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SUMMARY OF REFERENCES TO MINERAL OCCURRENCES (OTHER THAN MINERAL FUELS AND CONSTRUCTION MATERIALS) IN THE LIVENGOOD QUADRANGLE, ALASKA

OPEN-FILE REPORT 76-819

This report is preliminary and has not been edited or reviewed for conformity with Geological Survey standards and nomenclature

Menlo Park, California

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By

Edward H. Cobb

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Introduction

These summaries of references are designed to aid in library research on metallic and nonmetallic (other than mineral fuels and construction materials) mineral occurrences in the Livengood quadrangle, Alaska. All references to reports of the Geological Survey, to most reports of the U.S. Bureau of Mines, and to most reports of the State of Alaska Division of Geological and Geophysical Surveys and its predecessor State and Territorial agencies released before January 1, 1976, are summarized. Certain, mainly statistical, reports such as the annual Minerals Yearbook of the U.S. Bureau of Mines and the biennial and annual reports of the State of Alaska Division of Geological and Geophysical Surveys and its predecessor State and Territorial agencies are not included.

This report is divided into three parts: a section made up of summaries of references arranged alphabetically by occurrence name; a section that lists synonyms for names in the first section, claim names, and the names of operators and owners of mines and prospects; and a section that lists, by author, all references summarized in the first section.

ALASKA
ARCTIC OCEAN
GULF OF ALASKA
PACIFIC OCEAN
CHUKCHI SEA

Index map

Summaries of References

For each mineral occurrence there is a page that gives the name of the occurrence; the mineral commodities present (listed alphabetically for metallic commodities and then for nonmetallic commodities; FM is used for uranium and(or) thorium determined chemically or present as a constituent of an identified mineral other than monazite; RE is used if a mineral (other than monazite) containing any rare-earth element was identified); the mining district (Ransome and Kerns, 1954) in which the occurrence is located; the name of the 1:250,000-scale topographic quadrangle (Livengood); coordinates (as described by Cobb and Kachadoorian, 1961, p. 3-4); the metallic mineral resources map number (MF-413) and the occurrence number on that map if the occurrence is shown; and the latitude and longitude of the occurrence. These data, presented at the top of the page, are followed by a short, general summary of the published information on the occurrence. This is followed (continued on additional pages, if necessary) by more detailed summaries, arranged chronologically, of all references to the occurrence. Material in brackets is interpretive or explanatory and is not in the summarized reference.

Proper names of mines, prospects, and other mineral occurrences are given if such names appear in the reports summarized. If a deposit does not have such a name, but is near a named geographic feature, the name of that feature is shown in parentheses in lieu of a proper name. A deposit that has no proper name and is not near a named geographic feature is titled "Unnamed occurrence" and appears at the end of the list. If a part of a proper name is not always used in a reference, that part of the name is shown in parentheses. This is most common in company names and in place names with minor variations in spelling.

Citations are given in standard bibliographic format with the exception that references to reports and maps in numbered publication series also show, in parentheses, an abbreviation for the report or map series and the report or map number. Abbreviations used are:

AOF	Alaska Division of Geological and Geophysical Surveys Open-file Report
B	U.S. Geological Survey Bulletin
BMB	U.S. Bureau of Mines Bulletin
C	U.S. Geological Survey Circular
GC	Alaska Division of Geological and Geophysical Surveys (and predecessor State agencies) Geochemical Report
GQ	U.S. Geological Survey Geologic Quadrangle Map
IC	U.S. Bureau of Mines Information Circular
OF	U.S. Geological Survey Open-file Report (numbers are informal and used only within the Alaskan Geology Branch of the U.S. Geological Survey)

MF	U.S. Geological Survey Miscellaneous Field Studies Map
P	U.S. Geological Survey Professional Paper
RI	U.S. Bureau of Mines Report of Investigations
TDM	Alaska Territorial Department of Mines Pamphlet
USBM OF	U.S. Bureau of Mines Open-file Report

Summaries are as I made them while reading the cited reports. I made no attempt to use complete sentences and did not edit for grammatical consistency, although I have tried to edit out ambiguities.

References cited only in these introductory paragraphs are:

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. Geol. Survey Bull. 1139, 363 p.

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. Bur. Mines Inf. Circ. 7679, 91 p.

(Alabam Cr.) Gold (?)

Rampart district Livengood (11.9, 10.35) approx.
65°35'N, 148°22'W approx.

Summary: Prospects of fine gold reported, 1915, but no further mention of prospecting or mining.

Brooks, 1916 (B 642), p. 207-208 -- Good prospects of fine gold reported, 1915. Hole about a mile above mouth hit bedrock at 52 ft. Farther upstream on valley slope hole 125 ft. deep did not reach bedrock.

Mertie, 1918 (B 662), p. 273 -- Small amount of gold has been reported; must be some mineralized bedrock in basin.

Alaska | Gold

Fairbanks district | Livengood (19.2, 1.55)
MF-413, loc. 42 | 65°04'N, 147°24'W

Summary: Several veins, including one flat-lying one that may be in a slide block, opened by 2 tunnels, a shaft and drifts from it, and numerous pits and trenches. A few tons of ore milled out $30-$40 a ton in gold (old price). Includes references to: Fursteneau, Genki, Gladstone, Jupiter-Mars.

Brooks, 1911 (B 480), p. 34 -- Tunnel and crosscut completed on Jupiter-Mars, 1910.

Brooks, 1912 (B 520), p. 31 -- Some work on Jupiter-Mars, 1911.

Smith, 1913 (B 525), p. 175 -- On Gladstone claim 2 tunnels on a flat-lying lead that strikes E and dips gently southward. Miners believe part being mined may be a large slide block. Mill tests showed average gold tenor of about $30 a ton; not much sulfide material.

Smith, 1913 (B 542), p. 161 -- Same as B 525.

Chapin, 1914 (B 592), p. 337 -- Workings inaccessible in 1913. Has been production. 2 tunnels on flat-lying vein that dips south; shaft sunk 125 ft. to vein and 112 ft. of drifts turned off.

Hill, 1933 (B 849-B), p. 75 -- Data on claim names and ownership.

p. 99-100 -- All of old workings caved in 1931. New work mainly trenches and pits. Several quartz veins as much as several feet wide. Assays show from $0.43 to $16.88 to the ton. A few tons of $40 ore said to have been taken out, 1913-14; vein 18 in. wide. Veins strike from NE to E and dip from 30° N to 50° S.

Chapman and Foster, 1969 (P 625-D), p. D9 -- references to above.

Alaska Flyer

Gold

Fairbanks district
MF-413, loc. 17

Livengood (17.95, 0.85)
65°02'N, 147°34'W

Summary: Shaft sunk 30 ft.; auriferous quartz reported.

Smith, 1913 (B 525), p. 194 -- 30-ft. shaft; auriferous quartz reported.
Smith, 1913 (B 542), p. 180 -- Same as B 525.
Chapman and Foster, 1969 (P 625-D), p. D13 -- Reference to B 525, p. 194.

(Alder Cr.)

Gold

Fairbanks district
MF-413, loc. 91

Livengood (20.65, 1.75-1.85)
65°04'-65°05'N, 147°12'W

Summary: Tributary of Fairbanks Cr. on which placer mining was reported in 1912, 1915, and 1940. Most data probably were lumped with those for Fairbanks Cr.

Ellsworth and Davenport, 1913 (B 542), p. 208 — Mining, 1912.
Brooks, 1914 (B 592), p. 68 -- New discoveries, 1913.
Chapin, 1914 (B 592), p. 359 -- New discoveries, 1913.
Smith, 1917 (BMB 142), p. 22 -- Mining, 1915.
Smith, 1942 (B 933-A), p. 39 -- Mining, 1940.

(Amy Cr.) Antimony, Chromite, Gold

Tolovana district Livengood (11.4, 9.7)
MF-413, loc. 69 65°33'N, 148°26'W

Summary: Bedrock mainly chert, some granite, basalt porphyry, limestone, and argillite. Some of ground as much as 100 ft. deep. Concentrates contain gold, magnetite, limonite, chromite, pyromorphite, stibnite, and chrome spinel. Mining from 1918 to as recently as 1968.

Smith, 1917 (BMB 153), p. 52 -- Mining, 1916; water shortage.
Mertie, 1918 (B 662), p. 268-269 -- Prospecting showed gold on bedrock. Bedrock mainly chert; granite at mouth of 2nd tributary above Livengood Cr.; some basalt porphyry at head; limestone and argillite near mouth. Probably has been an important contributor of gold to Livengood Cr. and to S. Fork Hess Cr. No mining, 1916 [mining reported in BMB 153, p. 52, must have been prospecting only].
Martin, 1920 (B 712), p. 41 -- Mining, 1918.
Overbeck, 1920 (B 712), p. 181 -- Bench claims E of creek mined, 1918. Ground 25-100 ft. deep. Pay streaks 40-160 ft. wide; pay gravels 3 ft. thick. Limestone bedrock on 3 claims.
p. 184 -- Concentrates contain magnetite, limonite, hematite, chromite, and pyromorphite.
Brooks and Capps, 1924 (B 755), p. 37 -- Mining, 1922.
Smith, 1926 (B 783), p. 14 -- Mining, 1924.
Smith, 1929 (B 797), p. 21 -- Mining, 1926.
Smith, 1930 (B 813), p. 30 -- Mining, 1928.
Smith, 1932 (B 824), p. 36 -- Mining, 1929.
Smith, 1933 (B 836), p. 36 -- Dead work, 1930.
Smith, 1933 (B 844-A), p. 35 -- Mining, 1931.
Smith, 1934 (B 857-A), p. 34 -- Mining, 1932.
Smith, 1934 (B 864-A), p. 38-39 -- Mining, 1933.
Smith, 1936 (B 868-A), p. 39-40 -- Mining, 1934.
Smith, 1937 (B 880-A), p. 44 -- Mining, 1935.
Smith, 1938 (B 897-A), p. 52 -- Mining, 1936.
Smith, 1939 (B 910-A), p. 53 -- Mining, 1937.
Smith, 1939 (B 917-A), p. 53 -- Mining, 1938.
Smith, 1941 (B 926-A). p. 49 -- Mining, 1939.
Joesting, 1942 (TDM 1), p. 14 -- Placer stibnite is present.
p. 17 -- Chromite and chrome spinel in placers; probably derived from serpentine in Middle Devonian basic volcanic rocks.
Smith, 1942 (B 933-A), p. 46 -- Mining, 1940.
Foster, 1968 (C 590), p. 1 -- Has been major production. Nonfloat placer mining in 1967.
Cobb, 1973 (B 1374), p. 176 -- Mining, 1968.

Anna-Mary

Antimony, Gold, Lead, Silver

Fairbanks district
MF-413, loc. 42

Livengood (19.2, 1.55)
65°04'N, 147°24'W

Summary: Lode with crushed schist, gouge, iron-stained quartz, stibnite, possibly argentiferous galena, and argentiferous arsenopyrite. No data on tenor or mode of occurrence of gold. No record of production.

Hill, 1933 (B 849-B), p. 100 -- Lode strikes N 70° W, dips 70° S. Lode is 4-8 ft. wide, consisting of 1-6 ft. of crushed schist on hanging wall and 1-2 ft. of clay gouge on footwall; lenticular masses of crushed iron-stained quartz and galena and arsenopyrite high in silver on dump. Sample cut across 5 ft. at bottom of 15-ft. shaft assayed 46 cents a ton. Another unexplored lode is on the property.

Chapman and Foster, 1969 (P 625-D), p. D9 -- Reference to above, plus listing of lead, silver, antimony, gold, in "Metals" column and quartz, galena (argentiferous ?), stibnite, arsenopyrite (argentiferous), limonite in "Mineralogy" column.

Banner	Gold
Fairbanks district MF-413, loc. 45	Livengood (19.45, 1.65) 65°04'N, 147°22'W

Summary: Ore carrying free gold reported. All work pre-1912.

Smith, 1913 (B 525), p. 171 -- Ore carrying free gold reported. Shaft caved and partly filled [as of 1912].
Smith, 1913 (B 542), p. 157 — Same as B 525.
Chapman and Foster, 1969 (P 625-D), p. D9 -- Reference to B 525, p. 171.

(Beaver Cr.)	Gold (?)
Tolovana district	Livengood (?) E. Cen. 1/4 quad. (?)

Summary: Placer gold reported to have been found in basin in 1919.

Brooks and Martin, 1921 (B 714), p. 82 -- In 1919 placer gold was reported to have been found in Beaver Cr. basin.

(Bear Cr.) Gold (?)

Fairbanks district Livengood (20.9, 1.15) approx.
65°02'N, 147°10'W approx.

Summary: Has been prospecting.

Ellsworth, 1910 (B 442), p. 233 -- A little prospecting, 1909.

(Bedrock Cr.) Gold, Tin, Tungsten

Fairbanks district Livengood (18.95, 1.6)
MF-413, loc. 88 65°04'N, 147°26'W

Summary: Cassiterite and scheelite in concentrates. Bedrock has been mined from an open-cut on Discovery and milled. Gold (certainly placer and probably lode) were mined.

Brooks, 1923 (B 739), p. 30 -- Some lode material mined from open-cut on Discovery and milled at Rhoads & Hall [Cleary Hill] mill, 1921. [This reference may be garbled.]
Joesting, 1942 (TDM 1), p. 32 -- Placer cassiterite common.
p. 37 -- Scarce placer scheelite.
Byers, 1957 (B 1024-I), p. 188, 210 -- Scheelite in concentrates.

Billy — Gold (?)

Fairbanks district — Livengood (21.5, 2.7) approx. 65°07'N, 147°05'W approx.

Summary: Essentially barren quartz. Some samples assayed 29 cents to the ton, presumably in gold.

Hill, 1933 (B 849-B), p. 155-156 -- Ledge of barren white quartz strikes N 20° W, dips 70° W, is 20 ft. wide and sheared. No sulfides. Iron stained near schist. Some samples assayed 29 cents to the ton [assumed to be in gold].

Bobbie — Antimony, Lead, Silver

Fairbanks district — Livengood (19.1, 1.5)
MF-413, loc. 41 — 65°04'N, 147°25'W

Summary: Narrow stringer of nearly pure argentiferous galena; banded near walls and in large crystals in center of vein. Other material from property is kidneys made up of stibnite needles; imbedded quartz crystals and some included pyrite. No record of production.

Smith, 1913 (B 525), p. 177 -- Several pits and a tunnel on westward-dipping lode that strikes nearly north. Specimens of ore are mainly stibnite and galena with smaller quantities of other sulfides and quartz crystals. A narrow stringer of nearly pure galena is banded near walls; center of vein is all large galena crystals. Galena carries considerable silver.

Smith, 1913 (B 542), p. 163 -- Same as B 525.

Brooks, 1916 (B 649), p. 35 -- Quotation from B 525, p. 177. Specimens indicate that needles of stibnite form kidneys in which quartz crystals are imbedded and some pyrite is included.

Killeen and Mertie, 1951 (OF 42), p. 31 -- References to above.

Chapman and Foster, 1969 (P 625-D), p. D10 -- References to above and to an index map.

Bradley — Gold (?)

Fairbanks district — Livengood (18.75, 0.9)
65°02'N, 147°28'W

Summary: Shaft with sulfide-bearing quartz vein. Tunnel in mineralized material. See also North Star (Skoogy Gulch).

Smith, 1913 (B 525), p. 200 -- Shallow shaft; 2-ft. quartz vein strikes E and dips S; shattered and sheared milky quartz with sparse sulfides. [Not named in text; fits location of Bradley shaft on fig. 19.]

p. 202 -- Tunnel 200 ft. long; mineralized material, but no distinct vein except for a few stringers and at face, where there is vein material near a fault, some gouge. [Fits location of Bradley tunnel on fig. 19.]

Smith, 1913 (B 542), p. 186, 188 -- Same as B 525.

Branholm-Jenkins

Antimony, Lead

Fairbanks district
MF-413, loc. 47

Livengood (19.8, 1.75)
65°04'N, 147°20'W

Summary: Quartz vein in quartz-mica schist contains arsenopyrite, jamesonite, and galena. No data on possible gold or silver content. Includes references to: Leindecker, McNeil (& Huddelson).

Smith, 1917 (BMB 142), p. 23 -- Mining by McNeil & Huddelson, 1915.

Mertie, 1918 (B 662), p. 415 -- No operations in progress at Leindecker, Aug., 1916.

Hill, 1933 (B 849-B), p. 104 -- Vein at McNeil apparently strikes N 60° W and dips 70° S. Sacked ore on property contained quartz, arsenopyrite, jamesonite, and galena; country rock is quartz-mica schist.

Killeen and Mertie, 1951 (OF 42), p. 14 -- Antimony ore may have been mined.

p. 37 -- Reference to B 849-B, p. 104.

Chapman and Foster, 1969 (P 625-D), p. D8 -- References to above and to B 642, p. 37 [which is probably to Hi-Yu rather than to this property].

Burnet (Twin Cr.) — Gold

Fairbanks district — Livengood (18.8, 0.75)
MF-413, loc. 32 — 65°01'N, 147°28'W

Summary: Brecciated auriferous quartz veins in weathered granite on placer claim. Weathered material sluiced with placer gravel.

Chapin, 1914 (B 592), p. 349 -- Brecciated parallel auriferous quartz veins in weathered granite bedrock of a bench placer deposit. Weathered granite sluiced with placer gravel to recover gold.
Chapman and Foster, 1969 (P 625-D), p. D13 -- Reference to above.

Burnet (W. of Twin Cr.)	Gold
Fairbanks district	Livengood (18.95, 1.0) approx. 65°02'N, 147°26'W approx.

Summary: Coarse gold in slide rock.

Smith, 1913 (B 525), p. 200 -- Coarse gold reported to have been found in slide rock in a small pit. [Name not used in text; from fig. 19].

Smith, 1913 (B 542), p. 186 -- Same as B 525.

Burnet Galena — Antimony, Lead, Silver

Fairbanks district — Livengood (18.75, 0.9)
MF-413, loc. 30 — 65°02'N, 147°28'W

Summary: A flat-lying body of quartz contains lenses of argentiferous galena accompanied by jamesonite and is enclosed in quartz diorite intruded by granite porphyry. Sacked ore on dump in 1931, but no record of production.

Chapin, 1914 (B 592), p. 349-350 -- Flat-lying body of quartz with lenses of galena in center. Cubic cavities with limonitic material probably derived from pyrite. Galena said to have high silver content. Secondary pyromorphite and cerusite.

Hill, 1933 (B 849-B), p. 118 -- Dark quartz diorite intruded by both coarse- and fine-grained granite porphyry, all cut by quartz veinlets of at least 2 ages. Old shaft, open cut, caved tunnel in 1931. Sacks of galena-jamesonite-cerusite ore on dump.

Killeen and Mertie, 1951 (OF 42), p. 26 -- Reference to B 849, p. 118.

Chapman and Foster, 1969 (P 625-D), p. D13 -- References to above.

Busty Belle (Mines, Inc.)

Antimony, Gold, Lead, Molybdenum(?), Silver, Tungsten, Zinc

Fairbanks district
MF-413, loc. 20

Livengood (18.0, 0.45)
65°01'N, 147°34'W

Summary: Veins and contiguous rocks in silicified shear zones in granitic rocks and schist roof pendants contain argentiferous galena, stibnite, gold, pyrite, scheelite, powellite, sphalerite, tetrahedrite, and possibly molybdenite. Includes references to prospects at head of Fox Cr.

Forbes and others, 1968 (OF 324), p. 4-5 -- Fissure veins in quartz diorite consist of argentiferous galena, sphalerite, tetrahedrite, and pyrite; subordinate gold values.

p. 9-10 -- Trenching exposed roof zone (?) of quartz monzonite plutons, roof pendants of silicified schist, and auriferous quartz stringers and veins. Altered zone 30 ft. wide in both schist and quartz monzonite; both rock types sheared and silicified, veins border both sides of altered zone where in schist. Stibnite lenses along hanging wall of south vein; sample from altered rind of one lens contained 23.0 ppm Au.

p. 22-29 -- Samples from veins and altered schist contained from 0.13 to 8.20 ppm Au. Gold values in altered quartz monzonite were as high as 2.77 ppm. Nearby in altered quartz diorite veins contain quartz, argentiferous galena, stibnite, and gold (channel samples contained from 9.61 to 15.45 ppm Au). Contact zone between quartz monzonite and quartz diorite is altered; only traces of gold in quartz monzonite; none in quartz diorite. [Index maps and tables elsewhere in report contain more data on gold content of samples.]

Chapman and Foster, 1969 (P 625-D), p. D13 -- NW-trending fissure veins in Pedro Dome quartz diorite; scheelite and powellite limited to thin calcite veinlets and coatings along joints and fracture planes. "Mineralogy" column lists argentiferous galena, pyrite, calcite, scheelite, powellite, and molybdenite (?).

Butler (& Petree)

Antimony, Gold, Lead, Zinc

Fairbanks district
M-413, loc. 41

Livengood (19.1, 1.5)
65°04'N, 147°25'W

Summary: Shear zone in schist contains pyrite, arsenopyrite, galena, sphalerite, and stibnite. Quartz veins in the shear zone contain the same sulfides. Tourmaline needles in schist near quartz veins. Gold in sulfides; free in oxidized zone. Several hundred feet of workings, but no record of production. Includes references to: B.P., Mazeppa, Reese, Rex (Mining Co.).

Prindle, 1910 (B 442), p. 226-227 -- Shear zone in schist dips 45°-70° SW. Contains pyrite, arsenopyrite, galena, sphalerite, and stibnite. Some sulfides in quartz veins in shear zone. Tourmaline needles in schist near quartz veins. Free gold in upper part of oxidized zone; lower down values are in sulfides. Developed by tunnel, drift, winze, and raise to surface.

Brooks, 1911 (B 480), p. 34 -- No work (litigation), 1910. Total work to date includes a 160-ft. inclined shaft with several prospecting levels. Vein reported to be 4-8 ft. wide.

Brooks, 1912 (B 520), p. 31 -- Work said to have been done on Rex, 1911.

Smith, 1913 (B 525), p. 176-177 -- Quotation from B 442, p. 226; reference to B 520, p. 31. Legal and water problems caused cessation of work by 1912.

Smith, 1913 (B 542), p. 162-163 -- Same as B 525.

Hill, 1933 (B 849-B), p. 98-99 -- Scott Reese tunnel is 320 ft. long; intersects 2 fault zones(one strikes N 60° E and dips 80° S) and 2 quartz veins.

Killeen and Mertie, 1951 (OF 42), p. 30-31 -- Reference to B 442, p. 226.

Chapman and Foster, 1969 (P 625-D), p. D10 -- Data essentially as in above references.

Charles — Gold (?)

Fairbanks district — Livengood (20.9, 2.0)
MF-413, loc. 54 — 65°05'N, 147°10'W

Summary: Ledge reported to be 18 in. wide. Original reference is somewhat confusing, but is probably clear enough to indicate that there was no production (and may not even have been any gold.).

Brooks, 1912 (B 520), p. 31 -- Ledge reported to be 18 in. wide.
Smith, 1913 (B 525), p. 156 -- Reference to B 520, p. 31. [Smith seems to have misinterpreted the original record; he states that ore from Charles was milled at Chena. My interpretation is that ore came from two other prospects.]
Smith, 1913 (B 542), p. 141 -- Same as B 525.
Chapman and Foster, 1969 (P 625-D), p. D7 -- References to above. [Statement of production based on B 525, p. 156; see comment above.]

(Chatanika R.) Gold

Fairbanks district Livengood (16.85-18.5, 0.8-2.4)
MF-413, loc. 88 65°04'-65°07'N, 147°30'-147°44'W

Summary: Placers are deep; about 200 ft. at mouths of Dome and Vault Creeks. From 1911 to 1927 all mining was from drift mines; dredging began near mouth of Cleary Co. in 1928 and continued until World War II; drift mining was reported as recently as 1938. See also: (Cleary Cr., near Fairbanks), (Dome Cr.), (Vault Cr.).

Prindle and Katz, 1909 (B 379), p. 190-191 -- Promising discoveries, 1908. Depth to bedrock 65-125 ft.

Ellsworth and Parker, 1911 (B 480), p. 156 -- Mining at mouths of Dome and Vault Creeks; prospecting up Chatanika from Dome Cr.

Prindle and Katz, 1913 (B 525), p. 107 -- Depth to bedrock (measurements on 5 claims) 75-125 ft.

p. 112-113 -- Production, 1907-10, worth $1,245,000. Gold worth $17.62 per oz.

Brooks, 1914 (B 592), p. 68 -- Mining near mouths of Cleary and Dome Creeks, 1913.

Smith, 1917 (BMB 153), p. 51 -- In 1916 Chatanika, Cleary Cr., and tributaries produced $325,000.

Smith, 1930 (B 810), p. 25 - Mining, 1927. Extensive thawing program.

Smith, 1930 (B 813), p. 28, 47 -- Mining, including a dredge, 1928.

Smith, 1932 (B 824), p. 32-33, 52 -- Mining, including dredging, 1929.

Smith, 1933 (B 836), p. 32-33 -- Mining, including dredging, 1930.

Smith, 1933 (B 844-A), p. 32-33 -- Dredging, 1931. [Included with Cleary Cr. in list on p. 54.]

Smith, 1934 (B 857-A), p. 30-31 -- Dredging, 1932. [Included with Cleary Cr. in list on p. 51.]

Smith, 1934 (B 864-A), p. 34-35 -- Mining, including dredging, 1933. [Included with Cleary Cr. in list on p. 56.]

Smith, 1936 (B 868-A), p. 35-36 -- Dredging, 1934. [Included with Cleary Cr. in list on p. 58.]

Smith, 1937 (B 880-A), p. 39 -- Dredging, 1935. [Included with Cleary Cr. in list on p. 61.]

Smith, 1938 (B 897-A), p. 46-47 -- Mining, including dredging, 1936. [Included with Cleary Cr. in list on p. 71.] Prospect drilling, lower Chatanika R.

Smith, 1939 (B 910-A), p. 46-48 -- Drift mining with underground sluicing, 1937. Overburden 200 ft. thick; schist bedrock.

Smith, 1939 (B 917-A), p. 43-44 -- Mining, 1938.

p. 46 -- Drift mine with underground sluicing setup abandoned, 1938.

Smith, 1941 (B 926-A), p. 40 -- Mining, 1939. [One of dredges shown in list on p. 70 as on Cleary Cr. was probably on Chatanika R.]

Smith, 1942 (B 933-A), p. 39 -- Mining, 1940.

(Chatanika R.) - Continued

Koschmann and Bergendahl, 1968 (P 610), p. 26 -- Has been dredging.
Mulligan, 1974 (IC8626), p. 11 -- Deep placers (200 ft.) at mouths of Dome and Vault Creeks were drift mined in early days. Ground both patented and unpatented.

Chatham — Antimony, Gold

Fairbanks district — Livengood (19.4, 1.5)
MF-413, loc. 44 — 65°04'N, 147°23'W

Summary: Quartz vein with gold, but very few sulfides, is 6-8 in. thick; hanging wall slickensided. Cut by shear zone 10-15 ft. wide containing shoots and kidneys of stibnite as much as 12 ft. wide. Considerably more than 1,000 ft. of underground workings. Operated as a gold mine, 1912-13, 1934, possibly 1936. Worked for antimony, 1915-16. At least 100 tons shipped. 8 tons of ore from dump shipped in 1942. Includes references to: Chatam, Chatham Creek, Chatham Mining Co., Tanana Quartz Mining Co.

Brooks, 1912 (B 520), p. 31 -- Tanana Quartz Mining Co. Underground work in 1911. Two veins, 14-30 in. wide and 4 ft. wide. Ore shipments to custom mill; installed own mill in fall.

Smith, 1913 (B 525), p. 172-173 -- Vein exposed by 10 pits; traced for more than 500 ft. Vein is 6-18 in. thick, trends N 60° W, dips 65°-80° SW, and has a low sulfide content; hanging wall slickensided. Several hundred feet of drifts; stopes started; about a ton of ore a day mined (1912); gold content reported to be $25-$40 a ton. Nearby 60-ft. adit abandoned. Mine has own mill 1 mi. from mine.

Smith, 1913 (B 542), p. 158-159 -- Same as B 525.

Chapin, 1914 (B 592), p. 335-336 -- Vein 6-8 in. wide strikes N 60° W, dips 65°-80° SW. More than 1,000 ft. of underground tunnel and drifts, stopes blocked out. Vein is essentially quartz with gold [no data on tenor]; a narrow vein of stibnite that strikes E and dips S cuts the main vein.

Eakin, 1915 (B 622), p. 238 -- Idle, 1914.

Brooks, 1916 (B 642), p. 29 -- Antimony mining on a small scale, 1915.

Brooks, 1916 (B 649), p. 17 -- Antimony ore mined, 1915.

p. 35-36 -- References to B 525, p. 172-173; B 592, p. 335-336. Narrow vein of Chapin [B 592] on further exploration proved to be a shear zone 10-15 ft. wide containing shoots and kidneys of stibnite as much as 12 ft. long. Stibnite has been mined to depth of 120 ft.

Smith, 1917 (BMB 142), p. 23-24 -- Operated for antimony, 1915. 100 tons of ore shipped to San Francisco via St. Michael.

Smith, 1917 (BMB 153), p. 52 -- Antimony ore mined and shipped, 1916.

Mertie, 1918 (B 662), p. 415 -- Worked for antimony, 1916. Vein is about 18 in. thick, is almost vertical, and strikes N 70° E; gouge along foot wall (generally S side of vein); ore is stibnite.

Chapin, 1919 (B 692), p. 322 -- Old tailings being picked over, but no mining, 1917.

Hill, 1933 (B 849-B), p. 75 -- Data on claim names and ownership, 1931.

p. 100-101 -- Mine has produced; workings either iced or caved in 1931. References to B 525, p. 172-173; B 662, p. 415.

Chatham - Continued

Smith, 1936 (B 868-A), p. 20 -- 400 ft. of drifts and 240 ft. of raises driven in 1934. Some ore mined and sent to custom mill.
Smith, 1938 (B 897-A), p. 22 -- Mine reported to have been reopened, 1936.
Joesting, 1942 (TDM 1), p. 8 -- Stibnite present; reference to B 649.
Joesting, 1943 (TDM 2), p. 8-9 -- Reference to B 662, p. 415. Eight of about 20 tons of ore (40% Sb) left on dump after World War I was shipped in 1942. Old working inaccessible in 1942.
Ebbley and Wright, 1948 (RI 4173), p. 38 -- Antimony ore has been produced.
Killeen and Mertie, 1951 (OF 42), p. 12 -- Sample of stibnite ore contained 39.48% Sb.

p. 14 -- Significant amount of antimony ore has been mined.

p. 31-32 -- References to B 592, p. 335-336; B 649, p. 35-36; and B 662, p. 415. Mine operated as recently as 1936, but tunnel was inaccessible in 1942. About a ton of ore on dump. Assay of sample showed 38.48% Sb [given as 39.48% Sb on p. 12].

p. 41 -- Some high-grade ore on dump.

Chapman and Foster, 1969 (P 625-D), p. D9 -- Most of data from above references. In "Mineralogy" column shows quartz, stibnite, pyrite, jamesonite (?), and freibergite (?); in "Metals" column shows gold, antimony, silver, copper, zinc.

(Chatham Cr.) Antimony, Gold, Tin, Tungsten

Fairbanks district Livengood (19.05-19.15, 2.55-2.7)
MF-413, loc. 88 65°04'N, 147°25'W

Summary: Bedrock schist; granitic rock near head. Mining, largely by open-cut methods, in most years from 1903 to 1915. Production through 1910 was worth about $300,000. Dredge operated from 1926 or 1927 to 1934. Stibnite has been found in veins in schist and was common on piles of dredge tailings. Concentrates contain scheelite and cassiterite as well as gold and stibnite.

Prindle, 1904 (B 225), p. 68 -- Of economic importance in 1903.
p. 70 -- Mining at mouth and prospecting, 1903. Gold near head of stream is rough. Bedrock schist; granite near head.
Brooks, 1905 (B 259), p. 27 -- Mining, 1903.
Prindle, 1905 (B 251), p. 67 -- Of economic importance in 1903.
p. 78-79, 81 -- Gold discovered, 1902. Mining, 1904.
Purington, 1905 (B 263), p. 32-33 -- Open-cut mining has been successful.
p. 208 -- Gold worth $17.60 per oz.
Prindle, 1906 (B 284), p. 114 -- Stibnite has been found in places as veins a foot or more thick parallel to structure in schist.
p. 119 -- Has been a good producer, 1905; shallow placers.
Brooks, 1907 (B 314), p. 30 -- Reference to B 284, p. 114.
Prindle, 1908 (B 337), p. 41-42 -- Has been a good producer; shallow placers.
Ellsworth, 1910 (B 442), p. 233 -- Mining, 1909.
Prindle, 1910 (B 442), p. 226 -- Was good placer gold producer for about a mile above mouth.
Ellsworth, 1912 (B 520), p. 241 -- Mining, 1911.
Ellsworth and Davenport, 1913 (B 542), p. 205 -- No placer mining, 1912.
Prindle and Katz, 1913 (B 525), p. 98 -- Mining, 1908.
p. 112-113 -- Production, 1903-10, worth $300,000. Gold worth $16.90 per oz.
Chapin, 1914 (B 592), p. 358 -- Mining, 1913.
Eakin, 1915 (B 622), p. 232 -- Mining, 1914.
Brooks, 1916 (B 642), p. 59 -- Mining, 1915.
Smith, 1929 (B 797), p. 20 -- Dredge operated, 1926. [On p. 30 this dredge is listed as operating on Cleary Cr.]
Smith, 1930 (B 810), p. 25, 40 -- Dredge operated, 1927.
Smith, 1930 (B 813), p. 28, 47 -- Dredge operated, 1928.
Smith, 1932 (B 824), p. 32-33, 52 -- Dredge operated, 1929.
Smith, 1933 (B 836), p. 32, 54 -- Dredge operated, 1930.
Smith, 1933 (B 844-A), p. 32, 54 -- Dredge operated, 1931.
Smith, 1934 (B 864-A), p. 56 -- Dredge operated, 1933.
Smith, 1936 (B 868-A), p. 58 -- Dredge operated, 1934.
Smith, 1937 (B 880-A), p. 62 -- Dredge idle, 1935.
Joesting, 1942 (TDM 1), p. 10-11 -- Placer stibnite.
p. 32 -- Placer cassiterite common.
p. 37 -- Placer scheelite common.

(Chatham Cr.) - Continued

Joesting, 1943 (TDM 2), p. 9 -- Considerable stibnite float in old dredge tailings. Some about 1,000 ft. upstream from mouth appeared to have been dredged from bedrock.
Killeen and Mertie, 1951 (OF 42), p. 7 -- Stibnite in lode beneath gravel.
Byers, 1957 (B 1024-I), p. 188, 210 -- Scheelite in concentrates.

Chechako No. 1	Antimony, Copper, Gold, Lead, Silver, Zinc.
Fairbanks district	Livengood (18.7, 1.35)
MF-413, loc. 37	65°04'N, 147°28'W

Summary: Massive sulfides replaced limestone. Hanging wall sharp, footwall gradational. Sulfides are pyrite, sphalerite, argentiferous galena, arsenopyrite, stibnite, and chalcopyrite. Gold is present. Silver content highest where there is much galena or sphalerite. No record of production. Includes references to: Eldorado Mining (& Milling) Co., Westonvi(t)ch. See also Tolovana.

Smith, 1913 (B 525), p. 186-187 -- 30-ft. shaft of Eldorado Mining Co. filled with water in 1912. "Ore" on dump mainly quartz with seams of stibnite. Much limestone (mostly crystalline) on dump.

Smith, 1913 (B 542), p. 175 -- Same as B 525.

Brooks, 1916 (B 649), p. 31-32 -- Reference to B 525, p. 186-187. Quartz with seams of stibnite in eastward-trending vein associated with limestone and calcareous rock.

Mertie, 1918 (B 662), p. 416 -- Property of Eldorado Mining & Milling Co. is only silver-lead lode in district being worked in 1916; open cut and 40-ft. shaft. Argentiferous galena, pyrite, a little gold in vein 3-12 in. thick parallel to structure of country rock (quartzite).

Chapin, 1919 (B 692), p. 324 -- Vein about 3 ft. wide at surface and mainly stibnite; below surface is 10-15 ft. wide and encloses large bunches of pure galena said to be rich in silver. Disseminated pyrite abundant in places. Inclined shaft 45 ft. deep; 30 ft. of drifts and stopes. Hanging wall of vein strikes NE and dips steeply NW; footwall gradational.

Hill, 1933 (B 849-B), p. 71-73 -- Pyrite in large masses mixed with sphalerite, galena, and chalcopyrite at Westonvitch property.

p. 75 -- Data on ownership, 1931.

p. 89-90 -- 2 tunnels, 3 shafts, and several open cuts caved in 1931. Material on dumps consists largely of massive pyrite, sphalerite, galena, arsenopyrite, and stibnite that appear to have replaced limestone. Gold present. Silver values increase where much galena or sphalerite is present. Feldspar, pyroxene, and biotite in ore. No record of production.

Killeen and Mertie, 1951 (OF 42), p. 28 -- References to above.

Chapman and Foster, 1969 (P 625-D), p. D11 -- Data essentially as above.

Cheyenne	Gold
Fairbanks district MF-413, loc. 35	Livengood (18.9, 1.25) 65°03'N, 147°27'W

Summary: Float quartz carries about half an ounce of gold per ton. Shallow pits in frost-riven material did not find bedrock source. In some of references there is confusion between Cheyenne and Jackson.

Smith, 1913 (B 525), p. 182-183 -- Several shallow pits in frost riven talus; attempt to find source of quartz (about $10 per ton in gold) float lying on the surface. [Name not used in text; description fits Cheyenne of fig. 16.]

Smith, 1913 (B 542), p. 169 -- Same as B 525.

Chapman and Foster, 1969 (P 625-D), p. D12 -- Reference to above [confusion with Jackson, which is described (but not by name) in preceding paragraph of cited references].

(Cleary Cr., near Fairbanks) Antimony, Gold, Tin, Tungsten

Fairbanks district Livengood (18.45-19.15, 1.55-2.4)
MF-413, loc. 88 65°04'-65°07'N, 147°25'-147°30'W

Summary: Bedrock schist. Creek and its major tributaries head in mineralized zone that extends from Last Chance Cr. to Fairbanks Cr. With tributaries, was most productive placer-gold stream in Fairbanks district; from 1903 through 1924 production was about 1,129,650 fine oz. worth $23,349,900. Most was from drift mines working a pay streak 150 ft. wide and with an average thickness of 5 ft. Beginning in 1924 and until as recently as 1940 dredges also operated. Concentrates contained gold, stibnite, cassiterite, scheelite, pyrite, garnet, and rutile. A lens of stibnite 75 ft. long was uncovered by placer mining near mouth of Willow Cr. See also (Chatanika R.).

Prindle, 1904 (B 225), p. 68 -- Of economic importance, 1903.
p. 70-71 -- Bedrock schist. Depth to bedrock 18-40 ft. Nuggets worth as much as $19, some with attached quartz. Drift mining, 1903.

Brooks, 1905 (B 259), p. 26-28 -- Mining, 1903. Mining over distance of 7 mi. A nugget valued at $233 was found. Most mining by drifting, 1904.

Collier, 1905 (B 259), p. 127 -- Small rounded pebbles of cassiterite found, 1904.

Hess and Graton, 1905 (B 260), p. 181 -- Pebbles of stream tin found, July, 1904.

Prindle, 1905 (B 251), p. 67 -- Of economic importance, 1903.
p. 77-81 -- Depth to bedrock from 14 to more than 80 ft. Gravels largely schist; some hornblende-garnet rock and boulders of vein quartz. Gold in basal 1 to 7 ft. of gravel and top 1-1/2 to 4 ft. of bedrock. Pay streak 35 to 150 ft. wide; under benches as well as creek. Nugget worth $233 has been found. Black sand, pyrite, garnet, rutile, and cassiterite with the gold.

Purington, 1905 (263), p. 41-42 -- Data on methods and costs of sinking prospect shafts.
p. 208 -- Gold worth $17.24 per oz.

Prindle, 1906 (B 284), p. 111 -- One of major placer creeks as of 1905.
p. 119 -- Best producer of region; workable deposits found for 7 mi. along stream. Deposits average about 60 ft. thick. Pay streak averages 5 ft. thick and probably at least 150 ft. wide; in middle of valley and not related to present stream course. Average value of pay streak about $10 per cu. yd.

Brooks, 1907 (B 314), p. 30 -- Stibnite in placers.
p. 36 -- Major placer gold producer, 1906.

Brooks, 1908 (B 345), p. 39 -- Richest placers in upper part of creek worked out, 1907.
p. 41-42 -- Mining, 1907. Major interest was near mouth in Chatanika Flats.

(Cleary Cr., near Fairbanks) - Continued

Prindle, 1908 (B 337), p. 29 -- Quotation from B 314, p. 36.
p. 41-42 -- Same as B 284, p. 119.
Prindle and Katz, 1909 (B 379), p. 188 -- Cassiterite in concentrates.
p. 190-191 -- Mining, 1908. Depth to bedrock 14-125 ft.
Ellsworth, 1910 (B 442), p. 232-233 -- Mining, 1909. Ditch from Chatanika R. constructed in 1909.
Johnson, 1910 (B 442), p. 246 -- Cassiterite in concentrates.
Brooks, 1911 (P 70), p. 182 -- Mining, 1908.
Ellsworth and Parker, 1911 (B 480), p. 155-156 -- Mining, 1910.
Ellsworth, 1912 (B 520), p. 241 -- Mining, 1911.
Hess, 1912 (B 520), p. 89 -- Cassiterite found with rutile in placers.
Ellsworth and Davenport, 1913 (B 542), p. 204-205 -- Mining, 1912; most production from near mouth.
Prindle and Katz, 1913 (B 525), p. 98-99 -- Mining, 1908. Productive gravels merge with those of Chatanika R. beneath Chatanika Flats. Prindle and Katz doubt that any of gold in flats originally came down Chatanika R., but that all near mouth of Cleary Cr. came from Cleary Cr.
p. 107 -- Depth to bedrock 14-135 ft.
p. 112-113 -- Production, 1903-10, worth $17,500,000. Gold worth $17.06 per oz.
Brooks, 1914 (B 592), p. 68 -- Mining, 1913.
Chapin, 1914 (B 592), p. 358 -- Mining, 1913; productive ground in Chatanika Flats was extended.
Brooks, 1915 (B 622), p. 54-55 -- Mining, 1914. Production through 1914 from Cleary Cr. and tributaries was worth $21,600,000.
Eakin, 1915 (B 622), p. 230-232 -- Mining, 1915. Cleaned "side pay" and left-over parts of paystreak above Chatanika Flats. Most mining in Chatanika Flats, where gold seems to be on benches on south side of Chatanika valley.
Brooks, 1916 (B 642), p. 58-59 -- Mining, 1915. Total production, including tributaries, through 1915 was worth $22,270,000.
Smith, 1917 (BMB 142), p. 22 -- Mining, 1915.
Smith, 1917 (BMB 153), p. 51 -- Production, Chatanika, Cleary Cr., and tributaries, in 1916 was $325,000.
Brooks, 1918 (B 662), p. 51 -- Mining, 1916. Total production, including tributaries, through 1916 was worth $22,620,000.
Martin, 1919 (B 692), p. 35 -- Production, including tributaries, 1903-17, was worth $22,860,000.
Martin, 1920 (712), p. 39 -- Production, including tributaries, 1903-18, was worth $22,980,000.
Brooks and Martin, 1921 (B 714), p. 80-81 -- Mining, 1919. Production, including tributaries, 1903-19, was worth $23,060,000.
Brooks, 1922 (B 722), p. 45 -- Production, including tributaries, 1903-20, was worth $23,098,000.
Brooks, 1923 (B 739), p. 29 -- Production, including tributaries, 1903-21, was worth $23,142,000.

(Cleary Cr., near Fairbanks) - Continued

Brooks and Capps, 1924 (B 755), p. 35 -- Mining and prospect drilling for dredging ground, 1922. Production, including tributaries, 1900-22, was worth $23,198,000.
Capps, 1924 (B 755), p. 146 -- Has been the major producing creek of district. Mining, 1922.
Brooks, 1925 (B 773), p. 45 -- Production, including tributaries, 1900-23, was worth $23,252,000.
Smith, 1926 (B 783), p. 13 -- Mining, 1923-24. Production, including tributaries, through 1924 was worth $23,349,900.
p. 18 -- Dredge operated, 1924.
Moffit, 1927 (B 792), p. 17 -- Drilling to establish dredging ground, 1925.
p. 25 -- Dredge operated, 1925.
Smith, 1929 (B 797), p. 20 -- Mining, 1926.
p. 30 -- Dredge operated, 1926. [On p. 20 this dredge is said to be mining on Chatham Cr.]
Smith, 1932 (B 824), p. 33 -- Dredge built, 1929.
Hill, 1933 (B 849-B), p. 84 -- Source lodes in belt not much over a mile wide from Last Chance Cr.-Cleary Cr. divide to Wolf Cr.-Fairbanks Cr. divide.
Smith, 1933 (B 836), p. 32-33, 54 -- Dredging, 1930. [Some dredging probably was on Chatanika R.]
Smith, 1933 (B 844-A), p. 32-33, 54 -- Dredging, 1931. [Some dredging probably was on Chatanika R.]
Smith, 1934 (B 857-A), p. 30-31, 51 -- Dredging, 1932. [Some of dredging was on Chatanika R.]
Smith, 1934 (B 864-A), p. 34-35, 56 -- Dredging, 1933. [Some of the dredging was on Chatanika R.]
Smith, 1936 (B 868-A), p. 35-36, 58 -- Dredging, 1934. [Some of the dredging was on Chatanika R.]
Smith, 1937 (B 880-A), p. 39-40, 61 -- Dredging, 1935. [Some of the dredging was on Chatanika R.]
Smith, 1938 (B 897-A), p. 46-47, 71 -- Dredging, 1936. [Some of the dredging was on Chatanika R.]
Smith, 1939 (B 910-A), p. 46-47, 76 -- Dredging, 1937.
Smith, 1939 (B 917-A), p. 43-45, 74 -- Dredging, 1938.
Smith, 1941 (B 926-A), p. 40-41, 70 -- Mining (including dredging), 1939. [One dredge was probably on Chatanika R.]
Joesting, 1942 (TDM 1), p. 8 -- Placer scheelite and cassiterite near where stibnite lodes have been found.
p. 10 -- Placer stibnite present.
p. 32 -- Placer cassiterite common.
p. 37 -- Placer scheelite common.
Smith, 1942 (B 933-A), p. 38-39, 67 -- Mining, including dredging, 1940.
Joesting, 1943 (TDM 2), p. 20 -- Placer scheelite abundant above Bedrock Cr.
p. 28 -- Considerable placer scheelite in upper Cleary Cr. and its tributaries; at least some was undoubtedly derived from gold-quartz veins, some of which contain scheelite.
Thorne and others, 1948 (RI 4174), p. 27 -- Quotation from TDM 2, p. 20.
Killeen and Mertie, 1951 (OF 42), p. 7 -- Stibnite in placer concentrates.

(Cleary Cr., near Fairbanks) - Continued

p. 42 -- Thin lens of stibnite 75 ft. long uncovered by placer mining at Willow and Cleary Creeks.

Wedow, Killeen, and others, 1954 (C 331), p. 6-7 -- eU of old sample, 0.013% or 0.018%; probably due to zircon. Barren windrows of dredge tailings.

Byers, 1957 (B 1024-I), p. 188, 210 -- Scheelite in concentrates.

Burand, 1958 (GC 13), p. 15 -- One of the most productive placer-gold streams in district.

Koschmann and Bergendahl, 1968 (P 610), p. 26 -- Has been dredging.

Cobb, 1973 (B 1374), p. 128-129 -- With its tributaries, led all creeks in the Fairbanks district in the production of placer gold.

(Cleary Cr., near Livengood) Gold (?)

Tolovana district Livengood (12.1, 8.5) approx.
65°29'N, 148°20'W approx.

Summary: Prospects reported to have been found in 1915. No other suggestion of gold on this Cleary Cr. in literature.

Brooks, 1916 (B 642), p. 208 -- Prospects found, 1915.

Cleary Hill (Mines, Inc.)

Antimony, Copper, Gold, Lead, Silver, Tin, Tungsten, Zinc

Fairbanks district
MF-413, loc. 39

Livengood (19.0, 1.55)
65°04'N, 147°26'W

Summary: Principal vein averages about 1 ft. in thickness; maximum thickness is 3 ft.; smaller similar parallel veins in both hanging and foot walls. At least one intersecting vein is largely stibnite. Veins are crushed, cross foliation of schist country rock, and are complexly faulted. Thin limestone beds in schist contain scheelite. Cassiterite in weathered vein material. Metallic minerals in vein are gold, stibnite, arsenopyrite, pyrite, sphalerite, galena, chalcopyrite, jamesonite, covellite, scheelite. Major lode-gold mine in district; mining reported in 1910-15, 1927, 1929-42, 1949. Total production not known; was worth about $1,000,000 as of 1931. Fineness determinations in 1913 showed 0.818 gold and 0.169 silver. A few tons of stibnite ore was mined during World War II. Includes references to: Alabama, California, Carlisle, Cleary, Cleary Hill (Alaska) Mining Co., Colorado, Free Gold (Cleary Cr.), Idaho, New York, Paupers Dream, Rhoads (&) Hall, Rhodes (&) Hall, Roads & Hall, Snow Drift, Texas, V.

Prindle, 1910 (B 442), p. 225 -- Quartz vein from a few inches to nearly 3 ft. thick in schist with quartz stringers has been traced for 800 ft. on surface; strikes N 75° W to N 65° E and dips about 60° SE. Quartz somewhat shattered and slickensided. Visible gold, stibnite and arsenopyrite, and less pyrite and sphalerite. 90-ft. tunnel and 60-ft. shaft. [Called Free Gold in this reference.]

Brooks, 1911 (B 480), p. 33-35 -- Ledge is up to 4 ft. wide; has been traced on surface for about 1,000 ft. Main adit driven on ledge for a total of over 630 ft.; shaft sunk 50 ft.; 90-ft. crosscut; maximum depth below outcrop is 250 ft.; 1910. Rich ore from Carlisle fraction (mainly picked up on surface) milled; 50-ft. shaft and some crosscuts. Developments indicate that some of veins have encouraging continuity.

Brooks, 1912 (B 520), p. 31 -- Mining, 1911. Mill installed.

Smith, 1913 (B 525), p. 177-182 -- Main vein 1-3 ft. wide; trends about N 75° W; dips from 55° S to 63° S. Vein much crushed and faulted. Smaller similar parallel veins about 25 ft. away in both hanging and foot walls. Much of gold is free and in visible grains. Ore largely free of sulfides. Stibnite, galena, arsenopyrite, pyrite, chalcopyrite, and sphalerite present in small amounts; gold with sulfides. Gold averages 0.818 fine. 3 assays showed silver to average 0.169 fine. 147 tons of ore milled out an average of $120 a ton; may have been picked material. 5-stamp mill on property.

Smith, 1913 (B 542), p. 163-168 -- Same as B 525.

Chapin, 1914 (B 592), p. 337-338 -- Principal lode producer of district. More than 3,000 ft. of underground workings. Vein is essentially quartz; averages 12 in. thick.

Eakin, 1915 (B 622), p. 236-237 — Considerable development; mined all year; mill operated 350 days; 1914.

Cleary Hill (Mines, Inc.) - Continued

Brooks, 1916 (B 642), p. 60 -- Mine and mill operated until Sept. 10, 1915.
Brooks, 1916 (B 649), p. 34-35 -- References to B 525, p. 178, 181. Manager reported vein of antimony ore cutting main vein in mine. Cassiterite in weathered material associated with vein (much arsenopyrite and stibnite) on Pauper's Dream and Texas claims.
Smith, 1917 (BMB 142), p. 23-24 -- Mined until September, 1915.
Brooks, 1923 (B 739), p. 30 -- Mill, but not mine, operated, 1921.
Smith, 1926 (B 783), p. 9 -- A little production and much dead work reopening mine, 1924.
Moffit, 1927 (B 792), p. 12 -- New adit being driven. 7 men mining and operating mill, 1925.
Smith, 1929 (B 797), p. 13 -- Development work, 1926.
Smith, 1930 (B 810), p. 14-15 -- Development; a little ore mined, 1927.
Smith, 1930 (B 813), p. 17 -- New shaft and underground work; no production, 1928.
Smith, 1932 (B 824), p. 20 -- Productive mining, 1929.
Hill, 1933 (B 849-B), p. 49 -- $10 ore can be worked at a profit [1931].

p. 52 -- One of principal producers in recent years [1931].

p. 69-71 -- In specimen from 150 ft. below surface gold and sulfides (arsenopyrite and jamesonite) are primary. Vein badly crushed. Some oxidation products in lowest levels of mine. Covellite has been recognized in a polished section.

p. 75 -- Data on claim names and ownership.

p. 84 -- One of 2 producing lode mines in Cleary Cr. valley in 1931.

p. 93-96 -- As of 1931 has produced about $1,000,000. Main vein strikes N 70°-80° W, dips 43°-60° (average 50°) S; thickness 4-24 (average 12) in.; on crest of low anticline; much broken by intricate system of faults. Faults with the greatest throw strike parallel to vein, but dip N; one is a zone of contorted schist and gouge 30-40 ft. wide. Throw on faults of this series from 75 to nearly 170 ft. Other series of normal and reverse faults have less throw. Ore averages $33.40 a ton. Mill heads have been about $40 a ton. Free gold visible in much of ore; minor quantities of arsenopyrite and stibnite. Reference to B 525, p. 180-182, for data on Texas, Pauper's Dream, and California. [Pl. 5 is a mine map; about a mile of workings, plus stopes.]

Smith, 1933 (B 836), p. 19 -- Mining, 1930.
Smith, 1933 (B 844-A), p. 19 -- Mining, 1931.
Smith, 1934 (B 857-A), p. 17 -- Largest production in Pedro Dome area, 1932.
Smith, 1934 (B 864-A), p. 19-20 -- Largest production in Pedro Dome area, 1933.
Smith, 1936 (B 868-A), p. 20 -- Largest production in Pedro Dome area, 1934. Additional areas opened up underground and mill improved.
Smith, 1937 (B 880-A), p. 20 -- Largest production in Pedro Dome area, 1935.
Smith, 1938 (B 897-A), p. 21 -- Largest production in Pedro Dome area, 1936, in spite of fire that destroyed power plant and mill.
Smith, 1939 (B 910-A), p. 23 -- One of 3 major producers in Pedro Dome area, 1937.
Smith, 1939 (B 917-A), p. 25 -- One of 3 major producers in Pedro Dome area, 1938.

Cleary Hill (Mines, Inc.) - Continued

Smith, 1941 (B 926-A), p. 22-23 -- Major mine in district, 1939. Much exploration.

Joesting, 1942 (TDM 1), p. 8 -- Stibnite present; reference to B 649.

Smith, 1942 (B 933-A), p. 22-23 -- Mining, 1940. Structural problems now worked out and ore blocked out.

Joesting, 1943 (TDM 2), p. 9 -- About 5 tons of high-grade stibnite ore shipped in 1942. Stibnite remains exposed in workings.

Killeen and Mertie, 1951 (OF 42), p. 14 -- Antimony ore has been produced.

p. 29-30 -- Crystals of jamesonite disseminated in quartz vein; occasional kidneys of stibnite. References to B 649, p. 34; B 525, p. 181-182. Two kidneys of ore visible in 1942; the larger yielded about 6 tons of ore. A small lens and traces of stibnite along fault that strikes N 70°-80° W and dips steeply N.

p. 42 -- 6 tons of stibnite has recently been marketed.

Wedow, White, and others, 1954 (C 335), p. 2 -- 2 men mining, 1949, on lease. Workings extensive and intricate; vein offset by complex series of faults. Vein is 4-24 in. wide and consists of crushed, iron-stained quartz with gold and minor amounts of arsenopyrite and stibnite. Parts of vein and schist wall rock stained by arsenic and antimony oxides. Selected specimens had no more than 0.003% eU.

Byers, 1957 (B 1024-I), p. 206 -- Scheelite in quartz veins that cut thin limestone beds or calcareous schist and as wall-rock replacement of calcareous beds.

p. 208-209 -- Most of production has been gold; a little antimony. Adits on 3 levels; winze connects with 3 lower levels. Scheelite in scattered grains and seams 1/8 in. thick in wall rock in many places across widths of 1 ft.; estimated to contain 0.1% WO_3. Calcareous wall rock in one adit appears to contain 1.0% WO_3 across 1 ft. Some scattered scheelite crystals in gold-quartz vein. Ore probably contains no more than 0.1% WO_3.

Berg and Cobb, 1967 (B 1246), p. 220-221 -- Scheelite present.

Burand, 1968 (GC 13), p. 15 -- Major lode-gold mine.

Chapman and Foster, 1969 (P 625-D), p. D10 -- Most of data from above reports. Crushed quartz veins cut foliation of schist country rock at high angles; complexly faulted by at least 3 fracture systems. Low-angle NE-striking reverse faults. Scheelite in wall rock that contains thin limestone beds.

(Cleary Summit)

Fairbanks district

Antimony, Gold

Livengood (19.0, 1.2)
65°03'N, 147°26'W

Summary: Altered and sheared zones contain stibnite and as much as 17.4 ppm gold.

Forbes and others, 1968 (OF 324), p. 8 -- Weakly altered iron-stained zone about 20 ft. wide has gold values up to 17.40 ppm that appear to correlate with degree of alteration and a network of small quartz stringers.

Pilkington and others, 1969 (OF 383), p. 4, 11 -- 7-ft. shear zone with minor quartz and stibnite. Euhedral quartz crystals appear to be replacing the sulfide.

(Coffee Dome)

Gold, Lead, Silver

Fairbanks district
MF-413, loc. 56

Livengood (20.35, 2.2) approx.
65°06'N, 147°09'W approx.

Summary: Prospect with gold, lead, and silver. No other data.

Burand, 1968 (GC 13), p. 15 -- "....exploration work was done on a lead-silver prospect at the head of Walnut Cr....."

Chapman and Foster, 1969 (P 625-D), p. D7 -- Prospect; Au, Pb, Ag listed in table in "Metals" column; reference is "unpublished data."

Colbert & Warmbold — Gold

Fairbanks district — Livengood (19.0, 1.2)
MF-413, loc. 42 — 65°03'N, 147°25'W

Summary: Small gold-bearing quartz veins in schist.

Chapman and Foster, 1969 (P 625-D), p. D9 -- Small gold-bearing quartz veins in schist strike N 50° W, dip 28° S.

Cornell — Gold (?)

Fairbanks district — Livengood (18,9, 1,25)
65°03'N, 147°27'W

Summary: Tunnel, shallow shafts, and pits. Probably no ore was found.

Smith, 1913 (B 525), p. 286 — Abandoned tunnel; apparently no ore was discovered.
Smith, 1913 (B 542), p. 172 — Same as B 525.
Hill, 1933 (B 849-B), p. 91 — Tunnel and shallow shafts and pits caved [1931] and apparently long abandoned.
Chapman and Foster, 1969 (P 625-D), p. D11 — References to above.

(Crane Cr.)(Gulch) Gold

Fairbanks district Livengood (20.4, 1.75)
MF-413, loc. 91 65°04'N, 147°14'W

Summary: About 1,765 oz. of gold (as mined) produced in 1908.

Prindle and Katz, 1913 (B 525), p. 112-113 -- Gold worth $30,000 was produced in 1908. Gold was valued at $17.00 per oz.

Crosscut	Gold (?)
Fairbanks district	Livengood (18,85, 1.5) 65°04'N, 147°27'W

Summary: Prospect, presumably for gold. See also Tolovana.

Chapman and Foster, 1969 (P 625-D), p. D10 -- Prospect. Cited source of data is an index map in Chapin, 1914 [B 592], p. 332.

Cunningham — Antimony, Gold

Fairbanks district — Livengood (19.0, 1.6)
MF-413, loc. 40 — 65°04'N, 147°20'W

Summary: Small vein contains much arsenopyrite and some stibnite. Samples said to carry much gold. Short tunnel and winze; no production. See also Sunrise (Cleary Cr.)

Smith, 1913 (B 525), p. 182 -- Short tunnel and short winze on small, well-defined vein that "has a smooth wall apparently due to faulting." Much arsenopyrite, some stibnite; samples said to carry much gold, but has been no systematic sampling and no ore milled. [Name not used in text; from fig. 16.]

Smith, 1913 (B 542), p. 168 -- Same as B 525.

Chapman and Foster, 1969 (P 625-D), p. D10 -- Data similar to above; reference (Chapin, 1914 [B 592], p. 332) is to an index map.

David

Gold

Fairbanks district
MF-413, loc. 30

Livengood (18.75.0.9)
65°02'N, 147°28'W

Summary: Veins, all no more than 6 in. thick, in silicified schist contain gold. Vein with major work and only reported production is a continuation of the vein on the adjoining Rainbow claim. Other veins also contain arsenopyrite. Production reported, 1917-18; amount not given; from 100-ft. adit and stope 65 ft. long. Includes reference to Apex; see also Rainbow.

Smith, 1913 (B 525), p. 201-- Eastward-dipping ore shoot on Apex claim is apparently an extension of lead at Rainbow mine.

Smith, 1913 (B 542), p. 187 -- Same as B 525.

Chapin, 1919 (B 692), p. 322 -- Quartz vein differs in width from place to place from 6 in. to a gouge seam. probably same vein as at Rainbow. 100-ft. adit driven on vein; stope 65 ft. long; 2-stamp mill. Operated, 1917.

Martin, 1920 (B 712), p. 40 -- Mine and mill operated, 1918.

Hill, 1933 (B 849-B), p. 74 -- Prospecting; data on ownership, 1931.

p. 116 -- Tunnel 40 ft. long follows vein that strikes N 70° E and dips 35° S. Vein is 22 in. wide; samples assayed $1.04 and $1.24 a ton. 2 other veins (1/2 to 1 in. wide and 1 to 4 in. wide) assay $13.46 and $77.84 a ton; both contain arsenopyrite and visible gold. Country rock silicified schist.

Chapman and Foster, 1969 (P 625-D), p. D13 -- References to above. [David listed here and as part of Rainbow (p. D12). I think there is only one David claim.]

(Dawson Cr.) Gold

Rampart district
MF-413, loc. 57

Livengood (0.15, 8.25-8.3)
65°28'N, 149°59'W

Summary: A large tributary of Hunter Cr. Small-scale placer mining, 1911-13. See also (Hunter Cr.).

Ellsworth, 1910 (B 442), p. 240 -- Values reported, 1909.
Eakin, 1912 (B 520), p. 282-283 -- Small-scale mining, 1911.
Eakin, 1913 (B 535), p. 35 -- Small-scale mining, 1911.
Ellsworth and Davenport, 1913 (B 542), p. 222 -- Mining, 1912.
Chapin, 1914 (B 592), p. 362 -- Mining, 1913.

(Deep Cr.) Gold

Fairbanks district
MF-413, loc. 91

Livengood (21.1, 1.55)
65°04'N, 147°09'W

Summary: Gold discovered, 1913. More recent data probably included with that on Fairbanks Cr.

Chapin, 1914 (B 592), p. 359 -- New gold discovery, 1913.

(Dome Cr.) Gold, Tin, Tungsten

Fairbanks district Livengood (17.15-18.0, 0.85-1.7)
MF-413, locs. 84, 85 65°02'-65°04'N, 147°34'-147°41'W

Summary: Ground 30 to 200 ft. deep. Pay streak 130-165 ft. wide and about 5 ft. thick. Production, including that from tributaries, from 1903 through 1920 was about 394,245 fine oz. worth $8,149,000. Mining continued until as recently as 1940. Concentrates contained gold, scheelite, and a little cassiterite. See also (Chatanika R.).

Prindle, 1906 (B 284), p. 111 -- Pay has been found, 1905.
p. 119 -- Little known about deposits; seem to be similar to those of Cleary Cr. Mineralized rock at head of creek on Pedro Dome. Mining along 3 mi. of valley.
Brooks, 1907 (B 314), p. 36 -- Mining, 1906.
Brooks, 1908 (B 345), p. 41-42 -- A major producer, 1907. Pay streak traced into Chatanika Flats; major production from that area.
Prindle, 1908 (B 337), p. 29 -- Quotation from B 314, p. 36.
p. 43 -- Bedrock and gravel similar to those of Cleary Cr. Where worked depth to bedrock ranges from 30 to 200 ft.; bedrock surface uneven. Pay streak 130-165 ft. wide; 2-3 ft. gravel and 2-3 ft. bedrock.
Prindle and Katz, 1909 (B 379), p. 190-191 -- Mining, 1908. Depth to bedrock 65-202 ft.
Ellsworth, 1910 (B 442), p. 232 -- Mining, 1909.
Ellsworth and Parker, 1911 (B 480), p. 156 -- Less mining in 1910 than in earlier years; water shortage, litigation, some of richest claims worked out.
Ellsworth, 1912 (B 520), p. 241-242 -- Mining, 1911.
Ellsworth and Davenport, 1913 (B 542), p. 204 -- Mining, 1912; major operations in Chatanika Flats.
Prindle and Katz, 1913 (B 525), p. 100-101 -- Middle part of stream course not productive. Ground deep but rich. Auriferous gravel extends into Chatanika Flats.
p. 108 -- Depth to bedrock 38-198 ft.
p. 112-113 -- Production, 1906-1910, worth $5,050,000. Gold worth $17.43 per oz.
Brooks, 1914 (B 592), p. 68 -- Mining, 1913.
Chapin, 1914 (B 592), p. 358 -- Mining, 1913.
Brooks, 1915 (B 622), p. 54 -- Production from Dome Cr. and tributaries, 1903-14, worth $7,300,000.
Eakin, 1915 (B 622), p. 232 -- Mining, 1914; mainly in flats near mouth.
Brooks, 1915 (B 642), p. 58-59 -- Mining, 1915. Production, including tributaries, through 1915 was worth $7,570,000.
Smith, 1917 (BMB 142), p. 22 -- Mining, 1915.
Smith, 1917 (BMB 153), p. 51 -- Production, 1916, worth $175,000.
Brooks, 1918 (B 662), p. 51, 54 -- Mining, 1916. Production, including tributaries, 1903-16, was worth $7,770,000.

(Dome Cr.) - Continued

Martin, 1919 (B 692), p. 35 -- Production, including tributaries, 1903-17, was worth $7,910,000.
Martin, 1920 (B 712), p. 39 -- Production, including tributaries, 1903-1918, was worth $8,020,000.
Brooks and Martin, 1921 (B 714), p. 80-81 -- Mining, 1919. Production, including tributaries, 1903-19, was worth $8,080,000.
Brooks, 1922 (B 722), p. 45 -- Production, including tributaries, 1903-20, was worth $8,149,000.
Brooks, 1923 (B 739), p. 29 -- Mining, 1921.
Capps, 1924 (B 755), p. 146 -- Has been a major producer. Mining, 1922.
Moffit, 1927 (B 792), p. 17 -- Gold-producing creek.
Smith, 1930 (B 810), p. 25 -- Mining, 1927.
Smith, 1930 (B 813), p. 28 -- Mining, 1928.
Smith, 1932 (B 824), p. 33 -- Mining, 1929.
Smith, 1934 (B 857-A), p. 30 -- Mining, 1932.
Smith, 1934 (B 864-A), p. 35 -- Mining, 1933.
Smith, 1936 (B 868-A), p. 36 -- Mining, 1934.
Smith, 1937 (B 880-A), p. 39 -- Mining, 1935.
Smith, 1938 (B 897-A), p. 46 -- Mining, 1936.
Smith, 1939 (B 910-A), p. 46 -- Mining, 1937.
Smith, 1939 (B 917-A), p. 43-44 -- Mining, 1938.
Smith, 1941 (B 926-A), p. 40 -- Mining, 1939.
Joesting, 1942 (TDM 1), p. 32 -- Placer cassiterite scarce.
p. 37 -- Placer scheelite scarce.
Smith, 1942 (B 933-A), p. 39 -- Mining and preparatory work, 1940.
Joesting, 1943 (TDM 2), p. 20 -- Placer scheelite abundant above Seattle Cr.
, p. 28 -- Placer scheelite particularly abundant in upper Dome Cr.
Thorne and others, 1948 (RI 4174), p. 28 -- Quotation from TDM 2, p. 20.
Byers, 1957 (B 1024-I), p. 188, 210 -- Scheelite in concentrates.
Koschmann and Bergendahl, 1968 (P 610), p. 26 -- Has been dredging.
Cobb, 1973 (B 1374), p. 128-129 -- One of the most productive placer-gold streams in Fairbanks district; more than $4,000,000 in gold.
Mulligan, 1974 (IC 8626), p. 11 -- Buried frozen placer 50-200 ft. deep; partially drift mined. Now inactive. Claims both patented and unpatented.

(Dome View) Gold

Fairbanks district Livengood (18.55, 1.1)
MF-413, loc. 27 65°03'N, 147°29'-147°30'W

Summary: Quartz vein with visible gold averages 30 in. in width and cuts across structure of quartz-mica schist near contact with quartz diorite. Some of vein is brecciated and iron stained. Tunnel 145 ft. long. No recorded production.

Hill, 1933 (B 849-B), p. 75 -- Prospect being developed; data on ownership and claim names.

p. 83-84 -- Vein strikes N 40° E, dips 70° NW, cutting quartz- mica schist. Near contact between schist and quartz diorite of Pedro Dome. Vein is 12 to 40 (average 30) inches thick, in some places is massive and in others is brecciated and iron stained, particularly along hanging wall. Visible free gold; samples (not representative) ran $0.38 to $3.26; ore in sight probably closer to $5 a ton. Tunnel 145 ft. long has developed about 1,300 tons of ore.

Chapman and Foster, 1969 (P 625-D), p. D11 -- Reference to B 849-B, p. 83-84 and further data on names of claims, owners, etc.

(Dominion Cr.) — Gold (?)

Tolovana district — Livengood (?)
NE 1/4 SE 1/4 quad (?)

Summary: Prospects said to have been found in 1910; no other mention of this creek.

Ellsworth and Parker, 1911 (B 480), p. 165 -- Prospects were found, 1910. Newly named creek; location not learned by writers.
Prindle and Katz, 1913 (B 525), p. 151 -- Quotation from B 480, p. 165.

Earth Resources	Copper, Molybdenum
Tolovana district	Livengood (10.5, 8.1) 65°27'N, 148°34'W

Summary: Copper-molybdenum prospect.

Eakins, 1974 (AOF 40), p. 2 -- Copper-molybdenum prospect discovered in 1972 has been drilled at several locations.

Egan (Twin Cr.)

Tungsten

Fairbanks district
MF-413, loc. 31

Livengood (18.65, 0.7)
65°01'N, 147°29'W

Summary: Thin (less than 6 in.) pegmatite dikes that cut granodiorite contain sparsely scattered grains of scheelite. Minor development. Deposit extremely low grade.

Joesting, 1943 (TDM 2), p. 23 -- Scheelite in small stockworks of quartz stringers cutting fine-grained quartz diorite; also occurs sparingly in quartz diorite near quartz stringers. Some surface work and a tunnel run 30 ft. into hillside. Ore below commercial grade.

Thorne and others, 1948 (RI 4174), p. 29 -- Quotation from TDM 2, p. 23.

Wedow, Killeen, and others, 1954 (C 331), p. 7 -- Heavier-than-bromoform fraction of sample of vein material had eU content of 0.013%. [Name of prospect not used in reference.]

p. 22 -- Same data; Eagan identified.

Byers, 1957 (B 1024-I), p. 206 -- Pegmatite type of deposit; sparse scheelite grains in pegmatite derived from porphyritic granite.

p. 210 -- Open cut and several small trenches expose granodiorite crisscrossed by pegmatite dikes less than 6 in. wide derived from porphyritic granite. Sparsely distributed small grains of scheelite in pegmatites.

Chapman and Foster, 1969 (P 625-D), p. D13 -- Data from B 1024-I, p. 210.

Egan & Egan

Gold

Fairbanks district
MF-413, loc. 55

Livengood (20.95, 2.3)
65°06'N, 147°10'W

Summary: Quartz veins and crushed zone in biotite schist; a sample across a vein contained gold worth $7.38 a ton (old price). Includes reference to lode near Kokomo Cr.

Hill, 1933 (B 849-B), p. 155 -- 4 to 5 veins spaced about 100 ft. apart strike N 40° W and dip 45°-60° SW. Country rock is nearly flat silvery biotite schist. One of lodes is crushed zone of schist and quartz about 8 ft. wide. Sample across a 20-in.-wide vein assayed $7.38 a ton. Only work on prospect was shallow pits and trenches dug in 1930-31.

Burand, 1968 (GC 13), p. 15 -- Reference to B 849-B. [Name of prospect not used; reference incomplete.]

Chapman and Foster, 1969 (P 625-D), p. D7 -- Reference to above.

Emma

Gold

Fairbanks district
MF-413, loc. 35

Livengood (18.9, 1.25)
65°03'N, 147°27'W

Summary: Quartz vein 4-12 in. wide contains visible free gold. 10 tons of selected ore milled gave return of $38 a ton (old price). Greenstone and schist country rock. Developed with inclined shaft and 100 ft. of drifts. Abandoned soon after 1924. Includes references to Overga(a)rd.

Prindle, 1910 (B 442), p. 225 -- Being prospected, 1909. Vein exposed by 40-ft. shaft; strikes about E and dips steeply SE; from a few to about 16 in. thick; about parallel to schistosity of country rock. Schist brecciated and cemented by quartz. Deposit seems similar to Free Gold [Cleary Hill].

Smith, 1913 (B 525), p. 185-186 -- Stringer 6 in. wide between what appears to be greenstone and [presumably schist]. 60-ft. shaft and short drifts. 10 tons of selected ore milled an average of $38 a ton.

Smith, 1913 (B 542), p. 171-172 -- Same as B 525.

Chapin, 1914 (B 592), p. 340 -- Vein strikes about E and dips 45°-60° S; is 4-12 in. wide; quartz with visible gold. Inclined shaft 60 ft. deep and 100 ft. of drifts.

Eakin, 1915 (B 622), p. 238 -- A little work done, 1914.

Chapin, 1919 (B 692), p. 322 -- Small production on Overgard property, 1917.

Hill, 1933 (B 849-B), p. 90-91 -- Reference to B 525, p. 185-186 [some of data from B 592, p. 340]. Property reopened in 1924, but was soon abandoned.

Chapman and Foster, 1969 (P 625-D), p. D11 -- Reference to B 849-B, p. 90-91.

Empire	Gold
Fairbanks district MF-413, loc. 42	Livengood (19.2, 1.55) 65°04'N, 147°24'W

Summary: 14 tons of ore, presumably gold, mined in 1912.

Chapin, 1914 (B 592), p. 337 -- 14 tons of ore mined in 1912.
Chapman and Foster, 1969 (P 625-D), p. D9 -- Gold mine.

(Ester Cr.) Gold, Mercury

Tolovana district Livengood (11.2, 8.85)
MF-413, loc. 73 65°30'N, 148°28'W

Summary: Bedrock 20 ft. deep where being mined in 1916; 90 ft. deep farther downstream. Concentrates contain gold, magnetite, ilmenite, picotite, cinnabar, limonite, and zircon. Prospecting or mining, 1915-16, 1928-34. Includes references to (Lucky Gulch) if not definitely to (Goodluck Cr.).

Brooks, 1916 (B 642), p. 208 -- Prospects found, 1915.
Mertie, 1918 (B 662), p. 271-272 -- Cinnabar present. Prospecting and small-scale mining, 1916. Bedrock 20 ft. deep where being worked; 90 ft. farther downstream, concentrates contain gold, magnetite, ilmenite, picotite, cinnabar, limonite, and zircon.
Smith, 1930 (B 813), p. 30 -- Mining, 1928.
Smith, 1932 (B 824), p. 36 -- Mining, 1929.
Smith, 1933 (B 844-A), p. 35 -- Mining on Lucky Gulch, 1931.
Smith, 1934 (B 857-A), p. 34 -- Mining on Lucky Gulch, 1932.
Smith, 1934 (B 864-A), p. 39 -- Mining on Lucky Gulch, 1933.
Smith, 1936 (B 868-A), p. 39 -- Mining on Lucky Gulch, 1934.
Malone, 1965 (IC 8252), p. 55 -- Reference to B 662.

Eureka

Gold

Fairbanks district
MF-413, loc. 53

Livengood (20.75, 2.05)
65°06'N, 147°12'W

Summary: Said to have been a 50-ft. shaft, showing 3 ft. of ore. Some ore said to have been milled at Chena, 1911.

Brooks, 1912 (B 520), p. 31 -- 50-ft. shaft, showing 3 ft. of ore, said to have been sunk in 1911 and some ore milled at Chena.
Smith, 1913 (B 525), p. 156 -- Reference to B 520, p. 31.
Smith, 1913 (B 542), p. 142 -- Same as B 525.
Chapman and Foster, 1969 (P 625-D), p. D7 — References to above.

Excelsior — Antimony, Gold (?), Lead, Silver (?)

Fairbanks district — Livengood (19.95, 1.7)
MF-413, loc. 49 — 65°04'N, 147°18'W

Summary: Quartzite schist and graphitic schist contain galena, arsenopyrite, and stibnite. "Cross vein" contains same metallic minerals; reports of high silver content could not be verified. Some ore (valuable for gold and silver) said to have been shipped in 1912; this information in a 1911 report was not repeated in a 1913 report and is therefore suspect. Includes references to "cross vein."

Brooks, 1911 (B 480), p. 34 -- Vein 7 ft. thick said to carry $10 to $20 in gold and $15 to $30 in silver per ton. Another vein is chiefly galena and is said to carry $5 in gold. Some ore was shipped in 1910.

Smith, 1913 (B 525), p. 161-162 -- Quartzite schist and shiny graphitic schist said to yield high silver assays (could not be duplicated in samples collected by Smith). Galena, arsenopyrite, and stibnite present. So-called "cross vein" strikes N 30° E, dips steeply SE, merges with an E-W vein. Developed by 2 adits and several pits.

Smith, 1913 (B 542), p. 146-147 -- Same as B 525.

Brooks, 1916 (B 649), p. 38 -- Reference to B 525, p. 161.

Killeen and Mertie, 1951 (OF 42), p. 37 -- Reference to B 525, p. 161-162.

Chapman and Foster, 1969 (P 625-D), p. D8 -- References to B 525, p. 161, OF 42, p. 37.

(Fairbanks Cr.) Antimony, Gold, Silver, Tin, Tungsten

Fairbanks district Livengood (19.95-21.15, 1.4-1.8)
MF-413, locs. 50, 91 65°03'-65°04'N, 147°08'-147°19'W

Summary: Bedrock mainly schist; from 15 to 110 or more feet deep. Placer mining from 1903 to as recently as 1940. Dredging began in 1911, but drift and other mining also continued. Production, including that from tributaries, from 1903 through 1920 was about 380,115 fine oz. worth $7,857,000. Minerals in concentrates included gold, wolframite, cassiterite, rutile, stibnite, and scheelite. Mineralized schist, opened by a short tunnel, carries 60 oz. silver per ton and $4 in gold (gold at $20.67 an ounce) per ton. Quartz stringers carry the same amount of gold, but no silver.

Prindle, 1904 (B 225), p. 68 -- Of economic importance in 1903.
p. 71-72 -- Bedrock schist and gneiss at depth of 14-40 ft. Mainly shaft prospecting in 1903; beginning of drift mining.
Brooks, 1905 (B 259), p. 26-28 -- Mining, 1903, 1904. Depth to bedrock 15 to 60 or more ft.; gold in 18 in. to more than 7 ft. of gravel. Pay streak as much as 250 ft. wide. Largest nugget valued at $190.
Prindle, 1905 (B 251), p. 67 -- Of economic interest in 1903.
p. 81-83 -- Bedrock (schist) is from 15 ft. near head to 60 or more ft. 5 mi. downstream. Gravels schist, vein quartz, some gneiss. Pay found in gravel 18 in. to 7 ft. thick over width of 45 to 250 ft. Gold discovered in October, 1902; prospecting, 1903; much mining, 1904.
Purington, 1905 (B 263), p. 92 -- Data on use of stream points.
p. 194 -- Fine gold runs 500 colors to the cent; gold worth $17.70 per oz.
p. 208 -- Gold worth $17.76 per oz.
Prindle, 1906 (B 284), p. 111 -- Has been placer mining, 1905.
p. 118 -- Productive for 4 mi.; beginning 2 mi. below source. Production in 1905 probably worth more than $1,000,000. Pay in basal 4-8 ft. of gravel and top 2-3 ft. of bedrock.
Brooks, 1907 (B 314), p. 36 -- Mining, 1906.
Brooks, 1908 (B 345), p. 39 -- Richest pay streaks probably worked out, 1907.
p. 41-42 -- Mining, 1907.
Prindle, 1908 (B 337), p. 29 -- Quotation from B 314, p. 36.
p. 38 -- Essentially the same as B 284, p. 118.
Prindle and Katz, 1909 (B 379), p. 190-191 -- Mining, 1908. Depth to bedrock 12-110 ft.
Ellsworth, 1910 (B 442), p. 233 -- Production in 1909 worth about $500,000.
Johnson, 1910 (B 442), p. 246 -- Wolframite in concentrates.
Brooks, 1911 (P 70), p. 182 -- Mining, 1908.
Ellsworth and Parker, 1911 (B 480), p. 158-159 -- Mining, 1910.
Ellsworth, 1912 (B 520), p. 240 -- First dredge in district installed, 1911.
p. 242-243 -- Mining, including a dredge, 1911.

(Fairbanks Cr.) - Continued

Hess, 1912 (B 520), p. 89 -- Cassiterite with rutile in placers.
Ellsworth and Davenport, 1913 (B 542), p. 206-208 -- Mining, including a dredge, 1912. Some new placer ground opened up.
Prindle and Katz, 1913 (B 525), p. 102 -- Productive area from 2 to 6 mi. downstream from source. Bedrock mainly schist. [All data as of 1908].

p. 108-109 -- Depth to bedrock 11-110 ft. (on most claims less than 50 ft.).

p. 112-113 -- Production, 1904-10, worth $5,250,000. Gold worth $17.26 per oz.

Smith, 1913 (B 525), p. 163 -- Short tunnel; mineralized schist carries 60 oz. silver and $4 in gold to the ton; quartz stringers carry $4 in gold and no silver.
Smith, 1913 (B 542), p. 148-149 -- Same as B 525, p. 163.
Brooks, 1914 (B 592), p. 68 -- Mining, 1913.
Chapin, 1914 (B 592), p. 359 -- Mining, including a dredge, 1913.
Brooks, 1915 (B 622), p. 54 -- Production from Fairbanks Cr. and tributaries, 1903-14, worth $6,700,000.
Eakin, 1915 (B 622), p. 233 -- Mining, including a dredge, 1914.
Brooks, 1916 (B 642), p. 58-59 -- Mining, including a dredge, 1915. Production from Fairbanks Cr. and tributaries, 1903-15, was worth $6,970,000.
Smith, 1917 (BMB 142), p. 22 -- Mining, including a dredge, 1915.
Smith, 1917 (BMB 153), p. 51 -- Production, 1916, worth $200,000.
Brooks, 1918 (B 662), p. 51, 54 -- Mining, including a dredge, 1916. Production, including tributaries, 1903-16, was worth $7,250,000.
Martin, 1919 (B 692), p. 35 -- Production, including tributaries, 1903-17, was worth $7,400,000. New dredge to be operating in 1918.
Martin, 1920 (B 712), p. 38-39 -- Mining, including a dredge (another also constructed), 1918. Production, including tributaries, 1903-18, was worth $7,500,000.
Brooks and Martin, 1921 (B 714), p. 80-81 -- Mining, including 2 dredges, 1919. Production, including tributaries, 1903-19, was worth $7,700,000.
Brooks, 1922 (B 722), p. 44-45 -- 2 dredges operated, 1920. Production, including tributaries, 1903-20, was worth $7,857,000.
Brooks, 1923 (B 739), p. 9, 29 -- 2 dredges, 1921.
Brooks and Capps, 1924 (B 755), p. 14, 35 -- 2 dredges, 1922.
Capps, 1924 (B 755), p. 146 -- Has been a major producer. Mining, 1922.
Brooks, 1925 (B 773), p. 27 -- 2 dredges, 1923.
Smith, 1926 (B 783), p. 18 -- 2 dredges, 1924.
Moffit, 1927 (B 792), p. 17 -- Drift mining, 1925. Prospect drilling, 1925.

p. 25 -- 2 dredges operated, 1925.

Smith, 1929 (B 797), p. 20, 30 -- Mining, including a dredge, 1926.
Smith, 1930 (B 810), p. 25, 40 -- Mining, including a dredge, 1927.
Smith, 1930 (B 813), p. 28, 47 -- Mining, including a dredge, 1928.
Smith, 1932 (B 824), p. 32-33, 52 -- Mining, including 2 dredges, 1929.

(Fairbanks Cr.) - Continued

Smith, 1933 (B 836), p. 32-33, 54 -- Mining, including 2 dredges, 1930.
Smith, 1933 (B 844-A), p. 32, 54 -- Mining, including 2 dredges, 1931.
Smith, 1934 (B 857-A), p. 30, 51 -- Mining, including 2 dredges, 1932.
Smith, 1934 (B 864-A), p. 34-35, 56 -- Mining, including 2 dredges, 1933.
Smith, 1936 (B 868-A), p. 35-36, 58 -- Mining, including 2 dredges, 1934.
Smith, 1937 (B 880-A), p. 39, 61 -- Mining, including 2 dredges, 1935.
Smith, 1938 (B 897-A), p. 46, 71 -- Mining, including a dredge, 1936.
Smith, 1939 (B 910-A), p. 46, 77 -- Mining (no dredge), 1937.
Smith, 1939 (B 917-A), p. 43-45 -- Mining, 1938. Preparatory work.
Smith, 1941 (B 926-A), p. 40 -- Mining, 1939.
Joesting, 1942 (TDM 1), p. 11 -- Placer stibnite, cassiterite, and scheelite present.
p. 32 -- Placer cassiterite common.
p. 37 -- Placer scheelite common; placer wolframite scarce.
p. 40 -- Source of wolframite not known.
Smith, 1942 (B 933-A), p. 39 -- Mining and preparatory work, 1940.
Wedow, Killeen, and others, 1954 (C 331), p. 6 -- Barren windrows of dredge tailings.
Byers, 1957 (B 1024-I), p. 188, 210 -- Scheelite in concentrates.
Chapman and Foster, 1969 (P 625-D), p. D7 -- Reference to B 525, p. 163.
Cobb, 1973 (B 1374), p. 128-129 -- One of most productive creeks in district; with tributaries produced gold worth more than $4,000,000.

(Fish Cr.) Antimony, Bismuth, Gold, Tin, Tungsten

Fairbanks district Livengood (20.1-20.5, 0.45-0.55)
MF-413, loc. 90 65°00'N, 147°14'-147°17'W

Summary: Stream into which Fairbanks Cr. flows. Mining, probably mainly drifting, began about 1909 where depth to bedrock was about 25 ft.; continued until about 1916. Dredging began in 1926, continued through 1935, and was resumed in 1940; other types of mining also reported, 1927-40. Stibnite, auriferous bismuth nuggets, cassiterite, and scheelite in concentrates. No data on total gold production. See also Vogt (Fairbanks quad.).

Prindle and Katz, 1909 (B 379), p. 191 -- Depth to bedrock about 25 ft.
Ellsworth, 1910 (B 442), p. 233 -- Mining above mouth of Fairbanks Cr., 1909.
Ellsworth and Parker, 1911 (B 480), p. 159 -- Increase in amount of mining, 1910. Some coarse gold; a nugget worth $84.25 was recovered.
Ellsworth, 1912 (B 520), p. 243 -- Mining, 1911.
Ellsworth and Davenport, 1913 (B 542), p. 208 -- Mining, 1912.
Prindle and Katz, 1913 (B 525), p. 102-103 -- Up to 1908 gold had been found in widely separated localities. Bismuth found with gold. More recent data quoted from B 480, p. 159.
p. 112-113 -- Production, 1910, worth $200,000. Gold worth $18.48 per oz.
Brooks, 1914 (B 592), p. 68 -- Mining, 1913 [not mentioned in detailed account of activities in 1913 by Chapin].
Eakin, 1915 (B 622), p. 233 -- Mining, 1914.
Smith, 1917 (BMB 142), p. 23 -- Mining (not extensive), 1915.
Smith, 1917 (BMB 153), p. 51 -- Mining, 1916.
Smith, 1929 (B 797), p. 20, 30 -- Dredge began operating, 1926.
Smith, 1930 (B 810), p. 25, 40 -- Mining, including a dredge, 1927.
Smith, 1930 (B 813), p. 28, 47 -- Mining, including a dredge, 1928.
Smith, 1932 (B 824), p. 32-33, 52 -- Mining, including a dredge, 1929.
Smith, 1933 (B 836), p. 32-33, 54 -- Mining, including a dredge, 1930.
Smith, 1933 (B 844-A), p. 33 -- Dredge did not operate, 1931.
Smith, 1934 (B 864-A), p. 56 -- Dredge operated, 1933.
Smith, 1936 (B 868-A), p. 58 -- Dredge operated, 1934.
Smith, 1937 (B 880-A), p. 61 -- Dredge operated, 1935.
Smith, 1938 (B 897-A), p. 46, 72 -- Mining, 1936; dredge did not operate.
Smith, 1939 (B 910-A), p. 46 -- Mining, 1937.
Smith, 1939 (B 917-A), p. 43-45 -- Mining, 1938. Preparatory work.
Smith, 1941 (B 926-A), p. 40-41 -- Mining, 1939. Preparatory work.
Joesting, 1942 (TDM 1), p. 11 -- Placer stibnite (one piece containing a small gold nugget), cassiterite, and scheelite are present.
p. 32 -- Placer cassiterite rare.
Smith, 1942 (B 933-A), p. 38-39, 67 -- Mining, including dredging, 1940.

(Fish Cr.) - Continued

Wedow, Killeen, and others, 1954 (C 331), p. 6-7 -- Barren windrows of dredge tailings. Small nuggets, mainly bismuth and silicon with fine flakes and wires of gold, had eU of 0.016%; U and Th not found by spectrographic examination.

Wedow, White, and others, 1954 (C 335), p. 1 -- Reference to C 331, p. 7.
p. 3 -- Radioactivity associated with bismuth nuggets may be of some significance; outcrops too poor to use portable meters effectively.

Byers, 1957 (B 1024-I), p. 188, 210-211 -- Scheelite in concentrates; derived from nearby lodes.

Hasler and others, 1973 (P 820), p. 98 -- Bismuth minerals in vein deposit on a headwater tributary. [This reference is probably to the Vogt prospect in the Fairbanks quad.]

(Franklin Cr.)(Gulch) — Gold

Tolovana district — Livengood (10.95, 9.7) approx.
MF-413, loc. 64 — 65°32'N, 148°30'W approx.

Summary: Shallow placer mined, probably in 1915.

Brooks, 1916 (B 642), p. 208 -- Shallow placer has been mined; tributary to Livengood Cr.

Frederick(s) — Antimony, Gold

Fairbanks district — Livengood (17.4, 0.7)
MF-413, loc. 13 — 65°01'N, 147°39'W

Summary: Mineralized shattered zone in schist cut by granitic dikes. Lode consists of quartz and sulfides and their oxidation products. Kidneys of stibnite, some coarsely columnar and some finely granular, more abundant near footwall than hanging wall. Developed by shafts and 3 levels of drifts. Some of ore very rich in gold; production, 1910-12. Stibnite mined, probably in 1916. Probable mill ore on dump in 1931. Includes references to Friederich.

Brooks, 1911 (B 480), p. 34-35 -- Two lodes, one 20 in. to 3-1/2 ft. wide with granite dike on hanging wall, other 3-1/2 to 8 ft. wide. Both carry gold (several tons of ore milled) and considerable stibnite, 1910.

Brooks, 1912 (B 520), p. 32 -- Some ore shipped. Very rich chute 8 in. wide in a 2-ft. vein. 100-ft. shaft and 120-ft. adit.

Smith, 1913 (B 525), p. 194-196 -- Shaft a little more than 300 ft. deep sunk in vein that strikes about N 70° W and dips N at angles from 70° at surface to 45° at bottom of shaft. Vein as much as 3-1/2 ft. wide; adjacent shattered schist also mineralized. Hanging wall is a smooth fault plane. Stibnite in ore; more abundant toward footwall. Drifts on 100-ft., 200-ft., and 300-ft. levels. Granitic rock encountered 50 ft. from shaft in crosscut into hanging wall. Decomposed granite dike in crosscut on 300-ft. level. A second shaft follows the same vein 100 ft. Mineralization appears to have followed a shattered zone.

Smith, 1913 (B 542), p. 181-182 -- Same as B 525.

Chapin, 1914 (B 592), p. 345 -- Not in operation in 1913.

Brooks, 1916 (B 649), p. 17-18 -- Reference to B 525, p. 195-196. Kidneys of stibnite more abundant near footwall than near hanging wall. Some stibnite coarsely columnar and some finely granular. Stibnite partly oxidized at 100-ft. (lowest) level in mine.

Smith, 1917 (BMB 153), p. 52 -- Antimony ore mined and shipped, 1916.

Hill, 1933 (B 849-B), p. 80-81 -- Idle in 1931; no work on property since 1912 [a possible error; BMB 153, p. 52, reported mining in 1916]. About 100 tons of mill ore (?) on dump; grab samples assayed $1.46 and $2.83 a ton. Reference to B 525, p. 194-196.

Joesting, 1942 (TDM 1), p. 8 -- Stibnite present; reference to B 649.

Ebbley and Wright, 1948 (RI 4173), p. 38 -- Antimony ore has been produced.

Killeen and Mertie, 1951 (OF 42), p. 14 -- Antimony ore has been produced.
p. 23-24 -- References to B 480, p. 34-35; B 525, p. 195. No stibnite could be found around workings or dumps in 1942.

Chapman and Foster, 1969 (P 625-D), p. D14 -- "Mineralogy" column lists quartz, stibnite, pyrite, arsenopyrite, antimony-arsenic oxides, limonite. Other data from above references.

Mulligan, 1974 (IC 8626), p. 11 -- Data from P 625-D, p. D14; some stibnite produced during World Wars I and II; mine now inactive; claims unpatented.

Freeman & Scharf	Gold, Lead, Silver
Fairbanks district	Livengood (18.0, 0.45)
MF-413, loc. 20	65°01'N, 147°35'W

Summary: Vein carries considerable silver-bearing galena and gold. No other data.

Brooks, 1912 (B 520), p. 32 -- In 1911 some work was done on a vein. Silver-bearing galena carries some gold.

Smith, 1913 (B 525), p. 198 -- Vein carries considerable silver-bearing galena, as well as gold.

Smith, 1913 (B 542), p. 184 -- Same as B 525.

Chapman and Foster, 1969 (P 625-D), p. D13 -- Reference to B 525, p. 198, and further data on ownership.

(Gertrude Cr.) Gold

Tolovana district Livengood (10.9-11.1, 9.45)
MF-413, loc. 76 65°32'N, 148°29'-148°30'W

Summary: Bedrock near mouth is chert. Bench and creek placers. Concentrates contain gold, magnetite, ilmenite, picotite, and zircon. Placer mining, 1915-18, and 1930 to as recently as 1940. A lode prospect is on silica-carbonate rock that contains minor amounts of gold. See also (Glen Gulch).

Brooks, 1916 (B 642), p. 208 -- Shallow placers have been mined, 1915.
Brooks, 1918 (B 662), p. 56 -- Mining, 1916.
Mertie, 1918 (B 662), p. 256 -- Mining, 1916.
p. 269 -- Mining, 1916. Ground about 25 ft. deep. Bedrock chert near mouth. Concentrates contain gold, magnetite, ilmenite, picotite, and zircon.
Martin, 1920 (B 712), p. 41 -- Mining, 1918.
Overbeck, 1920 (B 712), p. 181 -- No mining on creek, 1918. Bench at mouth was hydraulicked; 12,000 ft. of bedrock cleaned.
Smith, 1933 (B 836), p. 35-36 -- Mining, 1930.
Smith, 1933 (B 844-A), p. 35 -- Mining, 1931.
Smith, 1934 (B 857-A), p. 34 -- Mining, 1932.
Smith, 1934 (B 864-A), p. 39 -- Mining, 1933.
Smith, 1936 (B 868-A), p. 39-40 -- Mining, 1934.
Smith, 1937 (B 880-A), p. 44 -- Mining, 1935.
Smith, 1938 (B 897-A), p. 52 -- Mining, 1936.
Smith, 1939 (B 910-A), p. 53 -- Mining, 1937.
Smith, 1939 (B 917-A), p. 53 -- Mining, 1938.
Smith, 1941 (B 926-A), p. 49 -- Mining, 1939.
Smith, 1942 (B 933-A), p. 46 -- Mining, 1940.
Foster, 1968 (C 590), p. 1-2 -- Has been major gold production. Lode prospect is massive, iron-stained silica-carbonate rock that contains minor amounts of gold.
p. 10-11 -- Analysis of sample from lode prospect showed 0.9 ppm Au.
Koschmann and Bergendahl, 1968 (P 610), p. 31 -- Reference to B 662, p. 256.

Gilmer

Antimony, Gold, Lead, Silver

Fairbanks district
MF-413, loc. 14

Livengood (17.4, 0.5)
65°01'N, 147°39'W

Summary: Fracture or shear zone that has been traced for 600-700 ft. is 3-5 ft. wide and contains shoots and kidneys of stibnite as much as 4 ft. across. Some fractured quartz cemented by stibnite. Some galena (argentiferous?) also present. Ore samples averaged 0.75 oz. gold and from a trace to 1.96 oz. silver per ton. A little antimony ore was mined in 1915. In 1942 about 2 tons of sacked high-grade stibnite was on property.

Brooks, 1916 (B 642), p. 29 -- Antimony ore mined on a small scale, 1915.

Brooks, 1916 (B 649), p. 17 -- Antimony ore mined on a small scale, 1915.

p. 29-30 -- Mica schist country rock strikes N 80° E, dips 80° S. Antimony deposits in fracture zone that strikes N 60° E to due E and dips 60°-70° NW. Has been traced 600-700 ft.; greatest width 3-5 ft. Stibnite in shoots (as much as 4 ft. in diameter) and kidneys along shear zone. Ore appears to contain small quantities of galena and grains of quartz. Some fractured quartz cemented by stibnite.

Koesting, 1942 (TDM 1), p. 8, 10 -- Stibnite present; reference to B 649. In 1941 workings were all caved. About 2 tons of sacked high-grade ore; lower grade stibnite on waste dumps. Ore considerably oxidized. Samples of sacked ore averaged 0.75 oz. Au per ton; from a trace to 1.96 oz. Ag per ton.

Ebbley and Wright, 1948 (RI 4173), p. 38 -- Antimony ore has been produced.

Killeen and Mertie, 1951 (OF 42), p. 12 -- Sample contained 46.53% Sb.

p. 14 -- Significant quantities of antimony ore have been mined.

p. 23 -- Fracture zone in schist trends N 80° E, dips 40° N, varies from 1 to 5 ft. in width; contains irregularly distributed kidneys of stibnite as much as 4 ft. thick. [Data not the same as in cited reference (B 649, p. 29-30)]. Workings inaccessible in 1942; about 6 tons of sacked ore on property.

p. 41 -- Mined, but unshipped, ore on property.

Chapman and Foster, 1969 (P 625-D), p. D14 -- Auriferous (0.2-0.74 oz. Au per ton) massive stibnite in fracture or shear zone in mica schist. Minerals include quartz, stibnite, galena, calcite, and oxides. Gold and antimony have been produced; silver present.

Mulligan, 1974 (IC 8626), p. 12 -- Same data as P 625-D, p. D14. Inactive; claims not patented.

Gilmore

Fairbanks district
MF-413, loc. 48

Livengood (19.85, 1.6)
65°04'N, 147°19'W

Summary: Tunnel driven from Gilmore mill to intersect workings of Mizpah and Ohio (Fairbanks Cr.) mine. See also: Mizpah, Ohio (Fairbanks Cr.).

Brooks and Martin, 1921 (B 714), p. 81 -- Some development, 1919. [This may really have been at Ohio (Fairbanks Cr.) or Mizpah.]

Hill, 1933 (B 849-B), p. 108 -- Tunnel at Gilmore mill said to have connected with Mizpah and Ohio (Fairbanks Cr.) workings. In 1931 was caved 450 ft. from mouth.

Killeen and Mertie, 1951 (OF 42), p. 36 -- "..at the mouth of this tunnel in 1942 there were 30 sacks of lead-copper antimony ore."

(Glen Gulch) Gold

Tolovana district Livengood (11.0, 9.4)
MF-413, loc. 67 65°32'N, 148°29'W

Summary: Fine, angular gold (a few pieces worth $1, old price) in 2-4 ft. of gravel on silicified limestone bedrock. Mining in 1916, 1931-34. See also (Gertrude Cr.)

Mertie, 1918 (B 662), p. 269 -- Mining, 1916. Bedrock silicified limestone. Gold fine, angular, and shotty; a few pieces worth $1. 2-4 ft. of gravel beneath 1-25 ft. muck.
Smith, 1933 (B 844-A), p. 35 -- Mining, 1931.
Smith, 1934 (B 857-A), p. 34 -- Mining, 1932.
Smith, 1934 (B 864-A), p. 39 -- Mining, 1933.
Smith, 1936 (B 868-A), p. 39 -- Mining, 1934.

Goepfert

Gold, Lead

Fairbanks district
MF-413, loc. 30

Livengood (18.75, 0.9)
65°02'-65°03'N, 147°28'W

Summary: References confusing. At one prospect a short adit follows a thin auriferous quartz vein in granite. At another a short tunnel was driven on a ledge containing galena. No mining reported. Includes references to Goepfert Galena.

Smith, 1913 (B 525), p. 201-202 -- Short adit driven in granite near contact with schist; follows 2-in. quartz stringer said to carry considerable galena.

Smith, 1913 (B 542), p. 187-188 -- Same as B 525.

Chapman and Foster, 1969 (P 625-D), p. D12 -- References to B 525, p. 201-202.

(Gold Mountain Cr.)	Gold (?)
Tolovana district	Livengood (?) NE 1/4 SE 1/4 quad. (?)

Summary: Prospects reported to have been found in 1910. No further data in the cited or more recent reports.

Ellsworth and Parker, 1911 (B 480), p. 165 -- Prospects found; upper Beaver Cr. basin; newly named creek; location not known to writers; 1910.

Prindle and Katz, 1913 (B 525), p. 151 -- Quotation from B 480, p. 165.

(Goodluck Cr.) Chromite, FM, Gold, Mercury, RE, Tin

Tolovana district
MF-413, locs. 70, 71

Livengood (11.5-11.7, 9.75-9.8)
65°33'N, 148°24'-148°25'W

Summary: Chert and silicified limestone apparently separated by a small body of diorite or greenstone. In 1916 or earlier a shaft sunk 60 ft. to bedrock found some gold just above bedrock. Mining reported in 1918, 1934, and 1939. Concentrates contain gold, chromite, chrome spinel, limonite, hematite, magnetite, ilmenite, cinnabar, cassiterite, and a niobium-titanium-uranium-rare earth mineral of the euxenite-polycrase series. Includes references to (Lucky Cr.) (Gulch) if obviously to this stream.

Mertie, 1918 (B 662), p. 268 -- No mining as of 1916. One shaft has been sunk 60 ft. to bedrock (brecciated dark-colored flint); some gold just above bedrock. Some gold in angular wash near head. Bedrock SW of creek is silicified limestone; NE of creek is dark chert; apparently separated by greenstone.

Martin, 1920 (B 712), p. 41 -- Mining, 1918, on Lucky Cr.

Smith, 1936 (B 868-A), p. 39-40 -- Mining, 1934.

Smith, 1941 (B 926-A), p. 49 -- Drift mining, 1939.

Loesting, 1942 (TDM 1), p. 17 -- Chromite and chrome spinels abundant in Lucky Gulch; probably derived from serpentine in Middle Devonian basic volcanics.

Wedow, Killeen, and others, 1954 (C 331), p. 11 -- Old concentrate sample contains 0.031 to 0.048 percent eU. Radioactivity due to black, pitchy-appearing mineral with conchoidal fracture.

Wedow, White, and others, 1954 (C 335), p. 2-3 -- Reference to C 331, p. 11. Old sample could not be duplicated. Bedrock in basin is chiefly chert and silicified Mississippian limestone. Small body of diorite on greenstone near head (may be dike between chert and limestone). Old sample contained mineral in euxenite-polycrase series (niobates and titanates of rare-earth elements and uranium). Minerals in concentrates from samples of old placer dumps included limonite, hematite, magnetite, epidote, spinel, chromite, ilmenite, gold, cinnabar, and cassiterite.

Cobb, 1973 (B 1374), p. 176 -- Scheelite and/or cassiterite and a niobium-titanium-uranium-rare earth mineral found.

Goodwin

Antimony

Fairbanks district
MF-413, loc. 10

Livengood (16.9, 0.3)
65°00'N, 147°45'W

Summary: Lenses of massive stibnite in crushed schist; also some pyrite. Same ore zone as at Scrafford. 90 ft. of shaft (vertical and inclined) sunk. According to some references some ore was mined and shipped in 1916; according to another none was. A little high-grade ore on dump in 1942. Some production (amount not stated), 1968-69. Includes references to Eagle, (Eagle Cr.).

Smith, 1917 (BMB 153), p. 52 -- Antimony ore mined and shipped from Eagle mine, 1916.

Hill, 1933 (B 849-B), p. 157 -- Stibnite shipped in 1916. 85-ft. inclined shaft and 60-ft. tunnel. Lenses of stibnite in crushed, sheared schist with pyrite. Ore zone strikes N 80° E, dips 45° S. Same zone as at Scrafford.

Joesting, 1943 (TDM 2), p. 10 -- Goodwin reports that in 1918 he found kidneys of stibnite 3-4 ft. wide at a depth of 90 ft. in an inclined shaft east of Eagle Cr. Shaft was sunk through zone of soft gouge and brecciated quartz and schist. Same zone as at Scrafford. Small amount of high-grade stibnite on dump.

Killeen and Mertie, 1951 (OF 42), p. 12 -- Sample of stibnite ore from mine dump contained 32.95% Sb.

p. 22-23 -- 4 lenses of stibnite, each of about 2 cu. ft. (500 lbs.). No ore produced because of drop in price in 1916. [This does not agree with BMB 153, p. 52; B 849-B, p. 157]. A few hundred pounds of ore remain on dump, Stibnite said also to have been found in nearby tunnel.

Chapman and Foster, 1969 (P 625-D), p. D14 -- References to B 849-B, p. 157; OF 42, p. 22-23.

Mulligan, 1974 (IC 8626), p. 12 -- Lenses of massive stibnite in crushed schist. Development and production, 1968-69; now idle. Claims unpatented.

Governor

Gold

Fairbanks district
MF-413, loc. 49

Livengood (19.95, 1.7)
65°04'N, 147°18'W

Summary: Shaft sunk on vein. Granite (on dump?) said to carry $10-$15 a ton in gold (old price).

Brooks, 1912 (B 520), p. 31 -- 30-ft. shaft sunk, 1911. Ledge 1 ft. wide reported to have been exposed.

Smith, 1913 (B 525), p. 160 -- 70-ft. shaft sunk on a nearly vertical vein trending N 80° W. Fine-grained granite (?) [probably on dump] said to carry $10-$15 in gold per ton. Many small vugs; apparently formed by leaching out of sulfides. As of 1912, had been no work "for some time."

Smith, 1913 (B 542), p. 145 -- Same as B 525.

Chapman and Foster, 1969 (P 625-D), p. D7 -- Reference to B 525, p. 160.

Grace E #1 — Gold

Fairbanks district — Livengood (19.3, 1.7)
65°04'N, 147°24'W

Summary: Free-milling gold, arsenopyrite, and minor pyrite in 2 small quartz veins in schist. Probably the same ground as Harris & Brown or Sky High.

Forbes and others, 1968 (OF 324), p. 8 -- Prospect opened on 2 small quartz veins that carry 2-3 percent sulfides (including arsenopyrite and minor pyrite) and free-milling gold. 1.30 ppm gold assay from unaltered schist 9 ft. into hanging wall.

Grace E #2 — Gold

Fairbanks district — Livengood (19.2, 1.55)
65°04'N, 147°24'W

Summary: Auriferous quartz veins; gold also in schist wall rock. May be the same ground as Alaska.

Forbes and others, 1968 (OF 324), p. 7-8 -- Analyses of grab and channel samples from auriferous quartz veins and adjacent schists showed gold values greater than 0.5 ppm 10 ft. into footwall; in hanging wall concentrations ranged from 0.63 to over 2.50 ppm gold.

Griffin

Gold

Tolovana district
MF-413, loc. 3

Livengood (10.65, 9.1)
65°31'N, 148°32'W

Summary: Massive, sulfide-bearing, green-stained, silica-carbonate-talc rock with quartz veining contains as much as 3.9 ppm gold (determined by atomic absorption). Caved adit and pits at property. See also (Lillian Cr.)

Foster and Chapman, 1967 (OF 275), loc. 8 -- Caved adit and pits expose green-stained quartz and silicified country rock. Arsenopyrite questionably identified. "Metals" column lists gold and traces of silver and nickel.

Foster, 1968 (C 590), p. 2 -- Massive, sulfide-bearing, green-stained silica-carbonate-talc rock veined by quartz contains as much as 3.9 ppm Au.

p. 10-11 -- Samples contained as much as 3.9 ppm Au (atomic absorption), 1,000 ppm Ni, and 1,000 ppm Cr. Fire assay of one sample showed 5.6 ppm Au.

Foster, 1968 (OF 322), p. 2 -- Massive, sulfide-bearing, green-stained silica-carbonate-talc rock with quartz veining crops out near lithologically similar adit and pit tailings [sic]; contain as much as 3.9 ppm gold. Nature of contact between pyritiferous metasedimentary country rock and silica-carbonate-talc rock is not known.

p. 8 -- Analytical data on 21 samples.

p. 17 -- Descriptions of samples.

(Grouse Cr.) Gold (?)

Rampart district Livengood
NW 1/4 NE 1/4 quad.

Summary: Prospects reported in 1915. No other data.

Brooks, 1916 (B 642), p. 209 -- Prospects reported, 1915.

(Gunnison Cr.) Gold, Tungsten

Rampart district Livengood (2.3, 7.9)
MF-413, loc. 61 65°27'N, 149°41'W

Summary: Placer mining was reported in 1904 and 1918 and may have been carried on in a few other years. A concentrate sample contained magnetite, ilmenite, picotite, zircon, scheelite, garnet, gold, pyrite, rutile and other nonmetallic minerals.

Prindle and Hess, 1906 (B 280), p. 48 -- Said to have been productive mining in 1904.
Hess, 1908 (B 337), p. 96 -- Same as B 280, p. 48.
Martin, 1920 (B 712), p. 41 -- Mining, 1918.
Overbeck, 1920 (B 712), p. 182 -- 4 men worked part of summer, 1918.
Mertie, 1934 (B 844-D), p. 192 -- Placer mining was done for several years. Concentrate sample contained magnetite, ilmenite, picotite, scheelite, and pyrite.
Waters, 1934 (B 844-D), p. 235-236 -- Black sand part of a concentrate sample contained magnetite, ilmenite, picotite, zircon, scheelite, garnet, gold, pyrite, rutile, and other nonmetallic minerals.
Joesting, 1942 (TDM 1), p. 39 -- Placer scheelite common; reference to B 844-D, p. 235.

Harris & Brown

Antimony, Gold (?)

Fairbanks district
MF-413, loc. 44

Livengood (19.4, 1.5)
65°04'N, 147°23'W

Summary: Brecciated quartz fragments cemented by matrix of crushed quartz or of stibnite. Lead-antimony sulfides may also be present.

Smith, 1913 (B 525), p. 175-176 -- 50-ft. shaft sunk on a steeply dipping vein that trends N 70° E. Quartz brecciated and fragments cemented in matrix of crushed quartz. A similar rock with matrix of stibnite also on claim. Sulfides deposited in late stage of vein formation.

Smith, 1913 (B 542), p. 162 -- Same as B 525.

Killeen and Mertie, 1951 (OF 42), p. 32 -- Reference to B 525, p. 175-176.

Chapman and Foster, 1969 (P 625-D), p. D9 -- Antimony and lead in "Metals" column. Quartz, stibnite, jamesonite (?), arsenopyrite (?), zinkenite (?), and pyrite in "Mineralogy" column.

Herschberger, Beall & Phipps — Gold

Fairbanks district — Livengood (18.85, 1.5) approx.
MF-413, loc. 38 — 65°04'N, 147°27'W

Summary: Some rich ore (assumed to be gold) taken out, 1910. On Willow Cr.

Brooks, 1911 (B 480), p. 34 -- Group of claims on Willow Cr. Some rich ore taken out in course of development work, 1910. No data on thickness of veins.
Chapman and Foster, 1969 (P 625-D), p. D11 -- Reference to above.

(Hess Cr.) Gold

Rampart district Livengood
N 1/2 quad.

Summary: Gold found in basin as early as 1892 and a little recovered from a gulch near head of creek in 1893. Gold has been found on bars 40 mi. below forks. Has been prospecting, but no mining except on South Fork. Includes reference to (Mike Hess Cr.); see also (Hess Cr., S. Fork).

Brooks, 1916 (B 642), p. 201 -- Placer gold found in Hess Cr. basin as early as 1892.

p. 208 -- Auriferous gravels seem to be widely distributed in basin. Gold has been found on bars 40 mi. below forks of Hess Cr.

Smith, 1917 (BMB 153), p. 52 -- Prospecting, 1916.

Brooks and Martin, 1921 (B 714), p. 82 -- Placer gold reported to have been found in Mike Hess basin.

Mertie, 1934 (B 844-D), p. 165 -- A little mining in gulch near head, 1893.

Cobb, 1973 (B 1374), p. 165 -- John Minook found gold, 1893. Some mining in a headwater gulch (which one is not known), 1893.

(Hess Cr., S. Fork) Gold

Rampart district Livengood
W 1/2 SW 1/4 quad.

Summary: Some of gravel carries gold, but not in continuous pay streaks.
See also: (Alabam Cr.), (Moose Cr.).

Brooks, 1916 (B 642), p. 63 -- Good prospects in Hess Cr. basin adjacent to Livengood Cr. [This is South Fork of Hess Cr.]

Brooks, 1916 (B 642), p. 207 -- Prospecting holes have been sunk as much as 100 ft. Gold found in 80 ft. of gravel in one hole; no concentration on bedrock. Bench gravels opposite Willow Cr. said to be auriferous.

Mertie, 1918 (B 662), p. 259 -- Placer gold present, but not in continuous pay streaks.

p. 272-273 -- No continuous pay streaks, but some productive pockets. Headwaters of South Fork and of Livengood Cr. have each pirated the other at least once. May be a bedrock source of gold on Goldstream Cr. [headwater part of South Fork].

Hidden Treasure (near Fairbanks) Gold

Fairbanks district
MF-413, loc. 28

Livengood (18.55, 1.3)
65°03'N, 147°30'W

Summary: Free gold in gash veins in fault zone. Tunnel 250 ft. long had caved by 1931. Enough ore for a mill test was mined about 1910.

Brooks, 1911 (B 480), p. 35 -- Three-foot vein developed by 140-ft. tunnel; high gold values. Some ore has been milled (1910).

Chapin, 1914 (B 592), p. 342-343 -- Mineralized fault zone with gash veins in fractures; quartz discontinuous. Gold can be panned from quartz and schist. Tunnel 250 ft. long. Ore shipped for mill test; no results because of loss of amalgam.

Hill, 1933 (B 849-B), p. 82 -- Tunnel caved and dump overgrown, 1931.

Chapman and Foster, 1969 (P 625-D), p. D11 -- Reference to B 592, p. 342-343, and data on claim names, etc.

Hirschberger & Zimmerman	Gold
Fairbanks district	Livengood (18.85, 0.9)
MF-413, loc. 33	65°02'N, 147°27'W

Summary: Ore shipped, 1911. Vein said to be 1 to 5 ft. wide. No other data. See also Zimmerman (near Twin Cr.).

Brooks, 1912 (B 520), p. 32 -- Ore shipped in 1911 from a vein said to be 1-5 ft. wide.
Chapman and Foster, 1969 (P 625-D), p. D12 -- Reference to B 520, p. 32.

Hi-Yu (Mining Co.) — Antimony, Gold, Lead, Silver, Zinc

Fairbanks district — Livengood (20.1, 1.75)
MF-413, loc. 51 — 65°04'N, 147°17'-147°18'W

Summary: Many quartz veins (some along faults and most offset by faults) contain free gold and sulfides including stibnite, argentiferous galena, arsenopyrite, pyrite, and sphalerite. Some oxidation products. Some silicified schist between veins might constitute low-grade gold ore. Considerable surface enrichment in places; $130 in gold (old price) per ton for some ore. Stibnite in kidneys and irregular veins. Stibnite has been mined, but this is primarily a gold mine. Well over a mile of workings. Operated from 1913 to 1940 except for 1 or 2 years. Mill production through 1931 was about $252,000 from 8,200 tons of ore. After 1936 sulfide concentrates were shipped to smelter. Includes references to: Crites & Feldman, Dorando, Feldman, Gibbs, Helen S., Insurgent, Nars (, Anderson & Gibbs), Saucy, Summit, Sunnyside (near Fairbanks), Teddy R, Wolf (Too Much Gold Cr.), Yankee Doodle.

Smith, 1913 (B 525), p. 156-159 -- At Crites & Feldman part of property, nearly vertical veins 1 to 3 ft. wide cut across lamination of schist; offset by faults. One vein is composed mainly of quartz with some stibnite and visible free gold. Where 2 veins join, a large mass of nearly pure well crystallized stibnite forms a lens in places more than 3 in. thick. In veins are minor amounts of argentiferous galena, arsenopyrite, pyrite, and sphalerite. Near surface, stibnite has been oxidized. As of 1912 only surface prospecting. At Nars, Anderson & Gibbs part of property, the same or parallel veins contain somewhat less stibnite. Hanging wall of main vein marked by a fault; some of sulfide mineralization was earlier than the faulting. Developed by 100-ft. incline and short drifts. Mill tests have yielded about $60 per ton. 6-1/2 tons ore milled, 1911-12.

Smith, 1913 (B 542), p. 142, 144-145 -- Same as B 525.

Chapin, 1914 (B 592), p. 327-329 -- Crites & Feldman part of property developed by tunnel 450 ft. along vein; offset a short distance to right by a nearly vertical fault; raise to surface. Variation in gold content; highest where sulfides are most abundant. Considerable surface enrichment; some ore ran $130 a ton. Surface trenching and hand picking of ore in 1912. On Teddy R claim is 150-ft. tunnel on auriferous quartz vein; ore has been shipped.

Eakin, 1915 (B 622), p. 236-237 -- Considerable development and some mining, 1914.

Brooks, 1916 (B 642), p. 60 -- Mine and mill operated throughout 1915.

Brooks, 1916 (B 649), p. 37-38 -- References to B 525, p. 156-159, and B 592, p. 327-328. Shear zone on Wolf and Saucy claims contains 2 mineralized zones that contain quartz, pyrite, gold, and irregular shoots and kidneys of stibnite.

Smith, 1917 (BMB 142), p. 23 -- Mine and mill operated, 1915.

Hi-Yu (Mining Co.) - Continued

Mertie, 1918 (B 662), p. 404-405 -- At Crites & Feldman new tunnel was driven 350 ft. on vein, which split there, one dipping steeply N and the other steeply S. Each followed 125-150 ft.; one 10-12 in. thick; other (and richer) 4-6 in. thick. Gold, stibnite, arsenopyrite, and sphalerite in thinner vein. Another vein of low-grade gold quartz (strikes E, dips 80° N) contains kidneys of stibnite.

p. 407-408 -- At Nars, Anderson & Gibbs 100 tons of ore reported to have been mined in 1916.

Chapin, 1919 (B 692), p. 321 -- Crites & Feldman mine and mill operated, 1917.

Martin, 1920 (B 712), p. 39 -- Ore mined and milled, 1918.

Brooks and Martin, 1921 (B 714), p. 81 -- Development and a little production, 1919.

Brooks, 1922 (B 722), p. 45 -- A little work; some ore was mined and miller, 1920.

Brooks, 1923 (B 739), p. 30 -- Continued work on an adit; a little incidental production, 1921.

Brooks and Capps, 1924 (B 755), p. 35 -- Mining and milling, 1922.

Brooks, 1925 (B 773), p. 15 -- Mining, 1923.

Smith, 1926 (B 783), p. 9 -- Mining, 1924.

Moffit, 1927 (B 792), p. 12 -- Mining, 1925. More than 4,200 ft. of adits; ground extensively faulted. 4 men mining. As much as 300 ton of ore a month milled.

Smith, 1929 (B 797), p. 13 -- Mining, 1926.

Smith, 1930 (B 810), p. 14-15 -- A little ore recovered during development work, 1927.

Smith, 1930 (B 813), p. 17 -- Mining, 1928.

Smith, 1932 (B 824), p. 20 -- Mining, 1929.

Hill, 1933 (B 849-B), p. 49 -- $10 ore can be worked at a profit.

p. 52 -- One of principal lode-gold producers in district.

p. 63 -- Some silicified schist with closely spaced quartz veinlets are rich enough to mine over widths of 8-12 ft.

p. 70 -- Some oxidation products in ore at lowest levels reached.

p. 75 -- Data on claim names and ownership.

p. 104 -- One of 2 producing mines in Fairbanks Cr. area, 1931.

p. 108-113 -- Operated continuously, 1913-31. Production of mill before 1931 was about $252,000 from 8,200 tons of ore. Well over a mile of workings, plus stopes; other open cuts, prospect pits, etc. Helen S. vein has average strike of N 65° W and is vertical or dips 80°-85° S; average width 10-12 in. Hi-Yu vein is similar; strikes N 75° W. Many faults, but none with more than 20 ft. of offset; all movement seems to have been normal. Many data on resource calculations and on mills. [Pl. 7 is a mine map.]

Smith, 1933 (B 836), p. 20 -- No production, 1930.

Smith, 1933 (B 844-A), p. 19 -- Development work, 1931.

Smith, 1934 (B 864-A), p. 20 -- Mining, 1933.

Smith, 1936 (B 868-A), p. 20 -- Mining, 1934. New underground development work and improved ore handling and milling practices made Hi-Yu the second largest producer in Pedro Dome area.

Hi-Yu (Mining Co.) -- Continued

Smith, 1937 (B 880-A), p. 20-21 -- Mining, 1935. Second largest producer in district.

Smith, 1938 (B 897-A), p. 21 -- Second largest producer in district, 1936. Sulfide concentrates shipped outside to smelter.

Smith, 1939 (B 910-A), p. 23-24 -- Mining, 1937.

Smith, 1939 (B 917-A), p. 25-26 -- Mining, 1938; ore body faulted and not found by end of year.

Smith, 1941 (B 926-A), p. 22-23 -- Mining, 1939.

Joesting, 1942 (TDM 1), p. 8 -- Stibnite present; reference to B 649.

p. 10 -- Stibnite vein about 20 in. wide discovered (or rediscovered) in 1941. Coarsely crystalline bladed stibnite, thin encrustation of oxides, a little fine-grained vitreous quartz. 0.01 oz. Au and 1.0 oz. Ag per ton.

Smith, 1942 (B 933-A), p. 22-23 -- Mining, 1940.

Joesting, 1943 (TDM 2), p. 7 -- Intermittent prospecting of stibnite occurrence described in TDM 1, p. 10, during 1942. About 15 tons of ore found.

Killeen and Mertie, 1951 (OF 42), p. 12 -- Samples of stibnite ore contained 56.12% and 65.84% Sb.

p. 14 -- Antimony ore has been produced.

p. 37-38 -- References to B 525, p. 157-158; B 662, p. 405; B 849-B, p. 108-113. Mine idle in 1942; small pile of stibnite ore at mouth of caved upper tunnel. Stibnite exposed in prospect pits several hundred feet above this tunnel; vein strikes E, has irregular steep dip; zone about 4 ft. wide, with half fine-grained quartz and half stibnite.

p. 41-42 -- Some already-mined ore available (1942). Some ore in exposed lenses or stringers.

Burand, 1968 (GC 13), p. 15 -- One of 3 most productive gold mines in district. Most easterly productive mine.

Chapman and Foster, 1969 (P 625-D), p. D7 -- References to above reports.

Hoel Bros., Johnson & Witmer — Gold

Fairbanks district — Livengood (17.0, 0.7)
MF-413, loc. 11 — 65°01'N, 147°42'W

Summary: Low-grade gold (quartz) deposit developed by 280 ft. of shaft and 60 ft. of drift. No record of production.

Brooks, 1912 (B 520), p. 32 -- Reported (1910) 280 ft. of shaft and 60 ft. of drift. 30-ft. ledge with low gold values and a richer vein 8 in. to 2 ft. wide.
Smith, 1913 (B 525), p. 196 -- Quotation from B 520, p. 32.
Smith, 1913 (B 542), p. 182 -- Same as B 525.
Chapman and Foster, 1969 (P 625-D), p. D14 -- References to above.
Mulligan, 1974 (IC 8626), p. 12 -- Essentially the same as above. Claims apparently abandoned.

Homestake (Mining Co.)

Antimony, Copper, Gold, Lead, Silver, Zinc

Fairbanks district
MF-413, loc. 45

Livengood (19.45, 1.65)
65°04'N, 147°22'W

Summary: Several mines have operated on various parts of this property at various times from 1910 to as recently as 1968. Deposits are quartz veins with gold and sulfide minerals, including jamesonite, stibnite, galena, freibergite, pyrite, chalcocite, chalcopyrite, and sphalerite. Some of gold ore was quite rich ($112 in free gold ($20.67 per fine ounce) a ton). Workings consisted of about half a mile of crosscuts and drifts, an inclined shaft, and stopes. Mines were very wet, so very little mining could be done below tunnel level. Gold, silver, and antimony have been produced; most if not all of gold in sulfide concentrates was lost. Includes references to: Christina, Horton & Solomon, Jamesonite, Kawalita, Keystone, Nordale, Rexall.

Brooks, 1911 (B 480), p. 34 -- Some rich ore taken out by Horton and Solomon, 1910.

Brooks, 1912 (B 520), p. 31 -- On Rexall claim development through 1911 included 177 ft. of crosscut and drift. Vein 8 in. to 2 ft. 8 in. wide. Considerable ore has been shipped to custom mill.

Smith, 1913 (B 525), p. 168, 170-171 -- At Homestake mine 5 veins that dip about 45° southward on surface. Being explored by tunnel (over 650 ft. long in 1912). One vein 3 in. to 1 ft. wide drifted on; 1,300 lbs. selected ore yielded $308 in free gold; concentrates said to contain considerable gold and silver. Antimony, copper, and iron sulfides present; galena practically absent. On Rexall claim mining began on quartz vein 3-5 ft. wide, striking N 25° E, dipping about 25° W; gold content low. Smaller, richer vein offset along large vein. Small vein 1 ft. to 18 in. wide; opened up by drifts and raises preparatory to stoping. 25 tons of ore yielded average of $112 a ton in free gold only. Large vein returned $37 a ton.

Smith, 1913 (B 542), p. 153, 155, 157 -- Same as B 525.

Chapin, 1914 (B 592), p. 325 -- A few crystals of primary chalcocite and derived carbonates in vein.

p. 331, 333-335 -- At Homestake most work has been done on a vein that strikes E and dips 45° S; some of vein barren; some shoots and pockets of very rich ora. Several hundred feet of drifts (from a development tunnel 750 ft. long) in main vein and several others. Vein material mainly iron-stained crystalline quartz with many open spaces; small amounts of stibnite, pyrite, and chalcocite; richest (in gold) parts of vein are those with chalcocite. Visible gold rare. At Rexall most work was on a vein 12-18 in. wide; quartz with few sulfides; drifted on for 500 ft.; stopes blocked out; several mined out.

Eakin, 1915 (B 622), p. 237-238 -- Small production from Homestake, 1914 Rexall leased to new operators.

Homestake (Mining Co.) - Continued

Brooks, 1916 (B 642), p. 60 -- Work reported, 1915.
Brooks, 1916 (B 649), p. 36-37 -- Reference to and quotation from B 592, p. 333-334.
Smith, 1917 (BMB 142), p. 23 -- Mining, 1915. Rich vein 5 in. wide; 50 tons of ore said to have milled out over $100 a ton.
Mertie, 1918 (B 662), p. 406-407 -- 80 tons of ore mined, 1916. Considerable variation (25°) in strike of vein. Stibnite and small amounts of pyrite and chalcocite present.
Hill, 1933 (B 849-B), p. 75 -- Data on claim names and ownership, 1931.
p. 101-102 -- Principal development is a crosscut tunnel said to be 800 ft. long; cut a quartz vein 2-3 in. thick (strike N 70° E, dip 40° S) on which drifts were turned and ore (about $60,000 worth) stoped. References to B 525, p. 168-170; B 592, p. 331-335.
Joesting, 1942 (TDM 1), p. 8 -- Stibnite present; reference to B 649.
Joesting, 1943 (TDM 2), p. 8 -- Stibnite found "several years ago." Plans to mine this ore in 1942 were abandoned because of high lead content.
Killeen and Mertie, 1951 (OF 42), p. 12 -- Sample of stibnite ore contained 45.64% Sb.
p. 14 -- Antimony ore has been produced.
p. 33 -- References to B 525, p. 168; B 592, p. 334; B 662, p. 407. Workings inaccessible in 1942. 50 lbs. of stibnite ore scattered around main tunnel mouth.
Saunders, 1963 (Vein on Kawalita claim mined, 1963; ore milled at Hi-Yu mill. Inclined shaft begun on vein; vein faulted off 25 ft. from collar; found again at 50-ft. level. Some ore stoped. Most of ore from open cut.
Burand, 1968 (GC 13), p. 15 -- Lead-silver vein being developed; ore is jamesonite and galena that contains much silver.
Forbes and others, 1968 (OF 324), p. 4 -- Kawalita vein is typical quartz-jamesonite-stibnite-gold assemblage. Keystone is quartz-jamesonite-freibergite-galena-stibnite vein.
p. 7-8 -- Kawalita vein contains free gold and trace sulfosalts; stibnite lenses along footwall. Gold content of vein (weighted average) is about 74 ppm; high assay of sample from near a stibnite lens. Gold enrichment extends into footwall. Jamesonite vein mined for silver, lead, and antimony; gold also present, but lost. Anomalous Ag, Ce, Pb, Sn, As, and Sb.
Chapman and Foster, 1969 (P 625-D), p. D8-D9 -- On the Willie claim a massive sulfide vein less than a foot wide, a crushed zone, and sheet-type bodies that cross foliation of schist country rock contain stibnite, jamesonite, and galena. Gold, antimony, and silver have been produced. On Kawalita claim a quartz vein contains jamesonite, pyrite, and tetrahedrite (?); metals listed as Au, Sb, Pb, Cu, Zn [without identification of minerals that contain them]. Elsewhere on property quartz veins contain gold, stibnite, galena, pyrite, chalcocite, limonite, and copper carbonates. Gold has been mined; some ore was very rich.

Homestake (Mining Co.) - Continued

Pilkington and others, 1969 (OF 383), p. 27 -- USBM drilled 2 diamond-drill holes in 1967. Anomalous concentrations of gold were found at depth.

Anderson and Johnson, 1970 (P 700-D), p. D125-D128 -- One man was mining fault gouge for its lead and silver content, 1967-68. Induced polarization and resistivity surveys across the Kawalita and Jamesonite veins detected 2 disseminated sulfide concentrations of possible economic interest.

Warfield, 1970 (USBM OF 3-70) -- In 1967 USBM core drilled 2 vertical holes 716.6 ft. and 690 ft. deep to test the continuity of gold, silver, and base-metal (mainly lead and antimony) mineralization at depth. Recent mining has been by opencut and shallow underground methods. Mineralization is present at depth, but grade is fairly low. Work before 1931 consisted of about 2,300 ft. crosscut and drifts and some stopes. Some of ore was very rich; production was about $60,000 in gold (at $20.67 per fine oz.). In 1963 exploration with OME loan resulted in inclined shaft to 147-ft. level and some drifting on Kawalita vein; work abandoned in 1965 because of problems with water. Opencut mining of Pb-Sb-Ag (mainly jamesonite) ore from Jamesonite vein (2-6 ft. wide) began in 1966. Shipments of ore and concentrates (milled at old Cleary Hill mill) were made. Drill-sample data are given in considerable detail. Minerals recognized in cores included pyrite, arsenopyrite, stibnite, sphalerite, galena, chalcopyrite. Highest assays were 0.28 oz. Au and 2.0 oz. Ag per ton.

(Hoosier Cr.) — Gold (?)

Tolovana district — Livengood (?)
NE 1/4 SE 1/4 quad. (?)

Summary: Prospects said to have been found in 1910; no other mention of this creek.

Ellsworth and Parker, 1911 (B 480), p. 165 -- Prospects found, 1910; upper Beaver Cr. drainage; newly named creek; location not known to writers.

Prindle and Katz, 1913 (B 525), p. 151 -- Quotation from B 480, p. 165.

Hoover

Antimony, Gold

Fairbanks district
MF-413, loc. 26

Livengood (18.5, 0.75)
65°01'N, 147°30'W

Summary: Quartz veins in sheared and brecciated zones in schist contain stibnite, pyrite, arsenopyrite, and gold. Mill tests reported to have recovered $8 a ton in gold. Development included 390-ft. tunnel and shallow shaft.

Brooks, 1912 (B 520), p. 32 -- Some ore shipped by Anderson & Birch to test mill, 1911.

Smith, 1913 (B 525), p. 198 -- Busch & Anderson prospecting; 4-1/2 tons ore sent for mill test. No data on gold tenor.

Smith, 1913 (B 542), p. 184 -- Same as B 525.

Chapin, 1914 (B 592), p. 347-348 -- 3 lodes on Birch & Anderson property. One is a brecciated zone in schist with quartz stringers carrying pyrite and arsenopyrite. The second is a 50-ft. zone of quartz, horses of schist, and gouge; pyrite and arsenopyrite in quartz and schist. The third is quartz carrying pyrite, arsenopyrite, and free gold. 14-ft. shaft on third lode; 390-ft. tunnel driven to intersect third lode crossed other two en route.

Hill, 1933 (B 849-B), p. 119-120 -- Working caved in 1931. Reports of old mill tests showed gold values of $8 a ton. Pile of material on dump at tunnel mouth contained stibnite, pyrite, and arsenopyrite mixed with schist; grab sample assayed $0.86 a ton.

Killeen and Mertie, 1951 (OF 42), p. 26 -- Reference to B 849-B [page number is incorrect; should be 120].

Chapman and Foster, 1969 (P 625-D), p. D13 -- References to B 525, p. 198 and B 849-B, p. 119-120.

(Hunter Cr.) Copper, Gold, Lead, Mercury, Tin

Rampart district Livengood (0.0-0.2, 8.3-8.35)
MF-413, loc. 57 65°28'N, 149°58'-150°00'W

Summary: Bedrock is slate, quartzite, tuffaceous greenstone, and Tertiary sandstone and conglomerate. Stream cuts through high bench gravels east of Minook Cr. Bench on south side of valley slopes toward creek. Pay streak is 8-10 ft. of gravel and top few feet of shattered bedrock; 20-30 ft. of muck over gravel. Concentrates contain gold, magnetite, ilmenite, hematite, barite, pyrite, picotite, cinnabar, galena, cassiterite, and native copper. Most of mining was by hydraulicking and on a fairly small scale. Began in 1896 and continued with few interruptions to as recently as 1940. See also (Hunter Cr.) Tanana quad.

Spurr, 1898, p. 294 -- Quartz veins in shear zones; not known to be auriferous.

p. 358-359 -- Except near mouth and in extreme headwaters bedrock is shales, tuff, and diabase of Rampart series. Much jointed; silicified shear zones impregnated with sulfides; occasional quartz and calcite veins. Schist reported near head of creek. Prospectors have found gold through entire length of creek, but only mining in 1896 was 1-1/4 mi. above mouth [in Tanana quad.].

Collier, 1903 (B 213), p. 55 -- Mining, 1902.

Brooks, 1904 (B 225), p. 58 -- Hydraulic plant installed on bench, 1903.

Prindle and Hess, 1905 (B 259), p. 112 -- Depth to bedrock 40 ft. or less; gravel about 12 ft. thick. Hydraulic plant in operation, 1904. Barite in concentrates.

Purington, 1905 (B 263), p. 208 -- Gold worth $19 per oz.

Prindle and Hess, 1906 (B 280), p. 31-33 -- Cuts through high bench E of Minook Cr. Bedrock near head is slate and quartzite; tuffaceous greenstone in lower part of valley; Kenai [Tertiary] sandstone and conglomerate near mouth. Sloping bench on south side of valley. Gravels 2-12 ft. thick overlain by as much as 40 ft. of frozen muck. Gold discovered, 1896. Production, through 1904, was worth probably about $24,000. Bench gravels mined, 1904, near mouth [in Tanana quad.]; much of gold in bedrock cracks; considerable barite and some hematite in concentrates. Hydraulicking, 1904, farther upstream.

p. 48-50 -- Copper found in concentrates. Data on freight rates, employment, etc. Production through fall, 1904, was $24,000.

Brooks, 1907 (B 314), p. 37 -- Mining, 1906.

Brooks, 1908 (B 345), p. 49 -- Mining, 1907.

Hess, 1908 (B 337), p. 65 -- Mining, 1897 [and probably 1896].

p. 72-75 -- Same as B 280, p. 31-33.

p. 97-98 -- Same as B 280, p. 48-50.

Brooks, 1909 (B 379), p. 55 -- Mining, 1908.

Ellsworth, 1910 (B 442), p. 240 -- Mining and prospecting, 1909.

(Hunter Cr.) - Continued

Ellsworth and Parker, 1911 (B 480), p. 167 -- Mining [probably in Tanana quad.], 1910.
Eakin, 1912 (B 520), p. 278-279 -- Very little of production from stream gravels; most from bench 15-20 ft. above stream; bedrock surface is irregular; overburden thickens toward valley wall.
p. 282 -- Mining, 1911.
Eakin, 1913 (B 535), p. 30-31 -- Same as B 520, p. 278-279.
p. 35 -- Mining, 1911.
Ellsworth and Davenport, 1913 (B 542), p. 222 -- Mining, 1912.
Chapin, 1914 (B 592), p. 362 -- Mining, 1913.
Brooks, 1915 (B 622), p. 64 -- Mining, 1914.
Brooks, 1916 (B 642), p. 64 -- Small-scale mining, 1915.
Smith, 1917 (BMB 153), p. 53 -- Mining, 1916.
Brooks, 1918 (B 662), p. 57 -- Mining, 1916.
Martin, 1919 (B 692), p. 37 -- Mining, 1917.
Martin, 1920 (B 712), p. 42 -- Mining, 1918.
Brooks and Martin, 1921 (B 714), p. 83 -- 2 small hydraulic plants, 1919.
Brooks, 1923 (B 739), p. 32 -- Mining, 1921.
Smith, 1926 (B 783), p. 14 -- Mining, 1924.
Smith, 1929 (B 797), p. 23 -- Mining, 1926.
Smith, 1930 (B 813), p. 35 -- Mining, 1928.
Smith, 1932 (B 824), p. 40 -- Mining, 1929.
Smith, 1933 (B 836), p. 42 -- Mining, 1930.
Smith, 1933 (B 844-A), p. 41 -- Mining, 1931.
Mertie, 1934 (B 844-D), p. 165 -- Mining had begun by summer, 1896.
p. 177-181 -- Creek in narrow v-shaped valley with low gravel benches. Gold discovered, 1896. Data from B 280 summarized. [Much of mining in part of stream in Tanana quad.] Near mouth of Dawson Cr. 8-10 ft. of gravel beneath 20-30 ft. of muck on benches. Gravel and top 4 ft. of shattered greenstone bedrock are mined. Heavy minerals in concentrates include magnetite, ilmenite, hematite, barite, pyrite, picotite, cinnabar, galena, cassiterite, and native copper.
Smith, 1934 (B 857-A), p. 39 -- Mining, 1932.
Smith, 1934 (B 864-A), p. 43 -- Mining, 1933.
Waters, 1934 (B 844-A), p. 232 -- Concentrate samples contained magnetite, ilmenite, hematite, barite, pyrite, gold, garnet, picotite, zircon, cinnabar, copper, galena, limonite, cassiterite, quartz, diopside, and epidote.
Smith, 1936 (B 868-A), p. 44 -- Mining, 1934.
Smith, 1937 (B 880-A), p. 47 -- Mining, 1935.
Smith, 1939 (B 910-A), p. 57 -- Mining, 1937.
Smith, 1939 (B 917-A), p. 56 -- Mining, 1938.
Smith, 1941 (B 926-A), p. 53 -- Mining, 1939.
Smith, 1942 (B 933-A), p. 49 -- Mining, 1940.
Wayland, 1961 (B 1058-I), p. 396 -- Cassiterite in concentrates.
Malone, 1962 (IC 8131), p. 56 -- Reference to B 844-D, p. 232.
Malone, 1965 (IC 8252), p. 55 -- Reference to B 844-D.
Cobb, 1973 (B 1374), p. 165-167 -- Bench gravels have been mined. Galena and cassiterite in placers.

(Idaho Bar) Gold

Rampart district Livengood (0.1, 7.85)
MF-413, loc. 58 65°27'N, 149°59'W

Summary: Deposit of high, auriferous Pliocene (?) gravel about 1,000 ft. higher than mouth of Little Minook Cr. [Tanana quad.] was prospected and drift mined in 1913, the late 1920's, and the 1930's; some of ground cleaned ran $1 a bedrock foot. Concentrates contained gold, ilmenite, hematite, magnetite, zircon, and garnet.

Prindle and Hess, 1905 (B 259), p. 113 -- One of interstream deposits 500 to 700 ft. above streams in Rampart district. Coarse gravels contain quartzite, quartzite breccia, vein quartz, and chert; finer material is decomposed softer rocks. Carries gold.
Prindle and Hess, 1906 (B 280), p. 31 -- Gravels have been prospected.
Chapin, 1914 (B 592), p. 362 -- Mining, 1913.
Smith, 1930 (B 813), p. 35 -- Drift mining, 1928.
Smith, 1933 (B 836), p. 42 -- One man winter mining, 1930.
Smith, 1933 (B 844-A), p. 41 -- Prospecting, 1931.
Mertie, 1934 (B 844-D), p. 183-184 -- Deposit of high gravel (Pliocene?) between Little Minook, Dawson, and Hunter Creeks; 1,000 ft. higher than mouth of Little Minook Cr. Shaft at crest of ridge said to have been sunk 100 ft. to bedrock. Tunnel driven on bedrock and 1,500 sq. ft. of bedrock (chert) cleaned, 1930-31. In places placer ran as high as $1 a bedrock foot. Gold coarse and shotty; accompanied by ilmenite, hematite, and magnetite. Not enough water for large-scale mining.
Smith, 1934 (B 857-A), p. 39 -- Prospecting, 1932.
Smith, 1934 (B 864-A), p. 43 -- Prospecting, 1933.
Waters, 1934 (B 844-D), p. 234-235 -- Heavy minerals include ilmenite, hematite, magnetite, zircon, garnet, and gold.
Smith, 1936 (B 868-A), p. 44 -- Prospecting, 1934.
Smith, 1937 (B 880-A), p. 47 -- Prospecting, 1935.
Cobb, 1973 (B 1374), p. 165 -- Pliocene (?) auriferous gravel as much as 100 ft. thick caps high terrace as much as 1,000 ft. above Minook Cr. [Tanana quad.]. Has been some mining.

Independence — Gold, Lead

Fairbanks district — Livengood (18.8, 0.75)
MF-413, loc. 32 — 65°02'N, 147°28'W

Summary: Fracture zone in porphyritic granite mineralized with vein quartz; joint surfaces also mineralized. Gold, pyrite, arsenopyrite, and galena present; about 2/3 of gold in sulfide minerals. Assays show $4 to $38 in gold a ton. Probably has been minor production. See also Moonlight.

Brooks, 1916 (B 642), p. 60-61 -- Vertical fracture zone in coarse porphyritic granite that strikes about E has been permeated and mineralized by vein quartz. Quartz veins broken by joints; joint surfaces also mineralized. Explored by adit about 30 ft. long. Some of quartz runs $38 a ton in gold; mineralized zone runs from $4 to $22 a ton. Pyrite, arsenopyrite, and galena present. Zone has been traced from granite into schist, where it is barren.

Brooks, 1918 (B 662), p. 410-411 -- Mineralized zone in porphyritic granite. Quartz veins and stringers are high-grade ore. Iron-stained joint planes in country rock also carry gold. Mineralized zone has been traced for 900 ft. on surface. Pyrite and arsenopyrite carry gold that is not freed by crushing to 40 mesh.

Hill, 1933 (B 849-B), p. 114-115 -- Developed by 2 tunnels. In upper tunnel quartz veinlets are in a zone 8-10 in. wide in porphyritic granite. Zone is vertical; strikes N 70° E. Coarse-grained pyrite and arsenopyrite are chief metallic minerals. Sample across zone assayed $6.86 to the ton.

Chapman and Foster, 1969 (P 625-D), p. D12 -- References to above and to a Univ. of Alaska B.S. thesis. Data essentially as above; has been production. Data mixed with those for Moonlight.

(Independence Cr.)

Fairbanks district

Antimony

Livengood (16.9, 0.3)
65°00'N, 147°45'W

Summary: Sparse stibnite in shear zone in schist; no other data.

Mulligan, 1974 (IC 8626), p. 12 -- Sparse stibnite mineralization in shear zone in schist.

I.X.L.

Gold (?)

Fairbanks district

Livengood (19.2, 1.55)
65°04'N, 147°24'W

Summary: Lode claim on which there may be gold.

Hill, 1933 (B 849-B), p. 75 -- I.X.L. claim is old Union claim.
Chapman and Foster, 1969 (P 625-D), p. D10 -- Gold may be present.

Jackson — Antimony, Gold, Lead, Silver

Fairbanks district — Livengood (19.0, 1.2)
MF-413, loc. 36 — 65°03'N, 147°26'W

Summary: Several quartz veins parallel and others cut across schistosity of quartzite schist and mica schist. Veins and country rock are all cut by many faults, at least some of which were pre-ore. Some gold is free and some is in sulfide minerals; sulfides identified are stibnite, jamesonite, argentiferous galena, pyrite, and arsenopyrite. Deposits explored by open cuts and several hundred feet of underground workings. No record of production; symbols for production of gold in P 625-D and MF-413 may not be correct. Includes references to: Regs & Burnet(t), Silver King.

Smith, 1913 (B 525), p. 182 -- Small mass of quartz, galena, pyrite, arsenopyrite, and stibnite interbedded in schist. Considerable galena on dumps of nearby shaft and tunnel. Galena in large well-crystallized cubes and in fine-grained masses close to walls of veins; reportedly carries more gold than silver. [Name not used in text; from fig. 16.]

Smith, 1913 (B 542), p. 168-169 -- Same as B 525.

Chapin, 1914 (B 592), p. 338-339 -- On Silver King [later renamed Little Jim] claim flat-lying lode parallel to foliation in schist is 1 ft. thick and contains quartz, pyrite, arsenopyrite, and an argentiferous "sulphantimonite of lead." On Your Jim and Our Jim claims 428-ft. prospect tunnel cuts a quartz stringer that contains gold and silver and auriferous gouge zones along steeply dipping nearly east-west parallel faults. Dump by flooded shaft sunk nearby in 1913 contains quartz with stibnite, pyrite, and limonite material.

Mertie, 1918 (B 662), p. 416-417 -- Minerals present include stibnite, argentiferous galena, pyrite, arsenopyrite, jamesonite (?), and gold, both free and with sulfides. Several veins; some parallel to schistosity and some cutting across it. Country rock is quartzite schist and mica schist. Country rock and veins cut by many faults at least some of which are pre-ore. Explored by open cuts and several hundred feet of underground workings.

Hill, 1933 (B 849-B), p. 92-93 -- Jamesonite and other sulfides on dumps; all of old workings caved in 1931. References to B 592, p. 338, and B 662, p. 416-417.

Killeen and Mertie, 1951 (OF 42), p. 27-28 -- References to above.
p. 42 -- Showing of stibnite of unproven significance.

Chapman and Foster, 1969 (P 625-D), p. D10 -- References to above.

Jackson and associates	Gold (?)
Fairbanks district	Livengood (19.05, 1.05) approx. 65°02'N, 147°26'W approx.

Summary: Prospect pits on possibly barren quartz that cuts greenstone-like schists.

Smith, 1913 (B 525), p. 201 -- Prospect holes; quartz cuts greenstone-like schists. Almost no sulfide mineralization. No reliable determinations of tenor have been made; probably low as quartz looks different from that in the rich lodes.

Smith, 1913 (B 542), p. 187 -- Same as B 525.

Johnson | Antimony, Gold, Tin, Tungsten

Fairbanks district | Livengood (18.85, 1.5)
MF-413, locs. 38, 88 | 65°04'N, 147°27'W

Summary: In 1942 a placer cut on Willow Cr. exposed high-grade stibnite in several parts of a wide quartz zone. Largest vein of stibnite (with occasional quartz and other sulfides) was 6-18 in. wide and was traced for 75 ft. In 1912 a shaft was sunk 16 ft. on a nearby quartz stringer with stibnite. Placer concentrates contain cassiterite, scheelite, and presumably gold. Includes references to (Willow Cr., near Fairbanks). See also Tolovana.

Joesting, 1943 (TDM 2), p. 7 -- High-grade stibnite in placer cut on Willow Cr. discovered in 1942. In several parts of a wide quartz zone. Largest occurrence of stibnite appears continuous for 75 ft.
p. 19-20 -- Placer cassiterite common; placer scheelite abundant.

Thorne and others, 1948 (RI 4174), p. 28 -- Quotation from TDM 2, p. 20.

Killeen and Mertie, 1951 (OP 42), p. 29 -- Placer cut through 12 ft. of gravel exposed a vertical vein of stibnite with occasional quartz and other sulfides; vein is 6-18 in. wide, was traced N 40° E for 75 ft. Nearby in 1912 a shaft was sunk 16 ft. on a narrow quartz stringer carrying stibnite.
p. 42 -- Vein might yield some stibnite.

Byers, 1957 (B 1024-I), p. 210 -- Scheelite present.

Berg and Cobb, 1967 (B 1246), p. 220-221 -- Scheelite present.

Chapman and Foster, 1969 (P 625-D), p. D11 -- References to TDM 2, p. 7; B 1024-I, p. 210.

Kellen

Antimony, Gold

Fairbanks district
MF-413, loc. 48

Livengood (19.85, 1.6)
65°04'N, 147°19'W

Summary: Small, low-tenor, auriferous quartz veins in blocky schistose quartzite. A crushed and recemented quartz vein contains stibnite and oxidation products. Exploratory shaft and tunnel, but no production.

Smith, 1913 (B 525), p. 163-164 -- Prospected by a shaft and a tunnel. Blocky schistose quartzite; small, low-tenor, auriferous quartz stringers in tunnel. Crushed and recemented quartz vein in tunnel contains stibnite and oxidation products; some probably completely leached out. Sporadic exploration; no production.

Smith, 1913 (B 542), p. 149 -- Same as B 525.

Brooks, 1916 (B 649), p. 38 -- Stibnite in crushed and recemented quartz.

Killeen and Mertie, 1951 (OF 42), p. 35-36 -- References to above.

Chapman and Foster, 1969 (P 625-D), p. D8 -- Reference to B 525, p. 163-164.

(Kokomo Cr.) Gold

Fairbanks district
MF-413, loc. 92

Livengood (21.0-21.25, 2.4-2.5)
65°07'N, 147°08'-147°09'W

Summary: Placer gold discovered, 1921. Mining, 1937-40. No other data in cited references. See also Egan & Egan.

Brooks, 1923 (B 739), p. 6, 29 -- New placer gold discovery, 1921.
Smith, 1939 (B 910-A), p. 48 -- Mining, 1937.
Smith, 1939 (B 917-A), p. 43, 46 -- Mining, 1938.
Smith, 1941 (B 926-A), p. 40, 42-43 -- Mining, 1939.
Smith, 1942 (B 933-A), p. 39 -- Mining, 1940.

(Lillian Cr.)

Antimony, Chromite, Gold, Mercury, Nickel, Silver, Tungsten

Tolovana district
MF-413, locs. 3, 66

Livengood (10.5-10.65)
65°31'N, 148°32'-148°34'W

Summary: Stream and bench placers; bedrock (sandstone, shale, and slate) surface beneath benches is irregular and slopes steeply toward the creek. Concentrates contain angular coarse gold, magnetite, ilmenite, picotite, chromite, limonite, cinnabar, scheelite, zircon, pyrite, stibnite, barite, arsenopyrite. A vein of stibnite is reported to have been uncovered during placer mining. A mineralized zone in a cut-bank contains stibnite and traces of cinnabar and gold. A sample of serpentine contained small amounts of nickel sulfides and silicates. Cinnabar in decomposed granitic material. Auriferous arsenopyrite-quartz-scorodite veins contain as much as 48 ppm gold and 2 ppm silver. Mining began in 1915 and was being carried on as recently as 1974.

Brooks, 1916 (B 642), p. 208 -- Shallow placers have been mined, 1915.
Smith, 1917 (BMB 153), p. 52 -- Mining, 1916.
Brooks, 1918 (B 662), p. 56 -- Mining, 1916.
Mertie, 1918 (B 662), p. 256 -- Mining, 1916.
p. 270-271 -- Mining, 1916. Both stream and bench placers. Placers where being worked are 4-30 ft. deep. Bedrock sandstone, shale, and some slate; commonly mineralized with pyrite. Gold angular, coarse, and in both gravels and top foot of bedrock. Concentrates contain gold, magnetite, ilmenite, picotite, limonite, cinnabar, scheelite, zircon, pyrite, stibnite, and barite. Vein of stibnite reported to have been uncovered during placer mining.
Martin, 1920 (B 712), p. 41 -- Mining, 1920.
Overbeck, 1920 (B 712), p. 181-183 -- 5 claims worked in 1918. Most of gold in low benches; scattered through 5-10 ft. of gravel; bedrock surface is very irregular and pitches steeply down the creek. Concentrates contain scheelite, magnetite, cinnabar, chromite, pyrite, arsenopyrite, zircon, and stibnite.
Mertie, 1923 (B 739), p. 157 -- Scheelite found with cinnabar and stibnite in gold placer.
Smith, 1926 (B 783), p. 14 -- Mining, 1924.
Moffit, 1927 (B 792), p. 19 -- Mining, 1925.
Smith, 1929 (B 797), p. 21 -- Mining, 1926.
Smith, 1930 (B 813), p. 30 -- Mining, 1928.
Smith, 1932 (B 824), p. 36 -- Mining, 1929.
Smith, 1933 (B 836), p. 35-36 -- Mining, 1930.
Smith, 1933 (B 844-A), p. 35 -- Mining, 1931.
Smith, 1934 (B 857-A), p. 34 -- Mining, 1932.
Smith, 1934 (B 864-A), p. 39 -- Mining, 1933.
Smith, 1936 (B 868-A), p. 39-40 -- Mining, 1934.
Smith, 1937 (B 880-A), p. 44 -- Mining, 1935.
Smith, 1938 (B 897-A), p. 52 -- Mining, 1936.

(Lillian Cr.) - Continued

Smith, 1939 (B 910-A), p. 53 -- Mining, 1937.
Smith, 1939 (B 917-A), p. 53 -- Mining, 1938.
Smith, 1941 (B 926-A), p. 49 -- Mining, 1939.
Joesting, 1942 (TDM 1), p. 14 -- Mineralized zone in a cut bank contains stibnite and traces of cinnabar and gold. Placer stibnite present. Vein of stibnite reported to have been uncovered by placer operations; reference to B 662, p. 270-271.
p. 18 -- Small amounts of nickel sulfides and silicates in sample of serpentine.
p. 26 -- Placer cinnabar present.
p. 39 -- Placer scheelite scarce.
Smith, 1942 (B 933-A), p. 46 -- Mining, 1940.
Malone, 1965 (IC 8252), p. 55 -- Reference to B 662.
Burand, 1966 (GC 11), p. 5 -- Placer gold has been produced.
Berg and Cobb, 1967 (B 1246), p. 239 -- Stibnite-bearing stringers that may contain traces of cinnabar and gold in deeply weathered rock.
Foster and Chapman, 1967 (OF 275), locs. 5-7 -- Stibnite vein exposed during placer mining. Mineralized zone containing thin seams of stibnite and traces of cinnabar and gold exposed in a cut bank. Cinnabar in decomposed granitic material near head of creek.
Foster, 1968 (C 590), p. 1-2 -- Has been major placer-gold production; only sporadic activity as of 1967. At lode prospect narrow auriferous arsenopyrite-quartz-scorodite veins occur in and near a limonite-stained dike in contorted graywacke-argillite rock. Samples contain from 0.5 to 48 ppm Au.
p. 10-11 -- Samples contain 0.5 to 48 ppm Au (atomic absorption) and as much as 2 ppm Ag. Fire assays showed 1.4 to 47 ppm Au.
Foster, 1968 (OF 322), p. 1 -- Narrow auriferous arsenopyrite-quartz-scorodite veins occur in and near a limonite-stained dike in altered and contorted graywacke-argillite country rock. Samples contain from less than 0.02 to 48 ppm Au (atomic absorption). North of the prospect felsic rocks intrude argillite.
p. 4-7 -- Analytical data on 113 samples.
p. 15-16 -- Descriptions of samples.
Koschmann and Bergendahl, 1968 (P 610), p. 31 -- Reference to B 662, p. 256.
Cobb, 1973 (B 1374), p. 176 -- Scheelite and/or cassiterite has been found.
Mulligan, 1974 (IC 8626), p. 11 -- Nonfloat mining, 1974. Claims are current.

(Little Eldorado Cr.) Gold, Tin, Tungsten

Fairbanks district Livengood (17.95-18.5, 1.3-2.0)
MF-413, locs. 86, 87 65°03'-65°06'N, 147°30'-147°35'W

Summary: Bedrock mainly schist; heads in quartz diorite of Pedro Dome. Concentrates contain gold, cassiterite, scheelite, and wolframite. Mining 1907-27, 1930-31, 1938-40 or later. Production through 1926 was worth $2,414,000 (about 116,800 fine oz.). No dredging. Includes references to (Eldorado Cr.).

Brooks, 1908 (B 345), p. 42 -- First production, 1907.
Prindle, 1908 (B 337), p. 42-43 -- Bedrock (where determined) is quartz-mica schist; diorite and white quartz boulders in gravel. Depth to bedrock 60 to 120 ft. Prospecting in 1906 only moderately successful; mining on one claim in 1907.
Prindle and Katz, 1909 (B 379), p. 188 -- Cassiterite in concentrates from Eldorado Cr.
p. 190-191 -- Promising discoveries, 1908, in lower valley. Depth to bedrock 87-160 ft.
Ellsworth, 1910 (B 442), p. 233 -- Much prospecting (mainly disappointing) and a little production, 1909.
Johnson, 1910 (B 442), p. 246 -- Wolframite and cassiterite in concentrates.
Ellsworth and Parker, 1911 (B 480), p. 156-157 -- Report that a 20-oz. nugget was found, 1910.
Ellsworth, 1912 (B 520), p. 242 -- Mining, 1911.
Ellsworth and Davenport, 1913 (B 542), p. 205 -- Mining, 1912.
Prindle and Katz, 1913 (B 525), p. 100 -- Heads in quartz diorite of Pedro Dome. Coarse gold (piece worth $90) in lower part; extends into Chatanika Flats.
p. 107 -- Depth to bedrock 87-160 ft.
p. 112-113 -- Production, 1907-10, worth $1,100,000. Gold worth $17.03 per oz.
Smith, 1913 (B 525), p. 190 -- Near forks a short tunnel trends S 15° E. No other data available.
Smith, 1913 (B 542), p. 176 -- Same as B 525, p. 190.
Brooks, 1914 (B 592), p. 68 -- Mining, 1913.
Chapin, 1914 (B 592), p. 358 -- Mining, 1913.
Brooks, 1915 (B 622), p. 54 -- Production, through 1914, worth $1,800,000.
Eakin, 1915 (B 622), p. 232 -- Mining, 1914.
Brooks, 1916 (B 642), p. 58-59 -- Mining, 1915. Production, through 1915, worth $1,870,000.
Smith, 1917 (BMB 142), p. 22 -- Mining, 1915.
Smith, 1917 (BMB 153), p. 51 -- Gold worth $120,000 mined, 1916.
Brooks, 1918 (B 662), p. 51, 54 -- Mining, 1916. Production through 1916 was worth $1,980,000.
Martin, 1919 (B 692), p. 35 -- Production through 1917 was worth $2,100,000.
Martin, 1920 (B 712), p. 39 -- Production through 1918 was worth $2,220,000.
Brooks and Martin, 1921 (B 714), p. 81 -- Production through 1919 was worth $2,255,000.

(Little Eldorado Cr.) - Continued

Brooks, 1922 (B 722), p. 45 -- Production through 1920 was worth $2,269,000.
Brooks, 1923 (B 739), p. 29 -- Production through 1921 was worth $2,302,000.
Brooks and Capps, 1924 (B 755), p. 35 -- Mining, 1922. Production through 1922 was worth $2,360,000.
Capps, 1924 (B 755), p. 146 -- Has been a major producer. Mining, 1922.
Brooks, 1925 (B 773), p. 45 -- Production through 1923 was worth $2,380,000.
Smith, 1926 (B 783), p. 11-13 -- Blasting rather than thawing used in long-wall undercutting in a deep (175 ft.) drift mine (800 ft. of drifts). Mining, 1923-24; total to date worth $2,414,000.
Moffit, 1927 (B 792), p. 17 -- Drift mining, 1925.
Smith, 1929 (B 797), p. 20 -- Mining, 1926.
Smith, 1930 (B 810), p. 25 -- Mining, 1927.
Smith, 1933 (B 836), p. 33 -- Mining, 1930.
Smith, 1933 (B 844-A), p. 32 -- Mining, 1931.
Smith, 1939 (B 917-A), p. 43-45 -- Mining, 1938. Preparatory work for large-scale mining.
Smith, 1941 (B 926-A), p. 40-41 -- Mining, 1939. Preparatory work.
Joesting, 1942 (TDM 1), p. 32 -- Placer cassiterite common; reference to B 379, p. 188.
p. 37 -- Placer wolframite scarce; reference to B 442, p. 246.
Smith, 1942 (B 933-A), p. 39 -- Mining and preparatory work, 1940.
Byers, 1957 (B 1024-I), p. 188, 210 -- Scheelite in placer concentrates.

(Livengood Cr.)

Antimony, Chromite, Gold, Monazite, Tin, Tungsten

Tolovana district
MF-413, locs. 5, 64

Livengood (10.5-11.3, 9.3-9.75)
65°31'-65°34'N, 148°25'-148°34'W

Summary: Gold discovered, 1914. Most of gold in old channel under bench parallel to and northwest of creek; traced for about 4 miles. Average depth to bedrock is 80 ft.; average width of channel is about 125 ft. Bedrock mainly chert; some greenstone and limestone. Gold in basal gravel and weathered bedrock. Concentrates contain gold, megnetite, ilmenite, picotite, hematite, pyrite, barite, chromite, arsenopyrite, zircon, cassiterite, scheelite, monazite. Stibnite vein uncovered by placer drift mining; some said to have been shipped out by parcel post during World War I. Placer mining, 1914-1970. Dredge operated near town of Livengood in 1940, 1946, and probably other years. Plans for resuming large-scale mining, 1974. Complex geomorphic history; divide between Livengood and Hess Creeks shifted back and forth as a result of successive stream piracies.

Brooks, 1915 (B 622), p. 51 -- New gold discovery, 1914.
Brooks, 1916 (B 642), p. 63 -- Deep channel mined, 1915.
Brooks, 1916 (B 642), p. 205-208 -- Deep channel, generally parallel to axis of valley, has been traced for 2 mi. and may extend for 4 mi. or more. So-called bench claims are on talus slopes above old channel. Depth to bedrock variable; 125 ft. at claim 4 below Discovery; deeper shafts farther downstream did not hit bedrock; shallower upstream. Bedrock ridge separates old and present channels. Gold in deep channel dark colored and generally not coarse; some nuggets worth as much as $20.
Smith, 1917 (BMB 142), p. 24-25 -- Mining, 1915; gravel in present stream bed not minable.
Smith, 1917 (BMB 153), p. 2 -- Best pay in district on Livengood Cr., 1916.
p. 52 -- Mining bench claims, 1916.
Brooks, 1918 (B 662), p. 56 -- Mining, 1916.
Mertie, 1918 (B 662), p. 256 -- Mining, 1916.
p. 260-268 -- Upper drainage captured from Hess Cr. Most of mining of old channel from bench claims NW of creek. Old channel separated from present channel by bedrock reef; has been traced for 4 mi. Average depth to bedrock is 80 ft. and fairly constant; average width of channel is 127 ft. Bedrock mainly chert, but some greenstone and limestone. Gold in basal gravel and weathered bedrock. Gold has higher value ($17.92 per oz. after charges) than in Fairbanks district, mainly because of lower silver content. Concentrates contain gold, magnetite, ilmenite, limonite, picotite, hematite, barite, and pyrite. Gold in present stream gravels, but placers less rich than in old channel.

(Livengood Cr.) - Continued

Martin, 1920 (B 712), p. 41 -- Mining, 1918. [Name Tolovana obviously was substituted for Livengood in the sentence cited.]

Overbeck, 1920 (B 712), p. 178-181 -- Most of gold production in district has been from buried placers along N side of valley half a mile from Livengood Cr. Some of headward tributaries were pirated from South Fork of Hess Cr. Gradient of old buried channel much steeper down valley than near head; abrupt change in gradient. Below break the pay streak is 75-180 ft. wide; above it is 100-364 ft. wide. About 5 ft. of gravels and from a few inches to 2-1/2 ft. of bedrock are mined. Working shafts about 50 ft. deep.

p. 183-184 -- Stibnite found in place in weathered bedrock on bench claim near head of creek. Minerals in concentrates include gold, chromite, pyrite, barite, magnetite, hematite, arsenopyrite, zircon.

Brooks and Martin, 1921 (B 714), p. 82 -- Mining, 1919.

Brooks, 1922 (B 722), p. 47 -- Mining, 1920.

Brooks, 1923 (B 739), p. 31 -- Mining, 1921. Average recovery from 7 drift mines was $6.50 worth of gold per yard sluiced.

Brooks and Capps, 1924 (B 755), p. 37 -- Mining, 1922.

Brooks, 1925 (B 773), p. 21 -- Buried bench placer.

Smith, 1926 (B 783), p. 14 -- Mining, 1924.

Moffit, 1927 (B 792), p. 19 -- Mining, 1925.

Smith, 1929 (B 797), p. 21 -- Mining, 1926.

Smith, 1930 (B 810), p. 27 -- Mining, 1927. Severe water shortage.

Smith, 1930 (B 813), p. 30 -- Mining, 1928.

Smith, 1932 (B 824), p. 36 -- Mining, 1929.

Smith, 1933 (B 836), p. 35-36 -- Mining, 1930.

Smith, 1934 (B 857-A), p. 34 -- Deep mining decreased, only one large operation in 1932.

Smith, 1934 (B 864-A), p. 39 -- Mining and prospect drilling, 1933.

Smith, 1936 (B 868-A), p. 39-40 -- Mining and prospecting, 1934.

Smith, 1937 (B 880-A), p. 44 -- Mining, 1935.

Smith, 1938 (B 897-A), p. 52 -- Mining, 1936.

Smith, 1939 (B 910-A), p. 53-54 -- Mining, 1937. Prospect drilling.

Smith, 1939 (B 917-A), p. 52-53 -- Mining, 1938. Preparatory work for large-scale mining.

Smith, 1941 (B 926-A), p. 48-49 -- Drift mine operated, 1939. Preparatory work continued.

Joesting, 1942 (TDM 1), p. 14 -- Stibnite from a vein discovered while drift mining for placer gold said to have been shipped by parcel post during World War I.

p. 17 -- Abundant chromite and chrome spinels in placers. Probably derived from serpentine in Middle Devonian volcanic rocks.

p. 34 -- Placer cassiterite rare.

p. 39 -- Placer scheelite scarce.

Smith, 1942 (B 933-A), p. 45-46, 68 -- Integrated operation set up; dredge built and operated; system to bring water from Hess Cr. begun, 1940.

Wedow, Killeen, and others, 1954 (C 331), p. 11 -- Dredging, 1946.

(Livengood Cr.) - Continued

Berg and Cobb, 1967 (B 1246), p. 239 -- Small amount of stibnite shipped from vein during World War I.

Foster and Chapman, 1967 (OF 275), loc. 1 -- Stibnite vein apparently discovered while drift mining for gold on a bench claim.

Foster, 1968 (C 590), p. 1 -- Major placer-gold producer. Nonfloat mining, 1967.

p. 3 -- Drill-hole data indicate some 17 million cubic yards of material with an average recoverable gold content of 70 cents a cubic yard (gold at $35 an ounce).

Koschmann and Bergendahl, 1968 (P 610), p. 31 -- Placers discovered, 1914. Reference to B 662, p. 256.

Cobb, 1973 (B 1374), p. 174-176 -- Workable placers discovered, 1914. Divide between Livengood and Hess Creeks shifted back and forth in response to successive stream captures. Extensive old channel on bench NW of creek has been traced from opposite Amy Cr. to below Myrtle Cr. Was extensively dredged near town of Livengood. Small-scale mining, 1970. Scheelite and/or cassiterite and monazite in concentrates.

Eakins, 1974 (AOF 40), p. 1-2 -- Gold discovered at mouth of Ruth Cr., 1914. Main pay streak on buried bench on north side of creek; creek placers are relatively small deposits. Plans in 1974 call for 2 dredges on bench within 4 years.

(Lucille Cr.) (Gulch)

Chromite, Gold

Tolovana district
MF-413, loc. 68

Livengood (11.25, 9.6)
65°32'N, 148°27'W

Summary: Considerable prospecting, but no record of mining, though there probably was some, as chromite and chrome spinels are reported to occur in the placers.

Mertie, 1918 (B 662), p. 269 -- One or two prospect shafts have been sunk, but there was no work being done in 1916.

Smith, 1936 (B 868-A), p. 39-40 -- Prospecting, 1934.

Joesting, 1942 (TDM 1), p. 17 -- Chromite and chrome spinels in placers.

Foster, 1968 (C 590), p. 3 -- Placer found during recent investigation should be investigated further; thick overburden and lack of water might make deposit uneconomic.

Lyons	Gold (?)
Fairbanks district	Livengood (18.95, 1.55) approx. 65°04'N, 147°26'W

Summary: Prospect; no other data. See also Cleary Hill.

Chapman and Foster, 1969 (P 625-D), p. D10 -- Prospect; reference is to an index map, Chapin, 1914 [B 592], p. 332.

Markovich

Antimony, Gold

Fairbanks district
MF-413, loc. 22

Livengood (18.0, 1.3)
65°03'N, 147°34'W

Summary: Badly crushed iron- and manganese-stained quartz contains stibnite and arsenopyrite; sample assayed $4.18 in gold per ton. At least 2 veins have been worked for stibnite. 200 tons of stibnite ore reported to have been shipped in 1916 and about 16-1/2 tons in 1949 (most from old dumps). A little gold ore reported to have been mined and milled in 1918. Well over 500 ft. of workings. Includes references to: Hindenburg, Ohio (Little Eldorado Cr.), Marcovich.

Mertie, 1918 (B 662), p. 415 -- Hindenberg claim worked for stibnite in 1916; 200 tons of ore reported to have been shipped. Shaft 25 ft. deep; drifts from bottom. "The ore body is said to lie nearly flat, dipping about 60° SE."

Martin, 1920 (B 712), p. 40 -- At Ohio claim a little ore was mined and milled, 1918. Shaft 25 ft. deep; 25 ft. of drift.

Hill, 1933 (B 849-B), p. 83 -- 3 shallow shafts on vein that strikes about E. "Ore" on dump is badly crushed iron- and manganese-stained quartz carrying stibnite and arsenopyrite; grab sample assayed $4.18 a ton.

Joesting, 1942 (TDM 1), p. 10 -- High-grade stibnite found on dump.

Joesting, 1943 (TDM 2), p. 9 -- 16-1/2 tons of ore containing 38% Sb sold in 1942. 6-1/2 tons (more than 50% Sb) mined from kidneys in raise from old tunnel; the rest (about 30% Sb) from old dump.

Ebbley and Wright, 1948 (RI 4173), p. 38 -- Several lenses yielded about 200 tons of stibnite ore.

Killeen and Mertie, 1951 (OF 42), p. 12 -- Sample of stibnite ore contained 57.76% Sb.

p. 14 -- Significant quantity of stibnite may have been mined.

p. 25 -- References to B 662, p. 415; B 712, p. 40; B 849-B, p. 83. Two veins have been worked. One strikes N 40° E, dips 68° SE; other strikes N 65° E, dips 74° W. 200 tons of ore mined from 3 shallow shafts in 1916. About 500 ft. of tunnel and other workings; 4 stibnite lenses found; 6 tons mined in 1942. About 120 tons of partially oxidized material (30% Sb estimated) on old dump.

p. 41 -- Ore that was mined but not shipped is on property.

Chapman and Foster, 1969 (P 625-D), p. D14 -- References to above and to a Ph.D. dissertation. "Mineralogy" column lists quartz, stibnite, arsenopyrite, sphalerite (?), chalcopyrite (?), freibergite (?). "Metals" column lists gold, antimony, zinc, copper, silver. [As no zinc, copper, or silver minerals are listed without a query, and as no assay data are given, only gold and antimony are listed in this summary.]

May Florence — Gold (?)

Fairbanks district — Livengood (18.45, 0.65)
65°01'N, 147°31'W

Summary: Brecciated schist and blue gouge between faults.

Chapin, 1914 (B 592), p. 346 -- Abandoned tunnel and shaft. Brecciated mass of schist and blue gouge but no quartz between 2 parallel faults.

Chapman and Foster, 1969 (P 625-D), p. D13 -- Reference to above.

McCarty (Alder Cr.) Gold

Fairbanks district Livengood (20.45, 2.05)
MF-413, loc. 52 65°06'N, 147°14'W

Summary: Vein 12-15 ft. wide with schist horses. Mineralization along walls and in horses. Developed by tunnel 160 ft. long and several crosscuts. With that amount of work it seems safe to assume that some gold is present, even though not in commercial amounts.

Prindle, 1910 (B 442), p. 227 -- 3 claims. Vertical quartz vein strikes about N 40° E and is 12-13 ft. thick. Mineralization along walls of vein and in schist horses in vein; said to carry values [assumed to be in gold]. Tunnel 120 ft. long parallel to vein; lode was crosscut at depth of 50 ft. Two similar quartz veins had not been opened in 1909. Quartz in veins is much fractured.

Smith, 1913 (B 525), p. 156 -- Quotation from B 442, p. 227.

Smith, 1913 (B 542), p. 141-142 -- Same as B 525.

Chapin, 1914 (B 592), p. 326 -- Vertical quartz vein strikes N 40° E and is 12-15 ft. wide; large horses of schist. Little sulfide mineralization. Vein much fractured. Tunnel 160 ft. long and several crosscuts.

Brooks, 1916 (B 642), p. 60 -- 30-ft. incline and 60 ft. of drifting on "North Star claims" in 1915; some ore milled. [This reference probably is to some other property with a North Star claim; I can't figure out what one.]

Chapman and Foster, 1969 (P 625-D), p. D7 -- References to B 442, p. 227; B 525, p. 156; B 592, p. 326.

McCarty (Henry Ford) — Antimony, Gold, Zinc

Fairbanks district — Livengood (19.55, 1.55)
MF-413, loc. 46 — 65°04'N, 147°21'W

Summary: Quartz veins, no more than 3 ft. in thickness, contain gold, stibnite, jamesonite, arsenopyrite, and a little sphalerite. Henry Ford vein is displaced by fissure that contains American Eagle vein. One of the most productive gold mines in district; mined sporadically from 1911 to 1917 and practically continuously from 1927 to as recently as 1942; no data on amount of production. A few tons of antimony ore produced during World Includes references to: American Eagle; Caribou; El Toro No. 3; Golden Eagle; Henry Ford, McCarty & Ewers (Gold Mining Co.); McCarty, L. J., and associates; McCarty Mining Co.; Schreiber. See also McCarty (Pioneer); some references may apply to either mine.

Brooks, 1912 (B 520), p. 31 -- In 1911 "...work was continued on the McCarty Creek ledge.....produced some ore, which was milled at Chena." [This may not be the Henry Ford; could be a different McCarty property.]

Smith, 1913 (B 525), p. 164 -- El Toro 3 claim developed by 65-ft. inclined shaft on vein, which flattens from 72° near surface to 51° farther down. Vein is hard, glassy quartz with stibnite; said to pan native gold. No production.

Smith, 1913 (B 542), p. 149-150 -- Same as B 525.

Eakin, 1915 (B 622), p. 238 -- Prospecting on American Eagle claim, 1914.

Brooks, 1916 (B 642), p. 60 -- Shaft sunk 107 ft., adit driven 400 ft., 1915, at American Eagle claim.

Smith, 1917 (BMB 142), p. 23 -- Adit driven 450 ft. and considerable ore mined, 1915.

Chapin, 1919 (B 692), p. 322 -- Development work and some production of gold and antimony, 1917. [This reference may be to McCarty (Pioneer).]

Smith, 1930 (B 810), p. 14-15 -- Development and minor production, 1927.

Smith, 1930 (B 813), p. 17 -- Mining, 1928.

Smith, 1932 (B 824), p. 20 -- Mining, 1929.

Hill, 1933 (B 849-B), p. 52 -- Has been a major lode producer in district for last few years [1931].

p. 75 -- Data on claim names and ownership.

p. 104-106 -- 3 major veins striking NE or NW and several smaller ones consist of from 2 to 3 ft. of quartz on the hanging walls and about the same thickness of crushed and sheared quartz, schist, and gouge. Some of ore is high in sulfides. 1,225 tons of ore mined in 1929-30 averaged more than $21.50 a ton. A thousand or more feet of underground workings, stopes, and many surface pits and trenches. Practically no proved ore, but prospects are good. Most of older workings caved in 1931.

Smith, 1933 (B 836), p. 19-20 -- Major producer in Fairbanks Cr. area, 1930.

Smith, 1933 (B 844-A), p. 19 -- Major producer in Fairbanks Cr. area, 1931.

Smith, 1934 (B 864-A), p. 20 -- Mining, 1933.

McCarty (Henry Ford) - Continued

Smith, 1938 (B 897-A), p. 22 -- Some production, 1936. Old adit reopened; shaft deepened.

Smith, 1939 (B 910-A), p. 23-24 -- Mining, 1937. Drifting in vein on 135-ft. level.

Smith, 1939 (B 917-A), p. 25-26 -- Exploration and some production, 1938.

Smith, 1941 (B 926-A), p. 22 -- About 865 ft. of drifts, crosscuts, and raises driven; some ore mined and milled, 1939.

Joesting, 1942 (TDM 1), p. 10 -- Lenses or bunches of stibnite that are later than gold mineralization. Sample from 235-ft. level contained 60.66% Sb and traces of As, Pb, and Au. Vein is coarsely crystalline quartz with free gold and small amounts of jamesonite, stibnite, arsenopyrite, and sphalerite.

Smith, 1942 (B 933-A), p. 22 -- Exploration, mining, and milling, 1940. More than 1,100 ft. of workings driven. Workings total shaft 250 ft. deep, nearly a mile of "underground passageways, and 1,750 feet of raises..." Considerable stoping.

Joesting, 1943 (TDM 2), p. 7-8 -- Lenses and kidneys of stibnite on all levels of mine. In 1942 about 15 tons of hand-sorted ore stocked on surface. Considerable stibnite-bearing ore milled with gold quartz ore. 5 tons of stacked ore (45% Sb) shipped to purchase depot. More ore exposed in workings.

Killeen and Mertie, 1951 (OF 42), p. 12 -- Sample assayed 52.82% Sb.

p. 14 -- Has been minor stibnite production.

p. 35 -- American Eagle vein strikes N 80° W, dips 60°-70° S, and varies from a stringer to 3 ft. in width. Several lenticular stibnite bodies are not more than a foot thick; some 15 ft. long. Henry Ford vein strikes N 30° E, dips 70° NW, is 4 ft. wide, and is displaced by fissure that contains American Eagle vein. About 4 tons of stibnite saved during gold mining in 1942; sample contained 52.82% Sb.

p. 42 -- 4 tons of antimony ore has been sold.

Burand, 1968 (GC 13), p. 15 -- One of most productive gold mines in district; in mineralized fracture zone along [Cleary] anticline.

Chapman and Foster, 1969 (P 625-D), p. D8 -- [Data for both McCarty properties (Henry Ford and Pioneer) are thoroughly mixed.]

McCarty (Pioneer) — Antimony, Gold

Fairbanks district — Livengood (19.55, 1.55)
MF-413, loc. 46 — 65°04'N, 147°21'W

Summary: Quartz veins 1-2 ft. thick, some with gouge along one or both walls, carry free gold and some stibnite. Other veins, 8-18 in. thick, carry much stibnite and jamesonite. Mine (mainly on Pioneer and Pennsylvania claims) produced gold worth $24,000 between 1910 and probably no later than 1917. A little stibnite ore also was produced. In 1942 a little stibnite ore was on dumps. Workings consisted of several shafts (one was a 146-ft. incline), at least one level of drifts, and raises. Includes references to: Black Warrior, Dorothy, Free Gold (Fairbanks Cr.), Harrietta, Henry Clay, Hinton, I.B., Iron Mask, Laughing Water, Leroy, Marigold, McCarty & Lawson, McDougall, Minnie Ha-Ha, Pennsylvania, Pioneer (Fairbanks Cr.), Russian Kid, War Eagle, Willie. See also McCarty (Henry Ford); some of references may apply to either mine.

Prindle, 1910 (B 442), p. 227 -- On Willie claim 4-5 ft. of ferruginous quartz and mineralized schist has been exposed. Gold can be panned from it. Strikes N 50° E, dips 80° SE and, reportedly, has been traced by float for about 1,000 ft.

Brooks, 1911 (B 480), p. 34 -- Open cuts. Some ore mined and milled, 1910.

Brooks, 1912 (B 520), p. 31 -- Ore mined from Pennsylvania claim; 350 ft. of adits driven on Russian Kid claim; 1911.

Smith, 1913 (B 525), p. 164-167 -- Veins on War Eagle, Leroy, Pioneer, Iron Mask, and Black Warrior claims are similar in appearance, strike nearly due E, dip more than 45° S, and are 1-2 ft. thick. Most work on Pioneer claim, where 3 shafts, drifts, and several pits proved vein for 800 ft.; average width about 18 in.; 6 in. to 1 ft. gouge on both walls. No production, 1912. 107 tons of ore has been sent to custom mill; 22 tons milled out $172 a ton and the rest $125-$150 a ton in gold, not including concentrates. Similar ore on Pennsylvania claim; vein strikes N 76° W, dips 56' S; gouge on hanging wall; average width about a foot. 92-ft. shaft, drifts on 50-ft. level, raises. Mill tests yielded high returns, but owners estimate average tenor of about $40. Mill being built, 1912.

Smith, 1913 (B 542), p. 150-153 -- Same as B 525.

Chapin, 1914 (B 592), p. 331 -- On Pennsylvania is inclined shaft 146 ft. deep, drifts on 50-ft. level, and several raises. Ore has been milled. Not operated in 1913.

Eakin, 1915 (B 622), p. 237 -- Mining, 1914.

Brooks, 1916 (B 642), p. 60 -- Some work reported, 1915.

Mertie, 1918 (B 662), p. 411-412 -- 2 veins with stibnite strike nearly E, dip steeply N and S, and are 8 and 18 in. thick. Several gold-quartz veins, one with some stibnite.

McCarty (Pioneer) - Continued

Chapin, 1919 (B 692), p. 322 -- Development work and some production of gold and antimony, 1917. [This reference may be to McCarty (Henry Ford).]

Hill, 1933 (B 849-B), p. 75 -- Data on claim names and ownership, 1931.

p. 102-103 -- No workings accessible in 1931. Gold production was $14,000 from Pioneer claim and $10,000 Pennsylvania claim. Some antimony ore was shipped. Pioneer vein strikes N 65° W, dips 60° S. Reference to B 525, p. 164.

Killeen and Mertie, 1951 (OF 42), p. 12-14 -- Samples assayed 57.01% Sb and 26.41% Sb. Has been minor stibnite production.

p. 33-34 -- Vein on Pennsylvania claim strikes N 8° W, dips 55° S, and is 12 in. wide; yellowish oxidation products of stibnite common in quartz. About half a ton of oxidized lump stibnite ore on dump. At Hinton cut small lenses of jamesonite and stibnite were visible in 1942. On Pioneer and adjacent claims a vein 8 in. wide is in places nearly pure stibnite. Other veins also contain stibnite. Has been some production [probably during World War I].

p. 41-42 -- Some low-grade ore available on dumps. Material at Hinton cut might be minable.

Chapman and Foster, 1969 (P 625-D), p. D8 -- [Data for both McCarty properties (Henry Ford and Pioneer) are thoroughly mixed.]

Mizpah

Antimony, Gold, Lead, Manganese, Tungsten

Fairbanks district
MF-413, loc. 48

Livengood (19.85, 1.6)
65°04'N, 147°19'W

Summary: Quartz vein from 3 in. to 3 ft. thick carries gold, scheelite, stibnite, and, in a faulted area, earthy wad and argentiferous galena. Ore richest in gold where stibnite is present. Gold and scheelite seem to be mutually exclusive, though in the same vein. Mine was worked 1912-18 and possibly (through Gilmore Tunnel) after 1931. Several hundred feet of underground workings. A little scheelite produced in 1916; a little stibnite also mined, probably about the same time. No data on total gold production; ore reported to have averaged between $30 and $40 a ton (old price of gold). Includes references to Black Joe. See also: Gilmore, Ohio (Fairbanks Cr.).

Smith, 1913 (B 525), p. 162 -- Vein strikes E, dips more than 75° S. Minable rock is 1-3 ft. thick. 3 tons of ore (probably selected) returned $92 a ton. Quartz appears to have been sheared; carries free gold and subordinate sulfides. Developed by 120-ft. shaft and drifts on 80-ft. level.

Smith, 1913 (B 542), p. 147-148 -- Same as B 525.

Chapin, 1914 (B 592), p. 329 -- Near-vertical eastward-trending quartz vein opened by 120-ft. shaft and drifts at 80-ft. level.

Eakin, 1915 (B 622), p. 237-238 -- Plan to resume work in fall, 1914.

Brooks, 1916 (B 642), p. 60 -- Developments continued, 1915.

Smith, 1917 (BMB 142), p. 23 -- Mining; some production, 1915.

Mertie, 1918 (B 662), p. 405-406 -- 200 tons of ore mined and milled, 1916. Quartz vein 3 in. to 3 ft. (average about 1 ft.) thick strikes E to S 70° E and dips about 65° SW; some horses in vein. Stibnite in some parts of vein; gold content greater where stibnite is present. In faulted area is "earthy wad and oxidized silver-lead ore" [no other data given]. About 360 ft. of underground workings. Yield from ore mined was between $30 and $40 a ton.

p. 421 -- Scheelite mined in 1916 from Black Joe and Mizpah claims adjoining Mizpah mine. Inclined shaft, 2 levels of drifts. Vein strikes N 80° W, dips 80° S; contains gold and scheelite in different parts of vein. Country rock is quartzite schist.

Chapin, 1919 (B 692), p. 321-322 -- Operated, 1917. Working on an eastward-trending quartz vein that dips steeply S; from a few inches to 3 ft. wide; carries considerable stibnite; some shoots very rich in free gold. Galena-bearing lode encountered in workings. A little scheelite mined, 1916. Several hundred feet Of workings; mill.

Martin, 1920 (B 712), p. 39 -- Mine and mill operated, 1918.

Capps, 1924 (B 755), p. 148 -- Scheelite in gold-bearing quartz vein in quartzite schist. Gold and scheelite in different parts of vein.

Mizpah - Continued

Hill, 1933 (B 849-B), p. 107 -- Main shaft sunk on vein that strikes N 65° W and dips 70° S. Many of workings caved in 1931. Vein (as exposed in pillars) is 20-24 in. wide; consists of iron-stained quartz. Report that Gilmore tunnel connected with Mizpah shaft and that a considerable tonnage of fair-grade ore was mined from Mizpah vein above tunnel level. Average value of all ore mined from Mizpah is reported to be between $30 and $40 a ton.

Killeen and Mertie, 1951 (OF 42), p. 14 -- Minor amounts of antimony ore have been produced.

p. 36 -- References to B 662, p. 406; B 592, p. 329.

Byers, 1957 (B 1024-I), p. 208 -- Quotation from B 662, p. 421. Small amount of scheelite concentrates recovered in 1916. No tungsten ore evident on dumps, 1942.

Berg and Cobb, 1967 (B 1246), p. 220 -- Scheelite concentrates produced as byproduct of production of gold from quartz veins.

Chapman and Foster, 1969 (P 625-D), p. D7 -- References to most of above reports.

Mohawk

Antimony, Gold

Fairbanks district
MF-413, loc. 29

Livengood (18.65, 1.2)
65°03'N, 147°28'W

Summary: Several quartz veins; ore contains gold, stibnite, pyrite, and arsenopyrite. Report of osmiridium by owner is not confirmed. At least 2 shafts and some drifts. Gold ore (probably less than 100 tons total) mined in 1912 or earlier and 1916-18. Includes references to: Heilig & Creighton, Rose.

Smith, 1913 (B 525), p. 190 -- 180-ft. adit driven on quartz vein about 1 ft. wide on Rose claim. 2 tons of ore has been milled; no data on tenor.

Smith, 1913 (B 542), p. 176 -- Same as B 525.

Chapin, 1914 (B 592), p. 342 -- On Rose claim a 4-ft. quartz vein strikes N 10° E, dips W. Pyrite, arsenopyrite, and free gold. Inclined shaft and other working. Vein reported to be 8 ft. thick at depth. Flooded in 1913. Another vein of glassy quartz with arsenopyrite is 8 in. wide, vertical, and strikes N 70° W.

Mertie, 1918 (B 662), p. 407 -- 46 tons of ore mined and milled, 1916. Gold quartz vein 16-18 in. thick strikes N 20° E, dips 60° W; another vein is 30-42 in. thick and may be either a fault-displaced segment of the first or a parallel vein. Gold, stibnite, pyrite, and arsenopyrite in vein. Developed by 50-ft. shaft and drifts. Arsenopyrite in quartz on dump by another shaft filled with water in 1916. Owner reported osmiridium.

Chapin, 1919 (B 692), p. 322 -- Shaft sunk 60 ft. and crosscuts started, 1917. 2 parallel veins that strike N 30° E, dip 65° NW.

Martin, 1920 (B 712), p. 40 -- Ore was mined from shaft on Rose claim and milled, 1918.

Hill, 1933 (B 849-B), p. 82 -- References to B 592, p. 342; B 662, p. 407.

Killeen and Mertie, 1951 (OF 52), p. 26 -- References to B 662, p. 407; B 849-B, p. 82.

Chapman and Foster, 1969 (P 625-D), p. D11 -- Data essentially from above references.

Moonlight — Gold

Fairbanks district — Livengood (18.85, 0.9)
MF-413, loc. 33 — 65°02'N, 147°27'W

Summary: 4 to 6 inches of crushed quartz and schist in fracture zone in quartzite schist and granite. Gold and unspecified sulfide minerals. Grab sample of possible "ore" on dump contained $3.26 a ton in gold. No record of production. Includes references to: Moonshine, Sunlight, Sunshine, Twilight; see also Independence.

Smith, 1913 (B 525), p. 201 -- 50-ft. shaft with 15-ft. drift. Vein dips to north, is about a foot wide and is said to carry considerable gold; quartz broken into wedge-shaped blocks; large amount of [unspecified] sulfides. Country rock is quartzite schist.

Smith, 1913 (B 542), p. 187 -- Same as B 525.

Chapin, 1914 (B 592), p. 349 -- Vein traced by prospect pits for 2,500 ft.; strikes N 70° W, dips steeply NE; cuts quartzite schist and granite; proven productive part all in schist. Vein pinches and swells; averages less than a foot in width. Considerable sulfides [kinds not identified] in post-quartz veinlets. Gold in quartz and sulfides. About 170 ft. of underground workings.

Eakin, 1915 (B 622), p. 238 -- Prospecting, winter of 1913-14.

Hill, 1933 (B 849-B), p. 114 -- 3 tunnels and connecting raises in bad condition in 1931. Near contact between granite and schist, 4-6 in. of crushed quartz and schist in a fracture zone (strike N 75° E, dip 75° N). 3 tons of material may have been considered to be ore; grab sample assayed $3.26 a ton.

Chapman and Foster, 1969 (P 625-D), p. D12 -- Data mixed with that for Independence.

Moore-Sheldon

Antimony

Fairbanks district
MF-413, loc. 37

Livengood (18.7, 1.35)
65°04'N, 147°28'W

Summary: Stibnite in sulfide-bearing marble and calc-schist truncated by a crushed zone.

Chapman and Foster, 1969 (P 625-D), p. D11 -- Banded blue and white sulfide-bearing marble and calc-schist truncated by iron-stained crushed zone that strikes N 55° E. Minerals include quartz, stibnite, and pyrite.

(Moose Cr.) Gold (?)

Rampart district Livengood
SW 1/4 NE 1/4 quad.

Summary: Small amounts of gold reported.

Brooks, 1916 (B 642), p. 209 — Prospects reported, 1915.
Mertie, 1918 (B 662), p. 273 — Small amounts of gold reported.

Mother Lode (Dome Cr.) — Copper

Fairbanks district — Livengood (17.4, 1.0)
MF-413, loc. 15 — 65°02'N, 147°37'W

Summary: Graphitic limestone impregnated with pyrite, chalcopyrite, and arsenopyrite. Two shafts; no production.

Smith, 1913 (B 525), p. 194 -- Two shafts, nearly filled with water in 1912. Material on dumps is graphitic limestone heavily impregnated with disseminated sulfides, mainly pyrite, but with some chalcopyrite and arsenopyrite. Has been post-sulfide faulting.

Smith, 1913 (B 542), p. 180 -- Same as B 525.

Chapman and Foster, 1969 (P 625-D), p. D14 -- Reference to B 525, p. 194.

Mother Lode (Willow Cr.) — Antimony, Gold

Fairbanks district — Livengood (18.7, 1.35)
MF-413, loc. 37 — 65°03'N, 147°28'W

Summary: Horizontal stibnite vein at contact between sericitized granite porphyry dike and mica schist. Very little gold (no more than $1 a ton in value).

Prindle, 1910 (B 442), p. 221 -- Stibnite deposited on surface of a sericitized granite porphyry dike; occurs as small veins and lenticular masses (up to several pounds in weight) in schist. "...apparently in close association with the granite porphyry." Samples that were assayed contained no more than $1 in gold per ton. [not mentioned by name; identified from B 649.]

Brooks, 1916 (B 649), p. 32-33 -- One of first lode stibnite discoveries in district. No commercial ore bodies found. Stibnite appears to have been deposited as a horizontal vein at contact of sericitized granite porphyry dike and mica schist. Stibnite occurs as a granular aggregate; much weathered; accompanied by a little pyrite. Some terminated quartz crystals buried in stibnite. Description in B 442, p. 221, quoted.

Killeen and Mertie, 1951 (OF 42), p. 27 -- Reference to B 649, p. 32.

Chapman and Foster, 1969 (P 625-D), p. D11 -- References to above.

(Myrtle Cr.) Gold

Tolovana district Livengood (10.5, 9.35)
MF-413, loc. 64 65°32'N, 148°33'W

Summary: Gold reported to have been mined in 1916 probably was reconcentrated from bench deposit of Livengood Cr. See also (Livengood Cr.).

Brooks, 1918 (B 662), p. 56 -- Mining, 1916.
Cobb, 1973 (B 1374), p. 176 -- Gold probably reconcentrated from bench deposit of Livengood Cr.

Newsboy — Antimony, Copper, Gold, Zinc

Fairbanks district — Livengood (18.7, 1.35)
MF-413, loc. 37 — 65°03'N, 147°28'W

Summary: Lode consists of crushed iron-stained silicified schist with closely spaced quartz veinlets; minable over widths of 8-12 ft.; contains gold, stibnite, pyrite, arsenopyrite, chalcopyrite, and sphalerite. Extensive workings on at least 5 levels; some stopes continuous from surface down to 160-ft. level or deeper. Mining reported 1911-13, 1930-35. Records lost; no data on production. Includes references to Newsboy Extension.

Brooks, 1912 (B 520), p. 31-32 -- Shaft sunk to 200 ft., 2 levels; being deepened to 315 ft. with drifting on 215-ft. level at end of 1911. Vein said to be 4 ft. wide. Ore shipped to custom mill; own mill installed in fall.

Smith, 1913 (B 525), p. 187-190 -- Inclined shaft sunk nearly 350 ft. and drifts at 4 levels. Vein trends N 40° E, dips 73° NW, ranges in width from less than a foot to 9 ft. and averages 2-3 ft. Large amounts of sulfides; pyrite, stibnite, arsenopyrite, chalcopyrite, and sphalerite. Numerous schist horses in vein. Vein faulted off at ends of some of drifts. Average tenor of ore not known; various sources and tests range from $40 to $104 in gold per ton. At Newsboy Extension vein strikes N 15° E, dips 77° W. 115-ft. shaft, short drifts. Ore similar to that at Newsboy; said to run about $15 a ton. Small mill. Mine and mill had not operated for some time (as of 1912).

Smith, 1913 (B 542), p. 172-175 -- Same as B 525.

Chapin, 1914 (B 592), p. 340-341 -- Vein varies in width from a few inches to 14 ft.; many horses of schist; dull, granular quartz; large amount of sulfides. Extensive workings on 5 levels, 1913.

Eakin, 1915 (B 622), p. 238 -- Idle, 1914.

Brooks, 1916 (B 649), p. 32 -- Reference to and quotation from B 525, p. 187-188. Stibnite probably could not be utilized because of arsenopyrite and other impurities.

Hill, 1933 (B 849-B), p. 49 -- $10 ore can be worked at a profit.

p. 63 -- Silicified schist with closely spaced quartz veinlets are sufficiently rich to mine over widths of 8-12 ft.

p. 75 -- Data on claim names and ownership.

p. 85-89 -- Vein strikes N 45°-48° E and dips 65°-80° NW. Vein cut off on NE end of workings by a fault and displaced on SW end by another. Newsboy vein 4-14 ft. wide and consists of crushed iron-stained schist and quartz with disseminated pyrite and arsenopyrite. Data on production have been lost, but total ore mined must have been great; stopes on each side of shaft are continuous from surface down to 160-ft. level or deeper. Another vein is 10 in. wide, strikes N 79° E, dips 60° S, and consists of crushed quartz and sulfides; gold also present. Reference to B 525, p. 187-189, for data on lower levels of mine and on mineralogy.

Newsboy - Continued

Smith, 1933 (B 836), p. 19 -- Development work resumed, 1930.
Smith, 1933 (B 844-A), p. 19 -- Mining, 1931.
Smith, 1934 (B 864-A), p. 20 -- Exploratory work, 1933.
Smith, 1936 (B 868-A), p. 20 -- Exploratory work, 1934.
Smith, 1937 (B 880-A), p. 21 -- Mining, 1935.
Killeen and Mertie, 1951 (OF 42), p. 28 -- References to B 525, p. 187-188; B 592, p. 340-341.
Chapman and Foster, 1969 (P 625-D), p. D11 -- References to several of above reports.

Nightingale, J.

Antimony, Lead, Silver

Fairbanks district
MF-413, loc. 25

Livengood (18.35, 0.55)
65°01'N, 147°31'W

Summary: Stibnite and massive argentiferous galena in altered quartz diorite. No record of production.

Smith, 1913 (B 525), p. 198 -- "...a lead carrying considerable galena and stibnite has been opened up...."
Smith, 1913 (B 542), p. 184 -- Same as B 525.
Killeen and Mertie, 1951 (OF 42), p. 26 -- Reference to above.
Chapman and Foster, 1969 (P 625-D), p. D13 -- Massive argentiferous galena lodes in altered quartz diorite-quartz stockwork country rock. Minerals include stibnite, argentiferous galena, and oxidation products. No production.

(Nome Cr.) Gold

Tolovana district
MF-413, loc. 93

Livengood (21.35-21.7, 6.9)
65°22'N, 147°02'-147°05'W

Summary: Most of mining and all of dredging were in part of Nome Cr. in Circle quad. Gold first found, 1910; ground about 15 ft. deep. Coarse gold near mouth of Ophir Cr. See also (Nome Cr.) Circle quad.

Ellsworth and Parker, 1911 (B 480), p. 165 -- Located, summer of 1910. Ground about 15 ft. deep. 2-4 ft. of pay gravel.

Ellsworth, 1912 (B 520), p. 243-244 -- Coarse gold found near mouth of Ophir Cr.; prospecting, 1911.

Ellsworth and Davenport, 1913 (B 542), p. 209-210 -- Prospecting and a little mining, 1910.

Prindle and Katz, 1913 (B 525), p. 150 -- Reference to B 480, p. 165.

Smith, 1937 (B 880-A), p. 44 -- Prospect drilling, 1935 [may be in Circle quad.].

Smith, 1942 (B 933-A), p. 39 -- Mining, 1940 [may be in Circle quad.].

Cobb, 1973 (B 1374), p. 174 -- Similar to creeks in Fairbanks district. Both stream and bench deposits are auriferous.

North Star (Skoogy Gulch)

Antimony, Gold

Fairbanks district
MF-413, loc. 30

Livengood (18.75, 0.9)
65°02'N, 147°28'W

Summary: Mineralized zone of faulted schist, altered dike rocks (probably granitic), and quartz veinlets is possibly 75 ft, wide. Boulders containing arsenopyrite and stibnite on a dump. Zone has average gold content of probably less than 0.2 oz. per ton. No record of production.

Prindle, 1910 (B 442), p. 223 -- In schist close to intrusive rocks.
Smith, 1913 (B 525), p. 202-203 -- Quotation from B 442, p. 223.
Smith, 1913 (B 542), p. 188-189 -- Same as B 525.
Martin, 1920 (B 712), p. 40 -- Adit being driven, 1918.
Hill, 1933 (B 849-B), p. 74 -- Prospecting, 1931; data on ownership.
p. 116-117 -- 2 tunnels reach Big Lead, a mineralized zone consisting of schist, altered dike rocks, quartz veinlets, and faults; may be as much as 75-1/2 ft. wide. All workings inaccessible in 1931. Boulders of arsenopyrite-stibnite ore on one dump. Big Lead said to average $4 a ton in gold; best assay from Hill's samples from dumps was $3.66 a ton; most surface samples across zone contained no gold.
Killeen and Mertie, 1951 (OF 42), p. 26 -- Reference to B 849-B, p. 117.
Chapman and Foster, 1969 (P 625-D), p. D12 — Iron-stained schist and quartzite; some granitic rock. Veins strike N 87° W and N 55° E and dip respectively 83° S and 43° S. Au and Sb listed under "Metals"; quartz and gold under "Mineralogy."

North Star Extension — Gold

Fairbanks district — Livengood (18.75, 0.9)
MF-413, loc. 30 — 65°02'N, 147°29'W

Summary: Quartz vein 1-6 inches thick in quartzite schist cut by aplite and porphyritic granite dikes yielded gold worth $5,000. Another vein 5 inches thick a ton of $35 ore. At old Central Star, shaft was sunk in schist near intrusive rocks and some ore mined and milled in 1916. Includes references to: Center Star, Central Star, Centre Star.

Prindle, 1910 (B 442), p. 223 -- Centre Star prospect is in schist close to intrusive rocks.

Smith, 1913 (B 525), p. 202-203 -- Quotation from B 442, p. 223.

Smith, 1913 (B 542), p. 188-189 -- Same as B 525.

Mertie, 1918 (B 662), p. 409 -- Center Star was worked in 1916. 3-in. auriferous quartz stringer strikes N 85° W, dips steeply S. Country rock is quartzite schist. Developed by 45-ft. shaft and 175 ft. of drifts.

Hill, 1933 (B 849-B), p. 74 -- Prospecting, 1931; data on ownership.
p. 116-118 -- Tunnel, shallow shaft, and open cuts. Quartz vein 1-6 in. wide in silicified schist trends N 84° W and dips 85° S. Ore that yielded $5,000 in gold said to have come from shaft. Richest of 5 samples from tunnel assayed $1.72 a ton. Aplite and porphyritic granite dikes. Pits dug on another 5-in. quartz vein are said to have yielded a ton of $35 ore. Claim covers part of old Central Star, where ore is reported to have been mined and milled in 1916. Schist and quartz porphyry fragments on dump.

Chapman and Foster, 1969 (P 625-D), p. D12 -- References to above.

Ohio (Fairbanks Cr.) — Antimony, Gold, Lead, Silver

Fairbanks district — Livengood (19.85, 1.6)
MF-413, loc. 48 — 65°04'N, 147°19'W

Summary: Auriferous quartz veins, at least one of which follows a fault, are mainly in schist. Sulfide minerals include stibnite, galena (probably argentiferous), pyrite, and arsenopyrite. Oxidized material from one shaft is reported to have yielded a globule of silver. Mine developed by several shafts and some drifts. 350 tons of ore milled in 1915. Includes references to: Connors & Stevens, Early Bird, Gilmore & Stevens, Gilmore & Stevenson, Gray Eagle, Mayflower; see also: Gilmore, Mizpah.

Smith, 1913 (B 525), p. 162-163 — Upper shaft (45 ft. deep) opens up a vein that may occupy a fault plane. Material on dump contains much galena and stibnite with quartz. Lower shaft exposes 2 NW-striking veins. Ore in footwall extends into schist; abuts slickensided fault surface on hanging wall. Owners believe ore averages at least $50 a ton in gold and some silver.

Smith, 1913 (B 542), p. 148 -- Same as B 525.

Chapin, 1914 (B 592), p. 329 -- Development, 1913.

Eakin, 1915 (B 622), p. 237-238 -- Mining on Mayflower claim, 1914. Shaft sunk on vein 2 - 2-1/2 ft. wide on Ohio group; 20 tons selected ore on dump.

Brooks, 1916 (B 642), p. 60 -- Mine and mill operated on regular basis, 1915.

Brooks, 1916 (B 649), p. 38 -- Stibnite and galena in ore.

Smith, 1917 (BM 142), p. 23 -- Mill built, 1915.

Mertie, 1918 (B 662), p. 408-409 -- 350 tons of ore milled in 1915. Most of work in 1916 was driving a long prospecting tunnel that could also serve as a working tunnel. Several gold-quartz veins; some pyrite and stibnite. Oxidized meterial from a shaft that penetrated a recrystallized green rock with quartz, pyrite, and arsenopyrite is reported to have yielded a globule of silver. Workings consist of shafts in rock that may be creeping downhill; at least 200 ft. of shafts; some drifts. On Early Bird claim 12-15 in. of stibnite in a kidney-shaped body was uncovered.

Chapin, 1919 (B 692), p. 322 -- Prospecting adit was 800 ft. long, Sept., 1917.

Martin, 1920 (B 712), p. 39 -- Adit nearly completed, 1918.

Hill, 1933 (B 849-B), p. 107-108 -- Reference to B 662, p. 408-409.

Killeen and Mertie, 1951 (OF 42), p. 36 -- References to B 525, p. 163; B 662, p. 409.

Chapman and Foster, 1969 (P 625-D), p. D7 -- References to above.

Old Glory

Tungsten

Fairbanks district
MF-413, loc. 18

Livengood (11.95, 0.7)
65°01'N, 147°35'W

Summary: Contact-metamorphic deposit of finely disseminated scheelite in quartz-mica schist and quartzite near tongue of larger granodiorite intrusive body; small granodiorite dike uncovered in prospect pit. Mineralized zone 3 to 4-1/2 ft. thick; channel sample contains 0.48% WO_3. Includes references to Leslie (& Hawks). Delete loc. 19 from MF-413.

Joesting, 1943 (TDM 2), p. 23 -- Bulldozed trench in weathered schist exposed a 3-ft. zone of finely disseminated scheelite; a few small high-grade spots; average WO_3 content estimated at from 0.5% to 1% WO_3. Fine-grained quartz diorite 8 ft. below surface in bottom of small pit sunk in trench.

Thorne and others, 1948 (RI 4174), p. 5 -- Prospect at Seattle Cr. examined, 1944.

p. 26-27 -- Trench bulldozed through 7 ft. of overburden into weathered schist. Pit sunk in bottom of trench exposed a 3-ft. zone of finely disseminated scheelite that strikes N 44° E and dips 45° SE. Zone estimated to contain about 0.5% WO_3.

p. 29 -- Quotation from TDM 2, p. 23.

Byers, 1957 (B 1024-I), p. 206 -- Contact metamorphic deposit.

p. 209-210 -- Bedrock is quartz-mica schist and quartzite; tongue of granodiorite (extension of mass at Pedro Dome) is a few hundred feet to the north; small granodiorite dike is exposed in prospect workings. Development consists of an open cut 20 ft. long and a small pit in floor of cut. Scheelite sparsely disseminated in walls of pit. Channel sample across 4-1/2 ft. contained 0.48% WO_3.

Berg and Cobb, 1967 (B 1246), p. 221 -- Scheelite-bearing lode in metamorphosed limestone.

Chapman and Foster, 1969 (P 625-D), p. D13 -- References to above reports.

Old Smoky

Gold

Tolovana district
MF-413, loc. 4

Livengood (10.85, 8.95)
65°30'N, 148°31'W

Summary: Auriferous arsenopyrite-quartz veins in ferruginous quartzite near porphyritic dikes contain 3-13 ppm gold as determined by atomic absorption or 1.6-7.0 ppm gold as determined by fire assay.

Foster, 1968 (C 590), p. 2 -- Narrow northwestward-trending auriferous arsenopyrite-quartz veins in ferruginous quartzite footwall near the intersection of an altered porphyritic biotite monzonite dike and a K-feldspar-rich porphyry dike. Samples contained 3-13 ppm Au.

p. 10-11 -- Samples contained 3 to 13 ppm Au (atomic absorption) or 1.6-7.0 ppm Au (fire assay)

Foster, 1968 (OF 322), p. 2 -- Same data as C 590, p. 2.

p. 9 -- Analytical data on 16 samples.

p. 18 -- Descriptions of samples.

(Olive Cr.)

Chromite, Gold, Mercury, Silver, Tungsten

Tolovana district
MF-413, locs 4, 72

Livengood (10.85-10.9, 8.7-8.95)
65°29'-65°30'N, 148°30'-148°31'W

Summary: Bedrock is slate and sandstone intruded by now highly altered granitic rock. Cinnabar in altered rock; explored by about 270 ft. of adits and tunnels; some material reported to run 20-30 lbs. mercury per ton. Some mercury probably was recovered (Hudson property). Nearby an altered and brecciated felsic rock in chert and argillite contains gold and a little silver; pyrite and arsenopyrite present. Creek was a major placer-gold producer, 1914 to as recently as 1967. Some gold on sandstone bedrock and some on false bedrock 80 ft. above true bedrock. Concentrates contained gold, magnetite, ilmenite, plentiful cinnabar, picotite, limonite, scheelite, chromite, pyrite, arsenopyrite, zircon. Includes references to: Hudson, Sunshine No. 2.

Brooks, 1915 (B 622), p. 51 -- Gold discovered, 1914.
Brooks, 1916 (B 642), p. 63 -- Has been open-cut mining, 1915.
Brooks, 1916 (B 642), p. 208-209 -- Mining, 1915.
Smith, 1917 (BMB 142), p. 24 -- Mining, 1915.
Smith, 1917 (BMB 153, p. 52 -- Mining, 1916.
Brooks, 1918 (B 662), p. 56 -- Mining, 1916.
Mertie, 1918 B 662), p. 256 -- Mining, 1916.
p. 271-272 -- On Discovery claim fine gold is in lower 7 ft. of 10 ft. of angular slide gravel on sandstone bedrock. Concentrates contain gold, magnetite, ilmenite, plentiful cinnabar, picotite, and limonite. On claim No. 2 below Discovery 14 ft. of gravel above clay false bedrock is auriferous. 80 ft. of barren muck between false bedrock and true bedrock; a little coarse gold on bedrock.
p. 274 -- Small landslide has exposed much-weathered granitic rock from which cinnabar was panned.
Martin, 1920 (B 712), p. 41 -- Mining, 1918.
Overbeck, 1920 (B 712), p. 182-183 -- Open-cut mining, 1918. Very fine gold distributed through 10-15 ft. of gravel. Concentrates contain scheelite, magnetite, much cinnabar, chromite, pyrite, arsenopyrite, and zircon. Cinnabar derived from weathered granite at head of creek.
Brooks and Capps, 1924 (B 755), p. 37 -- Mining, 1922.
Moffit, 1927 (B 792), p. 19 -- Mining, 1925.
Smith, 1929 (B 797), p. 21 -- Mining and prospect drilling, 1926.
Smith, 1930 (B 813), p. 30 -- Mining, 1928.
Smith, 1932 (B 824), p. 36 -- Mining, 1929.
Smith, 1933 (B 836), p. 36 -- Mining, 1930.
p. 81 -- Test runs said to have been made on quicksilver ore, 1930.
Smith, 1933 (B 844-A), p. 35 -- Mining, 1931.
Smith, 1934 (B 857-A), p. 34 -- Mining, 1932.
Smith, 1934 (B 864-A), p. 39 -- Mining, 1933.

(Olive Cr.) - Continued

Smith, 1936 (B 868-A), p. 39-40 -- Mining, 1934.
Smith, 1938 (B 897-A), p. 52 -- Mining, 1936.
Smith, 1939 (B 910-A), p. 53-54 -- Mining, 1937, and preparation for larger scale mining in 1938.
Smith, 1939 (B 917-A), p. 53 -- Mining, 1938.
Smith, 1941 (B 926-A), p. 49 -- Mining, 1939.
Joesting, 1942 (TDM 1), p. 17 -- Chromite and chrome spinels in placers; probably derived from serpentine in Middle Devonian basic volcanic rocks.

p. 26 -- Large amounts of placer cinnabar. Lode occurrence (Hudson prospect) discovered in 1917; considerable underground development and a little production. Joesting concluded that deposit is too low grade to be of commercial importance.

p. 39 -- Placer scheelite rare.

Smith, 1942 (B 933-A), p. 46 -- Mining, 1940.
Malone, 1962 (IC 8131), p. 8 -- Quantities of cinnabar in sluice boxes led to search for and discovery of cinnabar in place in 1917. Considerable exploration, but no production.

p. 48-50 -- Lode on E fork uncovered by a landslide, 1916 [says 1917 on p. 8]. In late 1920's Hudson found cinnabar in place on W fork. Bedrock is slate and sandstone intruded by a highly altered granitic rock. In most altered part, cinnabar is evenly distributed as small specks and grains. Explored by about 270 ft. of adits and tunnels. Some material reported to have run 20-30 lbs. Hg per ton.

Malone, 1965 (IC 8252), p. 32 -- No production during World War II (Hudson prospect).

p. 49-50 -- Same as IC 8131, p. 48-50.

p. 55 -- Reference to B 662.

Burand, 1966 (GC 11), p. 5 -- Placer gold has been produced. Weathered granitic rock contains some cinnabar; assays said to have been as high as 0.02% Hg.

p. 8 -- Cinnabar in weathered granite.

Berg and Cobb, 1967 (B 1246), p. 239 -- A little mercury has been recovered from lode. Claims staked on quartz-calcite veinlets (each less than 3 in. thick) that contain gold, silver, pyrite, and arsenopyrite; wall rock altered and carries some gold; samples from veinlets assayed as high as $12 a ton in gold and $2 a ton in silver (1917 prices).
Foster and Chapman, 1967 (OF 275), locs. 9-11 -- Cinnabar in weathered granitic rock [Hudson prospect]. Crushed and altered sulfide-bearing porphyritic igneous rock in brecciated chert; oxidized zone is about 220 ft. wide and separates altered volcanic rocks (SE) from greenschist-facies metasedimentary rocks (NW); pyrite and arsenopyrite present; anomalous amounts of Be, Nb, La, and some other elements detected by spectrographic analysis.

(Olive Cr.) - Continued

Foster, 1968 (C 590), p. 1-2 -- Has been a major placer-gold producer. Only sporadic mining as of 1967. Abundant cinnabar in placer cleanup in 1967. Sunshine No. 2 prospect is a few hundred feet above old Hudson mercury prospect. Northwestward trending, crumbly, auriferous dike with internal limonite veinlets is in contact with altered argillite.

p. 10-11 -- Two samples contained 0.5 and 0.8 ppm Au.

Foster, 1968 (OF 322), p. 2 -- Sunshine No. 2 prospect is on a northwesterly-trending crumbly, auriferous felsic dike with internal limonite veinlets; dike has cut and altered argillite country rock. Prospect is within 100 ft. of upper adit of old Hudson mercury prospect. Abundant cinnabar nuggets in cleanup at placer mine half a mile downstream, August, 1967.

p. 10 -- Analytical data for 6 samples.

p. 19 -- Descriptions of samples.

Koschmann and Bergendahl, 1968 (P 610), p. 31 -- Reference to B 662, p. 256.

Cobb, 1973 (B 1374), p. 174 -- A little cinnabar mined from lode at head of creek.

p. 176 -- Bench deposits were mined.

(Ophir Cr.) Gold

Tolovana district
MF-413, loc. 93

Livengood (21.35, 6.9)
65°22'N, 147°05'W

Summary: Coarse gold discovered in 1910. Sporadic small-scale mining and prospecting for the next few years.

Ellsworth and Parker, 1911 (B 480), p. 165 -- Discovered, spring, 1910. Small stampede in July. Coarse gold; gravel runs $1.25 to $1.75 per bedrock foot; largest nugget valued at $4.30.

Ellsworth, 1912 (B 520), p. 243 -- Said to be workable placers; may be winter mining, 1911-12.

Ellsworth and Davenport, 1913 (B 542), p. 210 -- Small-scale mining, 1912.

Prindle and Katz, 1913 (B 525), p. 150 -- Reference to B 480, p. 165.

Martin, 1920 (B 712), p. 38 -- Pay gravel reported to have been discovered in shallow bench deposits, 1918.

Cobb, 1973 (B 1374), p. 174 -- Gold discovered, 1910.

(Our Cr.) Gold

Fairbanks district Livengood (15.65-15.75, 0.45-0.55)
MF-413, locs. 77, 78 65°01'N, 147°52'-147°53'W

Summary: Very little mining; probably less than 250 oz. gold produced. Production reported in 1908 only. Where mined depth to bedrock was 75 ft.

Brooks, 1908 (B 345), p. 41-42 -- Placers discovered and minor production, 1907.
Prindle, 1908 (B 337), p. 44 -- Good prospects found, 1907.
Prindle and Katz, 1909 (B 379), p. 191 -- Depth to bedrock 64-120 ft.
Prindle and Katz, 1913 (B 525), p. 101-102 -- Gold discovered, 1906. Bedrock is mainly schist and "a small amount of rusty granitic rock." Where most work was done depth to bedrock is 75 ft. Nugget worth $12 found in 1908. In lower part of valley prospect holes were sunk 317 and 218 ft.

p. 108 -- Depth to bedrock 75 ft. on Washington Association.

p. 112-113 -- Production, 1908, worth $5,000. Gold worth $18.43 per oz.

Parker — Chromite, Nickel

Tolovana district — Livengood (11.75, 8.8)
MF-413, loc. 6 — 65°30'N, 148°23'W

Summary: Nickel in silicates, spinels, alloys, and sulfides and chromite in alpine-type serpentinites. See also (Olive Cr.)

Foster and Chapman, 1967 (OF 275), loc. 12 -- Nickeliferous alpine-type serpentinites with Ni in silicates, spinels, alloys, and sulfides. Nickel content for whole-rock samples as high as 0.42%. Chromite present.

(Pedro Cr.) Gold, Tin

Fairbanks district Livengood (18.45-18.8, 0.4-0.95)
MF-413, loc. 89 65°00'-65°02'N, 147°28'-147°31'W

Summary: Site of original discovery of placer gold in district, 1902. Depth to bedrock 8-40 ft. Concentrates contain gold, magnetite, garnet, rutile, pyrite, and cassiterite. Mining was by drifting, open cuts, dredges; from 1903 to as recently as 1940. No mining reported, 1917-25. Data on mining frequently combined with that for Goldstream, Fairbanks quad. See also (Pedro Cr.) Fairbanks quad.

Prindle, 1904 (B 225), p. 68-69 -- Bedrock is quartzite schist; 10-25 ft. deep. Gold in bottom 2-7 ft. of gravel and top 2-1/2 ft. of bedrock. Garnet and rutile present. Gold both very fine and coarse ($14 pieces). Open-cut mining, 1903.

Brooks, 1905 (B 259), p. 26-28 -- Mining, 1903, 1904. Depth to bedrock 8 to 30 ft. Pay gravel is 1 to 4 ft. thick; gold also in top 1 to 5 ft. of decomposed bedrock. Pay streak 40 to more than 200 ft. wide.

Prindle, 1905 (B 251), p. 67 -- Gold discovered, July 1902. Creek of economic importance, 1903.

p. 75-77 -- Depth to bedrock is 8 to 30 ft. Pay gravel is 1 to 4 ft. thick; gold also in top 1 to 5 ft. of bedrock. Heavy minerals with gold are black sand [magnetite], garnet, rutile, and pyrite. Mining, 1903, 1904, by open cuts and drifting.

Purington, 1905 (B 263), p. 32 -- Some of ground could be worked by open cutting.

p. 42 -- Data on cost of sinking shafts.

p. 208 -- Gold worth $18.40 per oz.

Prindle, 1906 (B 284), p. 111 -- Has been production, 1905.

p. 118 -- Production from creek between Twin Cr. and mouth. Deposits from 8 to 30 or more ft. thick. Values in as much as 8 ft. of gravel and 4 ft. of bedrock.

Brooks, 1907 (B 314), p. 36 -- Mining, 1906.

Prindle, 1908 (B 337), p. 29 -- Quotation from B 314, p. 36.

p. 39 -- Scene of first discovery in district; major producer.

Prindle and Katz, 1909 (B 379), p. 190 -- Mining, 1908.

p. 192 -- Depth to bedrock 9-35 ft.

Ellsworth, 1910 (B 442), p. 232 -- Mining, 1909.

Ellsworth and Parker, 1911 (B 480), p. 154-155 -- Mining, 1910.

Ellsworth, 1912 (B 520), p. 241 -- Mining, 1911.

Ellsworth and Davenport, 1913 (B 542), p. 206 -- Mining, 1912.

Prindle and Katz, 1913 (B 525), p. 105 -- Mining, 1908.

p. 109 -- Depth to bedrock no more than 40 ft.

p. 111 -- Value of gold produced, 1903-10, was $1,250,000.

p. 113 -- Gold worth $17.68 per oz.

Brooks, 1914 (B 592), p. 68 -- Mining, 1913.

Chapin, 1914 (B 592), p. 359 -- Mining, 1913.

Eakin, 1915 (B 622), p. 234 -- Mining, 1914.

(Pedro Cr.) - Continued

Brooks, 1916 (B 642), p. 59 -- Mining, 1915.
Smith, 1917 (BMB 142), p. 22-23 -- Mining, 1915.
Smith, 1917 (BMB 153), p. 51 -- Mining, 1916.
Brooks, 1918 (B 662), p. 54 -- Mining, 1916.
Smith, 1929 (B 797), p. 20 -- Mining, 1926.
Smith, 1930 (B 810), p. 25 -- Mining, 1927.
Smith, 1930 (B 813), p. 28 -- Mining, 1928.
Smith, 1932 (B 824), p. 33 -- Mining, 1929.
Smith, 1933 (B 836), p. 32-33 -- Mining, 1930 [Dredge, p. 32, is probably considered on Goldstream (Fairbanks quad.) in list on p. 54.]
Smith, 1933 (B 844-A), p. 32 -- Mining, 1931. [Dredge, p. 32, is probably considered on Goldstream (Fairbanks quad.) in list on p. 54.]
Smith, 1934 (B 857-A), p. 30 -- Mining, 1932. [Dredge, p. 30, is probably considered on Goldstream (Fairbanks quad.) in list on p. 51.]
Smith, 1934 (B 864-A), p. 34-35 -- Mining, 1933. [Dredge, p. 34-35, is probably considered on Goldstream (Fairbanks quad.) in list on p. 56.]
Smith, 1936 (B 868-A), p. 35-36 -- Mining, 1934. [Dredge, p. 35, is probably considered on Goldstream (Fairbanks quad.) in list on p. 58.]
Smith, 1937 (B 880-A), p. 39 -- Mining, 1935. [Dredge, p. 39, is probably considered on Goldstream (Fairbanks quad.) in list on p. 61.]
Smith, 1938 (B 897-A), p. 46 -- Mining, 1936. [Dredge, p. 46, is probably considered on Goldstream (Fairbanks quad.) in list on p. 71.]
Smith, 1939 (B 910-A), p. 46 -- Mining, 1937.
p. 48 -- Dredge for upper Pedro Cr. on order.
Smith, 1939 (B 917-A), p. 43-44, 74 -- Dredge operated, 1938.
Smith, 1941 (B 926-A), p. 40, 70 -- Dredge operated, 1939.
Joesting, 1942 (TDM 1), p. 32 -- Placer cassiterite rare.
Smith, 1942 (B 933-A), p. 38, 67 -- Dredge operated, 1940.
Wedow, Killeen, and others, 1954 (C 331), p. 6 -- Barren windrows of dredge tailings.
Cobb, 1973 (B 1374), p. 128 -- Gold discovered, 1902, by Felix Pedro.

Perrault

Antimony, Gold, Silver

Fairbanks district
MF-413, loc. 48

Livengood (19.85, 1.6)
65°04'N, 147°19'W

Summary: Mineralized quartz veins and schist contain veinlets of stibnite and small amounts of gold and silver.

Chapin, 1914 (B 592), p. 329 -- 3 or 4 nearly parallel quartz veins enclosing masses of schist, all more or less mineralized, form a ledge that strikes N 80° W and dips 60° S. Small amounts of gold and silver in limonitic material. Veinlets of stibnite in both quartz and schist.

Killeen and Mertie, 1951 (OF 42), p. 36 -- Reference to above.

Chapman and Foster, 1969 (P 625-D), p. D8 -- References to above.

Pioneer (Chatham Cr.) — Antimony, Gold, Zinc

Fairbanks district — Livengood (19.2, 1.55)
65°04'N, 147°24'W

Summary: An auriferous quartz vein about 3 ft. thick and a thinner one that contains gold, stibnite, arsenopyrite, sphalerite, and pyrite intersect. Three shafts were sunk and some stopes blocked out. Returns on test shipments were from $30 to $90 a ton in gold. 200 tons of ore milled, 1912-13. First lode claim in Fairbanks district; staked as Blue Bell in 1903.

Prindle, 1910 (B 442), p. 226 -- Small quartz stringer carrying free gold was found at the upper end of the productive gravels of Chatham Cr. in 1908. This and a larger vein (about 3 ft. thick) intersect. Both contain free gold; the smaller vein also contains considerable stibnite and arsenopyrite and some sphalerite and pyrite. Veins followed by shafts 24 ft. and 85 ft. deep.

Brooks, 1911 (B 480), p. 34 -- Prospecting, 1910.

Smith, 1913 (B 525), p. 173-174 -- Quotation from B 442, p. 226. In 1912 new shaft had been sunk 92 ft. and some stopes blocked out; mill under construction. Several mill-test shipments have been made; returns were $30 to $90 a ton in gold.

Smith, 1913 (B 542), p. 159-161 -- Same as B 525.

Chapin, 1914 (B 592), p. 336 -- Underground workings inaccessible in 1913. Mill has processed 200 tons of its own ore and considerable from other properties.

Brooks, 1916 (B 649), p. 35 -- Reference to B 442, p. 226.

Hill, 1933 (B 849-B), p. 90 -- First gold-quartz claim in district; located as Blue Bell in 1903. No work on property for many years. Reference to B 442, p. 226.

Killeen and Mertie, 1951 (OF 42), p. 31 -- Reference to B 442, p. 226.

Chapman and Foster, 1969 (P 625-D), p. D10 -- Data essentially as in above references.

Plumbum — Gold (?)

Fairbanks district — Livengood (19.9, 1.6)
65°04'N, 147°18'W

Summary: Quartz vein in schist. Practically barren of sulfides and no data on possible gold content.

Smith, 1913 (B 525), p. 160-161 -- Quartz vein 3 in. to 2 ft. thick in schist exposed in pit. Quartz lenses in schist are cut by vein. Vein heavily iron stained on upper surface, but appears practically barren of sulfides. This or parallel veins found in other pits; also some steep faults parallel to vein. About 1-1/2 tons of sacked ore [no statement that any gold is present].

Smith, 1913 (B 542), p. 146 -- Same as B 525.

Hill, 1933 (B 849-B), p. 104 -- Abandoned shaft and cuts [as of 1931]. Vein strikes N 70° W, dips 70° S.

Chapman and Foster, 1969 (P 625-D), p. D7 -- References to above.

(Quail Cr.) Gold, Mercury, Silver, Tin, Tungsten

Rampart district Livengood (1.1-1.75, 6.3-6.45)
MF-413, locs. 59, 60 65°22'N, 149°45-149°51'W

Summary: Bedrock is slaty shale with many quartz veinlets and small porphyry dikes. Sample of one dike contained about half an ounce of silver per ton. Benches about 400 ft. and 150 ft. above creek at forks contain gold; workable placers on lower. Concentrates contain gold, picotite, cassiterite, barite, scheelite, garnet, zircon, pyrite, rutile, a very little cinnabar. Bench and/or creek placers mined sporadically from 1898 to as recently as 1940. No data on total production.

Prindle and Hess, 1905 (B 259), p. 114-115 -- Prospecting and small-scale mining, 1904. Bedrock slaty shales with many quartz seams. Abundant small porphyry dikes, some mineralized. Benches 400 ft. above creek level being prospected.

Prindle and Hess, 1906 (B 280), p. 47-50 -- Gold found in prospect holes in bench gravels about 400 ft. and about 50 ft. above creek; not in paying amounts. Dikes carrying sulfides in lower part of valley; assay of a porphyry sample contained 0.52 oz. Ag a ton but no Au. Mining in 1898 and 1904 yielded about $3,300 in gold. Discoverers of gold wanted to call stream "Ptarmigan" Cr., but couldn't spell it and settled for "Quail." Some of gold may be reconcentrated. Data on freight rates and employment.

Hess, 1908 (B 337), p. 65 -- A little gold mined, 1898.
p. 95-98 -- Same as B 280, p. 47-50.

Brooks, 1909 (B 379), p. 55 -- Mining, 1908.

Ellsworth, 1910 (B 442), p. 241 -- Mining, 1909.

Brooks, 1911 (P 70), p. 183 -- Workable placers have been found [as of 1907].

Ellsworth and Parker, 1911 (B 480), p. 167 -- Mining, 1910.

Eakin, 1912 (B 520), p. 277 -- Placer ground in an area of slate-quartzite-schist bedrock.
p. 283 -- Mining, 1911.

Eakin, 1913 (B 535), p. 29 -- Placer ground in an area of slate, quartzite, and schist bedrock.
p. 35 -- Mining, 1911.

Ellsworth and Davenport, 1913 (B 542), p. 221 -- Mining, 1912.

Prindle and Katz, 1913 (B 525), p. 146-147 -- Data essentially as in B 280, p. 47-48. [Silver content of a dike given as 0.52 oz. per ton in B 280 and as 52 oz. per ton here.] Mining, 1910.

Chapin, 1914 (B 592), p. 362 -- Mining, 1913.

Brooks, 1915 (B 622), p. 64 -- Mining, 1914.

Brooks, 1916 (B 642), p. 64 -- Small-scale mining, 1915.

Brooks, 1918 (B 662), p. 57 -- Small-scale mining, 1916.

Martin, 1920 (B 712), p. 41 -- A little mining, 1918.

Overbeck, 1920 (B 712), p. 182 -- One man mining for part of summer, 1918.

Smith, 1930 (B 813), p. 35 -- Mining, 1928.

(Quail Cr.) - Continued

Smith, 1932 (B 824), p. 40 -- Mining, 1929.
Mertie, 1934 (B 844-D), p. 189-191 -- Two benches, one 150 ft. and the other (preserved in very few places) 400 ft. above stream near forks of creek; colors on higher bench; workable placers on lower. Placers not very rich; discovered in 1898 and mined in a small way since then. A sample of concentrates contained picotite, cassiterite, barite, scheelite, pyrite and one grain of cinnabar.
Smith, 1934 (B 864-A), p. 43 -- Mining, 1933.
Waters, 1934 (B 844-D), p. 235 -- Concentrate sample included picotite, cassiterite, barite, scheelite, garnet, zircon, gold, pyrite, rutile, and one grain of cinnabar.
Smith, 1936 (B 868-A), p. 44 -- Mining, 1934.
Smith, 1937 (B 880-A), p. 47 -- Mining, 1935.
Smith, 1941 (B 926-A), p. 53 -- Mining, 1939.
Joesting, 1942 (TDM 1), p. 27 -- Placer cinnabar rare; reference to B 844-D), p. 235.
p. 34 -- Placer cassiterite common; reference to B 844-D, p. 235.
Smith, 1942 (B 933-A), p. 49 -- Mining, 1940.
Malone, 1962 (IC 8131), p. 56 -- Reference to B 844-D, p. 235.
Malone, 1965 (IC 8232), p. 55 -- Reference to B 844-D.
Koschmann and Bergendahl, 1968 (P 610), p. 30 -- One of major placer streams of district.
Cobb, 1973 (B 1374), p. 165-167 -- Has been placer mining. Cassiterite in concentrates.

Queen

Gold (?)

Fairbanks district

Livengood (20.4, 2.0)
65°05'N, 147°14'W

Summary: Faulted quartz vein prospected in 1913. No data on gold content, if any.

Chapin, 1914 (B 592), p. 326 -- Quartz vein being prospected, 1913, by a short shaft and a 100-ft. incline. Vein cut off by fault cutting vein at a low angle. Vein 18 in. wide where cut off. No data on composition of vein.

Chapman and Foster, 1969 (P 625-D), p. D7 -- Reference to above.

Quemboe Bros.

Antimony, Gold

Fairbanks district
MF-413, loc. 44

Livengood (19.4, 1.5)
65°04'N, 147°22'W

Summary: Broken quartz-vein fragments cemented by stibnite, pyrite, and arsenopyrite. Samples across vein contained more than an ounce of gold a ton. 60-ft. shaft; no record of production.

Smith, 1913 (B 525), p. 171-172 -- Vein that trends N 70° W and dips south explored by a 60-ft. shaft and 2 short drifts. In parts of vein broken quartz fragments seem to have been cemented by sulfides, stibnite, pyrite, and arsenopyrite being most abundant. A fault appears to have followed hanging wall. Samples across vein assayed $22.50 and $32 in gold per ton.

Smith, 1913 (B 542), p. 158 -- Same as B 525.

Brooks, 1916 (B 649), p. 36 -- Reference to B 525, p. 171-172.

Killeen and Mertie, 1951 (OF 42), p. 32-33 -- References to B 525, p. 171-172; B 649, p. 36.

Chapman and Foster, 1969 (P 625-D), p. D9 -- Reference to B 525, p. 171-172 and an index map.

Rainbow — Gold, Lead, Tungsten, Zinc

Fairbanks district — Livengood (18.75, 0.9)
MF-413, loc. 30 — 65°02'N, 147°28'W

Summary: Schist and quartzite cut by granite dike; quartz vein 6-18 in. thick follows fault and is definitely younger than granite. Minerals in vein include pyrite, arsenopyrite, galena, sphalerite, scheelite, and gold. Several hundred feet of underground workings. Mining, probably little more than 500 tons total production, 1911 to probably 1913. See also: David, Whitman & Murray.

Brooks, 1912 (B 520), p. 32 -- Vein 2-1/2 to 3 ft. wide; about 500 ft. of underground workings. Shipments made to custom mill, 1911.

Smith, 1913 (B 525), p. 198-200 -- Nearly vertical vein strikes about E. Vertical shaft 100 ft. deep and 270 ft. of drifts on vein. Country rock is schist and quartzite cut by granite dike; granite at end of one drift. Vein contains pyrite, arsenopyrite, galena, sphalerite, and free gold. Mill run of 19 tons of ore (probably selected material) showed gold content worth $38 a ton. Gold 0.839 fine.

Smith, 1913 (B 542), p. 184-186 -- Same as B 525.

Chapin, 1914 (B 592), p. 348 -- Nearly vertical east-west quartz vein 18 in. wide in fault that cuts schist, quartzite, and granite. Vein traced in surface pits and fairly extensive underground workings. 480 tons of ore has been shipped. Mill on property did not give satisfactory results.

Eakin, 1915 (B 622), p. 238 -- Mine closed, 1914.

Chapin, 1919 (B 692), p. 322 -- Rainbow idle because of litigation.

Hill, 1933 (B 849-B), p. 74 -- Prospecting, 1931. Data on ownership.
p. 115 -- Old shaft and adit inaccessible in 1931. Most of data from B 592, p. 348. Vein also exposed in pit near Twin Cr.; 10 in. of white quartz with some arsenopyrite. On footwall (south) side of vein a 2-in. band of crushed, iron- and manganese-stained quartz contains arsenopyrite and free gold. 2-in. band assays $212.14 a ton; entire vein, $22.92 a ton.

Byers, 1957 (B 1024-I), p. 210 -- Scheelite present.

Berg and Cobb, 1967 (B 1246), p. 220-221 -- Scheelite present.

Chapman and Foster, 1969 (P 625-D), p. D12 -- References to above reports.

Rob (& Roy)

Antimony, Gold

Fairbanks district
MF-413, loc. 51

Livengood (20.1, 1.75) approx.
65°04'N, 147°17'-147°18'W

Summary: Shear zone 30 ft. wide in schist. Mineralized parts of shear zone contain quartz, pyrite, gold, and stibnite. Also some irregular shoots and kidneys of stibnite. Rich gold ore discovered in 1914 and mined through early 1918. 100-ft. shaft and at least 2 levels of drifts. Includes references to: Rob-Rye, Roy; see also Hi-Yu.

Eakin, 1915 (B 622), p. 237 -- Rich ore discovered, July 1914. Test shipment late in summer.

Brooks, 1916 (B 642), p. 60 -- 100-ft. shaft and 170 ft. of drifting on 2 levels; some ore milled, 1915.

Brooks, 1916 (B 649), p. 37-38 -- Shear zone, about 30 ft. wide, in schist trends N 60° W. Two mineralized zones in shear zone contain quartz, pyrite, gold, and stibnite. Irregular shoots and kidneys of stibnite also have been found.

Martin, 1920 (B 712), p. 39 -- Some ore hoisted and milled early in year, 1918.

Chapman and Foster, 1969 (P 625-D), p. D7 -- References to above.

Robinson

Gold (?)

Fairbanks district

Livengood (18.45, 0.65)
65°02'N, 147°31'W

Summary: Fault breccia of highly altered quartz diorite. Explored by shallow cuts and long trenches. No data on gold content, if any, or on possible presence of sulfides. Some of material on dumps is iron stained. See also: I.X.L., (Little Eldorado Cr.)

Hill, 1933 (B 849-B), p. 81-82 -- Fault breccia of highly altered quartz diorite strikes N 55° E. Explored by many shallow cuts and several long trenches. Evidence of some mineralization, but not much visible quartz. Material on dumps is mainly rusty, saricitized, and in places silicified highly altered igneous rock. Appears to be in same zone as is on Skoogy Gulch, Central Star [North Star Extension] and Faulkner property [North Star]. [Robinson property is a restaking of many older claims which are discussed under their old names. Which old property the Robinson shaft was on I can not determine.]

Chapman and Foster, 1969 (P 625-D), p. D13 -- Reference to above [and probably incorrect reference to B 525, p. 173].

Roughneck	Gold (?)
Fairbanks district	Livengood (19.4, 1.45) 65°04'N, 147°24'W

Summary: Prospect, presumably for gold. No other data.

Chapman and Foster, 1969 (P 625-D), p. D9 -- Prospect. Reference is to an index map, Chapin, 1914 [B 592], p. 332.

(Ruth Cr.)

Antimony, Chromite, Gold, Mercury, Monazite, Silver, Tungsten

Tolovana district
MF-413, locs. 3, 65

Livengood (10.65-10.7, 9.1-9.25)
65°31'N, 148°31'-148°33'W

Summary: One of major gold-producing streams in Livengood area. Bedrock is a mixture of many types of Devonian sedimentary rocks (including much black crystalline limestone) and a variety of intrusive rocks. On spur west of creek quartz veinlets carry pyrite, arsenopyrite, and gold; some samples show as much as $12 a ton in gold and $2 a ton in silver (1916 prices). Many grains of chromite scattered through mineralized rock; some exposed by excavation about 1916. Stibnite vein exposed and reburied in placer cut. Some slightly auriferous breccia found at a lode prospect, late 1960's. Concentrates contain gold, scheelite, magnetite, cinnabar, chromite, pyrite, arsenopyrite, zircon, monazite, chrome spinels, stibnite.

Smith, 1917 (BMB 153), p. 52 -- Mining on Ruby Cr., 1916. [Undoubtedly a lapsus for Ruth Cr.]

Brooks, 1918 (B 662), p. 22 -- Chromite-bearing veins have been found; gold placers of district carry chromite, but no platinum.

p. 56 -- Mining, 1916.

Mertie, 1918 (B 662), p. 256 -- Mining, 1916.

p. 269-271 -- Bedrock is black crystalline limestone seamed with calcite and quartz. Depth to bedrock 5-20 ft.; gold in base of gravel and top 2 ft. of bedrock; pay streak 30-40 ft. wide; bedrock slopes away from creek on both sides. Gold high grade; $18 an ounce after charges. Mining, 1916. Cinnabar reported from head of creek.

p. 273-274 -- Mineralized area on spur W of creek. Many nearly vertical quartz veinlets strike S 20°-60° E; mineralized with pyrite, arsenopyrite, and gold; some carry as much as $12 a ton in gold and $2 a ton in silver. Calcite veins carrying some gold and sulfides cut quartz veinlets. Many grains of chromite scattered through mineralized rock. One chromite body partially exposed by a small excavation. Entire mineralized mass may constitute a low-grade gold deposit. Bedrock is a mixture of many types of Devonian sedimentary rocks and a variety of intrusive rocks.

Martin, 1920 (B 712), p. 41 -- Mining, 1918.

Overbeck, 1920 (B 712), p. 181 - A little groundsluicing of gravels of present stream, 1918.

p. 183 -- Concentrates contain much scheelite, some magnetite, and a little cinnabar, chromite, pyrite, arsenopyrite, and zircon.

Smith, 1926 (B 783), p. 14 -- Mining, 1924.

Moffit, 1927 (B 792), p. 19 -- Mining, 1925.

Smith, 1929 (B 797), p. 21 -- Mining, 1926.

Smith, 1930 (B 813), p. 30 -- Mining, 1928.

Smith, 1932 (B 824), p. 36 -- Mining, 1929.

Smith, 1933 (B 836), p. 35-36 -- Mining, 1930.

(Ruth Cr.) - Continued

Smith, 1933 (B 844-A), p. 35 -- Mining, 1931.
Smith, 1934 (B 857-A), p. 34 -- Mining, 1932.
Smith, 1934 (B 864-A), p. 39 -- Mining, 1933.
Smith, 1936 (B 868-A), p. 39-40 -- Mining, 1934.
Smith, 1937 (B 880-A), p. 44 -- Mining, 1935.
Smith, 1938 (B 897-A), p. 52 -- Mining, 1936.
Smith, 1939 (B 910-A), p. 53 -- Mining, 1937.
Smith, 1939 (B 917-A), p. 53 -- Mining, 1938.
Smith, 1941 (B 926-A), p. 49 -- Mining, 1939.
Joesting, 1941 (TDM 1), p. 16-17 -- Chromite prospect about 25 years ago [1918]; reference to B 662, p. 275 [should be p. 274]. Chromite and chrome spinels in placers; probably derived from serpentine in Middle Devonian volcanic rocks.

p. 26 -- Placer cinnabar present.

p. 39 -- Placer scheelite common.

Smith, 1942 (B 933-A), p. 46 -- Mining, 1940.
Joesting, 1942 (TDM 2), p. 16 -- Stibnite vein reported to have been found in placer cut is now covered by tailings. Stibnite float in tailings.
Bates and Wedow, 1953 (C 202), p. 10 -- Monazite and radioactive zircon in concentrate sample. eU of heavy-mineral concentrate is 0.01%.
Wedow, Killeen, and others, 1954 (C 331), p. 11 -- Bromoform fraction of concentrate sample contained 0.01% eU. A few grains of monazite in sample.
Burand, 1966 (GC 11), p. 5 -- Placer gold has been produced. Fine grains of chromite disseminated in green-stained rock composed of a mixture of dolomite, quartz, calcite, and sulfides.

p. 8 -- Small stringer of stibnite exposed and reburied by placer miners.

Berg and Cobb, 1967 (B 1246), p. 240 -- Lode of sparsely disseminated chromite in serpentine has been prospected.
Foster and Chapman, 1967 (OF 275), locs. 2-4 -- Chromite in serpentinite exposed in small excavation. Stibnite vein exposed in placer cut. Quartz stringers (up to 3 in. thick) contain gold, pyrite, and arsenopyrite; contiguous mineralized zones up to 36 in. wide in altered dolomite-calcite-quartz-sulfide rock; late calcite veins carry gold and sulfides; chromite also present. Silicified breccia with disseminated sulfides contains 0.86 oz. Au per ton.
Overstreet, 1967 (P 630), p. 110 -- References to C 202, p. 10; C 331, p. 11.
Foster, 1968 (C 590), p. 1-2 -- Has been a major placer-gold producer. Only sporadic mining as of 1967. At lode prospect pyritized, brecciated, iron-stained igneous rock shows replacement by silica and carbonate and contains traces of gold.

p. 10-11 -- Samples from lode prospect contain no more than 0.1 ppm Au. Sample of serpentinite scree in placer cut contains 1.0 ppm Au by atomic absorption; 0.4 ppm Au by fire assay.

(Ruth Cr.) - Continued

Foster, 1968 (OF 322), p. 1 -- Slightly auriferous, altered igneous breccia unconformable beneath deformed graywacke-argillite sequence. Breccia, prehnite metadiorite, silica-carbonate-talc rock, and serpentinite probably represent an extensively altered NE-trending fault zone complex older than nearby monzonitic stock.

p. 3 -- Analytical data on 25 samples; highest Au value is 0.1 ppm.

p. 14 -- Descriptions of samples.

Koschmann and Bergendahl, 1968 (P 610), p. 31 -- Reference to B 662, p. 256.

Cobb, 1973 (B 1374), p. 176 -- Scheelite and/or cassiterite in concentrates.

(Sawtooth Mtn.)

Antimony

Tolovana district
MF-413, loc. 2

Livengood (3.45, 6.6)
65°23'N, 149°31'W

Summary: A little antimony ore was recovered from a stibnite lode 6 ft. thick on Sawtooth Mtn. at the head of Chocolate Cr.

Joesting, 1943 (TDM 2), p. 16 -- Stibnite lode reported at head of Chocolate Cr. Deposit 6 ft. thick. Sample contained more than 50% Sb.

Berg and Cobb, 1967 (B 1246), p. 239 -- Stibnite lode reported to be at least 6 ft. thick.

Cobb, 1973 (B 1374), p. 174 -- A little antimony ore was recovered.

Schaefer — Gold (?)

Fairbanks district — Livengood (19.95, 1.5)
65°04'N, 147°19'W

Summary: Flat-lying quartz stringer in steeply dipping decomposed and iron-stained schist. 150-ft. tunnel; no production; no data on gold content, if any.

Smith, 1913 (B 525), p. 163 -- Flat-lying quartz stringer in steeply dipping [schist] country rock. Tunnel 150 ft. long; so near surface that rock is decomposed and iron stained. No production. No data on tenor.

Smith, 1913 (B 542), p. 149 -- Same as B 525.

Chapman and Foster, 1969 (P 625-D), p. D7 -- Reference to B 525, p. 163.

Scrafford — Antimony, Gold, Lead, Silver

Fairbanks district — Livengood (16.75, 0.3)
MF-413, loc. 9 — 65°00'N, 147°45'W

Summary: Shear zone 3-15 ft. wide in quartz-mica schist contains iron-stained quartz, kidney-shaped masses of stibnite (largest mined was 40 ft. by 11 ft. by 6 ft.), gold (best reported assay was about 0.2 oz. a ton), argentiferous galena (one assay showed 8 oz. silver a ton), pyrite, and oxidation products. Principal antimony mine in district; about 1,600 tons of ore mined, mainly in 1916. Mine operated, 1915-16, 1926, 1968-70, and possibly in a few other years. Mined from open cuts, adit 300 ft. long, and 3 raises. In 1942 about 300 tons of low-grade (10-20 percent antimony) ore was on dump. Gold and silver may have been recovered at some time. Includes reference to Black Eagle and to an unnamed stibnite prospect (Smith, 1913 (B 525), p. 196).

Smith, 1913 (B 525), p. 196 -- Near head of a tributary of Treasure Cr. from south a lode carrying mainly stibnite has been found. Silver minerals reported to occur. [This unnamed prospect is probably the Scrafford.]

Smith, 1913 (B 542), p. 182 -- Same as B 525.

Brooks, 1916 (B 642), p. 29 -- Antimony producer, 1915.

Brooks, 1916 (B 649), p. 17 -- Antimony ore mined, 1915.

p. 28-29 -- Country rock is quartz-mica schist; foliation strikes N 60° E, dips steeply NW. Cut by shear zone that strikes E and dips 50°-70° S. Ore deposition in shear zone appears to be between walls 3-4 ft. apart; shear zone wider. Richest ore is stibnite in shoots that appear to be pod or lens shaped; largest about 40 ft. in longest dimension. Shoots separated by quartz intergrown with stibnite, kidneys of stibnite, and iron-stained fragments of schist. A little free gold, galena, and probably pyrite present with stibnite; an assay showed $4 in Au and 8 oz. Ag per ton. Surfaces of stibnite oxidized. Small amounts of vitreous quartz in almost all stibnite. Mine consists of an open cut, 75-ft. adit, 20-ft. shaft, and small stopes.

Mertie, 1918 (B 662), p. 414-415 -- Black Eagle was largest stibnite producer in district in 1916. Reference to B 649, p. 28-29.

Hill, 1933 (B 849-B), p. 156-157 -- Last work done in 1926 by R. C. Woods, who drove main tunnel 300 ft. Vein said to have been as much as 15 ft. wide between walls with 9 ft. of solid stibnite in places. Much of material on dumps could be concentrated. Au-Ag content probably does not exceed $2.43 a ton in any part of vein. Reference to B 649, p. 28-29.

Joesting, 1942 (TDM 1), p. 8 -- Was worked for stibnite; reference to B 649.

Joesting, 1943 (TDM 2), p. 10-11 -- Reference to B 649, p. 28-29. Several hundred tons of screened quartz and stibnite waste that apparently could be concentrated to a marketable product was on dump in 1942.

Scrafford -- Continued

Ebbley and Wright, 1948 (RI 4173), p. 38 -- Source of about 60% of past stibnite production from district. Several large lenses of stibnite were found.

Killeen and Mertie, 1951 (OF 42), p. 12 -- Stibnite ore on dump contained 28.64% Sb.

p. 14 -- 60% of past [as of 1942] production of district was from Scrafford mine.

p. 21-22 -- References to B 525, p. 196; B 649, p. 28-29; B 662, p. 415; B 849-B, p. 156. About 1,600 tons of ore recovered, principally in 1916. Shear zone 3-15 ft. wide (strike N 80° E, dip 50°-70° S) in schistose rock is partly filled with iron-stained quartz and kidneys of stibnite; one reported to have been 40 ft. by 11 ft. by 6 ft. Workings consisted of open cuts and a 300-ft. tunnel and 3 raises. Estimated 300 tons of 10-20 percent Sb ore might be recoverable from dump.

Berg and Cobb, 1967 (B 1246), p. 219 -- Largest antimony producer in district. About 1,600 tons of ore mined from eastward-striking southward-dipping shear zone 3-15 ft. wide in schist. Shear zone is partly filled with iron-stained quartz and kidney-shaped masses of stibnite; largest one mined was 40 ft. by 11 ft. by 6 ft. Property idle since about 1926; in 1942 about 300 tons of low-grade material (10-20% Sb) was on dump.

Chapman and Foster, 1969 (P 625-D), p. D14 -- Data mainly from above reports. Shows that Sb, Au, and Ag were produced.

Mulligan, 1974 (IC 8626), p. 12 -- Shear zone 3-15 ft. wide cuts quartz-mica schist and contains iron-stained quartz and massive stibnite; gold, silver-bearing galena, limonite, pyrite, and Sb-As oxides also present. Mine produced [how much of what not stated], 1968-70; idle in 1970. Claims not patented.

Silver Dollar

Fairbanks district

Gold (?)

Livengood (18.45, 0.65)
65°01'N, 147°31'W

Summary: Tiny quartz veinlets along joint and fracture planes in schist. No visible gold or sulfides.

Chapin, 1914 (B 592), p. 346 -- Tiny quartz veinlets along joint and fracture planes in schist. A few cavities filled with limonitic material. No visible gold or sulfides. Tunnel driven 25 ft.

Chapman and Foster, 1969 (P 625-D), p. D13 -- Reference to above.

Silver Fox

Copper, Gold (?), Lead, Molybdenum, Silver, Zinc

Fairbanks district

Livengood (18.1, 0.45)
65°00'N, 147°34'W

Summary: Quartz veins in tonalite contain flattened, small (1/2-inch) pods of molybdenite. Pyrite and chalcopyrite on slickensided fracture surfaces that offset veins. Across a fault from these occurrences are veins carrying pyrite, argentiferous galena, and sphalerite. Mine operated in 1973 mainly as a tourist attraction. May be on the same property as Silvertone; same ownership and very close to each other according to index maps.

Mowatt, 1974 (AOF 46) -- Quartz veinlets north of a narrow fault zone contain scattered, flattened pods (up to 1/2 in. in maximum dimension) of molybdenite. Country rock is tonalite. Slickensided fracture surfaces smeared with pyrite and chalcopyrite; offset molybdenite-quartz veins. South of fault zone mine is in area of fissure veins carrying pyrite, argentiferous galena, and sphalerite. [Gold also is apparently present and scheelite and powellite may be; wording is ambiguous.] Mine operated in 1973 principally as a tourist attraction; working face at end of 50-ft.-long drift over from a 375-ft.-long main adit; face about 85 ft. below ground surface.

Silvertone — Antimony, Gold, Lead, Silver

Fairbanks district — Livengood (18.0, 0.45)
MF-413, loc. 20 — 65°01'N, 147°34'W

Summary: Iron-stained quartz veins up to a foot thick cut dioritic rocks and contain argentiferous galena, jamesonite, and alteration products. Silver content of channel samples as high as 8.8 oz. a ton; gold content from 0.06 to 0.36 oz. a ton. At least 60 tons of ore has been shipped. Mine has produced silver, lead, and gold, but not antimony.

Berg and Cobb, 1967 (B 1246), p. 218 -- Silver-lead deposit explored during late 1950's; about 60 tons of hand-sorted ore shipped. Iron-stained quartz veins up to a foot thick cut dioritic rocks and contain argentiferous galena and jamesonite. Channel samples contained 2-5 percent Pb, and 2.9-8.8 oz. Ag and 0.06-0.36 oz. Au per ton. About 25 tons of ore stockpiled in 1958.

Chapman and Foster, 1969 (P 625-D), p. D13 -- Stibnite, argentiferous galena, anglesite, cerussite listed under "Mineralogy." Production of Au, Pb, Ag and presence of Sb listed under "Metals."

Sky High — Gold

Fairbanks district — Livengood (19.3, 1.7)
MF-413, loc. 43 — 65°04'N, 147°24'W

Summary: Decomposed, iron-stained material that may be a gossan contains a little gold.

Smith, 1913 (B 525), p. 175 -- Brown, iron-stained, decomposed material from which a little gold can be panned; nearly horizontal; 3-6 in. thick; may be an iron cap. Very little development.

Smith, 1913 (B 542), p. 161-162 -- Same as B 525.

Chapman and Foster, 1969 (P 625-D), p. D9 -- Reference to B 525, p. 175.

Solomon	Antimony
Fairbanks district MF-413, loc. 45	Livengood (19.45, 1.65) 65°04'N, 147°22'W

Summary: Quartz vein 3-4 inches thick contains much stibnite.

Smith, 1913 (B 525), p. 171 -- Quartz vein 3-4 in. thick carries much stibnite. General trend said to be northeasterly. [Name not used in text, but is shown on fig. 16.]
Smith, 1913 (B 542), p. 157 -- Same as B 525.
Killeen and Mertie, 1951 (OF 42), p. 33 -- Reference to above and an index map.
Chapman and Foster, 1969 (P 625-D), p. D9 -- References to above.

Soo (Mining Co.)

Antimony, Copper (?), Gold, Lead, Silver

Fairbanks district
MF-413, locs. 23, 24

Livengood (18.15-18.25, 1.0)
65°02'N, 147°32'-147°33'W

Summary: Quartz veins in shear zones contain free gold, stibnite, arsenopyrite, auriferous tetrahedrite, galena. May be rare copper sulfides. A 50-oz. sample of gold ran 824-1/2 parts of gold and 149 parts silver per 1,000. Considerable stibnite, some in large lenses; columnar and fibrous masses, together with fine granular aggregates; several tons that were on dump when mine closed were sold in 1942. Mine development consisted of several shafts and extensive underground workings. Mining reported intermittently from 1910 to 1936. Gold produced, 1912-14 and 1925-31, was worth between $140,000 and $165,000. Includes references to: Carnation, Chief, H & K, Hawkins, Heath & Kearns, La Rose, McGillvray & Ellis, Reliance (Mining Co.), Spaulding (& Brumbaugh), Spaulding-Ronan-Cunningham, Stevens & Martin, Waterbury, Waverly, Wild Rose.

Brooks, 1911 (B 480), p. 34 -- On Soo claim 125-ft. adit and 30-ft. shaft; vein 15 in. wide. On Waterbury claim 55-ft. shaft, 200-ft. crosscut; vein 3 ft. wide. At least some of the ore milled gave good returns, 1910.

Brooks, 1912 (B 520), p. 32 -- Reliance Mining Co. shipped ore to custom mill, 100-ft. shaft on vein, which is 7 ft. wide at bottom of shaft. About 270 ft. of other workings, practically all said to be on vein.

Smith, 1913 (B 525), p. 190-194 -- 3 major veins; 2 (Wild Rose and Soo) trend E and dip N; one (Chief) trends N 50° E and dips 50° NW. Quartz all sheared; contains free gold, some of which is smeared on slickensided surfaces. Sulfides include stibnite and auriferous tetrahedrite; copper sulfides extremely rare. Much of ore milled out $50-$60 or more a ton; some of richest ran over $250 a ton. Gold from 0.823 to 0.843 fine; 50-oz. sample ran 824-1/2 Au, 149 Ag. Most of development on Wild Rose vein.

Smith, 1913 (B 542), p. 176-180 -- Same as B 525.

Chapin, 1914 (B 592), p. 343-345 -- 3 veins [as described in B 525, p. 190-194]. Sulfides not abundant, but small bunches of stibnite with a little galena in Wild Rose vein; also tetrahedrite and copper sulfides. Extensive underground working, mainly along Wild Rose vein on Soo claim. Mills all of its own ore.

Eakin, 1915 (B 622), p. 236 -- Mainly prospecting and development, 1914. Some ore mined and milled.

Brooks, 1916 (B 642), p. 60 -- Some work done, 1915.

Brooks, 1916 (B 649), p. 31 -- Reference to and quotation from B 525, p. 190-194; reference to B 592, p. 343-345. Specimens of stibnite consist of columnar and fibrous masses, together with fine granular aggregates.

Smith, 1917 (BMB 142), p. 24 -- Mining, 1915. 24 tons of ore milled.

Soo (Mining Co.) - Continued

Smith, 1929 (B 797), p. 13 -- Work reported, 1926.
Smith, 1930 (B 810), p. 15 -- Prospecting, 1927; encouraging results.
Smith, 1930 (B 813), p. 17 -- Development and production, 1928.
Smith, 1932 (B 824), p. 20 -- Mining, 1929.
Hill, 1933 (B 849-B), p. 68-70 -- Typical ore from H-K vein shows 2 generations of quartz, one with a little gold and the second with pyrite, arsenopyrite, stibnite, and free gold. All gold is primary; proximity of some very rich ore to surface is coincidental.

p. 74 -- Data on claim names and ownership, 1931.

p. 77-80 -- Output, 1912-14 and 1925-31, was between $140,000 and $165,000. Veins are in shear zones; strike about E and dip 60° or more steeply to N. Samples assayed from $0.23 to $106.76 a ton in gold; some of ore mined ran $36 a ton. References to B 525, p. 190-194; B 592, p. 343-345.

Smith, 1933 (B 836), p. 19 -- Idle first part of season, then some development, 1930.
Smith, 1933 (B 844-A), p. 19 -- Mining and development, 1931.
Smith, 1934 (B 857-A), p. 18 -- Work discontinued during summer of 1932.
Smith, 1934 (B 864-A), p. 20 -- Mining, 1933.
Smith, 1936 (B 868-A), p. 20 -- Mining, 1934.
Smith, 1937 (B 880-A), p. 21 -- Mining, 1935.
Smith, 1938 (B 897-A), p. 22 -- Mining, 1936.
Joesting, 1942 (TDM 1), p. 10 -- Several large lenses of stibnite were found. Specimens of curved and bladed crystals contain over 60% Sb.
Joesting, 1943 (TDM 2), p. 9 -- 8 tons of high-grade stibnite that had been left on dump when mining ceased were hauled to Fairbanks in 1942. Stibnite bodies in mine no longer accessible.
Ebbley and Wright, 1948 (RI 4173), p. 38 -- Antimony ore has been produced.
Killeen and Mertie, 1951 (OF 42), p. 12 -- Samples of stibnite ore contain 47.88% and 63.90% Sb.

p. 14 -- Antimony ore has been produced.

p. 24 -- References to B 525, p. 191; B 649, p. 31; B 849-B, p. 78-79. 5-6 tons of previously mined ore on dumps in 1942.

p. 41 -- High-grade stibnite ore stacked on dumps.

Burand, 1966 (GC 11), p. 5 -- Mine operated for short intervals between 1912 and 1933. Gold worth $165,000 was produced.
Chapman and Foster, 1969 (P 625-D), p. D13 -- Data mainly from above reports; references to 2 other reports also. "Mineralogy" column lists quartz, gold, galena, stibnite, tetrahedrite, pyrite, arsenopyrite, limonite, and Sb-As oxides. Metals column lists antimony (produced), gold (produced), silver, lead.

(Spruce Cr.) Gold

Fairbanks district
MF-413, loc. 21

Livengood (17.8, 1.3) approx.
65°03'N, 147°36'W

Summary: Lode said to carry about $12 a ton in gold (old price); reported to have shaft 150 ft. deep.

Smith, 1913 (B 525), p. 190 -- Lode said to carry about $12 a ton in gold reported to have been opened by shaft 150 ft. deep. Not seen by Smith.

Smith, 1913 (B 542), p. 176 -- Same as B 525.

Chapman and Foster, 1969 (P 625-D), p. D14 -- Reference to B 525, p. 190.

S.S. Gold

Fairbanks district Livengood (18.75, 0.9)
MF-413, loc. 30 65°02'N, 147°29'W

Summary: Gold prospect in schist close to intrusive rocks. Data in principal reference are for general area. S.S. prospect is assumed to be on an auriferous quartz vein.

Prindle, 1910 (B 442), p. 223 -- Prospect in schist close to intrusive rocks.
Smith, 1913 (B 525), p. 202-203 -- Quotation from B 442, p. 223.
Smith, 1913 (B 542), p. 188-189 -- Same as B 525.
Chapman and Foster, 1969 (P 625-D), p. D13 -- Reference to B 525, p. 202-203.

(Steamboat Pup)(Cr.) Gold

Fairbanks district Livengood (18.45, 0.5)
MF-413, loc. 89 65°00'N, 147°31'W

Summary: Has been placer mining. Data on activity and production were probably included with those for Pedro Cr. in most years.

Prindle and Katz, 1913 (B 525), p. 113 -- Gold worth $18.00 per oz.
Brooks, 1916 (B 642), p. 59 -- Narrow paystreak mined, 1915.
Chapman and Foster, 1969 (P 625-D), pl. 1 -- Has been placer mining.

(Steel Cr.)

Tungsten

Tolovana district
MF-413, loc. 74

Livengood (11.5, 8.25) approx.
65°28'N, 148°25'W approx.

Summary: Wolframite in concentrate sample.

Joesting, 1943 (TDM 2), p. 20 -- Considerable wolframite in sample of placer concentrate; identification "made a number of years ago."

Cobb, 1973 (B 1374), p. 176 -- Scheelite and/or cassiterite in concentrates [probably meant wolframite]. One of only 2 streams in area that supported profitable mining that do not drain Money Knob or Amy Dome; source of gold not known. [Literature does not state that gold was present; it probably was, but there is no basis for statement that there was profitable mining.]

(Steese Highway, Mile 17.5) Gold

Fairbanks district Livengood (18.65, 0.7)
65°01'N, 147°29'W

Summary: As much as 2.7 ppm gold in sheared quartz diorite adjacent to quartz vein 6 in. thick along border of small pluton. May be the same ground as Egan (Twin Cr.).

Forbes and others, 1968 (OF 324), p. 27-28 -- Small quartz diorite pluton exposed in road cuts. South border is strongly sheared, altered, and iron stained. Vein quartz, 0.5 ft. thick, in gouge zone which strikes N 87° W, dips steeply to S. Gold values up to 2.70 ppm in altered quartz diorite adjacent to vein; decrease progressively along vein.

Steil

Fairbanks district
MF-413, loc. 37

Antimony

Livengood (18.7, 1.35)
65°04'N, 147°28'W

Summary: Narrow quartz veins in greenstone (?) contain some stibnite and less pyrite. No data on possible gold content. Includes reference to Steel. Au should be deleted, MF-413, p. 3.

Smith, 1913 (B 525), p. 187 -- On basis of material on dump, Smith concludes that quartz is in narrow branching veins in country rock that may be related to greenstones rather than to schist derived from sedimentary rocks. Some stibnite and less pyrite in ore. Not at producing stage in 1912. [No data on gold content, if any.]

Smith, 1913 (B 542), p. 175-176 -- Same as B 525.

Brooks, 1916 (B 649), p. 32 -- Stibnite- and pyrite-bearing veins reported to occur in a fracture zone.

Killeen and Mertie, 1951 (OF 42), p. 28 — Stringers of quartz carry stibnite and less pyrite.

Chapman and Foster, 1969 (P 625-D), p. D11 -- References to B 525, p. 187 and on index map.

Stepovich — Gold (?)

Fairbanks district — Livengood (18.85, 1.5)
65°04'N, 147°27'W

Summary: Prospect, presumably for gold. Only reference is to an index map. See also Cleary Hill.

Chapman and Foster, 1969 (P 625-D), p. D10 -- Reference to Chapin, 1914 [B 592], p. 332 [an index map only].

Sunrise (Cleary Cr.) — Antimony, Gold (?)

Fairbanks district — Livengood (19.0, 1.6)
MF-413, loc. 40 — 65°04'N, 147°26'W

Summary: Vein of quartz and gouge with included schist. No data on gold content, if any. Material on dump includes quartz with stibnite and oxidation products. Short adit and drift. See also Cunningham.

Chapin, 1914 (B 592), p. 337 -- Vein trends E, dips 25° S, is about a foot thick, and consists of ribbons of rusty-looking quartz, wide seams of blue gouge, and lenses of schist. Surface pits, adit, and short drift. Quartz impregnated with stibnite on dump; veinlets and coatings of antimony oxide; different from any rock seen in vein.

Killeen and Mertie, 1951 (OF 42), p. 31 -- Reference to above.

Chapman and Foster, 1969 (P 625-D), p. D10 -- References to above.

Sunrise (Last Chance Cr.) — Gold (?)

Fairbanks district — Livengood (18.7, 1.35)
60°03'N, 147°28'W

Summary: Quartz on dumps; probably came from stringers in schist. No data on gold content (if any).

Chapin, 1914 (B 592), p. 342 -- Prospected by surface pits. Fragments of quartz, which apparently occurs in narrow stringers in schist, on dumps.

Chapman and Foster, 1969 (P 625-D), p. D11 -- Reference to above.

Thompson — Gold

Fairbanks district — Livengood (18.55, 1.3)
MF-413, loc. 28 — 65°03'N, 147°29'W

Summary: Quartz veins in schist; both contain gold. Shallow shaft and tunnel. No production. See also: Dome View, Mizpah

Smith, 1913 (B 525), p. 190 -- Auriferous quartz in shallow prospect pit at elevation of 1,775 ft. near head of Last Chance Cr. [name not used].

Smith, 1913 (B 542), p. 176 -- Same as B 525.

Chapin, 1914 (B 592), p. 342 -- 24-in. quartz vein opened by 15-ft. vertical shaft. Tunnel 40 ft. lower than mouth of shaft driven 100 ft. parallel to lode; crosscut from it encountered 5-in. quartz stringer in mica schist and graphite schist. Quartz and wall rock both said to contain gold.

Hill, 1933 (B 849-B), p. 82 -- Note that Chapin [B 592] mentioned claim.

Thompson & Burns — Gold

Fairbanks district — Livengood (18.75, 0.9)
MF-413, loc. 30 — 65°02'N, 147°29'W

Summary: Reddish-yellow brecciated schist and dike rock. Similar rock in neighborhood contains a very small amount of gold (about 0.04 oz. per ton).

Hill, 1933 (B 849-B), p. 118 -- Tunnel driven N 70° W along a fracture dipping 80° S. Reddish-yellow crushed brecciated schist and dike rock on dump. Two samples of similar material in neighborhood assayed no more than 83 cents a ton.

Chapman and Foster, 1969 (P 625-D), p. D12 -- Reference to above.

Thrift

Gold

Fairbanks district
MF-413, loc. 12

Livengood (17.35, 0.9) approx.
65°02'N, 147°40'W approx.

Summary: Some ore reportedly mined and milled before 1912. Yielded $11 a ton in gold.

Smith, 1913 (B 525), p. 196 — Ore reported to have been milled and to have yielded $11 a ton in gold. No other data. No active work in 1912.

Smith, 1913 (B 542), p. 182 -- Same as B 525.

Chapman and Foster, 1969 (P 625-D), p. D14 -- Reference to B 525, p. 196.

Mulligan, 1974 (IC 8626), p. 11 -- Some gold reported to have been mined from quartz vein of unknown dimensions and attitude.

Tolovana (Mining & Milling Co.) Antimony, Gold, Silver, Tungsten

Fairbanks district Livengood (18.85, 1.5)
MF-413, loc. 38 65°04'N, 147°27'W

Summary: Lode is stringers or veinlets of quartz cutting silicified schist. Mineralization is in quartz and schist and consists of gold, stibnite, arsenopyrite, scheelite, and pyrite. A sample of gold analyzed for fineness contained 0.792 gold and 0.180 silver. Free gold is visible in both quartz and stibnite. Some of stibnite is bladed, some massive, and some disseminated. Mine had extensive workings; 900 ft. still accessible in 1949. Mining reported spasmodically from 1910 to 1931. No data on total production. Includes references to: Scheuyemere, Tolovana-Stibnite, Willow Creek-Tolovana Mining Co. See also: Chechako No. 1, Johnson.

Prindle, 1910 (B 442), p. 227 -- Small parallel stringers of auriferous quartz stringers in schist are from less than 1 in. to more than 3 in. thick and strike N 75° E. Some contain visible gold. Work on them begun in 1909.

Brooks, 1911 (B 480), p. 34 -- 80-ft. adit driven, some rich ore mined and milled, 1910.

Smith, 1913 (B 525), p. 183-186 -- Vein, composed of quartz stringers 1-3 in. wide separated by considerable thicknesses of schist, strikes about E and dips 60° S. Vein frozen to wall rocks, which in many places are impregnated with sulfides (mainly those of iron). In vein commonest metallic minerals are stibnite and gold. Stibnite crystalline; no large masses; apparently introduced later than the gold. A sample of gold ran 792 Au, 180 Ag. Elsewhere on property veins contain much bladed and massive stibnite. On Scheuyemere claim a short shaft and tunnel have been driven; glassy quartz on dump.

Smith, 1913 (B 542), p. 169-171, 175 -- Same as B 525.

Chapin, 1914 (B 592), p. 339-340 -- Main development on vein that trends E and dips 60° S. Stringers of quartz enclose lenses of schist. Gold is native, but appears to be associated with stibnite. Mineralized schist horses and wall rocks impregnated with gold-bearing sulfides. Extensive workings; considerable ore has been stoped. Near mill another stibnite-bearing auriferous quartz vein has been developed and some ore mined and milled. Another vein was discovered and opened up in 1913; strikes E, dips 50° S, is 18 in. to 3 ft. wide. Visible gold in both stibnite and quartz.

Brooks, 1916 (B 649), p. 33-34 -- Reference to B 525, p. 183-185; reference to and quotation from B 592, p. 339-340.

Moffit, 1927 (B 792), p. 12 -- Operated, 1925; mainly assessment work and prospecting.

Hill, 1933 (B 849-B), p. 52 -- Has produced during last few years, 1931.
p. 68 -- Some veinlets parallel to schistosity contain quartz, sulfides, and gold.
p. 75 -- Data on claim names and ownership, 1931.

Tolovana (Mining & Milling Co.) - Continued

p. 91-92 -- Tolovana "vein" is a zone of hard schist cut by quartz veinlets 1/4 to 1/2 in. wide; zone strikes N 80° E and dips 70° S. Veinlets consist of quartz with a little carbonate and arsenopyrite, stibnite, and free gold. Gold also in silicified schist between veinlets. A few hundred feet of workings accessible in 1931. Reference to B 525, p. 182-185.

Smith, 1933 (B 836), p. 19 -- Exploratory work, 1930; mine had been inactive for 15 years.

Smith, 1933 (B 844-A), p. 19 -- Mining, 1931.

Joesting, 1942 (TDM 1), p. 8 -- Stibnite present; reference to B 649.

Killeen and Mertie, 1951 (OF 42), p. 29 -- Disseminated stibnite crystals in quartz at main Tolovana mine. At Tolovana-Stibnite quartz vein contains considerable stibnite and its oxidation products.

p. 42 -- Small deposits on hill above mine might yield a little stibnite.

Wedow, White, and others, 1954 (C 335), p. 2 -- Mine long abandoned, but 900 ft. of workings still accessible in 1949. Stringers or veinlets of quartz enclose lenses of quartz-biotite schist. Gold and sulfides in both quartz veinlets and adjacent schist. No anomalous radioactivity.

Byers, 1957 (B 1024-I), p. 210 -- Scheelite in gold-quartz ore.

Berg and Cobb, 1967 (B 1246), p. 220-221 -- Scheelite present.

Chapman and Foster, 1969 (P 625-D), p. D11 -- References to above reports.

(Tolovana R.) Gold

Tolovana district Livengood
Central 1/4 quad.

Summary: All references to Tolovana R. are almost certainly to tributaries, including Ester, Livengood, Olive, and Wilbur Creeks.
See also: (Ester Cr.), (Livengood Cr.), (Olive Cr.), (Wilbur Cr.).

Martin, 1920 (B 712), p. 41 -- Mining, 1918. [This is undoubtedly meant to be Livengood Cr.].
Smith, 1930 (B 813), p. 30 -- Placer gold recovered from Tolovana R. and some of its tributaries E of Livengood Cr.
Smith, 1932 (B 824), p. 36 -- Same as B 813, p. 30.
Smith, 1933 (B 836), p. 36 -- Same as B 813, p. 30.
Smith, 1933 (B 844-A), p. 35 -- Same as B 813, p. 30.
Smith, 1934 (B 857-A), p. 34 -- Same as B 813, p. 30.

(Too Much Gold Gr. divide) Gold

Fairbanks district Livengood (19.8, 1.75)
65°04'N, 147°20'W

Summary: Thin quartz veins and mica schist wall rock contain as much as 3.96 ppm gold.

Pilkington and others, 1969 (OF 383), p. 4 -- Significant gold values in silicified schists of footwall of a vein less than a foot thick that strikes N 45° W and dips 74° SW. Another vein that strikes N 75° W and dips 70° S carries less gold.

p. 7 -- Samples across richer vein and wall rock contained 0.63 to 3.96 ppm gold. Samples across other vein and wall rock contained 0.13 to 0.65 ppm gold.

(Trail Cr.) Gold (?)

Tolovana district Livengood
NE 1/4 SE 1/4 quad.

Summary: Encouraging prospects reported, 1910.

Ellsworth and Parker, 1911 (B 480), p. 165 -- Encouraging prospects reported, 1910. Location on creek not given.
Prindle and Katz, 1913 (B 525), p. 150-151 -- Same as B 480, p. 165.

(Treasure Cr.) Gold

Fairbanks district Livengood (16.6-16.95, 0.4-0.85)
MF-413, locs. 8, 81 65°00'-65°02'N, 147°43'-147°46'W

Summary: Gold discovered, 1906, and drift mined until about 1913. Deposit permanently frozen, deep (200 ft.), about 7 ft. thick, and as much as 225 ft. wide. Production more than $250,000; possibly as much as $500,000. Lode gold (no other data given) near mouth of a tributary.

Brooks, 1907 (B 314), p. 36 -- Gold reported to have been found, 1906.
Prindle, 1908 (B 337), p. 29 -- Quotation from B 314, p. 36.
Prindle and Katz, 1909 (B 379), p. 191 -- Depth to bedrock 100-200 ft.
Ellsworth, 1910(B 442), p. 232 -- Mining, 1909. Much trouble with underground water.
Ellsworth, 1912 (B 520), p. 242 -- Mining, 1911.
Ellsworth and Davenport, 1913 (B 542), p. 205 -- Mining, 1912.
Prindle and Katz, 1913 (B 525), p. 101 -- Auriferous deposits to a point 3 mi. above mouth.
p. 107 -- Depth to bedrock 80-200 ft.
p. 112-113 -- Production, 1907-10, worth $250,000. Gold worth $17.77 per oz.
Smith, 1913 (B 525), p. 196 -- Gold lode near mouth of tributary of Treasure Cr.
Brooks, 1914 (B 592), p. 68 -- Mining, 1913.
Chapin, 1914 (B 592), p. 358 -- Mining, 1913.
Mulligan, 1974 (IC 8626), p. 12 -- Buried, frozen placer over 200 ft. deep from which gold was drift mined from a paystreak from 25 to 225 ft. wide and 7 ft. thick.

(Troublesome Cr.) Gold, Lead, Mercury, Tin

Rampart district Livengood (1.8-2.95, 6.35-8.9)
MF-413, locs. 61, 62 65°22'-65°30'N, 149°36'-149°45'W

Summary: Few data on geology. A little mining beginning about 1912. Concentrates contain gold, barite, hematite, magnetite, ilmenite, picotite, pyrite, cinnabar, garnet, galena, zircon, and cassiterite (both crystalline and as wood tin).

Prindle and Katz, 1913 (B 525), p. 146 -- Placer gold has been found [as of 1912 or earlier].

Mertie, 1934 (B 844-D), p. 192 -- Prospecting and mining have been reported. Concentrate sample from just below mouth of Union Cr. contained barite, hematite, magnetite, ilmenite, picotite, pyrite, cinnabar, and cassiterite.

Waters, 1934 (B 844-D), p. 236 -- Sample from below mouth of Union Cr. included barite, hematite, magnetite, ilmenite, picotite, pyrite, cinnabar, gold, garnet, galena, zircon, and cassiterite (both crystalline and as wood tin).

Joesting, 1942 (TDM 1), p. 27 -- Placer cinnabar scarce; reference to B 844-D, p. 236.

Wayland, 1961 (B 1058-I), p. 396 -- Cassiterite in concentrates.

Malone, 1962 (IC 8131), p. 56 -- Reference to B 844-D, p. 236.

Malone, 1965 (IC 8252), p. 55 -- Reference to B 844-D.

Cobb, 1973 (B 1374), p. 167 -- Galena and cassiterite in concentrates.

(Twin Cr.) Gold, Tin

Fairbanks district Livengood (18.8, 0.95)
MF-413, loc. 89 65°02'N, 147°28'W

Summary: Bedrock is quartzite schist and porphyritic granite. Most of placer ground was shallow (12 ft. is deepest mentioned). Cassiterite in concentrates. Mined sporadically from 1903 to 1927.

Prindle, 1904 (B 225), p. 68-69 -- Bedrock is quartzite schist and porphyritic granite; about 12 ft. deep where mined in 1903.
Brooks, 1905 (B 259), p. 27 -- Has been mining [as of 1904].
Prindle, 1905 (B 251), p. 67 -- Of economic importance, 1903.
p. 75 -- Mining, 1903. Mining near mouth, 1904.
Purington, 1905 (B 263), p. 32 -- Some of ground could be worked by open cutting.
p. 208 -- Gold worth $18.40 per oz.
Prindle and Katz, 1909 (B 379), p. 188 -- Cassiterite in concentrates.
p. 192 -- On one claim depth to bedrock is 8 ft.
p. 194 -- Hydraulic plant being installed, 1908.
Johnson, 1910 (B 442), p. 246 -- Cassiterite in concentrates.
Ellsworth and Davenport, 1913 (B 542), p. 206 -- Mining, 1912.
Prindle and Katz, 1913 (B 525), p. 105 -- Productive placer ground.
p. 109 -- Depth to bedrock (1 claim only), 8 ft.
p. 111 -- Production, 1903-10, worth $120,000.
p. 113 -- Gold worth $17.66 per oz.
Chapin, 1914 (B 592), p. 359 -- No mining in 1913.
Eakin, 1915 (B 622), p. 233 -- One outfit mining near mouth part of summer, 1914.
Brooks, 1916 (B 642), p. 59 -- Mining, 1915.
Smith, 1917 (BMB 153), p. 51 -- Mining, 1916.
Smith, 1930 (B 810), p. 25 -- Mining, 1927.
Joesting, 1942 (TDM 1), p. 32 -- Placer cassiterite common.

U.S. Smelting, Refining & Mining Co. Bismuth, Gold, Tin, Tungsten

Fairbanks district Livengood
SE 1/4 SE 1/4 quad.

Summary: Major gold placer operator of district with extensive operations on Cleary, Dome, Fairbanks, Fish, Little Eldorado, and Pedro Creeks and Chatanika R. Began preparatory work in 1925 and dredging in 1928; dredges operating in 1956. Channel samples indicate that dump of all dredge concentrates contains 0.1% WO_3, 2.23% tin, and 0.01% bismuth. The company also operated McCarty (Henry Ford) lode gold mine, 1937 to 1940 or later. Includes references to Fairbanks Exploration Co. See also: (Chatanika R.), (Cleary Cr., near Fairbanks), (Dome Cr.), (Fairbanks Cr.), (Fish Cr.), (Little Eldorado Cr.), McCarty (Henry Ford), (Pedro Cr.), U.S. Smelting, Refining & Mining Co. (Fairbanks quad.).

Moffit, 1927 (B 792), p. 17 -- Prospect drilling, ditch building, etc. in preparation for large-scale operations, 1925.
Smith, 1929 (B 797), p. 19-20 -- Preparations for large-scale operations, 1926.
Smith, 1930 (B 810), p. 25 -- Preparatory work, 1927.
Smith, 1930 (B 813), p. 28-29, 47 -- Cold-water thawing. Dredge built and operating on Chatanika R., 1928.
Smith, 1932 (B 824), p. 32-33, 52 -- Dredging, 1929.
Smith, 1933 (B 836), p. 24, 32-33, 54 -- Dredging, 1930.
Smith, 1933 (B 844-A), p. 32-33, 54 -- Dredging, 1931.
Smith, 1934 (B 857-A), p. 30-31, 51 -- Dredging, 1932.
Smith, 1934 (B 864-A), p. 34-35, 56 -- Dredging, 1933.
Smith, 1936 (B 868-A), p. 35-36, 58 — Dredging, 1934.
Smith, 1937 (B 880-A), p. 39-40, 61 -- Dredging, 1935.
Smith, 1938 (B 897-A), p. 46-47, 71 -- Dredging, 1936.
Smith, 1939 (B 910-A), p. 23-24 -- Operated McCarty (Henry Ford), 1937.
p. 45-47, 76 -- Dredging, 1937. Acquired old Fish Cr. dredge and considerable placer ground.
Smith, 1939 (B 917-A), p. 25-26 -- Will probably let lease on McCarty (Henry Ford) lapse.
p. 43-46, 74 -- Dredging, 1938.
Smith, 1941 (B 926-A), p. 40-42, 70 -- Dredging, nonfloat mining, and preparatory work, 1939.
Smith, 1942 (B 933-A), p. 22 -- Leased McCarty (Henry Ford), 1940.
p. 38-40, 67 -- Dredging, nonfloat mining, and preparatory work, 1940.
Bain, 1946 (IC 7379), p. 26-28 -- Data on thawing, stripping, and vital statistics of dredges.
Byers, 1957 (B 1024-I), p. 211 -- Channel samples of dump of all of the companies dredge concentrates contained 0.1% WO_3, 2.23% Sn, and 0.01% Bi.
Péwé, 1958 (GQ-110) -- Between 1928 and 1948 the company mined more than $100,000,000 worth of gold (at 1956 price) [more than 2,857,000 fine oz.] from the Fairbanks area. In 1956 8 gold dredges were operated.

(Vault Cr.) Gold

Fairbanks district Livengood (16.85-17.2, 0.7-1.5)
MF-413, locs. 79-83 65°02'-65°04'N, 147°41'-147°44'W

Summary: Bedrock probably all schist. Placers up to about 200 ft. deep. Near mouth in Chatanika Flats alluvium is 319 ft. thick; gold on false bedrock at 160 ft. Gold on upper creek coarse; one-third of pieces worth $1 or more (gold at $20.67 per fine oz.). Most of mining before World War II was drift mining. Mining from 1906 to as recently as 1940. Gold production, including that from tributaries, through 1924 was about 133,000 fine oz. worth $2,749,000. No data on composition of concentrates. See also (Chatanika R.)

Brooks, 1907 (B 314), p. 36 -- Rich placers found and mining begun, 1906.
Brooks, 1908 (B 345), p. 41-42 -- Mining, 1907.
Prindle, 1908 (B 337), p. 29 -- Quotation from B 314, p. 36.
p. 43-44 -- Bedrock probably schist. Depth to bedrock very variable; 50 to as much as 200 ft. Pay streak is 100 or more ft. wide and 3-6 ft. thick. In Chatanika Flats near mouth of creek alluvium is 319 ft. thick; gold on false bedrock at 160 ft. Mining 1906-07.
Prindle and Katz, 1909 (B 379), p. 190-191 -- Mining, 1908. Depth to bedrock 65-202 ft.
Ellsworth, 1910 (B 442), p. 232 -- Mining, 1909.
Ellsworth and Parker, 1911 (B 480), p. 156 -- Mining at mouth, 1910.
Ellsworth, 1912 (B 520), p. 242 -- Mining near mouth, 1911.
Ellsworth and Davenport, 1913 (B 542), p. 205 -- Mining, 1912.
Prindle and Katz, 1913 (B 525), p. 101 -- Placer deposits for 6 mi. above mouth. Gold on upper Vault Cr. coarse; one-third of pieces worth $1 or more.
p. 108 -- Depth to bedrock 65-208 ft.
p. 112-113 -- Production, 1907-10, worth $1,250,000. Gold worth $17.75 per oz.
Brooks, 1914 (B 592), p. 68 -- Mining, 1913.
Chapin, 1914 (B 592), p. 358 -- Mining, 1913; water shortage.
Brooks, 1915 (B 622), p. 54 -- Production, including tributaries, through 1914 was worth $2,400,000.
Eakin, 1915 (B 622), p. 233 -- Mining, 1914. Extensions of pay streak traced into Chatanika Flats.
Brooks, 1916 (B 642), p. 58-59 -- Mining, 1915. Production, including tributaries, through 1915 was worth $2,510,000.
Smith, 1917 (BMB 142), p. 22 -- Mining, 1915.
Smith, 1917 (BMB 153), p. 51 -- Gold mined in 1916 worth $40,000.
Brooks, 1918 (B 662), p. 51, 54 -- Mining, 1916. Production, including tributaries, through 1916 was worth $2,570,000.
Martin, 1919 (B 692), p. 35 -- Production, including tributaries, through 1917 was worth $2,640,000.
Martin, 1920 (B 712), p. 39 -- Production, including tributaries, through 1918 was worth $2,660,000.

(Vault Cr.) - Continued

Brooks and Martin, 1921 (B 714), p. 80-81 -- Mining, 1919. Production, including tributaries, through 1919 was worth $2,665,000.
Brooks, 1922 (B 722), p. 45 -- Production, including tributaries, through 1920 was worth $2,665,000.
Brooks, 1923 (B 739), p. 29 -- Production, including tributaries, through 1921 was worth $2,673,000.
Brooks and Capps, 1924 (B 755), p. 35 -- Production, including tributaries, through 1922 was worth $2,701,000.
Capps, 1924 (B 755), p. 146 -- Has been a major producer. Mining, 1922.
Brooks, 1925 (B 773), p. 45 -- Production, including tributaries, through 1923 was worth $2,733,000.
Smith, 1926 (B 783), p. 13 -- Mining, 1923-24. Production, including tributaries, through 1924 was worth $2,749,000.
Moffit, 1927 (B 792), p. 17 -- Gold-producing creek.
Smith, 1929 (B 797), p. 20 -- Mining, 1926.
Smith, 1933 (B 836), p. 33 -- Mining, 1930.
Smith, 1933 (B 844-A), p. 32 -- Mining, 1931.
Smith, 1934 (B 857-A), p. 30 -- Mining, 1932.
Smith, 1934 (B 864-A), p. 35 -- Mining, 1933.
Smith, 1936 (B 868-A), p. 36 -- Mining, 1934.
Smith, 1937 (B 880-A), p. 39 -- Mining, 1935.
Smith, 1938 (B 897-A), p. 46 -- Mining, 1936.
Smith, 1939 (B 910-A), p. 46 -- Mining, 1937.
Smith, 1939 (B 917-A), p. 43-44 -- Mining, 1938.
Smith, 1941 (B 926-A), p. 40 -- Mining, 1939.
Smith, 1942 (B 933-A), p. 39 -- Mining, 1940.
Koschmann and Bergendahl, 1968 (P 610), p. 26 -- Has been dredging.
Mulligan, 1974 (IC 8626), p. 11 -- Frozen placer about 200 ft. deep; inactive and covered by unpatented claims.

Vetter(-Shelden)

Antimony, Gold

Fairbanks district
MF-413, loc. 43

Livengood (19.3, 1.7)
65°04'N, 147°22'W

Summary: Fissure vein cutting schistose quartzite and quartz-mica schist contains sulfides (stibnite, jamesonite, and questionably identified arsenopyrite, freibergite, and pyrite) and gold. An unstated amount of gold has been mined.

Burand, 1968 (GC 13), p. 15 -- Some gold has recently been mined from a gold-quartz vein west of head of Wolf Cr. [Probably is Vetter property.]

Chapman and Foster, 1969 (P 625-D), p. D9 -- Sulfide fissure vein deposit transects flat-lying schistose quartzite and quartz-mica schist. Horses of iron-stained brecciated quartz and silicified schist. Minerals present include quartz, stibnite, jamesonite, antimony and arsenic oxide minerals, gold, arsenopyrite (?), freibergite (?), and pyrite (?). Gold has been produced. Sb, Cu, Zn, Ag, and Pb are listed in "Metals" column. [As minerals containing only Sb and Au are listed, only those metals are listed in the heading for this sheet.]

Wackwitz (Cleary Summit)

Fairbanks district
MF-413, loc. 36

Antimony, Gold, Lead

Livengood (19.0, 1.2)
65°03'N, 147°26'W

Summary: Quartz veins and mineralized zones in quartz-mica schist contain stibnite, galena, and jamesonite. Gold present (probably determined by assay). An unstated amount of antimony has been produced.

Chapman and Foster, 1969 (P 625-D), p. D12 -- Quartz veins and mineralized zones in quartz-mica schist contain stibnite, galena, and jamesonite. Antimony has been produced. Column headed "Metals" lists Au, Sb, Pb, Ag, Zn. [As minerals containing only Sb and Pb, only those and metals and gold are listed in the heading for this sheet.]

Wackwitz (Wyoming) — Antimony, Gold, Tungsten

Fairbanks district — Livengood (19.0, 1.55)
MF-413, loc. 39 — 65°04'N, 147°26'W

Summary: Quartz veins as much as 2 ft. thick contain gold and kidneys of stibnite, near which gold values are highest; scheelite in and adjacent to veins and as a replacement shoot in limestone. Bedrock is quartz-mica schist, quartzite, and thin limestone beds. Main (Wyoming) vein displaced 100 ft. to right by a fault. Gold (no data on production other than several thousand dollars worth) and a little scheelite concentrate produced. Mining or development work reported sporadically from 1909 to 1942. Well over 1,500 ft. of workings on 3 levels. Includes references to: Alaska Mining & Development Co., Goessman, Tanana Quartz (&) Hydraulic (Mining) Co., Wyoming (Quartz Mining Co.).

Prindle, 1910 (B 442), p. 225 -- Auriferous quartz being prospected, 1909; similar to Free Gold [Cleary Hill].

Brooks, 1911 (B 480), p. 33 -- Adit driven about 300 ft., 1910. Ledge parallel and close to that of Free Gold [Cleary Hill]; said to be about 10 in. wide.

Brooks, 1912 (B 520), p. 31 -- Work on Tanana Quartz Hydraulic Co. property, 1911.

Smith, 1913 (B 525), p. 181 -- Adit 165 ft. long; 50-ft. inclined winze sunk on vein from adit. Vein is 1-2 ft. wide; considerable free gold; ore sent to custom mills. Country rock resembles sheared and metamorphosed greenstone; in part, vein follows a fault. Quartz and younger calcite in vein. Auriferous quartz-vein material in prospect pits uphill from adit.

Smith, 1913 (B 542), p. 167 -- Same as B 525.

Chapin, 1914 (B 592), p. 338 -- Work in 1913 restricted to surface trenching on richer portions of a vein that strikes north and on 2 nearly parallel ones that strike N 75° W. 4-1/2 tons of hand-picked ore sent to mill; 4 tons more mined.

Eakin, 1914 (B 622), p. 237 -- Mining on a small scale, 1914.

Smith, 1917 (BMB 142), p. 24 -- Development work and probably some mining, 1915.

Mertie, 1918 (B 662), p. 411 -- Idle in 1916.

Chapin, 1919 (B 692), p. 322 -- Small production from Goessman property, 1917.

Brooks, 1923 (B 739), p. 30 -- Main adit extended, winze sunk, some ore mined, 1921.

Smith, 1926 (B 783), p. 9 -- Mining, 1924.

Moffit, 1927 (B 792), p. 12 -- New ball mill installed and run for a month, 1925. Vein much crushed and faulted; maximum thickness of 2 ft.; gold mineralization said to be good around kidneys of stibnite; much scheelite at margins of vein and in adjacent mineralized country rock.

Smith, 1929 (B 797), p. 13 -- Intermittent work; small gold production, 1926.

Smith, 1930 (B 810), p. 14-15 -- Development and a little mining, 1927.

Wackwitz (Wyoming) - Continued

Smith, 1930 (B 813), p. 17 -- Development and a little mining, 1928.
Smith, 1932 (B 824), p. 20 -- Mining, 1929.
Hill, 1933 (B 849-B), p. 52 -- Produced in recent years, 1931.
p. 96-98 -- Veins strike N 80° E to S 80° E, dip southward. Main (Wyoming) vein displaced about 100 ft. to right by fault. Veins 2 to 15 in. thick; some grade into zones of crushed schist and quartz as much as 5 ft. wide. Several hundred feet of workings on 3 tunnel levels; considerable stoping between lower 2 levels. Some of ore milled more than $6 a ton. Total production worth several thousand dollars [no more definite figure given].
Smith, 1933 (B 836), p. 19 -- Mining, 1930.
Smith, 1936 (B 868-A), p. 20 -- Work in progress, 1934.
Smith, 1937 (B 880-A), p. 21 -- Work in progress, 1935.
Smith, 1938 (B 897-A), p. 22 -- Production of gold reported, 1936.
Killeen and Mertie, 1951 (OF 42), p. 30 -- Reference to B 792, p. 12. No stibnite kidneys accessible in 1942; mine being actively worked, 1942.
Byers, 1957 (B 1024-I), p. 206-208 -- Scheelite in gold-quartz veins and limestone replacement bodies. Small amount of scheelite concentrates (byproduct of gold mining) reported to have been produced. Country rock is quartz-mica schist, quartzite, and thin limestone beds; strike N 85° W, dip 27° N. Mine developed from 3 adit levels; well over 1,500 ft. of workings. Scheelite in Wyoming vein in zone 6 in. wide and 70 ft. long along a drift; estimated to contain as much as 0.3% WO_3. Small (1 ft. by 3 ft. in cross section) replacement shoot in limestone estimated to contain 20% WO_3. Samples from ore dump and Wyoming vein contained 0.28%-1.64% WO_3.
Berg and Cobb, 1967 (B 1246), p. 220 -- A little scheelite concentrate produced as by-product of gold production from quartz veins.
Chapman and Foster, 1969 (P 625-D), p. D10 -- References to several of above reports.

(Walnut Cr.) Gold

Fairbanks district Livengood (20.75-20.85, 1.8-1.9)
MF-413, loc. 91 65°05'N, 147°11'W

Summary: Coarse gold recovered from shallow ground, 1906-08, 1912. Any more recent production probably included with that from Fairbanks Cr.

Ellsworth and Parker, 1911 (B 480), p. 159 -- Auriferous gravel on lower Walnut Cr. and adjoining left-limit bench claims opposite Nos. 1 and 2 of Fairbanks Cr.

Prindle and Katz, 1913 (B 525), p. 102 -- Production for at least 2 years [as of 1908]. Coarse gold (a nugget was valued at $45) in shallow ground.

p. 112-113 -- Production, 1906-08, was worth $8,700. Gold worth $17.00 per oz.

Ellsworth and Davenport, 1913 (B 542), p. 207-208 -- Mining, 1912.

(Washington Cr.)

Gold (?)

Tolovana district

Livengood
SW 1/4 SE 1/4 quad.

Summary: Prospecting, 1909; no confirmed positive results.

Ellsworth, 1910 (B 442), p. 234 -- Staked for entire length; not productive; 1909.
Prindle, 1910 (B 442), p. 208 -- Being prospected; some pay has been reported; 1909.

White Elephant — Lead, Silver

Fairbanks district — Livengood (18.95, 1.0)
MF-413, loc. 34 — 65°02'N, 147°26'W

Summary: Argentiferous galena accompanied by a little pyrite and quartz in flat lenses parallel to foliation of schist. Was some mining before 1913; presumably silver and possibly lead were sold.

Chapin, 1914 (B 592), p. 348 -- Flat lenses of galena parallel to foliation of schist associated with quartz stringers. One lens 9 ft. x 5 ft. x 5 in. was mined and milled; carried considerable silver. A little pyrite present. 20-ft. tunnel had caved by 1913.
Hill, 1933 (B 849-B), p. 114 -- Reference to B 592, p. 348.
Chapman and Foster, 1969 (P 625-D), p. D12 -- References to above.

Whitehorse — Antimony, Gold, Lead

Fairbanks district — Livengood (19.95, 1.7)
MF-413, loc. 49 — 65°04'N, 147°18'W

Summary: Auriferous quartz vein; footwall contains brecciated mass of rock cemented by stibnite and galena. Porphyritic granite dikes nearby. Some ore mined from pit and probably milled about 1915.

Smith, 1913 (B 525), p. 160 -- In footwall is much-brecciated mass of rock "cemented together by iron, stibnite, and galena." Contains fragments of older nearby auriferous vein. White porphyritic granite in vicinity. Some ore has been taken from pit 18 ft. deep; about half a ton sacked on dump in 1912. [Name not used; description fits Whitehorse claim of fig. 15.]

Smith, 1913 (B 542), p. 145-146 -- Same as B 525.

Smith, 1917 (BMB 142), p. 23 -- Development during winter [1914-15?]; 30 tons of ore shipped from Whitehorse and/or Yellowjacket.

Hill, 1933 (B 849-B), p. 104 -- Caved working on vein striking N 70° W and said to be 2 ft. wide.

Killeen and Mertie, 1951 (OF 42), p. 36-37 -- Reference to B 525, p. 160.

Chapman and Foster, 1969 (P 625-D), p. D7 -- References to above.

Whitman & Murray	Gold
Fairbanks district MF-413, loc. 30	Livengood (18.75, 0.9) 65°02'N, 147°28'W

Summary: Ore milled in 1910; 2 shafts, 400 ft. of drifts and crosscuts. This is the only reference to this property by this name; it may well have been known by another name in later years. See also Rainbow.

Brooks, 1911 (B 480), p. 35 -- Two shafts 40-50 ft. deep, 400 ft. of drifts and crosscuts; arrastre; considerable ore milled in 1910.
Chapman and Foster, 1969 (P 625-D), p. D12 -- Reference to above.

(Wilbur Cr.) Gold

Tolovana district
MF-413, loc. 75

Livengood (11.95, 8.2-8.25)
65°27'-65°28'N, 148°22'W

Summary: One of very few productive streams in area that do not drain Amy Dome or Money Knob; source of gold not known. Gold had been found in either 1915 or 1921. Mining 1926 to as recently as 1940. No good data on geometry of deposit, composition of concentrates, or amount of production.

Brooks, 1916 (B 642), p. 208 -- Prospects found, 1915.
Brooks, 1923 (B 739), p. 6, 31 -- Placer gold discovered, 1921.
Brooks and Capps, 1924 (B 755), p. 37 -- Discovery of 1921 is disappointing; gold content low and paystreak narrow.
Smith, 1929 (B 797), p. 21 -- Mining, 1926.
Smith, 1930 (B 813), p. 30 -- Mining, 1928.
Smith, 1932 (B 824), p. 36 -- Mining, 1929.
Smith, 1933 (B 836), p. 36 -- Mining, 1930.
Smith, 1933 (B 844-A), p. 35 -- Mining, 1931. Pay streak under benches found to be under more than 100 ft. of overburden [this probably is an error; Wilbur seems to be a lapsus for Livengood].
Smith, 1934 (B 857-A), p. 34 -- Mining, 1932.
Smith, 1934 (B 864-A), p. 39 -- Mining, 1933.
Smith, 1936 (B 868-A), p. 39-40 -- Mining, 1934.
Smith, 1937 (B 880-A), p. 44 -- Mining, 1935.
Smith, 1938 (B 897-A), p. 52 -- Mining, 1936.
Smith, 1939 (B 910-A), p. 53 -- Mining, 1937.
Smith, 1939 (B 917-A), p. 53 -- Mining, 1938.
Smith, 1941 (B 926-A), p. 49 -- Mining, 1939.
Smith, 1942 (B 933-A), p. 46 -- Mining, 1940; "Considerable amount" from this tributary of Tolovana R. from south.
Cobb, 1973 (B 1374), p. 46 -- Source of gold not known; not the same as most of other creeks in area (Amy Dome and Money Knob).

(Wildcat Cr.) Gold

Fairbanks district Livengood (16.9, 0.6)
MF-413, loc. 82 65°01'N, 147°43'W

Summary: Gold-bearing gravels for about half a mile above mouth. A little mining reported 1908-15.

Prindle and Katz, 1913 (B 525), p. 101 -- Auriferous deposits for about half a mile above mouth. Deposits so far [1908] developed are low grade.
Ellsworth and Davenport, 1913 (B 542), p. 205 -- Mining, 1912.
Brooks, 1914 (B 592), p. 68 -- Mining, 1913.
Chapin, 1914 (B 592), p. 358 -- Mining, 1913.
Brooks, 1916 (B 642), p. 59 -- Mining, 1915.

(Willow Cr., near Livengood) Gold

Rampart district
MF-413, loc. 63

Livengood (11.2, 11.1) approx.
65°38'N, 148°24'W approx.

Summary: Mining reported, 1924. In Hess Cr. basin.

Smith, 1926 (B 783), p. 14 -- Mining, 1924.
Cobb, 1973 (B 1374), p. 165 -- Has been minor mining.

(Wolf Cr.) Gold

Fairbanks district Livengood (19.15-19.4, 1.85-1.9)
MF-413, loc. 88 65°05'N, 147°23'-147°25'W

Summary: Gold is bright and some very rough. Ground as much as 60 ft. deep; gold in base of gravel and top 2 ft. of bedrock. Sporadic mining from 1903 to 1915 and 1937-40.

Prindle, 1904 (B 225), p. 68 -- Of economic importance in 1903.
p. 70-71 -- Bedrock 4-10 ft. deep; gold in base of gravel and top 2 ft. of bedrock. Open-cut mining, 1903. Gold bright; some very rough.
Prindle, 1905 (B 251), p. 67 -- Of economic importance in 1903.
p. 78-79 -- Mining, 1903. Open-cut mining, fall of 1902.
p. 84 -- Gold at head of creek very rough; could not have been carried very far.
Prindle, 1906 (B 284), p. 119 -- Very little work in 1904-05. Placers shallow.
Prindle, 1908 (B 337), p. 41-42 -- Mining, 1903; very little work since then; placers shallow.
Ellsworth, 1910 (B 442), p. 233 -- Prospecting only, 1909. Encouraging results reported.
Ellsworth and Parker, 1911 (B 480), p. 155-156 -- Mining, 1910.
Ellsworth and Davenport, 1913 (B 542), p. 205 -- Mining, 1912.
Prindle and Katz, 1913 (B 525), p. 112-113 -- Production, 1903, 1908-10, worth $33,000. Gold worth $17.85 per oz.
Chapin, 1914 (B 592), p. 358 -- Mining, 1913.
Eakin, 1915 (B 622), p. 232 -- New discoveries and increased mining, 1914. Ground increased in depth from slight at head to 60 ft.
Brooks, 1916 (B 642), p. 59 -- Mining, 1915.
Smith, 1917 (BMB 142), p. 22 -- Mining, 1915.
Smith, 1939 (B 910-A), p. 46 -- Mining, 1937.
Smith, 1939 (B 917-A), p. 43-44 -- Mining, 1938.
Smith, 1941 (B 926-A), p. 40 -- Mining, 1939.
Smith, 1942 (B 933-A), p. 39 -- Mining, 1940.

(Wolf Cr. divide) Gold

Fairbanks district Livengood (19.55, 1.55)
65°04'N, 147°21'W

Summary: Quartz veins and wall rock in old prospect trenches carry as much as 2.87 ppm gold

Pilkington and others, 1969 (OF 383), p. 11 -- Grab samples from veins exposed in old prospect trenches. Veins strike N 70° W, dip 55° S and strike N 65° E, dip 70° S; altered schist 1 ft. into footwall of the latter carries significant gold. Samples contained between 0.05 and 2.87 ppm gold.

(Wolverine Mtn.) Antimony

Rampart district (?) Livengood (0.9, 5.9) approx.
MF-413, loc. 1 65°20'N, 149°53'W approx.

Summary: Stibnite-bearing mafic dike. Occurrence may be on part of mountain in Hot Springs district.

Berg and Cobb, 1967 (B 1246), p. 236 -- Stibnite-bearing mafic dike. No other data.

Woods — **Antimony, Gold, Lead**

Fairbanks district — **Livengood (15.1, 11.25)**
MF-413, loc. 16 — **65°02'N, 147°35'W**

Summary: Quartz veins with visible gold, arsenopyrite, pyrite, stibnite, and galena. No record of production. Includes references to: Alpha, Omega. See also: Independence, Scrafford.

Hill, 1933 (B 849-B), p. 74 -- Claims held by M. E. Stevens in 1931.
p. 77-78 -- Alpha and Omega claims are south of west end of patented claims of Soo group (Reliance Mining Co.). What appears to be H & K vein of Soo property was opened on Omega claim.

Chapman and Foster, 1969 (P 625-D), p. D14 -- Data from a Univ. of Alaska B.S. thesis. Quartz veins pinch and swell; some massive, some shattered and sugary. Some visible gold. Some clay gouge and iron and manganese staining. Veins dip northward. Minerals identified include quartz, gold, arsenopyrite, pyrite, stibnite, galena, and limonite. No record of production.

Yellowjacket	Gold (?)
Fairbanks district	Livengood SE 1/4 SE 1/4 quad.

Summary: Some work in winter of 1914-15 (?); some ore may have been milled.

Smith, 1917 (BMB 142), p. 23 -- "On the Whitehorse and Yellowjacket some development work was done during the winter months and about 30 tons of ore was shipped to the mill." [winter of 1914-15?]

Zimmerman (Twin Cr.) — Gold

Fairbanks district — Livengood (18.65, 0.7)
MF-413, loc. 31 — 65°01'N, 147°29'W

Summary: Silicified crushed schist SW of a shear zone with 11 ft. of clay gouge contains a little arsenopyrite and as much as $1.66 a ton in gold. Quartz diorite on other side of shear zone is barren. Exposed in placer cut.

Hill, 1933 (B 849-B), p. 63 -- Silicified, sericitized schist 60 ft. wide in a cut.

p. 70 -- Schist wall rocks crushed and silicified.

p. 118-119 -- Extensive exposures of mineralized quartz diorite and schist in hydraulic cut in Twin Cr. Fault zone strikes E, dips 85° N; 11 ft. of clay gouge with quartz and schist fragments; some arsenopyrite. Quartz diorite NE of gouge zone; some quartz veins; no gold. SW of gouge zone is broken and crushed silicified schist with a little arsenopyrite; best assay of a sample was $1.66 a ton [in gold].

Chapman and Foster, 1969 (P 625-D), p. D13 -- Reference to B 849-B, p. 118-119.

Zimmerman (near Twin Cr.) — Gold, Silver

Fairbanks district — Livengood (18.85, 0.9)
MF-413, loc. 33 — 65°02'N, 147°27'W

Summary: Sulfide-bearing material contains as much as $12 in silver and $4 in gold to the ton (1913 prices).

Smith, 1913 (B 525), p. 201 -- Lode (may be continuation of Rainbow) contains sulfide-bearing material; assays of samples have indicated $12 in silver and $4 in gold to the ton. Strike of lode swings from E to N and dip from N to E.

Smith, 1913 (B 542), p. 187 -- Same as B 525.

Chapman and Foster, 1969 (P 625-D), p. D12 -- Reference to B 525, p. 201.

Unnamed occurrence	Asbestos
Tolovana district	Livengood (16.05, 11.8) 65°39'N, 147°47'W

Summary: Minor fiber veinlets in slightly sheared serpentinite.

Foster, 1969 (C 615), p. 2, 4 (site 3) -- Slightly sheared blocky dark-green serpentinite with minor fiber veinlets (light green on weathered sheared surface).

Unnamed occurrence	Chromite
Tolovana district MF-413, loc. 7	Livengood (15.9, 11.25) 65°37'N, 147°48'W

Summary: Sheared chromitite in scree.

Foster, 1969 (C 615), p. 21 (site 5) -- Scree rock sample is sheared black chromitite.

Synonyms, Claim Names, Operators, and Owners

Many mines and prospects have undergone changes in both their own names and in the names of their operators and owners. All names that appear in the cited references appear in this summary either in the first section as occurrence names or in this as synonyms. Descriptions of placer deposits commonly give little information on the location of individual mines or claims, so the names of all operators and owners of placer mines and claims are in this section with a notation to refer to the description of the stream that was mined or prospected.

Alabama -- see Cleary Hill, (Vault Cr.)
Alaska Artic Resources, Inc. -- see Nightingale, J.
Alaska Exploration Co. -- see (Fairbanks Cr.)
Alaska Mining & Development Co. -- see Wackwitz (Wyoming)
Algo Co. -- see Hi-Yu

Alpha -- see Woods
American Eagle -- see McCarty (Henry Ford)
Amy -- see Parker
Anchor -- see Chechako No. 1
Anderson -- see Silver Fox

Anderson and associates -- see Silvertone
Anderson & Birch -- see Hoover
Anderson-Wackwitz -- see Freeman & Scharf, Silvertone
Anna -- see Anna-Mary
Antimony -- see McCarty (Pioneer)

Apex -- see David
Arctic Alaska Fisheries & Enterprises, Inc. -- see Homestake
Aroostook -- see Perrault
Baltic -- see (Livengood Cr.)
Balzimer -- see Homestake

Bank -- see (Vault Cr.)
Barry -- see (Livengood Cr.)
BECS Corp. -- see Homestake
Big Chief -- see Soo
Big Jim -- see Jackson

Big Lead -- see North Star (Skoogy Gulch)
Bill Taft -- see Butler & Petree
Birch (&) Anderson -- see Hoover
Bishop -- see Whitehorse
Black Eagle -- see Scrafford

Black Joe -- see Mizpah
Black Warrior -- see McCarty (Pioneer)
Blue Bell -- see Pioneer (Chatham Cr.)
Blue Lead -- see McCarty (Pioneer)
Blue Moon -- see Pioneer (Chatham Cr.)

Bob -- see Newsboy
Bostrum & Wickstrom -- see (Wilbur Cr.)
B.P. -- see Butler & Petree
Bunnell -- see Woods
Burns -- see Chatham

Busch & Anderson -- see Hoover
California -- see Cleary Hill
Caribou -- see McCarty (Henry Ford)
Carlisle -- see Cleary Hill
Carnation -- see Soo

Center Star -- see North Star Extension
Central Star -- see North Star Extension
Centre Star -- see North Star Extension
Chatam -- see Chatham
Chatham Creek -- see Chatham

Chatham Creek Dredging Co. -- see (Chatham Cr.)
Chatham Gold Dredging Co. -- see (Chatham Cr.,), (Cleary Cr., near Fairbanks)
Chatham Mining Co. -- see Chatham
Chief -- see Scrafford, Soo
Christmas -- see (Dome Cr.)

Christina -- see Homestake
Cleary -- see Cleary Hill
Cleary Extension -- see Newsboy
Cleary Hill Alaska Gold Mines Co. -- see Cleary Hill, Wackwitz (Wyoming)
Cleary Hill (Alaska) Mining Co. -- see Cleary Hill

Colby -- see Chatham
Colorado -- see Cleary Hill
Connors & Stevens -- see Gilmore, Ohio (Fairbanks Cr.)
Cottonwood -- see Freeman & Scharf
Crane -- see (Olive Cr.)

Creighton (& Heilig) -- see Mohawk
Crites & Feldman -- see Hi-Yu
"Cross vein" -- see Excelsior
Dahl & Co. -- see (Gertrude Cr.)
Day Dawn -- see (Dome Cr.)

Deep Channel -- see (Livengood Cr.)
Diamond -- see (Cleary Cr., near Fairbanks)
Discovery -- see Pioneer (Chatham Cr.)
Dorando -- see Hi-Yu
Dorothy -- see McCarty (Pioneer)

Duncan -- see (Livengood Cr.,)
Eagan (and associates) -- see Eagan (Twin Cr.)
Eagle -- see Goodwin, (Livengood Cr.), Scrafford
(Eagle Cr.) -- see Goodwin
Early Bird -- see Ohio (Fairbanks Cr.)

Ebbert -- see Homestake
Eldorado (near Fairbanks) -- see Chechako No. 1, (Little Eldorado Cr.)
Eldorado (near Livengood) -- see (Livengood Cr.)
(Eldorado Cr.) -- see (Little Eldorado Cr.)
Eldorado Creek Mining Co. -- see Chechako No. 1

Eldorado Mining (& Milling) Co. -- see Chechako No. 1, Johnson
Elsie -- see Anna-Mary
El Toro No. 3 -- see McCarty (Henry Ford)
Equity Assn. -- see Soo
Estorffe & Radak -- see (Ruth Cr.)

Etna -- see (Livengood Cr.)
Fairbanks -- see Homestake
Fairbanks Exploration Co. -- see U.S. Smelting, Refining & Mining Co.
Fairbanks Gold Dredging Co. -- see (Fairbanks Cr.)
Fairbanks Gold Mining Co. -- see (Fairbanks Cr.), (Twin Cr.)

Fairhaven & Foss -- see McCarty (Henry Ford)
Falls -- see (Lillian Cr.), (Ruth Cr.), (Wilbur Cr.)
Falls & Barker -- see (Lillian Cr.)
Farrell and associates -- see (Idaho Bar)
Faulkner -- see North Star (Skoogy Gulch), North Star Extension, White Elephant

Fay -- see Chatham
Feldman -- see Hi-Yu
Fish -- see (Livengood Cr.)
Fish Creek Mining Co. -- see (Fish Cr.)
Fiske Bros. & Wickstrom -- see (Amy Cr.)

Foster & Hungerford -- see Alaska, Empire
Franklin -- see Chechako No. 1, Mohawk, Woods
Franklin and associates -- see (Seattle Cr.)
Franklin Lode -- see Woods
Franklin No. 2 -- see (Livengood Cr.)

Frederichs -- see Gilmer
Free Gold (Cleary Cr.) -- see Cleary Hill
Free Gold (Fairbanks Cr.) -- see McCarty (Pioneer)
Friederich -- see Fredericks
Fursteneau -- see Alaska

Gan -- see (Livengood Cr.)
Genki -- see Alaska
Georgia -- see (Our Cr.)
Gibbs -- see Hi-Yu
Gilmore & Stevens -- see Gilmore, Ohio (Fairbanks Cr.)

Gilmore & Stevenson -- see Gilmore, Ohio (Fairbanks Cr.)
Gladstone -- see Alaska
Glen Gulch Mining Co -- see (Gertrude Cr.)
Goepfert Galena -- see Goepfert
Goessman -- see Wackwitz (Wyoming)

Gold Dollar -- see Livengood Cr.)
Golden Eagle -- see McCarty (Henry Ford)
Goldstone -- see Alaska
(Goldstream Cr.) -- see (Hess Cr., S. Fork)
Goyett -- see Hidden Treasure (near Fairbanks), Mohawk

Goyett, Boyd & Shaw -- see Mohawk
Gray Eagle -- see Ohio (Fairbanks Cr.)
Greenback -- see Mohawk
Gustafson Bros. -- see Cleary Hill, Wackwitz (Wyoming)
Ha-Ha -- see McCarty (Pioneer)

Haley & Magnussen -- see (Wilbur Cr.)
H & K -- see Soo
Hanot Bros. -- see (Pedro Cr.)
Hard Luck -- see (Vault Cr.)
Hard Scramble -- see (Chatanika R.)

Harrais -- see Independence, Moonlight
Harrietta -- see McCarty (Pioneer)
Harris -- see Independence
Hawkins (and associates) -- see Soo
Healy -- see (Goodluck Cr.)

Heath & Kearns -- see Soo
Heilig & Creighton -- see Mohawk
Helen S. -- see Hi-Yu
Helen W. -- see Gilmer
Henry Clay -- see McCarty (Pioneer)

Henry Ford -- see McCarty (Henry Ford)
Hess & Burnet(t) -- see Jackson
Hess, Douglas & Lowe -- see (Gertrude Cr.)
Hidden Treasure (near Livengood) -- see (Livengood Cr.)
Hindenburg -- see Markovich

Hinton -- see McCarty (Pioneer)
Holke -- see Pioneer (Chatham Cr.)
Homestead -- see (Vault Cr.)
Hope -- see (Chatanika R.), Homestake
Horton & Solomon -- see Homestake

Hudson -- see (Olive Cr.)
I.B. -- see McCarty (Pioneer)
Idaho -- see Cleary Hill, (Little Eldorado Cr.)
Idaho Mining & Leasing Co. -- see (Little Eldorado Cr.)
Inspiration -- see Soo

Insurgent -- see Hi-Yu
Iron Mask -- see McCarty (Pioneer)
Isabel -- see (Vault Cr.)
Isabella -- see (Vault Cr.)
Italy -- see (Livengood Cr.)

Jack -- see Newsboy
Jamesonite -- see Homestake, McCarty (Pioneer)
Johnson & Martin -- see Johnson
Jupiter-Goldstone -- see Alaska
Jupiter-Mars (Consolidated Mining Co.) -- see Alaska

Jurich -- see (Lillian Cr.)
Katherine -- see Emma
Kawilita -- see Homestake
Key -- see Anna-Mary
Keystone (Mines, Inc.) -- see Hi-Yu, Homestake, McCarty (Henry Ford), McCarty (Pioneer)

La Rose -- see Soo
Last Chance -- see Dome View
(Last Chance Cr.) -- see (Little Eldorado Cr.)
Laughing Water -- see McCarty (Pioneer)
Le Boyteau -- see (Goodluck Cr.)

Leindecker -- see Branholm-Jenkins
Lemon -- see McCarty (Alder Cr.)
Leroy -- see McCarty (Pioneer)
Leslie (& Hawks) -- see Old Glory
Lietrim -- see (Livengood Cr.)

Lillian -- see (Lillian Cr.)
Lime -- see McCarty (Alder Cr.)
Little Jim -- see Jackson
Livengood & Hudson -- see (Gerturde Cr.), (Lillian Cr.), (Livengood Cr.), (Olive Cr.), (Ruth Cr.)
Livengood Cinnabar Corp. -- see (Olive Cr.)

Livengood Placers, Inc. -- see (Livengood Cr.)
Luckman & Co. -- see (Amy Cr.)
Luckman & West -- see (Amy Cr.)
(Lucky Cr.) (Gulch) -- see (Ester Cr.), (Goodluck Cr.)
Lucky Lad -- see Newsboy

Mahan -- see (Livengood Cr.)
Mandich (& Jurich) -- see (Lillian Cr.)
Marcovich -- see Markovich
Marietta -- see (Livengood Cr.)
Marigold -- see McCarty (Pioneer)

Markovitch -- see Markovich
Mars-Emerald -- see Alaska
Martin -- see Johnson
Mary -- see Anna-Mary, Woods
Mayflower -- see Ohio (Fairbanks Cr.)

Mazeppa -- see Butler & Petree
McCarthy (Alder Cr.) -- see McCarty (Alder Cr.)
McCarthy (Fairbanks Cr.) -- see McCarty (Pioneer)
McCarty & Ewers (Gold Mining Co.) -- see McCarty (Henry Ford)
McCarty & Lawson -- see McCarty (Pioneer)

McCarty, L. J., and associates -- see McCarty (Henry Ford)
McCarty Mining Co. -- see McCarty (Henry Ford)
McDougall -- see McCarty (Pioneer)
McGillvray & Ellis -- see Soo
McNeil (& Huddelson) -- see Branholm-Jenkins

(Mike Hess Cr.) -- see (Hess Cr.)
Miller -- see Chatham, Griffin
Million Dollar Corp. -- see Thompson & Burns
Mines Development Syndicate -- see (Livengood Cr.)
Minnie -- Perrault

Minnie Ha-Ha -- see McCarty (Pioneer)
Mintti -- see Markovich
Moonshine -- see Moonlight
Muchano -- see Gilmer
Muir -- see North Star (Skoogy Gulch)

Murphy -- see (Fairbanks Cr.)
Myntti -- see Markovich
Nars (, Anderson & Gibbs) -- see Hi-Yu
Nelson -- see (Livengood Cr.)
Nerich, Jackson & Faulkner -- see White Elephant

Nevada -- see (Vault Cr.)
New Deal -- see Hidden Treasure (near Fairbanks)
Newsboy Extension -- see Newsboy
Newsboy Mining Co. -- see Emma, Newsboy
New York -- see Cleary Hill

Nickaloff -- see Robinson (Pedro Dome)
Niggerhead -- see (Dome Cr.)
Nightingale, G. -- see Homestake
Nirige & Hershberger -- see Rainbow
Nordale (Corp.) -- see Homestake

Northern Commercial Co. -- see David
North Star (Alder Cr.) -- see McCarty (Alder Cr.)
North Star (Chatham Cr.) -- see Pioneer (Chatham Cr.)
Ohio (Little Eldorado Cr.) -- see Markovich
Oklahoma -- see Wackwitz (Wyoming)

Olive Creek Mines -- see (Olive Cr.)
Omega -- see Woods
Oregon -- see (Vault Cr.)
Oro Fino -- see Newsboy
Oro Grande -- see Newsboy

Ott & McGowon -- see Mizpah
Our Jim -- see Jackson
Overga(a)rd -- see Emma
Paupers Dream -- see Cleary Hill
Pennsylvania -- see McCarty (Pioneer)

Pilgrim -- see Newsboy
Pinnacle -- see Cheyenne
Pinska -- see Tolovana
Pioneer (Fairbanks Cr.) -- see McCarty (Pioneer)
Pioneer Co. -- see Pioneer (Chatham Cr.)

Pioneer Discovery -- see Pioneer (Chatham Cr.)
Pioneer (Quartz) Mining Co. -- see Pioneer (Chatham Cr.)
Poz & Contardi -- see Markovich
Quinn -- see Scrafford
Radak -- see (Ruth Cr.)

Ready Bullion -- see (Livengood Cr.)
Recorder -- see (Dome Cr.)
Red -- see (Livengood Cr.)
Reese -- see Butler & Petree
Reliance (Mining Co.) -- see Soo

Rex (Mining Co.) -- see Butler & Petree
Rexall -- see Homestake
Rhoades-Hall -- see Cleary Hill
Rhoads (&) Hall -- see Cleary Hill
Rhodes (&) Hall -- see Cleary Hill

Roads & Hall -- see Cleary Hill
Robinson & Drouin -- see David
Robinson & Lieman -- see Hoover
Rob-Rye -- see Rob & Roy
Rock Run -- see Dome View

Rogach -- see Markovich
Rogash -- see Markovich
Rose -- see Mohawk, Pioneer (Chatham Cr.)
Roth & Maddocks -- see David
Rowley-Shumeff -- see Nightingale

Roy -- see Rob & Roy
(Ruby Cr.) -- see (Ruth Cr.)
Russian Kid -- see McCarty (Pioneer)
Saucy -- see Hi-Yu
Scheuyemere -- see Tolovana

Scheuyemeress -- see Tolovana
Schreiber -- see McCarty (Hanry Ford)
(Seattle Cr.) -- see Old Glory
Shakespeare -- see (Dome Cr.)
Sierra -- see (Vault Cr.)

Silva (& Co.) -- see (Livengood Cr.)
Silver King -- see Jackson
Silver Ridge Mining Co. -- see Scrafford
Snow Drift -- see Cleary Hill
Somerville -- see (Livengood Cr.)

Spall & Livengood -- see (Livengood Cr.)
Spaulding (& Brumbaugh) -- see Soo
Spaunding-Ronan-Cunningham -- see Soo
Stadelman -- see (Amy Cr.), (Livengood Cr.)
Standard Mines, Ltd. -- eee (Livengood Cr.)

Steel -- see Steil
Stevens -- see Woods
Stevens & Martin -- see Soo
Stibnite -- see Johnson
Stier -- see (Chatanika R.)

Summit -- see Hi-Yu
Sunlight -- see Moonlight
Sunny -- see (Livengood Cr.)
Sunnyside (near Fairbanks) -- see Hi-Yu
Sunnyside (near Livengood) -- see (Livengood Cr.)

Sunrise (Treasure Cr.) -- see Scrafford
Sunshine -- see Moonlight
Sunshine No. 2 -- see (Olive Cr.)
Tanana Quartz (&) Hydraulic Mining Co. -- see Chatham, Wackwitz (Wyoming)
Tanana Quartz Mining Co. -- see Chatham

Tanana Vally Gold Dredging Co. -- see (Fish Cr.)
Teddy R. -- see Hi-Yu
Texas -- see Cleary Hill
Tolovana-Stibnite -- see Tolovana
Tonaskate -- see (Treasure Cr.)

Triangle -- see (Livengood Cr.)
Twilight -- see Moonlight
Twin Lode -- see Independence
Union -- see I.X.L.
V -- see Cleary Hill

Vergil -- see Jackson
Vernetti -- see Scrafford
Victor -- see (Vault Cr.)
Victoria -- see (Treasure Cr.)
Virginia -- see (Livengood Cr.)

Wackowitz Bros. -- see Dome View, Wackwitz (Wyoming)
Wackowitz Bros. & Nelson -- see Wackwitz (Wyoming)
Wackwitz Bros. -- see Dome View, Wackwitz (Wyoming)
Wackwitz, F. -- see Alaska
Wall -- see (Amy Cr.)

War Eagle -- see McCarty (Pioneer)
Warren -- see Anna-Mary
Washington -- see (Our Cr.)
Waterbury -- see Soo
Waverly -- see Soo

Westonvich -- see Chechako No. 1
Westonvik -- see Chechako No. 1
Westonvitch -- see Chechako No. 1
Wilcox -- see Gilmer
Wild Rose -- see Soo

Willie -- see Homestake, McCarty (Pioneer)
Willow Creek -- see Tolovana
(Willow Cr., near Fairbanks) -- see Johnson
Wolf (Too Much Gold Cr.) -- see Hi-Yu
Wolf (Wolf Cr.) -- see Homestake

Wolverine -- see Jackson
Wyoming (Quartz Mining Co.) -- see Cleary Hill, Wackwitz (Wyoming)
Yankee Doodle -- see Hi-Yu
Your Jim -- see Jackson
Zimmerman (Kokomo Cr.) -- see (Kokomo Cr.)

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