Pb, Zn, and Cu consistent with the hand-specimen mineralogy, less than 0.005 ppm Au, up to 50 ppm Ag, up to 15 ppm Sn, and up to 3 ppm W. The exposure of the vein is small but could indicate more vein-type mineralization in the area.

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

Tertiary or younger.

**Deposit model:**

Polymetallic vein along shear zone (Cox and Singer, 1986; model 22c)

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

22c

**Production Status** None**Site Status:** Probably inactive**Workings/exploration:**

Occurrence first found by the USGS in the late 70's in a quarry excavated for road metal. To 1996, no obvious signs or published descriptions of other work at the site.

**Production notes:**

None

**Reserves:**

None

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

Grybeck, Berg, and Karl, 1984; Brew, 1997 (OF 97-156-E).

**Primary reference:** Grybeck, Berg, and Karl, 1984**Reporter(s):** H.C. Berg (Fullerton, California) and D.J. Grybeck (USGS)**Last report date:** 11/1/98

**Site name(s): Lost Zarembo****Site type:** Occurrence**ARDF no.:** PE062**Latitude:** 56.381**Quadrangle:** PE B-3**Longitude:** 132.899**Location description and accuracy:**

Location of occurrence is known exactly in NE1/4, section 27, T. 63 S., R. 80 E., at an elevation of about 600 feet. Occurrence is well exposed on the north wall of a rock quarry adjacent to a logging road. In 1996, the quarry was largely grown up in vegetation but the mineral occurrence was still nicely exposed behind the trees.

**Commodities:****Main:** Cu, Pb, Zn**Other:****Ore minerals:** Chalcopyrite, galena, pyrite, sphalerite**Gangue minerals:** Silica matrix.**Geologic description:**

The deposit as described by Grybeck, Berg, and Karl (1984) consists of three, massive sulfide layers in orange-weathering, greenish-gray metarhyolite along the west wall of the quarry. The most prominent exposure of the sulfides is a 4-foot-thick layer that crops out for about 50 feet and is truncated at both ends by faults. Selected portions of the massive sulfide layers contain up to 30% sulfides, mainly sphalerite, accompanied by minor pyrite, chalcopyrite, and galena, in a fine-grained siliceous matrix. Analyses of selected grab samples contain up to 0.55 ppm Au, about 8% Zn, 0.25% Pb, 0.39% Cu, 30 ppm or less Ag, and up to 5000 ppm Ba. The occurrence forms a wedge-shaped, fault-bounded outcrop about 30 by 100 feet in size in size that abuts steeply-dipping Tertiary basalt, diabase, and rhyolite dikes. As now exposed, the massive sulfide deposit is not very large and the quarry is dominated by the various steeply dipping Tertiary dikes. The association of massive sulfides interbedded with metarhyolite suggests that this occurrence is part of the Duncan Canal-Zarembo belt of dismembered, Upper Triassic volcanogenic massive sulfide deposits described by Berg and Grybeck (1980) and Berg (1981).

**Alteration:**

Outcrop is iron-stained, probably from weathering of sulfides.

**Age of mineralization:**

Probably a segment of the dismembered, Upper Triassic Duncan-Zarembo volcanogenic mineral belt defined by Berg and Grybeck (1980) and Berg (1981).

**Deposit model:**

Kuroko volcanogenic massive-sulfide deposit (Cox and Singer, 1986; model 28a); alternatively a Sierran Kuroko volcanogenic massive sulfide deposit (Bliss, 1992; model 28a1)

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

28a or 28a.1

**Production Status** No**Site Status:** Inactive**Workings/exploration:**

Originally found by the USGS in the late 70's. Revisited by the USGS in 1996 (D.J. Grybeck); little had changed except for signs that others had collected samples there.

**Production notes:**

None

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

Berg and Grybeck, 1980; Berg, 1981; Grybeck, Berg, and Karl, 1984.

**Primary reference:** Grybeck, Berg, and Karl, 1984**Reporter(s):** H.C. Berg (Fullerton, California) and D.J. Grybeck (USGS)**Last report date:** 11/1/98

**Site name(s): Unnamed (near Round Point)****Site type:** Prospect**ARDF no.:** PE063**Latitude:** 56.28**Quadrangle:** PE B-3**Longitude:** 132.703**Location description and accuracy:**

As originally reported by Grybeck, Berg, and Karl (1984), this site is based on a short examination by the reporters and an industry geologist who was working from a small camp nearby. The specific site that was visited was an exposure in a small creek bed in about the center of section 36, T. 64 S., R. 81 E., but mineralized outcrops were reported to be more extensive in the vicinity.

**Commodities:****Main:** Cu, Pb, Zn**Other:****Ore minerals:** Chalcopyrite, pyrite, sphalerite**Gangue minerals:****Geologic description:**

The mineralized exposure consists of rusty-weathering, light green-gray felsic metavolcanic rocks with small lenses, pods, and layers up to a foot thick that contain disseminated sulfides, mainly pyrite and possibly sphalerite and chalcopyrite. Analyses of grab samples show less than 5 ppm Cu, 50-150 ppm Pb, 200-11,000 Zn, and 150-5,000 Ba. The felsic metavolcanic rocks are interbedded with light gray, silicified limestone and dark gray argillite. Recent geologic mapping in the area (S. Karl, oral communication, 1998) indicates that the rocks in which the sulfides occurs are probably part of the Triassic Hyd Group. The site marked the southern end of the Duncan Canal-Zarembo belt of Triassic volcanogenic massive-sulfide mineralization as originally defined by Berg and Grybeck in 1980.

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

Probably Triassic.

**Deposit model:**

Kuroko volcanogenic massive-sulfide deposit (Cox and Singer, 1986; model 28a); alternatively a Sierran Kuroko volcanogenic massive sulfide deposit (Bliss, 1992; model 28a1)

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

28a or 28a1

**Production Status** None

**Site Status:** Undetermined

**Workings/exploration:**

Site was originally defined in 1984 by Grybeck, Berg, and Karl on the basis of a brief visit to an industry exploration camp nearby. However, exploration was more widespread than just the occurrence that the USGS visited and there may have been some drilling on the property. However, there is little indication that major surface exploration continued in this area much beyond the mid-80's, although the area may well have been further examined by industry since.

**Production notes:**

None

**Reserves:**

None

**Additional comments:**

**References:**

Berg and Grybeck, 1980; Grybeck, Berg, and Karl, 1984.

**Primary reference:** Grybeck, Berg, and Karl, 1984

**Reporter(s):** H.C. Berg (Fullerton, California) and D.J. Grybeck (USGS)

**Last report date:** 11/1/98

**Site name(s): Unnamed (near Round Point)****Site type:** Prospects**ARDF no.:** PE064**Latitude:** 56.287**Quadrangle:** PE B-3**Longitude:** 132.75**Location description and accuracy:**

Coordinates are the approximate center of a block of more than 600 claims staked on southeastern Zarembo Island in the late 1970's and active through at least 1981 (U.S. Bureau of Mines, 1980). Locality 66 of Grybeck, Berg, and Karl (1984), who also include a map showing the outline of the claims as of the early 80's. See also PE063 for a specific site within the claim block that was active during the same period.

**Commodities:****Main:** Cu, Pb, Zn**Other:****Ore minerals:****Gangue minerals:****Geologic description:**

See PE063 for description of a prospect within this claim block.

Recent mapping by the USGS (Sue Karl, oral communication, 1998) indicates that much of this block of claims consists of Triassic Hyd Group rocks that host the volcanogenic massive sulfide deposits of the Duncan-Zarembo belt defined by Berg and Grybeck (1980), and Berg (1981).

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

Triassic.

**Deposit model:**

Kuroko volcanogenic massive-sulfide deposit (Cox and Singer, 1986; model 28a); alternatively a Sierran Kuroko volcanogenic massive sulfide deposit (Bliss, 1992; model 28a1)

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

28a or 28a1

**Production Status** None

**Site Status:** Active?

**Workings/exploration:**

Block of more than 600 claims staked in the late 1970's and active through at least 1981 (U.S. Bureau of Mines, 1980). The 1995, Alaska Department of Natural Resources Kardex claim data base shows that at least a few claims were still active.

**Production notes:**

None

**Reserves:**

None

**Additional comments:**

**References:**

U.S. Bureau of Mines, 1980; Grybeck, Berg, and Karl, 1984.

**Primary reference:** Grybeck, Berg, and Karl, 1984

**Reporter(s):** H.C. Berg (Fullerton, California) and D.J. Grybeck (USGS)

**Last report date:** 11/1/98

**Site name(s):** Unnamed (near Deep Bay)

**Site type:** Prospect

**ARDF no.:** PE065

**Latitude:** 56.409

**Quadrangle:** PE B-2

**Longitude:** 132.636

**Location description and accuracy:**

Northeast Zarembo Island. Approximate location of a single placer claim staked in 1972 and active through at least 1975 (U.S. Bureau of Mines, 1980). Locality 67 of Grybeck, Berg, and Karl (1984).

**Commodities:**

**Main:** Au?

**Other:**

**Ore minerals:**

**Gangue minerals:**

**Geologic description:**

Other than several lode claims in the vicinity that were staked at about the same period and about which little is known, no other mineral deposits are known in the vicinity.

**Alteration:**

**Age of mineralization:**

**Deposit model:**

Placer gold?

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

39a ?

**Production Status** No

**Site Status:** Probably inactive

**Workings/exploration:**

Single placer claim staked in 1972 and active through at least 1975 (U.S. Bureau of

Mines, 1980).

**Production notes:**

**Reserves:**

**Additional comments:**

**References:**

U.S. Bureau of Mines, 1980; Grybeck, Berg, and Karl, 1984.

**Primary reference:** U.S. Bureau of Mines, 1980

**Reporter(s):** H.C. Berg (Fullerton, California) and D.J. Grybeck (USGS)

**Last report date:** 11/1/98

**Site name(s):** Unnamed (near Roosevelt Harbor)

**Site type:** Occurrences

**ARDF no.:** PE066

**Latitude:** 56.396

**Quadrangle:** PE B-2

**Longitude:** 132.63

**Location description and accuracy:**

Coordinates are at the approximate center of a block of three lode claims staked near Roosevelt Harbor on northeastern Zarembo Island in 1973 and active through 1975 (U.S. Bureau of Mines, 1980).

**Commodities:**

**Main:** Unknown

**Other:**

**Ore minerals:**

**Gangue minerals:**

**Geologic description:**

No published description. The rocks in the vicinity consist of Cretaceous intermediate plutons and hornblendite (Brew, 1997 [OF 97-156-D]). No other mineral deposits are known in the vicinity other than a single gold placer claim that was staked at about the same time and was soon abandoned.

**Alteration:**

**Age of mineralization:**

**Deposit model:**

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

**Production Status** None

**Site Status:** Probably inactive

**Workings/exploration:**

Block of three lode claims staked in 1973 and active through 1975 (U.S. Bureau of

Mines, 1980).

**Production notes:**

None

**Reserves:**

**Additional comments:**

**References:**

U.S. Bureau of Mines, 1980; Grybeck, Berg, and Karl, 1984; Brew, 1997 (OF 97-156-D).

**Primary reference:** U.S. Bureau of Mines, 1980

**Reporter(s):** H.C. Berg (Fullerton, California) and D.J. Grybeck (USGS)

**Last report date:** 11/1/98

**Site name(s): Exchange****Site type:** Prospect**ARDF no.:** PE067**Latitude:** 56.422**Quadrangle:** PE B-2**Longitude:** 132.532**Location description and accuracy:**

Long known prospect near Wedge Point, northwest Woronkofski Island. Roehm (1945 [IR 195-37]) describes it as a large quartz lens parallel to the shoreline for about 300 feet and just back from it.

**Commodities:****Main:** Au**Other:****Ore minerals:** Galena, gold, pyrite, sphalerite**Gangue minerals:** Quartz**Geologic description:**

Quartz vein 12-15 feet thick in granite contains sparse pyrite and moderate values in gold. Opened by two adits and open cuts (Wright and Wright, 1908; Roehm, 1945 [IR 195-37]). Brew (1997 [OF 97-156-D]) has mapped the rocks in the vicinity as Cretaceous low- to medium-grade schist and semischist derived from Cretaceous-Jurassic Seymour Canal Formation sedimentary rocks. However, that mapping was more regional than detailed and descriptions of the deposit invariably show it as being in felsic plutonic rocks variously described as granite or syenite.

**Alteration:****Age of mineralization:****Deposit model:**

Gold quartz vein

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):****Production Status** None

**Site Status:** Active?

**Workings/exploration:**

The property was first staked in 1900 and developed by surface trenches and some underground workings that include a crosscut 45 feet long. Two of the claims were restaked in 1974, were active through at least 1982, and are probably still active in 1996.

**Production notes:**

No record of production.

**Reserves:**

**Additional comments:**

**References:**

Wright and Wright, 1905; Wright and Wright, 1908; Roehm, 1945 (IR 195-37); Cobb, 1972 (OF 78-870); Cobb, 1972 (MF-415); U.S. Bureau of Mines, 1980; Grybeck, Berg, and Karl, 1984; Brew, 1997 (OF 97-156-D).

**Primary reference:** Roehm, 1945 (IR 195-37)

**Reporter(s):** H.C. Berg (Fullerton, California) and D.J. Grybeck (USGS)

**Last report date:** 11/1/98

**Site name(s):** Unnamed (near Elephants Nose)

**Site type:** Prospect

**ARDF no.:** PE068

**Latitude:** 56.432

**Quadrangle:** PE B-2

**Longitude:** 132.51

**Location description and accuracy:**

Coordinates are at the approximate location of a single claim staked in 1955 and apparently not active since (U.S. Bureau of Mines, 1980).

**Commodities:**

**Main:** Th, U

**Other:**

**Ore minerals:**

**Gangue minerals:**

**Geologic description:**

No published information other than claim staked for uranium. Brew (1997 [OF 97-156-D]) has mapped the rocks in the vicinity as Cretaceous low- to medium-grade schist and semischist derived from Cretaceous-Jurassic Seymour Canal Formation sedimentary rocks.

**Alteration:**

**Age of mineralization:**

**Deposit model:**

Insufficient evidence to assign.

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

**Production Status** No

**Site Status:** Probably inactive

**Workings/exploration:**

One lode claim staked for radioactive minerals in 1955; apparently not active since.

**Production notes:**

**Reserves:**

**Additional comments:**

**References:**

U.S. Bureau of Mines, 1980; Grybeck, Berg, and Karl, 1984; Brew, 1997 (OF 97-156-D).

**Primary reference:** U.S. Bureau of Mines, 1980

**Reporter(s):** H.C. Berg (Fullerton, California) and D.J. Grybeck (USGS)

**Last report date:** 11/1/98

**Site name(s):** Unnamed (near Chicagof Peak)

**Site type:** Prospect

**ARDF no.:** PE069

**Latitude:** 56.349

**Quadrangle:** PE B-2

**Longitude:** 132.338

**Location description and accuracy:**

Coordinates are at the approximate center of three lode claims staked in 1967 near Pat Creek and Trout Lake just east of the Zimovia Highway, in the center of section 5., T. 63 S., R. 83 E. (U.S. Bureau of Mines, 1980).

**Commodities:**

**Main:** W

**Other:**

**Ore minerals:** Unknown

**Gangue minerals:**

**Geologic description:**

Three lode claims staked for tungsten in 1967; apparently not active since. The rocks in the vicinity consist of Cretaceous schist and hornfels peripheral to a stock of Cretaceous hornblende tonalite and similar intermediate plutonic rocks (Brew, 1997 [OF 97-156-D]).

**Alteration:**

**Age of mineralization:**

**Deposit model:**

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

**Production Status**

**Site Status:**

**Workings/exploration:**

Three lode claims staked for W in 1967; apparently not active since (U.S. Bureau of Mines, 1980).

**Production notes:**

**Reserves:**

**Additional comments:**

**References:**

U.S. Bureau of Mines, 1980; Grybeck, Berg, and Karl, 1984; Brew, 1997 (OF 97-156-D).

**Primary reference:** U.S. Bureau of Mines, 1980

**Reporter(s):** H.C. Berg (Fullerton, California) and D.J. Grybeck (USGS)

**Last report date:** 11/1/98

**Site name(s):** Unnamed (near Chicagof Peak)

**Site type:** Prospect

**ARDF no.:** PE070

**Latitude:** 56.362

**Quadrangle:** PE B-1

**Longitude:** 132.29

**Location description and accuracy:**

Coordinates are at the approximate center of two lode claims staked for Fe in 1960 and active through 1968 (U.S. Bureau of Mines, 1980). In SW1/4, section 34, T. 63 S., R. 83 E.; about 2 miles east-southeast of Chicagof Peak, Wrangell Island.

**Commodities:**

**Main:** Fe

**Other:**

**Ore minerals:**

**Gangue minerals:**

**Geologic description:**

Two lode claims staked for Fe in 1960 and active through at least 1968. Rocks in the vicinity consist of Cretaceous schist and hornfels near several large plutons of Cretaceous hornblende-biotite tonalite and related intermediate plutonic rocks (Brew, 1997 [OF 97-156-C]).

**Alteration:**

**Age of mineralization:**

**Deposit model:**

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

**Production Status** No

**Site Status:** Probably inactive

**Workings/exploration:**

Two lode claims staked for Fe in 1960 and active through at least 1968.

**Production notes:**

**Reserves:**

**Additional comments:**

**References:**

U.S. Bureau of Mines, 1980; Grybeck, Berg, and Karl, 1984; Brew, 1997 (OF 97-156-C).

**Primary reference:** U.S. Bureau of Mines, 1980

**Reporter(s):** H.C. Berg (Fullerton, California) and D.J. Grybeck (USGS)

**Last report date:** 11/1/98

**Site name(s):** Unnamed (near Steamer Point)

**Site type:** Occurrences

**ARDF no.:** PE071

**Latitude:** 56.219

**Quadrangle:** PE A-3

**Longitude:** 132.689

**Location description and accuracy:**

Coordinates are at the approximate center of block of thirty-four lode claims about a mile east of Steamer Point on northwestern Etolin Island; staked in 1978 and active through at least 1981 (U.S. Bureau of Mines, 1980).

**Commodities:**

**Main:** Unknown

**Other:**

**Ore minerals:**

**Gangue minerals:**

**Geologic description:**

Thirty-four lode claims staked in 1978 and active though at least 1981. Geologic units in the vicinity consist of Tertiary alkali granite in contact with hornfels formed from the Seymour Canal Formation. (Brew, 1997 [OF 97-156-A and B]).

**Alteration:**

**Age of mineralization:**

**Deposit model:**

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

**Production Status** No

**Site Status:** Probably inactive

**Workings/exploration:**

Thirty-four lode claims staked in 1978 and active though at least 1981 (U.S. Bureau of Mines, 1980).

**Production notes:**

**Reserves:**

**Additional comments:**

**References:**

U.S. Bureau of Mines, 1980; Grybeck, Berg, and Karl, 1984; Brew, 1997 (OF 97-156-A);  
Brew, 1997 (OF 97-156-B).

**Primary reference:** U.S. Bureau of Mines, 1980

**Reporter(s):** H.C. Berg (Fullerton, California) and D.J. Grybeck (USGS)

**Last report date:** 11/1/98

**Site name(s):** Unnamed (near Keating Range)

**Site type:** Prospect

**ARDF no.:** PE072

**Latitude:** 56.146

**Quadrangle:** PE A-2

**Longitude:** 132.624

**Location description and accuracy:**

Coordinates are at the approximate center of block of forty-seven lode claims on the northern part of the Keating Range, western Etolin Island; staked in 1978 and active through at least 1981 (U.S. Bureau of Mines, 1980).

**Commodities:**

**Main:** Unknown

**Other:**

**Ore minerals:**

**Gangue minerals:**

**Geologic description:**

Block of forty-seven lode claims staked in 1978 and active through at least 1981.

Rocks in the vicinity consist of augite-bearing flows, volcanic breccia, tuff, graywacke, phyllite, and slate of the Jurassic-Cretaceous Stephens Passage Group and their hornfelsed equivalents across the Mosman fault (Brew, 1997 [OF 97-156-A]).

**Alteration:**

**Age of mineralization:**

**Deposit model:**

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

**Production Status**

**Site Status:**

**Workings/exploration:**

Forty-seven lode claims staked in 1978 and active through at least 1981 (U.S. Bureau of

Mines, 1980).

**Production notes:**

**Reserves:**

**Additional comments:**

**References:**

U.S. Bureau of Mines, 1980; Grybeck, Berg, and Karl, 1984; Brew, 1997 (OF 97-156-A).

**Primary reference:** U. S. Bureau of Mines, 1980

**Reporter(s):** H.C. Berg (Fullerton, California) and D.J. Grybeck (USGS)

**Last report date:** 11/1/98

**Site name(s):** Unnamed (near Steamer Bay)

**Site type:** Occurrences

**ARDF no.:** PE073

**Latitude:** 56.139

**Quadrangle:** PE A-2

**Longitude:** 132.655

**Location description and accuracy:**

Coordinates are at the approximate center of a block of 22 claims east of the southern end of Steamer Bay; staked in 1972 and 1973; apparently not active since (U.S. Bureau of Mines, 1980).

**Commodities:**

**Main:** Unknown

**Other:**

**Ore minerals:**

**Gangue minerals:**

**Geologic description:**

A block of 22 claims was staked in 1972 and 1973; apparently not active since (U.S. Bureau of Mines, 1980). Rocks in the vicinity consist of augite-bearing flows, volcanic breccia, tuff, graywacke, phyllite, and slate of the Jurassic-Cretaceous Stephens Passage Group (Brew, 1997 [OF 97-156-A]). There is no other geologic information available about this site.

**Alteration:**

**Age of mineralization:**

**Deposit model:**

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

**Production Status**

**Site Status:** Probably inactive

**Workings/exploration:**

Twenty-two claims were staked in 1972 and 1973; apparently not active since (U.S. Bureau of Mines, 1980).

**Production notes:**

**Reserves:**

**Additional comments:**

**References:**

U.S. Bureau of Mines, 1980; Grybeck, Berg, and Karl, 1984; Brew, 1997 (OF 97-156-A).

**Primary reference:** U.S. Bureau of Mines, 1980

**Reporter(s):** H.C. Berg (Fullerton, California) and D.J. Grybeck (USGS)

**Last report date:** 11/1/98

**Site name(s):** Unnamed (near or on Turn Island)

**Site type:** Occurrences

**ARDF no.:** PE074

**Latitude:** 56.24

**Quadrangle:** PE A-2

**Longitude:** 132.336

**Location description and accuracy:**

Coordinates are at the approximate center of a single lode claim on Turn Island on Zimovia Strait; staked in 1979 and active through 1982 (U.S. Bureau of Mines, 1980).

**Commodities:**

**Main:** Unknown

**Other:**

**Ore minerals:**

**Gangue minerals:**

**Geologic description:**

A single lode claim was staked in 1979 and active through 1982 (U.S. Bureau of Mines, 1980). Rocks in vicinity consist of Cretaceous schist and hornfels (Brew, 1997 [OF 97-156-A]).

**Alteration:**

**Age of mineralization:**

**Deposit model:**

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

**Production Status**

**Site Status:**

**Workings/exploration:**

A single lode claim was staked in 1979 and active through 1982 (U.S. Bureau of Mines, 1980).

**Production notes:**

**Reserves:**

**Additional comments:**

**References:**

U.S. Bureau of Mines, 1980; Grybeck, Berg, and Karl, 1984; Brew, 1997 (OF 97-156-A).

**Primary reference:** U.S. Bureau of Mines, 1980

**Reporter(s):** H.C. Berg (Fullerton, California) and D.J. Grybeck (USGS)

**Last report date:** 11/1/98

**Site name(s): Unnamed (on Found Island)****Site type:** Prospect**ARDF no.:** PE075**Latitude:** 56.107**Quadrangle:** PE A-1**Longitude:** 132.072**Location description and accuracy:**

Coordinates are at the approximate center of a single lode claim on Found Island at the south entrance to Zimovia Strait; staked for gold in 1962 and active through at least 1977 (U.S. Bureau of Mines, 1980).

**Commodities:****Main:** Au**Other:****Ore minerals:****Gangue minerals:****Geologic description:**

A single lode claim was staked for gold in 1962 and was active through at least 1997 (U.S. Bureau of Mines, 1980). Rocks in the vicinity consist of Cretaceous schist and hornfels and Cretaceous tonalite and related intermediate plutonic rocks (Brew and others, 1984).

**Alteration:****Age of mineralization:****Deposit model:****Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):****Production Status****Site Status:****Workings/exploration:**

A single lode claim was staked for gold in 1962 and was active through at least 1997

(U.S. Bureau of Mines, 1980).

**Production notes:**

**Reserves:**

**Additional comments:**

**References:**

U.S. Bureau of Mines, 1980; Brew and others, 1984; Grybeck, Berg, and Karl, 1984.

**Primary reference:** U. S. Bureau of Mines, 1980

**Reporter(s):** H.C. Berg (Fullerton, California) and D.J. Grybeck (USGS)

**Last report date:** 11/1/98

**Site name(s):** Unnamed (near Fisherman Chuck)

**Site type:** Occurrences

**ARDF no.:** PE076

**Latitude:** 56.051

**Quadrangle:** PE A-1

**Longitude:** 132.186

**Location description and accuracy:**

Coordinates are at the approximate center of two claims near Fisherman Chuck, eastern Etolin Island; staked for radioactive minerals in 1956; apparently not active since (U.S. Bureau of Mines, 1980).

**Commodities:**

**Main:** Th, U

**Other:**

**Ore minerals:**

**Gangue minerals:**

**Geologic description:**

Two claims were staked for radioactive minerals in 1956 near Fisherman Chuck; apparently not active since (U.S. Bureau of Mines, 1980). Rocks in the vicinity consist mostly of Tertiary migmatitic rocks and granite (Brew and others, 1984).

**Alteration:**

**Age of mineralization:**

**Deposit model:**

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

**Production Status** None

**Site Status:** Probably inactive

**Workings/exploration:**

Two claims were staked for radioactive minerals in 1956 near Fisherman Chuck; apparently not active since (U.S. Bureau of Mines, 1980).

**Production notes:**

**Reserves:**

**Additional comments:**

**References:**

U.S. Bureau of Mines, 1980; Brew and others, 1984; Grybeck, Berg, and Karl, 1984.

**Primary reference:** U. S. Bureau of Mines, 1980

**Reporter(s):** H.C. Berg (Fullerton, California) and D.J. Grybeck (USGS)

**Last report date:** 11/1/98

**Site name(s): Unnamed (on Niblack Islands)****Site type:** Occurrences**ARDF no.:** PE077**Latitude:** 56.039**Quadrangle:** PE A-1**Longitude:** 132.101**Location description and accuracy:**

Coordinates are at the approximate center of ten claims at five locations on the Niblack Islands in Ernest Sound; staked for Cu in 1956; apparently not active since (U.S. Bureau of Mines, 1980). Locality 79 of Grybeck, Berg, and Karl (1984).

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

Ten claims at five locations on the Niblack Islands, Ernest Sound, were staked for Cu in 1956; apparently not active since (U.S. Bureau of Mines, 1980). Brief examination by the USGS in 1979 did not reveal any obvious signs of mineral deposits (Grybeck, Berg, and Karl, 1984, locality 79). Rocks in the vicinity consist largely of migmatite and granite (Brew and others, 1984).

**Alteration:****Age of mineralization:****Deposit model:****Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):****Production Status** None**Site Status:** Probably inactive**Workings/exploration:**

Ten claims at five locations on the Niblack Islands, Ernest Sound, were staked for Cu in 1956; apparently not active since (U.S. Bureau of Mines, 1980).

**Production notes:**

None

**Reserves:**

None

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

U.S. Bureau of Mines, 1980; Brew and others, 1984; Grybeck, Berg, and Karl, 1984.

**Primary reference:** U.S. Bureau of Mines, 1980

**Reporter(s):** H.C. Berg (Fullerton, California) and D.J. Grybeck (USGS)

**Last report date:** 11/1/98

## References

- Bain, H. F., 1946, Alaska's minerals as a basis for industry: U.S. Bureau of Mines Information Circular 7379, 89 p.
- Barker, J. C., and Mardock, C. L., 1988, Lithophile metal, REE-Y-Nb deposits on southern Prince of Wales Island, Alaska, in Vassiliou, A. H., D. M., and Carcon, D, J. T., eds., Process Mineralogy VII: Applications to mineral beneficiation technology and mineral exploration with special emphasis on disseminated carbonaceous gold ores: Metallurgical Society Annual Meeting, Denver, Colorado, February 23-27, 1987, Symposium Proceedings, p. 139-157.
- Barnes, D. F., Brew, D. A., and Morin, R. L., 1989, Bouguer gravity map of the Petersburg quadrangle and parts of the Port Alexander, Sitka and Sumdum quadrangles, Alaska: U.S. Geological Survey Miscellaneous Field Studies Map MF-1970-A 21 p., 1 sheet, scale 1:250,000.
- Berg, H. C., and Cobb, E. H., 1967, Metalliferous lode deposits of Alaska: U.S. Geological Survey Bulletin 1246, 254 p.
- Berg, H.C., 1981, Upper Triassic volcanogenic massive sulfide metallogenic province identified in southeastern Alaska, in Albert, N.R.D., and Hudson, T., eds, United States Geological Survey in Alaska: Accomplishments during 1979: U. S. Geological Survey Circular 823-B, p. B104-108.
- Berg, H. C., and Grybeck, Donald, 1980, Upper Triassic volcanogenic Zn-Pb-Ag (-Cu-Au) mineral deposits near Petersburg, Alaska: U.S. Geological Survey Open-File Report 80-527, 11 p., 1 oversize sheet.
- Bittenbender, P. E., Maas, K. M., Still, J. C., and Redman, E.C., 1993, Mineral investigations in the Ketchikan mining district, Alaska, 1992: Ketchikan to Hyder areas: U. S. Bureau of Mines Open-File Report 11-93, 86 p.
- Blake, W. P., 1868, Geographic notes upon Russian America and the Stikine River: 40th Congress, 2nd Session, House Executive Document 177, part 2, 19 p.
- Bliss, J.D., ed., 1992, Developments in mineral deposit modeling: U.S. Geological Survey Bulletin 2004, 168 p.
- Bressler, C.T., 1950, Garnet deposits near Wrangell, southeastern Alaska: U. S. Geological Survey Bulletin 963-C, p. 81-93.
- Brew, D.A., 1997, Reconnaissance geologic map of the Petersburg A-2 quadrangle, southeastern Alaska: U. S. Geological Survey Open-File Report 97-156-A, scale 63,360, one sheet, 22 p. pamphlet.
- Brew, D.A., 1997, Reconnaissance geologic map of the Petersburg A-3 quadrangle, southeastern Alaska: U. S. Geological Survey Open-File Report 97-156-B, scale 63,360, one sheet, 24 p. pamphlet.
- Brew, D.A., 1997, Reconnaissance geologic map of the Petersburg B-1 quadrangle, southeastern Alaska: U. S. Geological Survey Open-File Report 97-156-C, scale 63,360, one sheet, 20 p. pamphlet.
- Brew, D.A., 1997, Reconnaissance geologic map of the Petersburg B-2 quadrangle, southeastern Alaska: U. S. Geological Survey Open-File Report 97-156-D, scale 63,360, one sheet, 21 p. pamphlet.
- Brew, D.A., 1997, Reconnaissance geologic map of the Petersburg B-3 quadrangle, southeastern Alaska: U. S. Geological Survey Open-File Report 97-156-E, scale 63,360, one sheet, 21 p. pamphlet.
- Brew, D.A., 1997, Reconnaissance geologic map of the Petersburg B-4 quadrangle, southeastern Alaska: U.

- S. Geological Survey Open-File Report 97-156-F, scale 63,360, one sheet, 23 p. pamphlet.
- Brew, D.A., 1997, Reconnaissance geologic map of the Petersburg B-5 quadrangle, southeastern Alaska: U. S. Geological Survey Open-File Report 97-156-G, scale 63,360, one sheet, 20 p. pamphlet.
- Brew, D.A., 1997, Reconnaissance geologic map of the Petersburg C-1 quadrangle, southeastern Alaska: U. S. Geological Survey Open-File Report 97-156-H, scale 63,360, one sheet, 23 p. pamphlet.
- Brew, D.A., 1997, Reconnaissance geologic map of the Petersburg C-3 quadrangle, southeastern Alaska: U. S. Geological Survey Open-File Report 97-156-I, scale 63,360, one sheet, 18 p. pamphlet.
- Brew, D.A., 1997, Reconnaissance geologic map of the Petersburg C-4 quadrangle, southeastern Alaska: U. S. Geological Survey Open-File Report 97-156-J, scale 63,360, one sheet, 21 p. pamphlet.
- Brew, D.A., 1997, Reconnaissance geologic map of the Petersburg C-5 quadrangle, southeastern Alaska: U. S. Geological Survey Open-File Report 97-156-K, scale 63,360, one sheet, 18 p. pamphlet.
- Brew, D.A., 1997, Reconnaissance geologic map of the Petersburg D-4 quadrangle, southeastern Alaska: U. S. Geological Survey Open-File Report 97-156-L, scale 63,360, one sheet, 20 p. pamphlet.
- Brew, D.A., 1997, Reconnaissance geologic map of the Petersburg D-5 quadrangle, southeastern Alaska: U. S. Geological Survey Open-File Report 97-156-M, scale 63,360, one sheet, 22 p. pamphlet.
- Brew, D.A., and Drinkwater, J.L., 1991, Tongass Timber Reform Act Wilderness Areas supplement to U. S. Geological Survey Open-File Report 91-10 (Undiscovered locatable mineral resources of the Tongass National Forest and adjacent lands, southeastern Alaska): U. S. Geological Survey Open-File Report 91-343, 56 p.
- Brew, D.A., Drew, L.J., Root, D.H., and Huber, D.F., 1991, Undiscovered locatable minerals resources of the Tongass National Forest and adjacent areas, southeastern Alaska: U. S. Geological Survey Open-File Report 91-10, 370 p., 15 maps, 1:250,000 scale, 1 map, 1:500,000 scale.
- Brew, D. A., Grybeck, D. J., Cathrall, J. B., Karl, S. M., Koch, R. D., Barnes, D. F., Newberry, R. J., Griscom, Andrew, and Berg, H. C., 1989, Mineral-resource map of the Petersburg quadrangle and parts of the Port Alexander, Sitka, and Sumdum quadrangles, southeastern Alaska: U.S.G.S. Misc. Field Studies Map MF-1970-B, 47 p., 1 sheet, scale 1:250,000.
- Brew, D. A., Grybeck, D. J., Cathrall, J. B., Karl, S. M., Koch, R. D., Barnes, D. F., Griscom, A., and Berg, H. C., 1987, Mineral resource assessment process and results, Petersburg project area, southeastern Alaska [abs.], in Sachs, J. S., ed., U.S.G.S. research on mineral resources- 1987: U.S. Geological Survey Circular 995, p. 8-9.
- Brew, D. A., Ovenshine, A. T., Karl, S. M., and Hunt, S. J., 1984, Preliminary reconnaissance geologic map of the Petersburg and parts of the Port Alexander and Sumdum 1:250,000 quadrangles, southeastern Alaska: U. S. Geological Survey Open-File Report 84-405, 43 p., 2 sheets, scale 1:250,000.
- Brooks, A. H., 1902, Preliminary report on the Ketchikan mining district, Alaska, with an introductory sketch of the geology of southeastern Alaska: U. S. Geological Survey Professional Paper 1, 120 p.
- Brooks, A. H., 1911, The Alaskan mining industry in 1910: U. S. Geological Survey Bulletin 480, p. 21-42.
- Brooks, A. H., 1913, The Alaskan mining industry in 1912: U. S. Geological Survey Bulletin 542, p. 18-51.
- Brooks, A. H., 1915, The Alaskan mining industry in 1914: U. S. Geological Survey Bulletin 622, p. 15-68.

- Brooks, A. H., 1916, The Alaskan mining industry in 1915: U. S. Geological Survey Bulletin 642, p. 16-71.
- Brooks, A. H., 1921, The future of Alaska mining: U. S. Geological Survey Bulletin 714, p. 5-57.
- Brooks, A. H., 1922, The Alaskan mining industry in 1920: U. S. Geological Survey Bulletin 722, 7-67.
- Brooks, A. H., 1923, The Alaskan mining industry in 1921: U.S. Geological Survey Bulletin 739, p. 1-44.
- Brooks, A. H., and Capps, S. R., 1924, The Alaskan mining industry in 1922: U. S. Geological Survey Bulletin 755, p. 3-49.
- Buddington, A. F., 1923, Mineral deposits of the Wrangell district; U. S. Geological Survey Bulletin 739, p. 51-75.
- Buddington, A. F., 1925, Mineral investigations in southeastern Alaska: U.S. Geological Survey Bulletin 733, p. 71-139.
- Buddington, A. F., 1926, Mineral investigations in southeastern Alaska: U. S. Geological Survey Bulletin 783, p. 41-62.
- Buddington, A. F., and Chapin, Theodore, 1929, Geology and mineral deposits of southeastern Alaska: U. S. Geological Survey Bulletin 800, 398 p.
- Burand, W. M., 1961, Lillie's molybdenum prospect, Koscuisko Island, Alaska: Alaska Territorial Department of Mines Property Examination 117-8, 6 p., 2 sheets, scale 1:500 and 1:63,360.
- Burchard, E. F., 1914, A barite deposit near Wrangell: U. S. Geological Survey Bulletin 592, p. 109-117.
- Burrell, P. D., Cobb, E. H., and Brew, D. A., 1982, Geologic bibliography of the Petersburg project area, Alaska: U. S. Geological Survey Open-File Report 82-483, 30 p.
- Cathrall, J. B., Day, G. W., Hoffman, J. D., and McDanal, S. K., 1983, A listing and statistical summary of analytical results for pebbles, stream sediments and heavy-mineral concentrations from stream sediments, Petersburg area, southeast Alaska: U.S. Geological Survey Open-File Report 83-420-A, 218 p., scale 1:250,000, 1 sheet.
- Cathrall, J. B., Day, G. W., Hoffman, J. D., and McDanal, S. K., 1983, Distribution and abundance of copper, determined by spectrographic analysis in the minus 80-mesh fraction of stream sediments, Petersburg area, southeast Alaska: U.S. Geological Survey Open-File Report 83-420-B, scale 1:250,000, 1 sheet.
- Cathrall, J. B., Day, G. W., Hoffman, J. D., and McDanal, S. K., 1983, Distribution and abundance of copper, determined by spectrographic analysis, in non-magnetic fraction of heavy-mineral concentrates from stream sediments, Petersburg area, southeast Alaska: U.S. Geological Survey Open-File Report 83-420-C, scale 1:250,000, 1 sheet.
- Cathrall, J. B., Day, G. W., Hoffman, J. D., and McDanal, S. K., 1983, Distribution and abundance of lead, determined by spectrographic analysis in the minus 80-mesh fraction of stream sediments, Petersburg area, southeast Alaska: U.S. Geological Survey Open-File Report 83-420-D, scale 1:250,000, 1 sheet.
- Cathrall, J. B., Day, G. W., Hoffman, J. D., and McDanal, S. K., 1983, Distribution and abundance of lead, determined by spectrographic analysis in the nonmagnetic fraction of heavy-mineral concentrates from stream sediments, Petersburg area, southeast Alaska: U.S. Geological Survey Open-File Report 83-420-E, scale 1:250,000, 1 sheet.

- Cathrall, J. B., Day, G. W., Hoffman, J. D., and McDanal, S. K., 1983, Distribution and abundance of zinc, determined by spectrographic analysis in the minus 80-mesh fraction of stream sediments, Petersburg area, southeast Alaska: U.S. Geological Survey Open-File Report 83-420-F, scale 1:250,000, 1 sheet.
- Cathrall, J. B., Day, G. W., Hoffman, J. D., and McDanal, S. K., 1983, Distribution and abundance of zinc, determined by spectrographic analysis in the nonmagnetic fraction of heavy-mineral concentrates from stream sediments, Petersburg area, southeast Alaska: U.S. Geological Survey Open-File Report 83-420-G, scale 1:250,000, 1 sheet.
- Cathrall, J. B., Day, G. W., Hoffman, J. D., and McDanal, S. K., 1983, Distribution and abundance of barium, determined by spectrographic analysis in the minus 80-mesh fraction of stream sediments, Petersburg area, southeast Alaska: U.S. Geological Survey Open-File Report 83-420-H, scale 1:250,000, 1 sheet.
- Cathrall, J. B., Day, G. W., Hoffman, J. D., and McDanal, S. K., 1983, Distribution and abundance of barium, determined by spectrographic analysis in the nonmagnetic fraction of heavy -mineral concentrates from stream sediments, Petersburg area, southeast Alaska: U.S. Geological Survey Open-File Report 83-420-I, scale 1:250,000, 1 sheet.
- Cathrall, J. B., Day, G. W., Hoffman, J. D., and McDanal, S. K., 1983, Distribution and abundance of silver, determined by spectrographic analysis in the nonmagnetic fraction of heavy-mineral concentrates from stream sediments, and in the minus 80-mesh fraction of stream sediments, Petersburg area, southeast Alaska: U.S. Geological Survey Open-File Report 83-420-J, scale 1:250,000, 1 sheet.
- Cathrall, J. B., Day, G. W., Hoffman, J. D., and McDanal, S. K., 1983, Distribution and abundance of detectable gold, arsenic, bismuth, and antimony, determined by spectrographic analysis in the nonmagnetic fraction of heavy-mineral concentrates from stream sediments, and in the minus 80-mesh fraction of stream sediments, Petersburg area, southeast Alaska: U.S. Geological Survey Open-File Report 83-420-K, scale 1:250,000, 1 sheet.
- Cathrall, J. B., Day, G. W., Hoffman, J. D., and McDanal, S. K., 1983, Distribution and abundance of tin, determined by spectrographic analysis in the nonmagnetic fraction of heavy-mineral concentrates from stream sediments, Petersburg area, southeast Alaska: U.S. Geological Survey Open-File Report 83-420-L, scale 1:250,000, 1 sheet.
- Cathrall, J. B., Day, G. W., Hoffman, J. D., and McDanal, S. K., 1983, Distribution and abundance of cadmium, determined by spectrographic analysis in the nonmagnetic fraction of heavy-mineral concentrates from stream sediments, Petersburg area, southeast Alaska: U.S. Geological Survey Open-File Report 83-420-M, scale 1:250,000, 1 sheet.
- Cathrall, J. B., Day, G. W., Hoffman, J. D., and McDanal, S. K., 1983, Distribution and abundance of molybdenum, determined by spectrographic analysis in the minus 80-mesh fraction of stream sediments, Petersburg area, southeast Alaska: U.S. Geological Survey Open-File Report 83-420-N, scale 1:250,000, 1 sheet.
- Cathrall, J. B., Day, G. W., Hoffman, J. D., and McDanal, S. K., 1983, Distribution and abundance of molybdenum, determined by spectrographic analysis in the minus 80-mesh fraction of stream sediments, Petersburg area, southeast Alaska: U.S. Geological Survey Open-File Report 83-420-O, scale 1:250,000, 1 sheet.
- Cathrall, J. B., Day, G. W., Hoffman, J. D., and McDanal, S. K., 1983, Distribution and abundance of nickel, determined by spectrographic analysis in the minus 80-mesh fraction of stream sediments, Petersburg area, southeast Alaska: U.S. Geological Survey Open-File Report 83-420-P, scale 1:250,000, 1 sheet.
- Cathrall, J. B., Day, G. W., Hoffman, J. D., and McDanal, S. K., 1983, Distribution and abundance of nickel,

- determined by spectrographic analysis in the nonmagnetic fraction of heavy-mineral concentrates from stream sediments, Petersburg area, southeast Alaska: U.S. Geological Survey Open-File Report 83-420-Q, scale 1:250,000, 1 sheet.
- Cathrall, J. B., Day, G. W., Hoffman, J. D., and McDanal, S. K., 1983, Distribution and abundance of cobalt, determined by spectrographic analysis in the minus 80-mesh fraction of stream sediments, Petersburg area, southeast Alaska: U.S. Geological Survey Open-File Report 83-420-R, scale 1:250,000, 1 sheet.
- Cathrall, J. B., Day, G. W., Hoffman, J. D., and McDanal, S. K., 1983, Distribution and abundance of cobalt, determined by spectrographic analysis in the nonmagnetic fraction of heavy-mineral concentrates from stream sediments, Petersburg area, southeast Alaska: U.S. Geological Survey Open-File Report 83-420-S, scale 1:250,000, 1 sheet.
- Cathrall, J. B., Day, G. W., Hoffman, J. D., and McDanal, S. K., 1983, Distribution and abundance of chromium, determined by spectrographic analysis in the minus 80-mesh fraction of stream sediments, Petersburg area, southeast Alaska: U.S. Geological Survey Open-File Report 83-420-T, scale 1:250,000, 1 sheet.
- Cathrall, J. B., Day, G. W., Hoffman, J. D., and McDanal, S. K., 1983, Distribution and abundance of chromium determined by spectrographic analysis in the nonmagnetic fraction of heavy-mineral concentrates from stream sediments, Petersburg area, southeast Alaska: U.S. Geological Survey Open-File Report 83-420-U, scale 1:250,000, 1 sheet.
- Cathrall, J. B., Day, G. W., Hoffman, J. D., and McDanal, S. K., 1983, Distribution and abundance of tungsten, determined by colorimetric and spectrographic analysis in the minus 80-mesh fraction of stream sediments, Petersburg area, southeast Alaska: U.S. Geological Survey Open-File Report 83-420-V, scale 1:250,000, 1 sheet.
- Cathrall, J. B., Day, G. W., Hoffman, J. D., and McDanal, S. K., 1983, Distribution and abundance of tungsten determined by spectrographic analysis in the nonmagnetic fraction of heavy-mineral concentrates from stream sediments, Petersburg area, southeast Alaska: U.S. Geological Survey Open-File Report 83-420-W, scale 1:250,000, 1 sheet.
- Chapin, Theodore, 1916, Mining developments in southeastern Alaska: U. S. Geological Survey Bulletin 642, p. 73-104.
- Chapin, Theodore, 1918, Mining developments in the Ketchikan and Wrangell mining districts: U. S. Geological Survey Bulletin 662, p. 63-75.
- Chapin, Theodore, 1919, Mining developments in the Ketchikan district: U. S. Geological Survey Bulletin 692, p. 85-89.
- Clark, A. L., and Greenwood, W. R., 1972 Geochemistry and distribution of platinum-group metals in mafic to ultramafic complexes of southern and southeastern Alaska, in Geological Survey Research: U.S. Geological Survey Professional Paper 800-C p. C157-C160.
- Cobb, E. H., 1972, Metallic mineral resources map of the Petersburg quadrangle, Alaska: U. S. Geological Survey Miscellaneous Field Studies Map MF-415, 1 sheet, scale 1:250,000.
- Cobb, E. H., 1972, Summary of references to mineral occurrences (other than mineral fuels and construction materials) in the Petersburg Quadrangle, Alaska: U.S. Geological Survey Open-File Report 78-870, 53 p.
- Cobb, E. H., 1973. Placer deposits of Alaska: U.S. Geological Survey Bulletin 1374, 213 p.

- Cobb, E. H., 1978, Summary of references to mineral occurrences (other than mineral fuels and construction materials) in the Petersburg quadrangle, Alaska: U.S. Geological Survey Open-File Report 78-870.
- Coldwell, J. R., 1990, Northwest Canada Mining leads to road proposal: Southeast Alaska Business Journal, December 1990, p. 4.
- Cox, D.P., and Singer, D.A., eds., 1986, Mineral deposit models: U.S. Geological Survey Bulletin 1992, 379 p.
- Denny, R. L., 1961, Lillie, Hawkins, and Eichner Moly prospect (Koscuisko Island): Alaska Territorial Department of Mines Property Examination 117-7, 3 p
- Dickinson, K. A., 1979, A uranium occurrence in the Tertiary Kootznahoo Formation on Kuiu Island, southeast Alaska: U.S. Geological Survey Open-File Report 79-1427, 5 p.
- Dickinson, K. A., 1979, Uraniferous phosphate occurrence on Kupreanof Island, southeast Alaska: U. S. Geological Survey Open-File Report 79-1316, 2 p.
- Dickinson, K.A., and Campbell, J.A., 1982, The potential for uranium deposits in the Tertiary Kootznahoo Formation of the southern part of the Admiralty trough, southeastern Alaska: U. S. Geological Survey Open-File Report 82-983, 18 p.
- Dickinson, K. A., and Pierson, C. T., 1988, A statistical analysis of chemical and mineralogic data from the Tertiary Kootznahoo Formation in southeastern Alaska, with emphasis on uranium and thorium: U.S. Geological Survey Bulletin 1851, 19 p.
- Douglass, S. L., Webster, J. H., Burrell, P. D., Lanphere, M. A., and Brew, D. A., 1989, Major-element chemistry, radiometric ages, and locations of samples from the Petersburg and parts of the Port Alexander and Sumdum quadrangles, southeastern Alaska: U.S. Geological Survey Open-File Report 89-527,66 p., 1 pl., scale 1:250,000.
- Eakins, G. R., 1975, Uranium investigations in southeastern Alaska: Alaska Division of Geological and Geophysical Surveys, Geologic Report 44, 62 p.
- Fowler, H. M., 1948, Report of investigations in the Petersburg-Ketchikan mining precincts: Alaska Territorial Department of Mines Itinerary Report 195-2, 12 p.
- Fowler, H. M., 1948, Taylor Creek lead-zinc prospect, Duncan Canal, Kupreanof Island, Alaska: Alaska Territorial Department of Mines Property Examination 117-5, 1 p.
- Fowler, H. M., 1950, Report of investigations in the Hyder, Ketchikan, Wrangell, Petersburg, Juneau, Sitka, Skagway Mining Precincts, May 24-November 10, 1950. Alaska Territorial Dep. Mines Itinerary Rep., 1950.
- Fowler, H. M., 1950, Report of investigations in the Hyder, Ketchikan, Wrangell, Petersburg, Juneau, Sitka, and Skagway precincts: Alaska Territorial Department of Mines Itinerary Report 195-6, 29 p.
- Fowler, H. M., 1951, Report of investigations in the Petersburg, Wrangell, Ketchikan, and Hyder mining districts: Alaska Territorial Department of Mines Itinerary Report 195-8, 13 p.
- Fowler, H. M. Summary of Mining Investigations in the Petersburg, Wrangell, Ketchikan and Hyder Mining Districts, Alaska, May 22-August 16, 1951. Alaska Territorial Dep. Mines Itinerary Rep., 1951, 10 pp.
- Gault, H. R., Rossman, D. L., Flint, G. M., Jr., and Ray, R. G., 1953, Some lead-zinc deposits of the Wrangell district, Alaska: U. S. Geological Survey Bulletin 998-B, p. 15-58.

- Glover, A. E., 1951, Salmon Bay - Red Bay reconnaissance, Prince of Wales Island: Alaska Territorial Department of Mines Mineral Investigation 117-1, 6 p.
- Gooch, A. E., 1964, Field trip to the Dry Pass and Shakan molybdenum deposits: Alaska Territorial Department of Mines Itinerary Report 117-1, 4 p., 1 sheet, scale 1:63,360.
- Green, C. B., Bundtzen, T. K., Peterson, R. J., Seward, A. F., Deagen, J. R., and Burton, J. E., 1989, Alaska's mineral industry 1988: Alaska Division of Geological and Geophysical Surveys Special Report 43, 79 p.
- Grybeck, D. J., Berg, H. C., and Karl, S. M., 1984, Map and description of the mineral deposits in the Petersburg and eastern Port Alexander quadrangles: U.S. Geological Survey Open-File Report 84-837, 86 p., 1 sheet, scale 1:250,000.
- Herreid, Gordon, and Kaufman, M. A., 1964, Geology of the Dry Pass area, southeastern Alaska: Alaska Division of Mines and Minerals Geologic Report, 7, 16 p.
- Hess, F. L., 1924, Molybdenum deposits, a short review: U. S. Geological Survey Bulletin 761, 35 p.
- Himmelberg, G.R., and Loney, R.A., 1995, Characteristics and petrogenesis of Alaskan-type ultramafic-mafic intrusions, southeastern Alaska: U. S. Geological Survey Professional Paper 1564, 47 p.
- Himmelberg, G.R., Loney, R.A., and Craig, J.T., 1986, Petrogenesis of the ultramafic complex at the Blashke Islands, southeastern Alaska: U. S. Geological Survey Bulletin 1662, 14 p.
- Houston, J. R., Bates, R. G., Velikanje, R. S., and Wedow, Helmuth, Jr., 1958, Reconnaissance for radioactive deposits in southeastern Alaska, 1952: U. S. Geological Survey Bulletin 1058-A, p. 1-31.
- Karl, S.M., and Koch, R.D., 1990, Maps and preliminary interpretation of anomalous rock geochemical data from the Petersburg quadrangle and parts of the Port Alexander, Sitka, and Sumdum quadrangles, southeastern Alaska: U. S. Geological Survey Miscellaneous Field Studies Map MF-1970-C, 40 p., 7 sheets, scale 1:250,000.
- Karl, S. M., Berg, H. C., Grybeck, D., and Abramson, B. S., 1980, Tables describing metalliferous and selected nonmetallic mineral deposits in the Petersburg and eastern Port Alexander quadrangles, Alaska: U.S. Geological Survey Open-File Report 80-793, 14 p., 4 sheets, scale, 1:250,000.
- Karl, S. M., Koch, R. D., Hoffman, J. S., Day, G. W., Sutley, S. J., and McDanal, S. K., 1985, Trace element data for rock samples from the Petersburg and parts of the Port Alexander and Sumdum quadrangles, Southeastern Alaska: U.S. Geological Survey Open-File Report 85-146, 698 p., 1 pl., scale 1:250,000.
- Kaufman, Alvin, 1958, Southeastern Alaska's mineral industry: U. S. Bureau of Mines Information Circular 7844, 37 p.
- Kennedy, G. C., and Walton, M. S., Jr., 1946, Geology and associated mineral deposits of some ultra basic rock bodies in southeastern Alaska: U. S. Geological Survey Bulletin 947-D, p. 65-84.
- Kerns, W. H., 1950, Investigations of Taylor Creek lead-zinc deposit, Kupreanof Island, Petersburg, Alaska: U. S. Bureau of Mines Report of Investigations 4669, 13 p.
- Le Compte, J. R., 1981, Landsat features maps of the Petersburg quadrangle and vicinity, southeastern Alaska: U.S. Geological Survey Open-File Report 81-799, 2 sheets, scale 1:250,000.
- Maas, K. M., Bittenbender, P. E., and Still, J. C., 1995, Mineral investigations in the Ketchikan mining dis-

- trict, southeastern Alaska: U. S. Bureau of Mines Open-File Report 11-95, 606 p.
- Martin, G. C., 1919, The Alaskan mining industry in 1917: U. S. Geological Survey Bulletin 692, p. 11-42.
- Martin, G. C., 1920, The Alaskan mining industry in 1918: U. S. Geological Survey Bulletin 712, p. 11-52.
- McClelland, W. C., and Gehrels, G. E., 1990, Geology of the Duncan Canal shear zone: Evidence for Early and Middle Jurassic deformation of the Alexander terrane, southeastern Alaska: Geological Society of America Bulletin, v. 102, p. 1378-1392.
- Mertie, J. B., Jr., 1921, Lode mining in the Juneau and Ketchikan districts: U. S. Geological Survey Bulletin 714, p. 105-128.
- Moffit, F. H., 1927, Mineral industry of Alaska in 1925: U.S. Geological Survey Bulletin 792, p. 1-39.
- Muffler, L. J. P., 1967, Stratigraphy of Keku Islets and neighboring parts of Kuiu and Kupreanof Islands, southeastern Alaska: U. S. Geological Survey Bulletin 1241-C, p. 1-52, scale 1:63,360.
- Newberry, R. J., 1995, An update on skarn deposits of Alaska: Alaska Division of Geological and Geophysical Surveys Public-Data File 95-20, 72 p., 1 disk.
- Newberry, R. J., and Brew, D. A., 1989, Epigenetic hydrothermal origin of the Groundhog Basin-Glacier Basin silver-tin-lead-zinc deposits, southeastern Alaska: U. S. Geological Survey Bulletin 1903, p. 113-121.
- Noel, G. A., 1966, The productive mineral deposits of southeastern Alaska, in Alaska Division of Mines and Minerals, Report for the year 1966: Juneau, Alaska, p. 51-57, 60-68.
- Overstreet, W.C., 1967, The geologic occurrence of monzonite: U.S. Geological Survey Professional Paper 530, 327 p.
- Philpotts, John, and Evans, J. R., 1992, Rare earth minerals in 'thunder eggs' from Zarembo Island, southeast Alaska: in U.S. Geological Survey Bulletin 2041, p. 98-105.
- Race, W. H., 1963, Castle Island barite deposit, Duncan Canal, Alaska (Petersburg Quadrangle): Alaska Territorial Department of Mines Property Examination 117-9, 15 p., 1 sheet, scale 1:480.
- Roehm, J. C., 1945, Preliminary report of investigations and itinerary of J. C. Roehm in the Wrangell and Petersburg precincts, Alaska: Alaska Territorial Department of Mines Itinerary Report 195-37, 13 p.
- Roehm, J. C., 1945, Preliminary report of investigations in the Juneau and Petersburg precincts and itinerary of J. C. Roehm: Alaska Territorial Department of Mines Itinerary Report 195-38, 10 p.
- Roehm, J. C., 1946, Preliminary report on Taylor Creek lead-zinc property of Ora P. Schoonover (Taylor Creek): Alaska Territorial Department of Mines Property Examination 117-4, 2 p.
- Roehm, J. C., 1946, Report of Investigations and itinerary of J. C. Roehm in the Petersburg and Ketchikan mining precincts: Alaska Territorial Department of Mines Itinerary Report 195-41, 13 p.
- Shepard, J. G., 1925, Ground Hog Basin Claims: Alaska Territorial Department of Mines Property Examination 117-3, 4 p., 1 sheet.
- Shepard, J. G., 1925, The Lake Virginia Mining Company (Groundhog Basin): Alaska Territorial Department of Mines Property Examination 117-2, 1 p.

- Smith, P. S., 1916, Mineral industry of Alaska in 1924: U.S. Geological Survey Bulletin 783, p. 1-80.
- Smith, P. S., 1926, Mineral industry of Alaska in 1924: U.S. Geological Survey Bulletin 783, p. 1-30.
- Smith, P. S., 1930, Mineral industry of Alaska in 1927, U.S. Geological Survey Bulletin 810, p. 1-64.
- Smith, P. S., 1932, Mineral industry of Alaska in 1929: U.S. Geological Survey Bulletin 824, p. 1-81.
- Smith, P. S., 1933, Mineral industry of Alaska in 1930: U.S. Geological Survey Bulletin 836, p. 1-83.
- Smith, P. S., 1933, Mineral industry of Alaska in 1931, U.S. Geological Survey Bulletin 844-A, p. 1-82.
- Smith, P. S., 1934, Mineral industry of Alaska in 1933: U.S. Geological Survey Bulletin 864-A, p. 1-94.
- Smith, P. S., 1941, Mineral industry of Alaska in 1939: U. S. Geological Survey Bulletin 926-A, p. 1-106.
- Smith, P. S., 1942, Occurrences of molybdenum minerals in Alaska: U.S. Geological Survey Bulletin 844-A, p. 1-82.
- Smith, P. S., 1942, Occurrences of molybdenum minerals in Alaska: U.S. Geological Survey Bulletin 926-C, p. 161-210.
- Spurr, J. E., 1898, Geology of the Yukon gold district Alaska, with an introductory chapter on the history and conditions of the district to 1897, by H. B., Goodrick: U.S. Geological Survey 18th Annual Report, part 3, p. 87-392.
- Swainbank, R. C., Bundtzen, T. K., Clough, A. H., Henning, M. W., and Hansen, E. W., 1995, Alaska's Mineral Industry 1994: Alaska Division of Geological and Geophysical Surveys Special Report 49, 77 p.
- Taylor, H.P., 1967, The zoned ultramafic complexes of southeastern Alaska, in Wyllie, P.J., ed., Ultramafic and related rocks: New York, J. Wiley and Sons, p. 97-121.
- Taylor, H. P., Jr., and Noble, J. A., 1969, Origin of magnetite in the zoned ultramafic complexes of southeastern Alaska, in Wilson, H. D .B., ed., Magmatic ore deposits: Economic Geology Monograph 4, p. 209-230.
- Thorne, R.L., 1943, Shakan molybdenum deposit, Kosciusko Island, southeastern Alaska: U. S. Bureau of Mines War Mineral Report 108, 9 p.
- Tripp, R. B., and Cathrall, J. B., 1984, Mineralogical map showing the distribution of selected minerals in nonmagnetic fractions of heavy-mineral concentrates from stream sediments, Petersburg area, southeast Alaska: U.S. Geological Survey Open-File Report 83-420-X, 1 sheet, scale 1:250,000.
- Twenhofel, W. S., Reed, J. C., and Gates, G. O., 1949, Some mineral investigations in southeastern Alaska: U. S. Geological Survey Bulletin 963-A, p. 1-45.
- Twenhofel, W. S., Robinson, G. D., and Gault, H. R., 1946, Molybdenite investigations in southeastern Alaska: U. S. Geological Survey Bulletin 947-B, p. 7-38.
- U.S. Bureau of Mines, 1980, Claim map, Petersburg quadrangle, Alaska: U.S. Bureau of Mines Map No. 117, 1 sheet, scale 1:250,000.
- 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.

- Walton, M. S., 1951, The Blashke Island ultrabasic complex with notes on related areas in southeastern Alaska: U. S. Geological Survey Open-File Report 126, 266 p.
- Warner, J. D., 1989, Columbian-, rare-earth element-, and thorium- bearing veins near Salmon Bay, southeastern Alaska: U.S. Bureau of Mines Open-File Report 6-89, 25 p.
- Wedow, Helmuth, Jr., and others, 1953, Preliminary summary of reconnaissance for uranium and thorium in Alaska, 1952, U.S. Geological Survey Circular 248, 15 p.
- Wedow, Helmuth, Jr., White, M. G., and Moxham, R. M., 1952, Interim report on an appraisal of the uranium possibilities of Alaska: U.S. Geological Survey Open-File Report 51, 123 p.
- White, M. G., and others, 1952, Preliminary summary of reconnaissance for uranium in Alaska, 1951: U. S. Geological Survey Circular 196, 17 p.
- White, M. G., West, W. S., Tolbert, G. E., Nelson, A. E., and Huston, J. R., 1952, Preliminary summary of reconnaissance of uranium in Alaska, 1951: U.S. Geological Survey Circular 196, 17 p.
- Williams, J. A., 1953, Preliminary report on Maid of Mexico Property (Woewodski Island): Alaska Territorial Department of Mines Property Examination 117-6, 4 p., 1 sheet, scale 1:63,360.
- Williams, J. A., and Decker, P. A., 1932, Exploring Castle Island barite deposit by Diamond Drilling, Duncan Canal: Alaska Territorial Department of Mines Miscellaneous Report 117-1, 47 p., 1 sheet, scale 1:250,000
- Wright, C. W., 1907, Lode mining in southeastern Alaska: U. S. Geological Survey Bulletin 314, p. 47-72.
- Wright, C. W., 1908, Lode mining in southeastern Alaska, 1907: U.S. Geological Survey Bulletin 345, p. 78-97.
- Wright, C. W., 1909, Mining in southeastern Alaska: U. S. Geological Survey Bulletin 379, p. 67-86.
- Wright, F. E., and Wright, C. W., 1905, Economic developments in southeastern Alaska: U. S. Geological Survey Bulletin 259, p. 47-68.
- Wright, F. E., and Wright, C. W., 1906, Lode mining in southeastern Alaska: U.S. Geological Survey Bulletin 284, p. 30-54.
- Wright, F. E., and Wright, C. W., 1908, The Ketchikan and Wrangell mining districts, Alaska: U. S. Geological Survey Bulletin 347, 210 p.