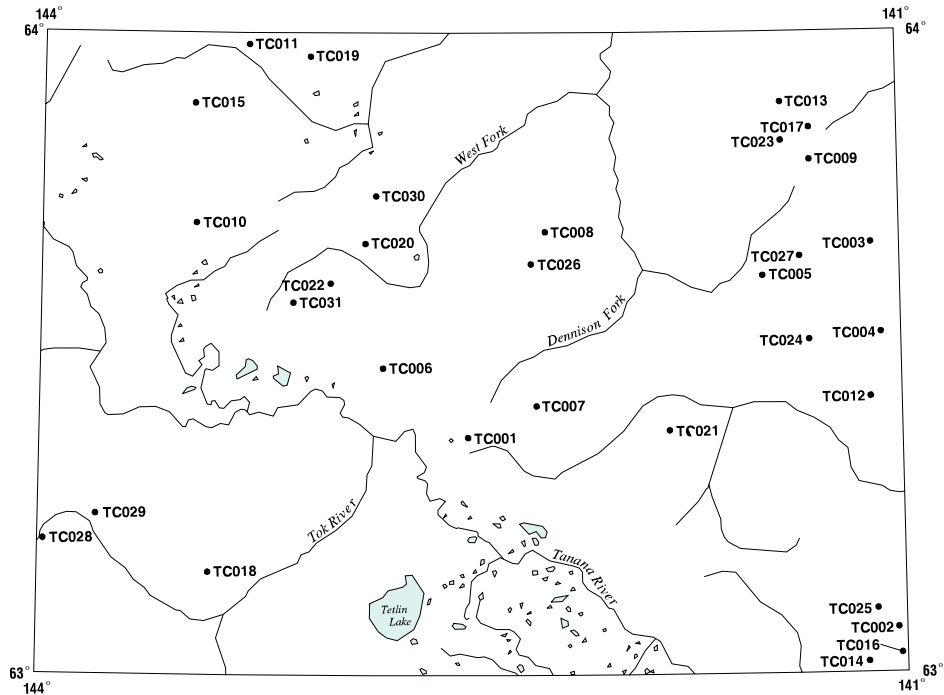


## Tanacross quadrangle

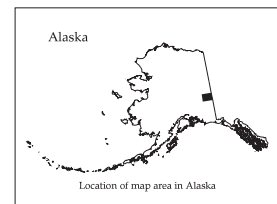
Descriptions of the mineral occurrences shown on the accompanying figure follow. See U.S. Geological Survey (1996) for a description of the information content of each field in the records. The data presented here are maintained as part of a statewide database on mines, prospects and mineral occurrences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



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

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

Cheryl Cameron  
Alaska Division of Geological & Geophysical Surveys  
794 University Ave., Suite 200  
Fairbanks, AK 99709-3645



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

**OPEN-FILE REPORT 99-358**

**Site name(s): ASARCO; Tok; Dennis**

**Site type:** Prospect

**ARDF no.:** TC001

**Latitude:** 63.37

**Quadrangle:** TC B-4

**Longitude:** 142.51

**Location description and accuracy:**

The prospect is located on a north-facing hillside about 5 miles northeast of Tetlin Junction. It is at about 3000 feet of elevation, in section 3, T. 19 N., R. 15 E., of the Copper River Meridian. It is location 20 of Singer and others (1976), and locality 1 of Eberlein and others (1977). It lies about 3.5 miles north of Ladue Peak. The location is known to within a mile.

**Commodities:**

**Main:** Cu, Mo

**Other:**

**Ore minerals:** Chalcopyrite (?), molybdenite, pyrite

**Gangue minerals:**

**Geologic description:**

The ASARCO prospect consists of silicified and deeply leached Tertiary quartz porphyry hypabyssal intrusive and extrusive rocks that contain disseminated molybdenite and copper sulfide minerals (Singer and others, 1976). The regional geology of the prospect consists of Tertiary felsic volcanics surrounded by undivided granitic rocks (Foster, 1970). The prospect lies within the eastern Yukon-Tanana Y1 subterrane of Foster and Keith (1994). Cities Services Mineral Corp. drilled three holes in the prospect in 1971, and then dropped the project (David Hedderly-Smith, oral communication, 1998). A rhyolite flow near the ASARCO prospect yielded an age of 55-60 Ma (Newberry and others, 1996).

**Alteration:**

Alteration types include severe silicification and leaching of the hypabyssal intrusive (Singer and others, 1976).

**Age of mineralization:**

Early Tertiary (55-60 Ma), based on the prospect's similarity to the Taurus prospect (TC027) and the Pushbush prospect (TC024) nearby, as well as a radiometric date on a

rhyolite flow near the prospect (Newberry and others, 1996).

**Deposit model:**

Porphyry Cu deposit (Cox and Singer, 1986; model 21a)

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

21a

**Production Status:** None

**Site Status:** Undetermined

**Workings/exploration:**

Surface sampling, some sampling and drilling in 1970 and 1971.

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

Foster, 1970; Singer and others, 1976; Eberlein and others, 1977; Gill, 1977; Cobb and Eberlein, 1980 (OFR 80-1086); Nokleberg and others, 1987; Foster and Keith, 1994; Newberry and others, 1996.

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

**Reporter(s):** C.E. Cameron (ADGGS)

**Last report date:** 4/13/99

**Site name(s):** B.C.

**Site type:** Mine

**ARDF no.:** TC002

**Latitude:** 63.07

**Quadrangle:** TC A-1

**Longitude:** 141.03

**Location description and accuracy:**

The B.C. mine is located in sec. 22, T. 15 N., R. 23 E., of the Copper River Meridian, about one mile from the Canadian border, along a tributary of McArthur Creek. It is location 14 of Singer and others (1976), and locality 2 of Eberlein and others (1977). The location is accurate to within a mile.

**Commodities:**

**Main:** Au

**Other:**

**Ore minerals:** Gold

**Gangue minerals:** Quartz

**Geologic description:**

The mine is both a placer and a lode deposit since it consists of eluvial and gold-bearing bench gravels about 20 feet thick which overlie decomposed Mesozoic granodiorite that contains gold-bearing quartz veins. The eluvial gold has delicate wire and crystal forms (Eberlein and others, 1977, p. 101). The regional geology surrounding the mine consists of undivided granitic rock; mostly hornblende granodiorite (Foster, 1970). Similar prospects exist on the Canadian side of the border. There are also many other placer claims along McArthur Creek (TC014) to the west.

**Alteration:**

**Age of mineralization:**

**Deposit model:**

Placer gold deposit (Cox and Singer, 1986; model 39a), residual placer gold deposit, lode gold deposit?

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

39a

**Production Status:** Undet.

**Site Status:** Undetermined

**Workings/exploration:**

Some surface exploration. Claim staking activity reported in 1977 by Eberlein and others (1977).

**Production notes:**

**Reserves:**

**Additional comments:**

**References:**

Foster, 1970; Singer and others, 1976; Eberlein and others, 1977; MacKevett and Holloway, 1977; Cobb and Eberlein, 1980 (OFR 80-1086).

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

**Reporter(s):** C.E. Cameron (ADGGS)

**Last report date:** 4/13/99

**Site name(s):** Baggage**Site type:** Prospect**ARDF no.:** TC003**Latitude:** 63.67**Quadrangle:** TC C-1**Longitude:** 141.1**Location description and accuracy:**

Baggage prospect is located within a large block of claims that cover about 8 square miles; it is about one mile west of the Canadian border, in the NW 1/4 section 26, T. 23 N., R. 22 E., of the Copper River Meridian. Latitude and longitude given above correspond to the approximate center of the claims. McElfish Creek runs through the middle of the area. The location is accurate to within 1/2 mile.

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

Baggage prospect was staked in the 1970's by Cities Services Mineral Corporation, and was considered a possible porphyry-Cu prospect (David Hedderly-Smith, oral communication, 1998). The regional geology of the area is mapped as Paleozoic-Precambrian biotite gneiss and amphibolite- grade schist (Foster, 1970). The prospect lies within the eastern Yukon-Tanana Y1 subterrane (Foster and Keith, 1994).

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

Likely to be one of three ages of porphyry mineralization -- 90 to 100 Ma, 70 Ma, or 55 Ma -- based on dates from other porphyry prospects in the Yukon-Tanana terrane.

**Deposit model:**

Porphyry Cu? (Cox and Singer, 1986, model 21a)

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

21a?

**Production Status:** None

**Site Status:** Undetermined

**Workings/exploration:**  
Surface exploration.

**Production notes:**

**Reserves:**

**Additional comments:**

**References:**  
Foster, 1970; Foster and Keith, 1994.

**Primary reference:** This description

**Reporter(s):** C.E. Cameron (ADGGS)

**Last report date:** 4/13/99

**Site name(s):** Big Creek

**Site type:** Prospect

**ARDF no.:** TC004

**Latitude:** 63.53

**Quadrangle:** TC C-1

**Longitude:** 141.07

**Location description and accuracy:**

Big Creek prospect is located within section 7, T. 20 N., R. 22 E., of the Copper River Meridian, at about 3000 feet elevation on a northwest facing hillside above Big Creek. It is location 12 of Singer and others (1976), and location 3 of Eberlein and others (1977). The location is accurate to within a mile.

**Commodities:**

**Main:** Pb, Zn

**Other:**

**Ore minerals:** Galena, pyrite, sphalerite

**Gangue minerals:**

**Geologic description:**

The Big Creek prospect is in an area of possible stratiform sulfide deposits. It consists of galena, sphalerite and iron sulfides disseminated in quartz-mica schist of Paleozoic and/or Precambrian age (Eberlein and others, 1977, p. 101). The regional geology around the prospect consists of amphibolite-grade quartz-mica schist that is Precambrian to Paleozoic in age (Foster, 1970). High copper anomalies were found in soil samples collected during the early 1970's, although no primary mineralization was found on the surface (David Hedderly-Smith, oral communication, 1998).

**Alteration:**

**Age of mineralization:**

**Deposit model:**

Stratiform Pb-Zn volcanogenic deposit?

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

**Production Status:** None



**Site Status:** Active?

**Workings/exploration:**

Surface exploration and soil sampling conducted in the 1970's. There probably has been more recent exploration in the area.

**Production notes:**

**Reserves:**

**Additional comments:**

See also Ladue prospect (TC012).

**References:**

Foster, 1970; Singer and others, 1976; Eberlein and others, 1977; Cobb and Eberlein, 1980 (OFR 80-1086).

**Primary reference:** Eberlein and others, 1977

**Reporter(s):** C.E. Cameron (ADGGS)

**Last report date:** 4/13/99

**Site name(s): Bluff****Site type:** Prospect**ARDF no.:** TC005**Latitude:** 63.62**Quadrangle:** TC C-1**Longitude:** 141.48**Location description and accuracy:**

The Bluff prospect is located on a mountaintop in sections 10 and 11, T. 21 N., R. 20 E., of the Copper River Meridian. It is location 9 of Singer and others (1976), and location 4 of Eberlein and others (1977). The block of claims containing Bluff is adjacent to the west boundary of the Taurus prospect (TC027) block of claims, although the centers of prospecting activity for the two deposits do not adjoin. The geographic coordinates are the approximate center of prospecting activity at Bluff. The location is accurate to within 2 to 3 miles.

**Commodities:****Main:** Pb, Zn**Other:****Ore minerals:** Chalcopyrite, galena, magnetite, molybdenite, pyrite, sphalerite**Gangue minerals:** Tourmaline**Geologic description:**

The Bluff prospect contains disseminated pyrite, chalcopyrite, molybdenite, tourmaline, and magnetite within high-level porphyritic quartz monzonite and granodiorite intrusions. The intrusions are of mid-Cretaceous to early Tertiary age (Foster, 1970). The intrusions also show evidence of strong hydrothermal alteration. Numerous faults and dikes are found in the area (Singer and others, 1976). The prospect was explored by surface sampling, diamond drilling, and geophysics in the early 1970's by Cities Services Mineral Corp. (David Hedderly-Smith, oral communication, 1998). The regional geology of the prospect consists of Precambrian-Paleozoic biotite gneiss and schist of amphibolite grade (Foster, 1970). The prospect also lies within the eastern portion of the Y1 subterrane of the Yukon-Tanana terrane (Foster and others, 1994).

**Alteration:**

Strong hydrothermal alteration (Singer and others, 1976).

**Age of mineralization:**

Mid-Cretaceous to early Tertiary, based on other deposits in the area (Mosquito: TC015).

**Deposit model:**

Porphyry Cu (Cox and Singer, 1986; model 21a)

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

21a

**Production Status:** None

**Site Status:** Undetermined

**Workings/exploration:**

Explored by surface sampling, diamond drilling, and geophysics by Cities Services Mineral Corp. in the early 1970's (Singer and others, 1976). There has probably been more exploration in recent years. The Bluff prospect was also staked in 1987 by Resource Associates of Alaska, but was dropped two years later.

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

See also Mosquito (TC015) and Peternie (TC022) prospects.

**References:**

Foster, 1970; Singer and others, 1976; Eberlein and others, 1977; Cobb and Eberlein, 1980 (OFR 80-1086); Nokleberg and others, 1987; Foster and Keith, 1994.

**Primary reference:** Eberlein and others, 1977

**Reporter(s):** C.E. Cameron (ADGGS)

**Last report date:** 4/13/99

**Site name(s):** Bush; VABM Bush; Hajdukovich Molybdenum?

**Site type:** Prospect

**ARDF no.:** TC006

**Latitude:** 63.478

**Quadrangle:** TC B-4

**Longitude:** 142.806

**Location description and accuracy:**

The Bush prospect encompasses the area around and to the east of Bush Mountain, in sections 25, 30, 31, and 36, T. 20 N., R. 14 E., of the Copper River Meridian. The prospect covers an area of about 3 square miles, and coordinates given correspond to the approximate center. The location is accurate.

**Commodities:**

**Main:** Mo, Pb

**Other:**

**Ore minerals:** Hematite, pyrite

**Gangue minerals:**

**Geologic description:**

Geology in the immediate vicinity of the Bush prospect consists of one rhyolite and two porphyritic latite units intruding Precambrian to Paleozoic amphibolite-grade schist (Foster, 1976, Doyon Ltd., 1998). The rhyolite is highly siliceous and iron stained along fracture surfaces; hematite and pyrite are common trace accessory minerals. One porphyritic latite unit is light green and contains trace amounts of pyrite; the other unit lacks pyrite and is a darker green (Dashevsky, 1982). The region where the prospect is located lies within the Yukon-Tanana Y1 subterrane (Foster, 1970; Foster and others, 1994). During soil sampling programs, low levels of lead and molybdenum were identified (Doyon Ltd., 1998).

**Alteration:**

**Age of mineralization:**

If the Bush prospect represents a porphyry Mo occurrence, its age is probably Late Cretaceous to early Tertiary, since there are other porphyry Mo deposits in the area of that age (Mosquito: TC015).

**Deposit model:**

Porphyry Mo? (Cox and Singer, 1986; model 21a)

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

**Production Status:** None

**Site Status:** Active

**Workings/exploration:**

In 1979, WGM Inc. analyzed the ridgetop soils, and in 1981 Arctic Resources Inc. conducted soil sampling on a grid. In 1982, Doyon Ltd. conducted prospecting traverses on the property.

**Production notes:**

**Reserves:**

**Additional comments:**

This property lies on Doyon Ltd. selected land. For more information, contact Doyon Ltd.

This property may be the same as the Hajdukovich molybdenum prospect reported by Saunders (1967), or very close to it.

**References:**

Saunders, 1967; Foster, 1970; Dashevsky, 1982; Foster and others, 1994; Doyon Ltd., 1998.

**Primary reference:** Doyon Ltd., 1998

**Reporter(s):** C.E. Cameron (ADGGS)

**Last report date:** 4/13/99

**Site name(s):** Dennis Ladue

**Site type:** Prospect

**ARDF no.:** TC007

**Latitude:** 63.419

**Quadrangle:** TC B-3

**Longitude:** 142.272

**Location description and accuracy:**

The Dennis Ladue prospect is an area of about 8 square miles. The latitude and longitude correspond to approximately the center of the property. The prospect covers most of sections 11-15 and 21-36, T. 19 N., R. 16 E., of the Copper River Meridian. The location is accurate.

**Commodities:**

**Main:** Au

**Other:** Ag, Ba, Mo, Sb, W, Zn

**Ore minerals:** Pyrite

**Gangue minerals:** Quartz, tourmaline

**Geologic description:**

The Dennis Ladue prospect is underlain by granite, syenite, aplite and porphyritic rhyolite phases of a composite felsic stock. This stock intrudes chlorite schists, biotite schists, and quartzite. The alteration at the property is structurally controlled, and shows evidence of intense silicification within the granite and the rhyolite (DiMarchi and others, 1989). Quartz veins and vein breccia follow north-trending shoots; the veins have traces of pyrite and tourmaline (DiMarchi and others, 1989). The prospect lies within the eastern portion of the Y1 subterrane of the Yukon-Tanana terrane (Foster and others, 1994). In 1995, a re-analysis of WGM Inc. soil and silt samples by Doyon Ltd. revealed anomalous values of tungsten, silver, gold, antimony, arsenic, barium, molybdenum, and zinc.

**Alteration:**

Alteration at the prospect consists of intense silicification within the granite and rhyolite (DiMarchi and others, 1989).

**Age of mineralization:**

**Deposit model:**

Epithermal Au/Ag/W, distal to porphyry? (Doyon Ltd., 1998)

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

In 1975, WGM Inc. conducted a stream silt reconnaissance program on the property, and in 1981 Arctic Resources Inc. analyzed ridgeline soils. In 1985, Doyon Ltd. reanalyzed the silt and soils that contained greater than 20 ppb gold. In 1989 Central Alaska Exploration Corp. did mapping as well as rock, soil, and stream sediment sampling. In 1991, Central Alaska Gold Company conducted rock and soil sampling for gold mineralization.

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

This property lies within Doyon Ltd. selected lands. For more information, contact Doyon Ltd.

**References:**

Foster, 1970; DiMarchi and others, 1989; Foster and others, 1994; Doyon Ltd., 1998.

**Primary reference:** Doyon Ltd., 1998**Reporter(s):** C.E. Cameron (ADGGS)**Last report date:** 4/13/99

**Site name(s): Mt. Fairplay; Fairplay****Site type:** Prospects**ARDF no.:** TC008**Latitude:** 63.69**Quadrangle:** TC C-3**Longitude:** 142.24**Location description and accuracy:**

The Fairplay prospects are in a large block of claims that cover about 20 square miles on Mount Fairplay. The center of most activity is in section 14, T. 22 N., R. 16 E., of the Copper River Meridian, and is location 5 of Singer and others (1976), and location 6 of Eberlein and others (1977). The Taylor Highway passes just to the west of Mt. Fairplay, and much of the claim block is easily accessible by this road. The location is accurate.

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

The Fairplay prospects consist of disseminated chalcopyrite, galena, molybdenite, pyrite, and sphalerite that occur in hydrothermally altered Tertiary hypabyssal syenite and associated felsic volcanic rocks (Singer and others, 1976). Syenite that intrudes the felsic volcanic rocks at Mt. Fairplay has a K/Ar age of 67 +/- 2 Ma and contains minor gold-bearing quartz veins (Kerin, 1976; Wilson and others, 1985; Newberry and others, 1996). The Fairplay prospect area was staked in the early 1970's, and there are other similar prospects nearby (Singer and others, 1976). The syenite complex at Mt. Fairplay is similar to others in the Carmacks metallogenic belt of the Mount Nansen-Cash area in the Yukon Territory (Indian and Northern Affairs Canada, 1989).

**Alteration:**

Hydrothermal alteration (Singer and others, 1976).

**Age of mineralization:**

The syenite at Mt. Fairplay is about 70 Ma, based on K-Ar ages (Kerin, 1976). The felsic intrusive and extrusive rocks that host the syenite are Tertiary.



**Deposit model:**

Porphyry Cu-Mo deposit (Cox and Singer, 1986; model 21a)

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

21a

**Production Status:** None

**Site Status:** Undetermined

**Workings/exploration:**

Surface exploration was conducted and silt and soil samples were taken by WGM Inc. in 1975-76. More recent activity is very probable.

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

Part of the Mt. Fairplay region lies on Doyon Ltd. selected lands. For more information, contact Doyon Ltd.

**References:**

Kerin, 1976; Singer and others, 1976; Eberlein and others, 1977; Cobb and Eberlein, 1980 (OFR 80-1086); U.S.B.M. Mt Fairplay Field Report, 1984; Wilson and others, 1985; Indian and Northern Affairs Canada, 1989; Newberry and others, 1996.

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

**Reporter(s):** C.E. Cameron (ADGGS)

**Last report date:** 4/13/99

**Site name(s): Fishhook****Site type:** Prospect**ARDF no.:** TC009**Latitude:** 63.8**Quadrangle:** TC D-1**Longitude:** 141.31**Location description and accuracy:**

The Fishhook prospect covers an area of approximately 2 square miles. It is location 7 of Eberlein and others (1977). It is located to the west of the Fishhook Bend of the Sixty-mile River. Accessibility is limited; the Taylor highway passes about 24 miles west of the prospect. However, rough overland access is available from Canada (Curt Freeman, unpublished data, 1998). The coordinates are for the approximate center of the claim block, but the center of mineralization and prospecting could be elsewhere within the claim block. The location is accurate to within 1 mile.

**Commodities:****Main:** Ag, Au**Other:** Barite, Cu, Mo, Pb, Sb**Ore minerals:** Chalcopyrite, galena, gold, molybdenite, pyrite, silver, stibnite, sulfosalts**Gangue minerals:** Hematite, quartz**Geologic description:**

The country rock within the Fishhook prospect area is augen gneiss having a possible igneous protolith (Mertie, 1931; Foster, 1970). This protolith has a possible emplacement age (inferred from dating other exposures in the region) of Devonian to Mississippian (360 Ma), with resets in the Late Jurassic (190 Ma) and Early to mid-Cretaceous (135-107 Ma) time (Dusel-Bacon and Aleinikoff, 1985). Cretaceous-Tertiary, fine-grained biotite granite, granodiorite, monzodiorite, and a coarse-grained alkali granite intrude the augen gneiss and are exposed in small outcrops at the prospect. Tertiary (?) volcanics are also present (Gill, 1977).

Local structures are dominated by numerous, high-angle, NE-trending fault zones. Many subordinate fault zones in the area parallel the NE strike and possibly reflect underlying igneous activity (Curt Freeman, unpublished data, 1998). The mineralization at the Fishhook prospect appears to be structurally controlled by the NE-trending faults. Minerals include chalcopyrite, galena, gold, molybdenite, pyrite, silver, sulfosalts, and stibnite. The more highly mineralized areas occur as breccias along the NE faults. The plutonic rocks also contain elevated values of lead, silver, barium, antimony, and gold. Anoma-

lous bismuth along some of the faults suggests a plutonic-source fluid. Extensive hydrothermal alteration and silicification is present in many of the fault zones (Curt Freeman, unpublished data, 1998).

This property was examined in the 1970's as a porphyry-copper deposit, but no significant grades of copper were found. Soil sampling, rock-chip sampling, and stream-sediment sampling were done on the property in the 1970's. In 1978, a shallow drill hole was put in, but no significant mineralization was found. In recent years, soil and rock chip sampling, geologic mapping, and a ground-based magnetometer survey have been conducted (Curt Freeman, unpublished data, 1998).

**Alteration:**

Intense hydrothermal alteration and silicification is found in many of the NE-trending fault zones and in portions of intrusive units at the prospect (Curt Freeman, unpublished data, 1998).

**Age of mineralization:**

Late Cretaceous-early Tertiary.

**Deposit model:**

Plutonic-related (?) ore deposit along NE-trending faults

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

**Production Status:** None

**Site Status:** Active

**Workings/exploration:**

Soil sampling, rock chip sampling, and stream sediment sampling were carried out in the 1970's. In 1978, one shallow drill hole was put in, but did not encounter significant mineralization. In recent years, soil and rock-chip sampling, geologic mapping, and a ground-based magnetometer survey have been conducted (Curt Freeman, unpublished data, 1998). This prospect was examined in the 1970's as a porphyry-Cu deposit, but no significant grades of copper were found (J.M. Messing, oral communication, 1998).

**Production notes:**

**Reserves:**

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

Mertie, 1931; Foster, 1970; Eberlein and others, 1977; Gill, 1977; Cobb and Eberlein, 1980 (OFR 80-1086); Dusel-Bacon and Aleinikoff, 1985.

**Primary reference:** This description

**Reporter(s):** C.E. Cameron (ADGGS)

**Last report date:** 4/13/99

**Site name(s): Friden****Site type:** Prospect**ARDF no.:** TC010**Latitude:** 63.704  
B-6**Quadrangle:** TC C-5**Longitude:** 143.461**Location description and accuracy:**

The Friden prospect covers an area of about 15 square miles. Latitude and longitude given above correspond to the center of the prospect. The prospect occurs in sections 2-11 and 14-18, T. 22 N., R. 10 E., of the Copper River Meridian. The location of the prospect is accurate.

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

Soil samples of the Friden prospect show anomalous molybdenum on the ridge, and weakly anomalous gold in stream-sediment samples. The area is underlain by amphibolite-grade schist country rock that has been intruded by Tertiary (?) quartz monzonite, diorite, rhyolite porphyry and rhyolite breccias, and minor olivine basalt. The granitic rocks also appear to contain high levels of fluorine (Doyon Ltd., 1998).

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

Tertiary?

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

**Site Status:** Active

**Workings/exploration:**

In 1979 WGM Inc. conducted a soils reconnaissance program for molybdenum. In 1981, Arctic Resources Inc. conducted a follow-up investigation of high-value soil samples, and in 1984 Doyon Ltd. briefly examined a fluorine anomaly. In 1985, Doyon Ltd. reanalyzed samples containing anomalous gold values. In 1990, stream sediments were sampled for gold by Doyon Ltd., and in 1991, stream sediments, rocks, and soils were sampled.

**Production notes:**

**Reserves:**

**Additional comments:**

This prospect lies on Doyon selected land. For more information, contact Doyon Ltd.

**References:**

Doyon Ltd., 1998.

**Primary reference:** Doyon Ltd., 1998

**Reporter(s):** C.E. Cameron (ADGGS)

**Last report date:** 4/13/99

**Site name(s):** J-26; July 26; June 26

**Site type:** Prospect

**ARDF no.:** TC011

**Latitude:** 63.982

**Quadrangle:** TC D-5

**Longitude:** 143.281

**Location description and accuracy:**

The J-26 prospect encompasses about 4 square miles on a hilltop, in sections 4 and 5, T. 25 N., R. 11 E., of the Copper River Meridian and sections 32 and 33, T. 26 N., R. 11 E., of the Copper River Meridian. The location is accurate, and the coordinates given in the fields above correspond to the approximate center of the prospect.

**Commodities:**

**Main:** Cu, Mo

**Other:** Ag, Au, Pb, Zn

**Ore minerals:**

**Gangue minerals:** Quartz

**Geologic description:**

J-26 is a porphyry molybdenum prospect within a rhyolite porphyry; it is located near the margin of a propylitized, medium-grained, biotite- and hornblende-bearing, quartz monzonite stock. Nearby pelitic schist, calc-silicate schist, and marble have been recrystallized to hornfels, calc-silicate tactite and garnet-pyroxene skarn. There are numerous Tertiary (?) mafic and felsic dikes, as well as quartz veins. Alteration at the prospect consists of widespread propylitic alteration, localized silica alteration, and skarn (DiMarchi and others, 1989). The general geology consists of Tertiary felsic volcanics surrounded by Mesozoic granitic rocks (Foster, 1970). The property has been soil sampled. Elements listed above as commodities were found in anomalous concentrations in soil samples (Doyon Ltd., 1998).

**Alteration:**

The alteration consists of widespread propylitic alteration and localized silica alteration and skarn (DiMarchi and others, 1989).

**Age of mineralization:**

Likely to be one of the three porphyry events in eastern interior Alaska at 90 to 100 Ma, 70 Ma, or 55 Ma.

**Deposit model:**

Mo-porphyry (Cox and Singer, 1986; model 21a)

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

21a

**Production Status:** None

**Site Status:** Active

**Workings/exploration:**

Surface exploration and soil sampling have been done on the property by companies working under an exploration agreement with Doyon Ltd.

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

This prospect lies on Doyon Ltd. selected land. For more information, contact Doyon Ltd.

**References:**

Foster, 1970; DiMarchi and others, 1989; Doyon Ltd., 1998.

**Primary reference:** Doyon Ltd., 1998

**Reporter(s):** C.E. Cameron (ADGGS)

**Last report date:** 4/13/99



**Site name(s): Ladue; North Ladue; Ladue Camp****Site type:** Prospect**ARDF no.:** TC012**Latitude:** 63.43**Quadrangle:** TC B-1**Longitude:** 141.11**Location description and accuracy:**

Ladue, also called North Ladue and Ladue Camp, is a large block of claims located in sections 2, 11, 12, and 13, T. 19 N., R. 22 E., of the Copper River Meridian, about four miles from the Canadian border. It is location 13 of Singer and others (1976), and location 8 of Eberlein and others (1977). The prospect covers about 2 square miles. The coordinates are for the approximate center of the most intense prospecting activity, in the southern portion of the claim block. The location is accurate to within a mile.

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

The Ladue prospect consists of galena and sphalerite in rhyolite dikes that cross-cut amphibolite-grade, quartz-mica schist of Paleozoic and/or Precambrian age. The Ladue claims were staked in 1975 and 1976. In 1976, the property was explored using ground and airborne electromagnetic surveys. Soil sampling in 1976 indicated several zones of anomalous lead-zinc values, spatially related to good conductors (Eberlein and others, 1977, p. 101). In 1982, Noranda spent 18 field days exploring the property. They conducted electromagnetic surveys, soil geochemistry, and geologic mapping (Dunbier, 1982).

The Noranda efforts focused on the Lucy claim block as one of the most promising in the area. After the field work was finished, Noranda concluded that there were low-level anomalies of copper, lead and zinc, but that there was not a near-surface massive sulfide deposit on the Lucy claim block, although one may exist in the region (Dunbier, 1982).

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

**Deposit model:**

Stratabound Cu-Pb-Zn volcanogenic deposit?

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

**Production Status:** None

**Site Status:** Undetermined

**Workings/exploration:**

In 1976, the property was explored using airborne and ground electromagnetics. An undetermined amount of soil sampling also took place (Eberlein and others, 1977, p. 101). In 1982, the property was explored again using electromagnetic surveys, soil sampling, geologic mapping, and reconnaissance geologic mapping and sampling by Noranda (Dunbier, 1982).

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

See also: Big Creek prospect (TC004).

**References:**

Singer and others, 1976; Eberlein and others, 1977; Cobb and Eberlein, 1980 (OFR 80-1086); Dunbier, 1982.

**Primary reference:** Dunbier, 1982

**Reporter(s):** C.E. Cameron (ADGGS)

**Last report date:** 4/13/99

**Site name(s):** Liberty Creek

**Site type:** Mine

**ARDF no.:** TC013

**Latitude:** 63.89

**Quadrangle:** TC D-1

**Longitude:** 141.41

**Location description and accuracy:**

The Liberty Creek placer mine claim blocks are located near the center of Liberty Creek, and the approximate center of the claim blocks is about 2 miles to the west of the confluence of Dude Creek with Liberty Creek, in section 6, T. 24 N., R. 21 E., of the Copper River Meridian. The location of the placer mine is known to about 2.5 miles.

**Commodities:**

**Main:** Au

**Other:**

**Ore minerals:** Gold

**Gangue minerals:**

**Geologic description:**

The Liberty Creek placer mine was initially staked in 1934, and held for two years. In 1937, it was re-staked, and active from 1937 to 1941. It was staked again in 1977. In the 1930's, there was some hand placer mining at the site. The site is currently being mined for placer gold using mechanized methods (J.M. Messing, oral communication, 1998). The geology in the vicinity of Liberty Creek consists of Paleozoic and/or Precambrian biotite gneiss and schist (amphibolite facies), and a small area of greenschist-grade Paleozoic phyllite and schist (Foster, 1970; Foster and Keith, 1994).

**Alteration:**

**Age of mineralization:**

Quaternary?

**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

**Site Status:** Active

**Workings/exploration:**

The site has been staked numerous times since 1934. It was initially staked in 1934, held for two years, and re-staked again in 1937. It was active from 1937 to 1941, and staked again in 1977. In the 1930's, there was some hand placer mining activity at the site. It is currently an active, mechanized, low-grade placer mine (J.M. Messing, oral communication, 1998).

**Production notes:**

The mine had some small production during the 1930's. Mechanized mining began on a small scale in the 1970's. Larger scale mining was attempted in the early 1990's. The current activity is at a modest level (J.M. Messing, oral communication, 1998).

**Reserves:**

**Additional comments:**

**References:**

Foster, 1970; Foster and Keith, 1994.

**Primary reference:** This description

**Reporter(s):** C.E. Cameron (ADGGS)

**Last report date:** 4/13/99

**Site name(s): McArthur Creek****Site type:** Mines**ARDF no.:** TC014**Latitude:** 63**Quadrangle:** TC A-1**Longitude:** 141.1**Location description and accuracy:**

McArthur Creek is just west of Moosehorn Ridge. The creek runs approximately north-south for more than 20 miles, and has numerous placer mine claims on it. The coordinates are arbitrarily placed at the headwaters of the creek in section 31, T. 15 N., R. 23 E., of the Copper River Meridian. The location is known to about 10 miles.

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

Many placer claims exist on McArthur Creek, and there probably are productive placer mining operations in this area. There is a large amount of placer mining activity in this area on the Canadian side of the border (Foster and others, 1976). Claim names in this area include Boundary, Border, and Alien. The regional geology consists of Paleozoic gneiss and schist (Foster, 1970).

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

Quaternary?

**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:** Active?

**Workings/exploration:**

There are many placer claims along McArthur Creek and a long history of mining along the creek but details are lacking. On the Canadian side of the border, there are many placer gold mines with historic gold production on McArthur Creek.

**Production notes:**

Some placer gold recovered.

**Reserves:**

**Additional comments:**

**References:**

Foster, 1970; Foster and others, 1976.

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

**Reporter(s):** C.E. Cameron (ADGGS)

**Last report date:** 4/13/99

**Site name(s): Mosquito****Site type:** Prospect**ARDF no.:** TC015**Latitude:** 63.89**Quadrangle:** TC D-5**Longitude:** 143.47**Location description and accuracy:**

The Mosquito prospect is located within sections 3,4, 9, and 10, T. 24 N., R. 10 E., of the Copper River Meridian. It is location 1 of Singer and others (1976), and location 9 of Eberlein and others (1977). It is 6 miles south of the Mosquito Fork of the Fortymile River. The location is accurate to within 1/2 mile. The coordinates correspond to the approximate center of the prospect. The location is accurate to within 1/2 mile.

**Commodities:****Main:** Cu, Mo**Other:** Ag, Pb, Zn**Ore minerals:** Chalcopyrite, magnetite, molybdenite, pyrite**Gangue minerals:****Geologic description:**

The Mosquito prospect consists of disseminated chalcopyrite, magnetite, molybdenite, and pyrite in an intrusion of hydrothermally altered quartz monzonite and quartz latite porphyry (Singer and others, 1976). The area contains small, isolated outcrops of felsic volcanic rocks that are reported to be more extensive than shown on Foster and others (1976) geologic map. The most common texture is porphyritic with a fine- to medium-grained groundmass. Phenocrysts include euhedral and subhedral quartz, some of which is mildly strained, and altered feldspar, biotite, and hornblende. The rocks range from slightly altered to so completely altered that the original texture and composition cannot be determined. Sericite, clay minerals, quartz, and chlorite are the most common alteration products. However, limonite and carbonate also occur (Foster and others, 1976). Potassium feldspars in a vein cutting the intrusion have an integrated  $^{40}\text{Ar}/^{39}\text{Ar}$  age of  $70.0 \pm 0.3$  Ma (Newberry and others, 1996). The prospect has anomalous values in gold, bismuth, and tellurium, suggesting that it is an extension of the Carmacks porphyry belt (Alaska Division of Geological and Geophysical Surveys, 1993; Burleigh and Lear, 1994; Newberry and others, 1996). In 1974-75, some drilling and sampling took place on the prospect. Grades of up to 0.17% Mo were reported, but it is unclear if they refer to the Mosquito prospect or the Peternie prospect (TC022) (Singer and others, 1976).

**Alteration:**

Zones of quartz-sericite-pyrite, quartz-magnetite, and epidote-chlorite-quartz pyrite alteration (Doyon Ltd., 1998).

**Age of mineralization:**

If this prospect represents a porphyry Cu-Mo deposit, the age of mineralization is likely the same or close to the age of alteration, reported by Newberry and others to be 70.0 +/- 0.3 Ma (1996).

**Deposit model:**

Porphyry Cu-Mo deposit (Cox and Singer, 1986; model 21a)

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

21a

**Production Status:** None

**Site Status:** Undetermined

**Workings/exploration:**

In 1970-73, Resource Associates of Alaska did mapping, trenching, rock and soil sampling, and completed 3 miles of IP lines. In 1974-75, Cities Services did 788 feet of drilling in 2 holes, and 2.5 miles of IP lines. This was followed in 1979 by WGM Inc., who carried out petrographic analyses, mapping at 1:10,000 and 1:5,000 scales, a geochemical soil and rock sampling grid, and magnetics on the soil grid. In 1981 Arctic Resources Inc. analyzed 22 miles of soil traverses, and in 1984 Doyon Ltd. briefly visited the prospect. In 1990 Doyon Ltd. conducted rock, soil and stream sediment sampling for gold (Doyon Ltd., 1998).

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

This prospect lies within Doyon Ltd. selected lands. For more information, contact Doyon Ltd.

**References:**

Foster and others, 1976; Singer and others, 1976; Eberlein and others, 1977; Cobb and Eberlein, 1980 (OFR 80-1086); Bundtzen and others, 1984; Nokleberg and others, 1987; Alaska Division of Geological and Geophysical Surveys, 1993; Burleigh and Lear, 1994; Newberry and others, 1996; Doyon Ltd., 1998.

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



**Reporter(s):** C.E. Cameron (ADGGS)

**Last report date:** 4/13/99

**Site name(s):** Move**Site type:** Prospect**ARDF no.:** TC016**Latitude:** 63.03**Quadrangle:** TC A-1**Longitude:** 141.02**Location description and accuracy:**

The Move prospect is located within a block of claims in section 34, T. 14, R. 23 E., of the Copper River Meridian and section 3, T. 15 N., R. 23 E., of the Copper River Meridian, about 1/2 mile from the Canadian border. The size of the prospect is uncertain. It is reported that many other similar prospects exist nearby. It is location 15 of Singer and others (1976), and location 10 of Eberlein and others (1977). The location of the prospect is known to within 3 to 4 miles.

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

The Move prospect consists of gold-bearing quartz veins in Mesozoic or Tertiary granitic rocks (MacKevett and Holloway, 1977). The region has been mapped as undifferentiated igneous rocks (Foster, 1970). There was some claim staking in 1976 (Singer and others, 1976), and it is probable that there has been more activity recently.

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

Gold-quartz vein

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

**Site Status:** Undetermined

**Workings/exploration:**

Surface prospecting has been done on the property.

**Production notes:**

**Reserves:**

**Additional comments:**

**References:**

Foster, 1970; Singer and others, 1976; Eberlein and others, 1977; MacKevett and Holloway, 1977; Cobb and Eberlein, 1980 (OFR 80-1086).

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

**Reporter(s):** C.E. Cameron (ADGGS)

**Last report date:** 4/13/99

**Site name(s): NE Pika Canyon****Site type:** Prospect**ARDF no.:** TC017**Latitude:** 63.85**Quadrangle:** TC D-1**Longitude:** 141.31**Location description and accuracy:**

The NE Pika Canyon prospect is located in section 22, T. 24 N., R. 21 E., of the Copper River Meridian and covers an area of about 1 square mile. It is located just to the north-east of Pika Canyon prospect (TC023), and two miles north of Fishhook prospect (TC009). The location is accurate to within 1/2 mile.

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

The geology at the NE Pika Canyon prospect consists of three main units: Precambrian or early Paleozoic gneiss and schist; Paleozoic phyllite and schist; and a Tertiary mafic volcanic unit. The igneous rocks within the prospect area range in composition from felsic to mafic. Many NE-trending faults as well as intense folding dominate the area (Gill, 1977).

During 1974-1976, soil, rock chip, and stream-sediment sampling were conducted on the prospect, as well as a ground magnetic survey on a 200 by 500 foot grid (Gill, 1977, p. 2). The soil samples showed anomalous values for copper and zinc, but it is uncertain whether the anomalies represent zoning related to a structurally controlled copper-zinc deposit (Gill, 1977, p. 87). Cities Services Mineral Corp. also drilled two holes on the property in 1976 (Cities Services Mineral Corp. Annual Labor Reports, unpublished claim reports, 1976).

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

Tertiary?

**Deposit model:**

Structurally-controlled copper-zinc?

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

**Production Status:** None

**Site Status:** Active?

**Workings/exploration:**

During 1974-1976, soil samples, rock chip samples, and stream-sediment samples were taken, and a ground magnetics survey was conducted. The soil samples and the survey were taken on a 200 by 500 foot grid (Gill, 1977, p. 2). NE Pika Canyon has probably been explored further since 1977.

**Production notes:**

**Reserves:**

**Additional comments:**

**References:**

Gill, 1977.

**Primary reference:** Gill, 1977

**Reporter(s):** C.E. Cameron (ADGGS)

**Last report date:** 4/13/99

**Site name(s): Noah****Site type:** Prospect**ARDF no.:** TC018**Latitude:** 63.16**Quadrangle:** TC A-5**Longitude:** 143.41**Location description and accuracy:**

Noah prospect is near the southwest corner of section 18, T. 15 N., R. 11 E., of the Copper River Meridian. It is location 21 of Singer and others (1976). It is located 4 miles northwest of the Glenn Highway and the Tok River, and about 7 miles west of Clearwater Camp. The location is accurate to within 2 to 3 miles.

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

The Noah prospect is a copper prospect in Precambrian and/or Paleozoic quartz-feldspar-biotite gneiss (amphibolite grade) near a Mesozoic or Tertiary pluton (Foster, 1970; MacKevett and Holloway, 1977). No more information is available.

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

If it is a porphyry-Cu deposit, it is likely to be from one of the three porphyry ages in eastern interior Alaska: 90 to 100 Ma, 70 Ma, or 55 Ma.

**Deposit model:**

Possibly a Cu-porphyry deposit (Cox and Singer, 1986; model 21a)

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

21a?

**Production Status:** None

**Site Status:** Undetermined

**Workings/exploration:**

Surface exploration has been done on the property.

**Production notes:**

**Reserves:**

**Additional comments:**

**References:**

Foster, 1970; Singer and others, 1976; MacKevett and Holloway, 1977; Cobb and Eberlein, 1980 (OFR 80-1086).

**Primary reference:** MacKevett and Holloway, 1977

**Reporter(s):** C.E. Cameron (ADGGS)

**Last report date:** 4/13/99

**Site name(s): North Mosquito Flats****Site type:** Prospect**ARDF no.:** TC019**Latitude:** 63.963**Quadrangle:** TC D-5**Longitude:** 143.065**Location description and accuracy:**

The North Mosquito Flats prospect covers an area of about 6 square miles. The coordinates correspond to the center of the property. The prospect is in sections 5, 7-10, T. 25 N., R. 12 E., of the Copper River Meridian. It is 25 miles west of the Taylor Highway, on the north side of Mosquito Flats. An overgrown bulldozer trail crosses the prospect. The location is accurate.

**Commodities:****Main:** Ag, Cu**Other:** Au, F, Mo, Pb, Zn**Ore minerals:****Gangue minerals:****Geologic description:**

The geology in the North Mosquito Flats prospect area includes quartzite on the west ridge of the prospect, and altered granodiorite on the east ridge. Porphyritic rhyolite is also found (Doyon Ltd., 1998). The bedrock is Paleozoic schist and quartzite intruded by Mesozoic quartz monzonite and granodiorite (Foster, 1970). Argillic alteration, iron staining, and silicification are present. North Mosquito Flats first received attention in the 1970's and 1980's when USGS geochemical studies discovered lead, molybdenum, and zinc anomalies in silt in the northern drainages to Mosquito Flats (Curtin and others, 1976). Subsequent stream sediment samples were anomalous in gold. Traverses down-ridge found high gold values between the two ridges on the property. Soils collected in 1981 show anomalies in copper and fluorine (Doyon Ltd., 1998).

**Alteration:**

Argillic alteration, iron staining, and silicification are all present in the porphyritic rhyolite and the quartzite at the prospect (Doyon Ltd., 1997).

**Age of mineralization:**



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

In 1976, the USGS conducted a mineral resource appraisal and an aeromagnetic reconnaissance of the area (Curtin and others, 1976; U.S. Geological Survey, 1976). In recent years, soil and rock sampling has been conducted on the property.

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

This prospect is within Doyon Ltd. selected lands. For more information, contact Doyon Ltd.

**References:**

Foster, 1970; Curtin and others, 1976; Foster and others, 1976; U.S. Geological Survey, 1976 (MF-767A); Doyon Ltd., 1998.

**Primary reference:** Doyon Ltd., 1998**Reporter(s):** C.E. Cameron (ADGGS)**Last report date:** 4/13/99

**Site name(s): North Peternie****Site type:** Prospect**ARDF no.:** TC020**Latitude:** 63.672**Quadrangle:** TC C-4**Longitude:** 142.869**Location description and accuracy:**

The North Peternie prospect is located north along the ridge from Peternie prospect (TC022), in section 22, T. 22 N., R. 13 E., of the Copper River Meridian. It covers an area of about 1 square mile. The coordinates correspond to the center of the prospect. It is 6 miles west of the West Fork of the Dennison Fork of the Fortymile River. The location is accurate.

**Commodities:****Main:** Pb**Other:** Ag, Mo**Ore minerals:** Pyrite**Gangue minerals:****Geologic description:**

The North Peternie prospect is believed to be part of the same system as Peternie prospect (TC022) and VW prospect (TC030). They are all thought to be porphyry Mo deposits within quartz monzonite and latite porphyry intrusive rocks. The geology at the prospect consists of pyritic, granite intrusives (Foster, 1970). Potassium feldspar in a vein cutting the intrusion at Peternie has a  $40\text{Ar}/39\text{Ar}$  age of  $102.8 \pm 0.5$  Ma (Newberry and others, 1996). The North Peternie prospect lies within the Y1 subterrane of the Yukon-Tanana terrane (Foster and others, 1994). Ridgeline soil samples at North Peternie show anomalous values of molybdenum and silver (Doyon Ltd., 1998).

**Alteration:**

Quartz monzonite and latite porphyry rocks are hydrothermally altered (Doyon Ltd., 1997).

**Age of mineralization:**

$40\text{Ar}/39\text{Ar}$  dates of potassium feldspar in a vein cutting the intrusive at the Peternie prospect (TC022) nearby yield an age of 102 Ma for the mineralization (Newberry and others, 1996).

**Deposit model:**

Porphyry Mo (Cox and Singer, 1986; model 21a)

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

21a

**Production Status:** None

**Site Status:** Active

**Workings/exploration:**

Ridgeline soil has been sampled at the prospect.

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

This property is located on Doyon Ltd. selected lands. For more information, contact Doyon Ltd.

**References:**

Foster, 1970; Foster and others, 1994; Newberry and others, 1996; Doyon Ltd., 1998.

**Primary reference:** Doyon Ltd., 1998

**Reporter(s):** C.E. Cameron (ADGGS)

**Last report date:** 4/13/99

**Site name(s):** Oreo; Oreo Mountain

**Site type:** Prospect

**ARDF no.:** TC021

**Latitude:** 63.38

**Quadrangle:** TC B-2

**Longitude:** 141.81

**Location description and accuracy:**

The Oreo prospect is located in section 32, T. 19 N., R. 19 E., of the Copper River Meridian and covers an area of about 1 square mile. The coordinates given are the approximate center of the claims. The location is known to within 1 square mile.

**Commodities:**

**Main:** Cu?

**Other:**

**Ore minerals:**

**Gangue minerals:**

**Geologic description:**

The Oreo Mountain prospect was initially staked in the 1970's by Cities Services Mineral Corp. as a possible porphyry Cu deposit. It has a reportedly large intriguing geochemical anomaly (David Hedderly-Smith, oral communication, 1998). The regional geology is mapped as Paleozoic and/or Precambrian biotite gneiss, amphibolite grade. The prospect is located within the Y1 subterrane of the Yukon-Tanana terrane (Foster and Keith, 1994).

**Alteration:**

**Age of mineralization:**

**Deposit model:**

Porphyry Cu? (Cox and Singer, 1986; model 21a)

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

21a?

**Production Status:** None

**Site Status:** Undetermined

**Workings/exploration:**

**Production notes:**

**Reserves:**

**Additional comments:**

**References:**

Foster, 1970; Foster and Keith, 1994.

**Primary reference:** This description

**Reporter(s):** C.E. Cameron (ADGGS)

**Last report date:** 4/13/99

**Site name(s): Peternie****Site type:** Prospect**ARDF no.:** TC022**Latitude:** 63.61**Quadrangle:** TC C-4**Longitude:** 142.99**Location description and accuracy:**

The Peternie prospect is located within sections 7 and 18, T. 21 N., R. 14 E., of the Copper River Meridian and sections 12 and 13, T. 21 N., R. 13 E., of the Copper River Meridian. It encompasses about 4 square miles and is 9 miles west of the Dennison Fork of the Fortymile River. It is location 2 of Singer and others (1976). The coordinates given are for the approximate center of the prospect. The location is accurate to within 1/2 mile.

**Commodities:****Main:** Cu, Mo, Zn**Other:****Ore minerals:** Chalcopyrite, molybdenite, pyrite**Gangue minerals:****Geologic description:**

The Peternie prospect consists of disseminated sulfide minerals in altered and leached quartz monzonite and latite porphyry (Singer and others, 1976). Potassium feldspar in a vein cutting the intrusive has a  $^{40}\text{Ar}/^{39}\text{Ar}$  age of 102.8  $\pm$  0.5 Ma (Newberry and others, 1996). In 1974, some drilling and sampling took place. Sampling results show that copper minerals and molybdenite are probably present. Elevated molybdenum and zinc values were also reported in rock grab samples. Seven drill pads are visible from the air, and several thousand feet of drill core are stockpiled on site. Examination of random core boxes in 1984 by Doyon Ltd. showed pervasive potassic, propylitic, and phyllic alteration in the majority of samples examined. Systematic rock and soil sampling have also been conducted on the property (Doyon Ltd., 1998).

**Alteration:**

Pervasive hydrothermal alteration, evidenced by potassic, propylitic, and phyllic alteration in core (Doyon Ltd., 1997).

**Age of mineralization:**

Potassium feldspar in a vein cutting the intrusive has a  $^{40}\text{Ar}/^{39}\text{Ar}$  age of  $102.8 \pm 0.5$  Ma (Newberry and others, 1996).

**Deposit model:**

Porphyry Cu-Mo deposit (Cox and Singer, 1986; model 21a)

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

21a

**Production Status:** None

**Site Status:** Undetermined

**Workings/exploration:**

Extensive drilling and prospecting took place on the site in the 1970's, as well as airborne magnetometer studies. The property was soil sampled in the early 1980's, and is now within Doyon Ltd. selected lands.

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

See North Peternie prospect (TC020) and VW (TC030) prospect. This prospect is located on Doyon Ltd. selected land. For more information, contact Doyon Ltd.

Peternie is sometimes called Paternie, but the correct name is Peternie (Doyon Ltd., 1998).

**References:**

Singer and others, 1976; Eberlein and others, 1977; Cobb and Eberlein, 1980 (OFR 80-1086); Newberry and others, 1996; Doyon Ltd., 1998.

**Primary reference:** Doyon Ltd., 1998

**Reporter(s):** C.E. Cameron (ADGGS)

**Last report date:** 4/13/99

**Site name(s): Pika Canyon****Site type:** Prospect**ARDF no.:** TC023**Latitude:** 63.83**Quadrangle:** TC D-1**Longitude:** 141.41**Location description and accuracy:**

The Pika Canyon prospect is located in sections 29, 30, 31, and 32, T.24 N., R. 21 E., of the Copper River Meridian, it covers about 2 square miles. It is location 7 of Singer and others (1976), and location 12 of Eberlein and others (1977). It lies directly west of the Fishhook prospect (TC009) and 3 miles south of Liberty Creek. The location is accurate to within 1/2 mile.

**Commodities:****Main:** Cu**Other:****Ore minerals:** Chalcopyrite, malachite, pyrite, sphalerite (?)**Gangue minerals:****Geologic description:**

The geology at Pika Canyon consists of three main units: Precambrian or early Paleozoic gneiss and schist, Paleozoic phyllite and schist, and Tertiary mafic to felsic volcanic rocks. Many NE-trending faults as well as intense folding dominate the area (Gill, 1977).

During 1974-1976, soil, rock chip, and stream-sediment sampling were conducted on the prospect by Cities Services Mineral Corp., as well as a ground magnetic survey on a 200- by 500-foot grid (Gill, 1977, p. 2). The soil samples showed anomalous values for copper, zoned in a pattern typical of porphyry-copper deposits in the southwest U.S. (Gill, 1977, p. 87). Pyrite, chalcopyrite, and possibly sphalerite were found in float samples (Gill, 1977).

The alteration at Pika Canyon is patchy and somewhat irregular, but generally occurs in somewhat concentric zones of potassic, phyllic, and propylitic alteration (Gill, 1977, p. 86).

**Alteration:**

The alteration at Pika Canyon is patchy and somewhat irregular, but generally occurs in somewhat concentric zones of potassic, phyllic, and propylitic alteration (Gill, 1977, p. 86).



**Age of mineralization:**

Tertiary?

**Deposit model:**

Porphyry Cu deposit (Cox and Singer, 1986; model 21a)

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

21a

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

During 1974-1976, soil, rock chip, and stream-sediment sampling were conducted on the prospect, as well as a ground magnetic survey on a 200- by 500-foot grid (Gill, 1977, p. 2).

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

Pika Canyon prospect is sometimes called Pitka Canyon, but Pitka is a misspelling of the name.

**References:**

Singer and others, 1976; Eberlein and others, 1977; Gill, 1977; Cobb and Eberlein, 1980 (OFR 80-1086).

**Primary reference:** Gill, 1977**Reporter(s):** C.E. Cameron (ADGGS)**Last report date:** 4/13/99

**Site name(s): Pushbush****Site type:** Prospect**ARDF no.:** TC024**Latitude:** 63.52**Quadrangle:** TC C-1**Longitude:** 141.32**Location description and accuracy:**

The Pushbush prospect is located in the SE 1/4 section 11, T. 20 N., R. 21 E., of the Copper River Meridian. It is location 11 of Singer and others (1976), and location 13 of Eberlein and others (1977). It is just north of the Big Creek prospect (TC004). The location is accurate to within 1 mile.

**Commodities:****Main:** Cu, Mo**Other:****Ore minerals:** Chalcopyrite, molybdenite, pyrite**Gangue minerals:****Geologic description:**

The Pushbush prospect consists of disseminated pyrite, chalcopyrite, and molybdenite in Tertiary mafic and felsic volcanic rocks, biotite gneiss, and schist. The schist is likely Paleozoic and/or Precambrian in age, and has undergone amphibolite facies metamorphism (Foster and Keith, 1994). The extent of mineralization is unknown. The deposit has been trenched, but two diamond drill holes in the 1970's did not encounter mineralization (Eberlein and others, 1977, p. 102). Secondary biotite gave a K-Ar age of 56 +/- 2 Ma (Sinclair, 1986).

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

Secondary biotite gave a K-Ar age of 56 +/- 2 Ma (Sinclair, 1986).

**Deposit model:**

Porphyry Cu-Mo deposit (Cox and Singer, 1986; model 21a)

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

21a

**Production Status:** None

**Site Status:** Undetermined

**Workings/exploration:**

Explored by trenches, and two drill holes.

**Production notes:**

**Reserves:**

**Additional comments:**

See also: Taurus (TC027) and ASARCO (TC001) prospects.

**References:**

Singer and others, 1976; Eberlein and others, 1977; Cobb and Eberlein, 1980 (OFR 80-1086); Sinclair, 1986; Foster and Keith, 1994.

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

**Reporter(s):** C.E. Cameron (ADGGS)

**Last report date:** 4/13/99

**Site name(s): Shady Ridge****Site type:** Prospect**ARDF no.:** TC025**Latitude:** 63.1**Quadrangle:** TC A-1**Longitude:** 141.1**Location description and accuracy:**

Shady Ridge prospect is a group of about 40 claims located in T. 15 N., R. 23 E., of the Copper River Meridian. The size of the claim is uncertain, and the location is accurate to within 5 square miles.

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

Shady Ridge prospect is a group of 40 claims staked in the late 1970's. They are likely a porphyry Cu-Mo prospect (David Hedderly-Smith, oral communication, 1998). The regional geology is mapped as Mesozoic hornblende granodiorite (Foster, 1970).

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

Porphyry Cu-Mo (Cox and Singer, 1986; model 21a)

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

21a

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

Surface exploration.

**Production notes:**

**Reserves:**

**Additional comments:**

**References:**

Foster, 1970.

**Primary reference:** This description

**Reporter(s):** C.E. Cameron (ADGGS)

**Last report date:** 4/13/99

**Site name(s): Silver Lining****Site type:** Prospect**ARDF no.:** TC026**Latitude:** 63.64**Quadrangle:** TC C-3**Longitude:** 142.29**Location description and accuracy:**

The Silver Lining prospect is located approximately 42 road miles northeast of Tok in the north-central Tanacross (C-3) quadrangle. The prospect is located at the 30-mile marker of the Taylor Highway, at an elevation of 3000 to 3500 feet on the southwest flank of Mt. Fairplay, within T. 22 N., R. 16 E., of the Copper River Meridian (Curt Freeman, unpublished data, 1992). The location is accurate to within 1 to 2 miles.

**Commodities:****Main:** Ag, Au, Cu, Pb**Other:** As, Sb, Zn**Ore minerals:** Arsenopyrite, azurite, chalcophanite, chalcopyrite, chrysocolla, galena, malachite, scorodite, stibiconite**Gangue minerals:** Clay, limonite, quartz**Geologic description:**

The Silver Lining prospect is the Mt. Fairplay biotite syenite which is flanked to the west by Tertiary mafic volcanic rocks and to the east by biotite-quartz gneiss and schist (Foster, 1970). The Mt. Fairplay syenite has a K/Ar date of 67 +/- 2 Ma (Wilson and others, 1985). The prospect is notable for north-northeast linear structures. The mineralization consists of gold, silver, copper, arsenic, lead, zinc, and antimony mineralization hosted by quartz-clay altered shear zones in the biotite syenite. Minerals found include arsenopyrite, chalcopyrite, and galena. The mineralization is controlled by northeast-trending structures that cross-cut a strong northwest joint fabric. Rock samples contain up to 0.255 ounces per ton gold, 62 ounces per ton silver, 6.4 percent copper, and 4.7 percent lead (Curt Freeman, unpublished data, 1992).

The regional geology consists of Upper Proterozoic to Lower Paleozoic polymetamorphic rocks ranging from biotite-quartz gneiss to quartz-muscovite-garnet schist (Foster, 1970). This basement assemblage is intruded by numerous intermediate Mesozoic to Tertiary intrusions and is capped by Tertiary mafic and felsic volcanic rocks (Foster, 1970).

**Alteration:**

Host syenite is altered to clay and cut by quartz-clay fractures.

**Age of mineralization:**

Tertiary or younger.

**Deposit model:**

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

**Production Status:** None

**Site Status:** Active

**Workings/exploration:**

Minor surface rock sampling.

**Production notes:**

**Reserves:**

**Additional comments:**

**References:**

Foster, 1970; Wilson and others, 1985.

**Primary reference:** This description

**Reporter(s):** C.E. Cameron (ADGGS)

**Last report date:** 4/13/99

**Site name(s): Taurus; East Taurus; West Taurus****Site type:** Prospect**ARDF no.:** TC027**Latitude:** 63.65**Quadrangle:** TC C-1**Longitude:** 141.35**Location description and accuracy:**

The Taurus prospect is located in section 28, T. 22 N., R. 21 E., of the Copper River Meridian. Access to the property is by air, and there are two gravel airstrips on the property. Alternatively, a rough land route is available for heavy equipment via a winter trail (Leriche, 1995, p. 451). This is locality 5 of Eberlein and others (1977). Bluff prospect (TC005) claims lie directly to the west, and the center of Bluff prospect (TC005) prospecting activity lies to the southwest. The location is accurate to within 1 mile.

**Commodities:****Main:** Cu, Mo**Other:****Ore minerals:** Chalcocite, chalcopyrite, covellite, magnetite, molybdenite, pyrite**Gangue minerals:** Fluorite, quartz, sericite, tourmaline**Geologic description:**

The Taurus property is usually separated into two main zones: West Taurus and East Taurus. The property is underlain in part by a metamorphic basement complex of possible Late Precambrian or early Paleozoic age that consists of biotite gneiss, augen gneiss, biotite schist, and quartzite (Foster, 1970). Early Tertiary felsic rocks intrude the metamorphic rocks. Secondary biotite within the intrusion at the Taurus prospect has been dated by K-Ar techniques to be approximately 57 +/- 2 Ma (Nokleberg and others, 1995).

Two major faults have been identified on the property. The Tourmaline fault strikes northeasterly and appears to have left-lateral movement with a possible displacement of up to 6.5 km. The McCord Creek fault trends easterly across the claims. Porphyry intrusions, which host mineralization at the East and West Taurus zones, are located near the McCord Creek fault, suggesting that it controlled their emplacement. Many northeast trending linears have been interpreted using satellite images and topographic maps (Leriche, 1995, p. 452).

The Taurus porphyry copper-type mineralization appears to be related to a group of widespread, small bodies of early Tertiary, quartz monzonite porphyry, quartz latite, feldspar-quartz porphyry, intrusive breccia, quartz porphyry and dacite porphyry. Intrusive



breccia crops out along the southern border of an altered Upper Cretaceous granodioritic pluton on the eastern side of the property. Quartz monzonite porphyry occurs along the southern contacts of the altered granodiorite and of intrusive breccia in the central part of the property (Leriche, 1995, p. 452).

The alteration at the East Taurus zone consists of an upper leached cap underlain by supergene and hypogene zones. The leached cap varies from 40 to 50 meters in depth, and shows pervasive argillic alteration due to groundwater leaching. Other alteration types in the leached cap consist of pervasive silicification, quartz-sericite, and quartz-magnetite alteration. Supergene and hypogene zones are accompanied by phyllic, silicic, propylitic, and potassic alteration (Leriche, 1995, p. 453).

Mineralization in the leached cap at East Taurus consists of minor remnant pyrite, chalcocopyrite, and molybdenite in quartz stockworks and silicified zones. The supergene zone varies in thickness from 30 meters to 53 meters. Mineralization in it consists of chalcocite, covellite, pyrite, chalcocopyrite, and molybdenite. Chalcocite appears in fractures and within quartz veinlets. In the lower hypogene zone, mineralization is pyrite, chalcocopyrite, and molybdenite as disseminations along fractures and in the center of quartz veinlets (Leriche, 1995, p. 453).

Mineralization in the West Taurus area consists of pyrite and subordinate chalcocopyrite, covellite, chalcocite, malachite, and azurite. Molybdenite is found in quartz-filled fractures in the sericitically altered, quartz latite unit. Chalcocopyrite and molybdenite are found as fracture fillings in close proximity to the Tourmaline and McCord Creek faults (Leriche, 1995, p. 454).

The majority of drilling conducted on the property has been done in the East Taurus zone. In 1993, Noranda calculated preliminary reserves of 23 million tons grading 0.3% Cu and 0.039% Mo. Drill samples collected in the 1970's were not assayed for gold, but later analyses of part of the core reveals some elevated values in gold (Leriche, 1995, p. 455).

Resource Associates of Alaska re-staked the Taurus and Bluff (TC005) prospects in 1987 and did some soil geochemistry. They dropped both properties two years later. They probably analyzed for gold and may not have found enough to continue holding the property.

**Alteration:**

Hypogene alteration associated with mineralization includes argillic, potassic, phyllic, silicic, and propylitic alteration of varying intensities. A supergene leached cap, approximately 50 meters thick, exhibits strong argillic alteration over the East and West Taurus zones (Leriche, 1995).

**Age of mineralization:**

Secondary biotite within the intrusion at the Taurus prospect has been dated by K-Ar techniques as approximately 57 +/- 2 Ma (Nokleberg and others, 1995).

**Deposit model:**

Porphyry Cu-Mo deposit (Cox and Singer, 1986; model 21a)

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

21a

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

Taurus prospect was staked in 1970 by International Minerals and Chemical Corporation during a reconnaissance geochemical survey. During the 1970's, geologic mapping, soil sampling, magnetometer and IP surveys, and 3060 meters of diamond and rotary drilling were done. In recent years, an airborne magnetic, electromagnetic, and resistivity survey, as well as 404 meters of reverse circulation drilling have been done (Leriche, 1995, p. 451).

In 1987, Resource Associates of Alaska staked the Taurus and Bluff (TC005) prospects, but dropped both 2 years later. Noranda staked Taurus in 1993.

**Production notes:****Reserves:**

In 1993, Noranda indicated that the East Taurus zone contains a 23 million ton reserve grading 0.3% Cu and 0.039% Mo (Leriche, 1995).

**Additional comments:**

See also the Pushbush prospect (TC024) and the ASARCO prospect (TC001).

**References:**

Foster, 1970; Singer and others, 1976; Eberlein and others, 1977; Gill, 1977; Cobb and Eberlein, 1980 (OFR 80-1086); Nokleberg and others, 1987; Leriche, 1995; Nokleberg and others, 1995; Newberry and others, 1996.

**Primary reference:** Leriche, 1995**Reporter(s):** C.E. Cameron (ADGGS)**Last report date:** 4/13/99

**Site name(s): Tok****Site type:** Prospect**ARDF no.:** TC028**Latitude:** 63.21**Quadrangle:** TC A-6**Longitude:** 143.98**Location description and accuracy:**

The Tok prospect is within the SE 1/4 section 36, T. 17 N., R. 7 E., of the Copper River Meridian. It is located in the headwaters of the Tok River valley, and is location 23 of Singer and others (1976). The location is accurate to within 1 mile.

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

The Tok prospect is cited in Singer and others (1976) as a possible lode gold deposit. There is no information other than name and location. Regional geology consists of undifferentiated Paleozoic and/or Precambrian metamorphic rocks (Foster, 1970).

**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:** Undetermined**Workings/exploration:**

Surface prospecting.

**Production notes:**

**Reserves:**

**Additional comments:**

**References:**

Foster, 1970; Singer and others, 1976; MacKevett and Holloway, 1977; Cobb and Eberlein, 1980 (OFR 80-1086).

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

**Reporter(s):** C.E. Cameron (ADGGS)

**Last report date:** 4/13/99

**Site name(s): Tok Antimony; Stibnite; A Lucky Leak; Gamblin; Caulk**

**Site type:** Mine

**ARDF no.:** TC029

**Latitude:** 63.25

**Quadrangle:** TC A-6

**Longitude:** 143.8

**Location description and accuracy:**

The deposit is located nearly at the foot of Stibnite Creek (formerly called Boulder Creek), in the SW 1/4 section 13, T. 17 N., R. 8 E., of the Copper River Meridian (Ebbley and Wright, 1948, p. 30). It is location 22 of Singer and others (1976).

**Commodities:**

**Main:** Sb

**Other:**

**Ore minerals:** Pyrite, stibnite

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

**Geologic description:**

The Tok Antimony deposit, also called Boulder Creek, Stibnite, A Lucky Leak, and Stibnite Creek was discovered in the early 1900's. The mineralization at the prospect consists of a six-meter-wide fault zone that contains four types of stibnite ore: (1) coarse-grained, acicular stibnite in crystals up to 50 millimeters long associated with quartz, (2) fine-grained massive stibnite with interstitial quartz and minor pyrite, (3) mineralized breccia consisting of quartz and schist fragments in a matrix of quartz, calcite, muscovite, stibnite and pyrite, and (4) quartz-pyrite-stibnite stringers. The high-grade ore is concentrated along two well-defined fault planes as two distinct veins about 0.6 meter wide, separated by 1 to 2 meters of fractured and altered chlorite schist. Isolated pods of stibnite and pyrite-bearing quartz stringers less than 1 to 2 centimeters wide occur along minor faults within 30 meters of veins (Ebbley and Wright, 1948).

In 1940, several tons of ore from the prospect were stockpiled by Boulder Creek awaiting transport. All of it was washed away by the river and was never processed (Ebbley and Wright, 1948).

**Alteration:**

**Age of mineralization:**

**Deposit model:**

Stibnite vein (Cox and Singer, 1986; model 27d)

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

27d

**Production Status:** Yes; small

**Site Status:** Undetermined

**Workings/exploration:**

A 12-foot adit was driven in 1914. In 1940, several tons of material were stockpiled and mined, but were washed away by the river before it could be transported from the deposit (Ebbley and Wright, 1948, p. 31).

**Production notes:**

Several tons of high grade ore were stockpiled at the site in 1940, but were washed away by the river before it could be transported (Ebbley and Wright, 1948). There was some mining from an open cut with a bulldozer in 1976 (York, 1980).

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

Brooks, 1916; Moffit, 1938; Joesting, 1942 (P1); Joesting, 1942 (MR 194-11); Moffit, 1944; Ebbley and Wright, 1948; Cobb, 1961 (B 1139); Berg and Cobb, 1967; Foster, 1970; Cobb, 1972 (MF-383); Foster and others, 1976; Singer and others, 1976; MacKevett and Holloway, 1977; Cobb and Eberlein, 1980 (OFR 80-1086); York, 1980.

**Primary reference:** Ebbley and Wright, 1948

**Reporter(s):** C.E. Cameron (ADGGS)

**Last report date:** 4/13/99

**Site name(s):** VW, VABM West

**Site type:** Prospect

**ARDF no.:** TC030

**Latitude:** 63.746

**Quadrangle:** TC C-4

**Longitude:** 142.832

**Location description and accuracy:**

The VW prospect is located just north along the ridge from the Peternie prospect (TC022), and it covers an area of about 2 square miles, centered at the coordinates above. The prospect occurs in sections 26 and 27, T. 23 N., R. 13 E., of the Copper River Meridian. There are two centers of prospecting, one in each section. The coordinates refer to the eastern location, and the other is approximately one mile away, in nearly the center of section 27, T. 23 N., R. 13 E., of the Copper River Meridian. The location is accurate within 1 to 2 miles.

**Commodities:**

**Main:** Cu, Mo

**Other:** Au?

**Ore minerals:** Pyrite

**Gangue minerals:** Quartz, sericite

**Geologic description:**

The mineralization at this prospect and at the Peternie prospect (TC022) consists of disseminated sulfide minerals in altered quartz monzonite and latite porphyry (Singer and others, 1976). These rocks intrude quartz-biotite schist, chlorite schist, muscovite schist, and quartz-biotite gneiss. This property shows broad areas of pervasive hydrothermal alteration, including well-developed silicification, secondary sericite and secondary pyrite. Propylitic alteration is not seen widely (Doyon Ltd., 1998). The intrusive rocks and alteration assemblages at VW are similar to those at the nearby Peternie prospect (TC022). Vein potassium feldspar at the Peternie prospect has a  $^{40}\text{Ar}/^{39}\text{Ar}$  plateau age of 102.8 +/- 0.5 Ma (Newberry and others, 1996). It is likely that mineralization at the VW prospect formed at approximately the same time as mineralization at the Peternie prospect, but there are no age data for the VW prospect.

The VW prospect is believed to be part of the same system as the Peternie (TC022) and North Peternie (TC020) prospects. Resource Associates of Alaska drilled 8 holes in the property in the 1970's and interpreted it as a Mo-Cu porphyry prospect. Soil samples have revealed low-level gold values (Doyon Ltd., 1998). IP line data suggest that the

property is a porphyry Mo deposit (Doyon Ltd., 1998).

**Alteration:**

The prospect contains broad areas of pervasive hydrothermal alteration, including well-developed silicification, secondary sericite, and secondary pyrite (Doyon Ltd., 1998).

**Age of mineralization:**

Vein potassium feldspar at the Peternie prospect has a  $^{40}\text{Ar}/^{39}\text{Ar}$  plateau age of 102.8 +/- 0.5 Ma (Newberry and others, 1996). It is likely that mineralization at the VW prospect formed at approximately the same time as mineralization at the Peternie prospect, but there are no age data for the VW prospect.

**Deposit model:**

Porphyry Mo deposit (Cox and Singer, 1986; model 21a)

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

21a

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

In the 1970's, Resource Associates of Alaska drilled 8 holes at the VW prospect. In 1979 WGM Inc. conducted a reconnaissance soil program for molybdenum. In 1980, Anaconda did airphoto analysis, selective rock geochemistry, and airborne magnetics interpretation. In 1981, Arctic Resources Inc. sampled a soil grid, and in 1982 Doyon Ltd. conducted prospecting traverses and did an IP resistivity line. In 1984, Doyon Ltd. conducted a brief prospect examination.

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

This property is located on Doyon Ltd. selected land. For more information, contact Doyon Ltd.

**References:**

Foster, 1970; Singer and others, 1976; Newberry and others, 1996; Doyon Ltd., 1998.

**Primary reference:** Doyon Ltd., 1998**Reporter(s):** C.E. Cameron (ADGGS)**Last report date:** 4/13/99



**Site name(s): Sixtymile Butte****Site type:** Prospect**ARDF no.:** TC031**Latitude:** 63.58**Quadrangle:** TC C-5**Longitude:** 143.12**Location description and accuracy:**

The Sixtymile Butte prospect is a large area of about 12 square miles located within T. 20-21 N., R. 12-13 E., Tanacross (C-5) and (C-6) quadrangles, covering much of Sixtymile Butte. There are two centers of prospecting activity: one in the SE1/4 section 20, T. 21 N., R. 12 E., of the Copper River Meridian and the other in the SE 1/4 section 29, T. 21 N., R. 13 E., of the Copper River Meridian. The coordinates given are for the first location. The locations are accurate to within 1 to 2 miles.

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

The Sixtymile Butte area is dominated by mid-Cretaceous lavas, welded tuffs, tuff breccias and volcanic agglomerates (Foster, 1970). These rocks were mapped as Tertiary, but recent work suggests that they are Cretaceous (Doyon Ltd., 1998). The volcanics range in composition from andesitic to dacitic and have volcanic-arc-type, minor-element abundances (Bacon and others, 1990). Stream-silt sampling revealed three drainages with anomalous gold values (Doyon Ltd., 1998).

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

The volcanic complex probably is mid-Cretaceous (Doyon, 1998).

**Deposit model:**

Epithermal Au-Ag?

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

**Production Status:** None

**Site Status:** Active

**Workings/exploration:**

In 1975, WGM Inc. conducted a base-metal reconnaissance program. In 1981, Arctic Resources Inc. did a soils traverse, and in 1985 Doyon Ltd. resubmitted the samples for Au pathfinders. In 1990, Doyon Ltd. sampled stream sediments for gold.

**Production notes:**

**Reserves:**

**Additional comments:**

This property is located on Doyon conveyed land. For more information, contact Doyon Ltd.

**References:**

Foster, 1970; Bacon and others, 1990; Doyon Ltd., 1998.

**Primary reference:** Doyon Ltd., 1998

**Reporter(s):** C.E. Cameron (ADGGS)

**Last report date:** 4/13/99

## References

- Alaska Division of Geological and Geophysical Surveys, 1993, Trace element and major oxide analyses of samples from the Eagle and Tanacross quadrangles, east-central Alaska: Alaska Division of Geological and Geophysical Surveys Public-Data File 93-4, 31 p.
- Bacon, C.R., Foster, H.L., and Smith, J.G., 1990, Rhyolitic calderas of the Yukon-Tanana terrane, east-central Alaska: Volcanic remains of a mid-Cretaceous magmatic arc: *Journal of Geophysical Research*, v. 95, p. 339.
- Berg, H.C., and Cobb, E.H., 1967, Metalliferous lode deposits of Alaska: U.S. Geological Survey Bulletin 1246, 254 p.
- Bliss, J.D., ed., 1992, Developments in mineral deposit modeling: U.S. Geological Survey Bulletin 2004, 168 p.
- Brooks, A.H., 1916, Antimony deposits of Alaska: U.S. Geological Survey Bulletin 649, 67 p.
- Bundtzen, T. K., Eakins, G. R., Clough, J. G., Lueck, L. L., Green, C. B., Robinson, M. S., and Coleman, D. A., 1984, Alaska's mineral industry 1983: Alaska Division of Geological and Geophysical Surveys Special Report 33, 56 p.
- Burleigh, R.E., and Lear, K.G., 1994, Compilation of data for Phase I of the mineral resource evaluation of the Black River and Fortymile subunits: U.S. Bureau of Mines Open-File Report 48-94, 116 p.
- Cobb, E.H., 1972, Metallic mineral resources map of the Tanacross quadrangle, Alaska: U.S. Geological Survey Miscellaneous Field Studies Map MF-383, 1 sheet, scale 1: 250,000.
- Cobb, E.H., and Eberlein, G.D., 1980, Summaries of data on and lists of references to metallic and selected non-metallic mineral deposits in the Big Delta and Tanacross quadrangles, Alaska: U.S. Geological Survey Open-File Report 80-1086, 76 p.
- Cobb, E.H., and Kachadoorian, Reuben, 1961, Index of metallic and nonmetallic mineral deposits of Alaska compiled from published reports of Federal and State agencies through 1959: U.S. Geological Survey Bulletin 1139, 363 p.
- Cox, Dennis P, and Singer, Donald A., eds., 1986, Mineral deposit models: U.S. Geological Survey Bulletin 1693, 379 p.
- Curtin, G.C., Day, G.W., O'Leary, R.M., Marsh, S.P., Tripp, R.B., 1976, Geochemical maps showing the distribution and abundance of molybdenum in the Tanacross Quadrangle, Alaska: U.S. Geological Survey Miscellaneous Field Studies Map MF-0767-G.
- Dashevsky, S., 1982, Doyon exploration program, block 8 – Fortymile, 1982: Fairbanks, Alaska, 109 p. (Copy of report held by Doyon Ltd.)
- DiMarchi, J.J., Flanders, R.W., Freeman, L.K., Puchner, C.K., Rohtert, W.R., Stubbs, G.S., and Tolbert, R.S., 1989, 1989 annual report, Alaska field operations, volume 1: Central Alaska Exploration Corporation, 203 p. (Copy of report held by Doyon Ltd.)
- Doyon, Ltd, 1998, Veta Prospects 1997 Volume 1: Fairbanks, Alaska, Doyon Ltd., unpublished report 98-10, 256 p.
- Dunbier, John, 1982, Final report, the Ladue River prospect: Noranda Exploration Inc, unpublished data, 18 p.
- Dusel-Bacon, C., and Aleinikoff, J.N., 1985, Petrology and tectonic significance of augen gneiss from a belt of

- Mississippian granitoids in the Yukon-Tanana terrane, east-central Alaska: Geological Society of America Bulletin, v. 96, p. 411-425.
- Ebbley, Norman, Jr., and Wright, W.S., 1948, Antimony deposits in Alaska: U.S. Bureau of Mines Report of Investigations 4173, 41 p.
- Eberlein, G.D., Chapman, R.M., Foster, H.L., and Gassaway, J.S., 1977, Map and table describing known metaliferous and selected nonmetaliferous mineral deposits in central Alaska: U.S. Geological Survey Open-File Report 77-168D, 132 p., 1 map, scale 1:1,000,000.
- Ellsworth, C.E., and Davenport, R.W., 1913, Placer mining in the Yukon-Tanana region: U.S. Geological Survey Bulletin 542, p. 203-222.
- Freeman, C., 1992, Preliminary geology and mineralization on the Silver Lining prospect, Tanacross quadrangle, Alaska: Fairbanks, Alaska, Avalon Development Corporation, unpublished report, 8 p.
- Freeman, C., 1998, Executive summary, Fishhook Project, Alaska, prepared for Eastana Exploration: Fairbanks, Alaska, Avalon Development Corporation, unpublished report, 9 p.
- Foster, H.L., 1967, Geology of the Mount Fairplay area, Alaska: U.S. Geological Survey Bulletin 1241-B, p. B1-B18.
- Foster, H.L., 1970, Reconnaissance geologic map of the Tanacross quadrangle, Alaska: U.S. Geological Survey Miscellaneous Geological Investigations Map I-593, 1 sheet, scale 1:250,000.
- Foster, H.L., Albert, N.R.D., Barnes, D.F., Curtin, G.C., Griscom, Andrew, Singer, D.A., and Smith, J.G., 1976, The Alaskan Mineral Resources Assessment Program: Background information to accompany folio of geologic and mineral resource maps of the Tanacross quadrangle, Alaska: U.S. Geological Survey Circular 734, 23 p.
- Foster, H.L., and Keith, T.E.C., 1994, Geology of the Yukon-Tanana area of east-central Alaska: *in* Plafker, G. and Berg, H.C., eds, The geology of North America, vol. G-1, The geology of Alaska: Geological Society of America, p. 205-240.
- Foster, H.L., Keith, T. E. C., Menzie, W.D., 1994, Geology of the Yukon-Tanana area of East-Central Alaska: *in* Plafker, G. and Berg, H.C., eds., The geology of North America, vol. G-1, The geology of Alaska: Geological Society of America, p. 205-240.
- Gill, R., 1977, Geology and mineral deposits of the southwest quarter of the Tanacross D-1 quadrangle, Alaska: [unpublished M.S. thesis]: Golden, Colorado, Colorado School of Mines, 129 p.
- Indian and Northern Affairs, Canada, 1987, Yukon Exploration 1988: Exploration and Geological Services Division, Yukon, Indian and Northern Affairs Canada, 304 p.
- Joesting, H.R., 1941, Antimony prospect on Boulder Creek: Alaska Department of Mines PE 69-1, 8 p.
- Joesting, H.R., 1942, Strategic mineral occurrences in interior Alaska: Alaska Department of Mines Pamphlet 1, 46 p.
- Joesting, H.R., 1942, Antimony and tungsten deposits in Fairbanks and adjacent areas: Alaska Department of Mines MR 194-11, 25 p.
- Kerin, L.J., 1976, The reconnaissance petrology of the Mount Fairplay igneous complex [unpublished M.S. thesis]: Fairbanks, Alaska, University of Alaska, 95 p.

- Leriche, P.D., 1995, Taurus copper-molybdenum porphyry deposit, east-central Alaska: *in* Schroeter, T.G., ed., Porphyry Deposits of the Northwestern Cordillera: Canadian Institute of Mining, Metallurgy, and Petroleum Special Volume 46, p. 451-457.
- MacKevett, E.M., Jr., and Holloway, C.D., 1977, Map showing metalliferous and selected nonmetalliferous Mineral deposits in the eastern part of southern Alaska: U.S. Geological Survey Open-File Report 77-169 A, 1 sheet + 99 p. tabular material, scale 1:1,000,000.
- Mertie, J.B., 1931, A geologic reconnaissance of the Dennison Fork District, Alaska: U.S. Geological Survey Bulletin 827, 44 p.
- Moffit, F.H., 1938, Geology of the Slana-Tok district, Alaska: U.S. Geological Survey Bulletin 904, 54 p.
- Moffit, F.H., 1944, Mining in the northern Copper River region, Alaska: U.S. Geological Survey Bulletin 943-B, p. 25-47.
- Newberry, R.J., Layer, P.W., Burleigh, R.E., and Solie, D.N., 1996, New  $^{40}\text{Ar}/^{39}\text{Ar}$  dates for intrusions and mineral prospects in the eastern Yukon-Tanana terrane, Alaska – Regional patterns and significance, *in* Gray, J.E., and Riehle, J.R., (eds), Geological Studies in Alaska by the U.S. Geological Survey, 1996: U.S. Geological Survey Professional Paper 1595, p. 131-159.
- Nokleberg, W.J., Bundtzen, T.K., Berg, H.C., Brew, D.A., Grybeck, D., Robinson, M.S., Smith, T.E., and Yeend, W., 1987, Significant metalliferous lode deposits and placer deposits of Alaska: U.S. Geological Survey Bulletin 1786, 104 p.
- Nokleberg, W.J., Bundtzen, T.K., Brew, D.A., and Plafker, G., 1995, Metallogensis and tectonics of porphyry copper and molybdenum (gold, silver) and granitoid-hosted gold deposits of Alaska: Canadian Institute of Mining and Metallurgy Special Volume 46, p. 103-141.
- Ransome, A.L., and Kerns, W.H., 1954, Names and definitions of regions, districts, and subdistricts in Alaska (used by the Bureau of Mines in statistical and economic studies covering the mineral Industry of the Territory): U.S. Bureau of Mines Information Circular 7679, 91 p.
- Saunders, R.H., 1967, Mineral occurrences in the Yukon-Tanana Region, Alaska, Special Report 2: Division of Mines and Minerals, Department of Natural Resources, Alaska, 60 p.
- Sinclair, W.D., 1986, Molybdenum, tungsten, and tin deposits and associated granitoid intrusions in the Northern Canadian cordillera and adjacent parts of Alaska, *in* Morin, J.A., ed., Mineral deposits of the northern cordillera: Canadian Institute of Mining and Metallurgy, Special Volume 37, p. 216-233.
- Singer, D.A., Curtin, G.C., and Foster, H.L., 1976, Mineral resources map of the Tanacross quadrangle, Alaska: U.S. Geological Survey Miscellaneous Field Studies Map MF-767E, 1 sheet, scale 1:25,000.
- U.S. Bureau of Mines, 1984, Mt. Fairplay report: U.S. Bureau of Mines, Fairbanks, Alaska, unpublished data on file at Geologic Materials Center, Box 13, Eagle River, Alaska, 17 p.
- U.S. Geological Survey, 1976, Aeromagnetic map of the Tanacross quadrangle, Alaska: U.S. Geological Survey Miscellaneous Field Studies Map MF-767-A, 2 sheets.
- Wilson, F.H., Smith, J.G., and Shew, N., 1985, Review of radiometric data from the Yukon crystalline terrane, Alaska and Yukon Territory: Canadian Journal of Earth Sciences, v. 22, no.4, p. 525-537.
- York, T.M., 1980, Geology of the Tok antimony mine, Tok, Alaska: Golden, Colorado, Colorado School of Mines, [unpublished M.S. thesis], 94 p.