

1923

A. Sosta in charge for New York interests
Work in winter

1918

882755

This group* comprises eleven Crown-granted claims—Northern Partnership Engineer Group. No. 1, Northern Partnership No. 2, Northern Partnership No. 3, Northern Partnership No. 4, Northern Partnership No. 5, Engineer No. 1, Mickey, Plato, Philadelphia Fraction, Mill Brook, and Daisy—situated on the east side of Taku arm, about ten miles south of Golden Gate, sixty-five miles from Carcross, on the White Pass Railroad, and twenty-five miles from Atlin. The claims are located two deep along the shore from the water's edge up the hill. The property was owned by the late Captain James Alexander, who, with Mrs. Alexander, were lost in the S.S. "Princess Sophia" disaster in Lynn canal in October of this year. The captain had "stayed with it" at this one property for over ten years through all kinds of adverse conditions, and was on his way out to close a deal for the property, and reap the reward, when the fates decreed otherwise. No information is available at the present time as to the future plans for the property.

Quoting from D. D. Cairnes's report of 1913, "The ores at the Engineer mine occur in veins mainly in Jura-Cretaceous shales and finely textured greywackes that vary from dark greenish and brownish to almost black in colour. The veins range from simple veins a few inches in thickness to compound veins over 200 feet thick, and consist largely of quartz, calcite, and intercalated and brecciated wall-rock. The chief metallic mineral is native gold; in addition, small particles of tellurides, as well as some pyrite and native antimony, also occur. The veins are thus of value only for their gold contents.

Attitudes ✓

"The beds have been invaded by dykes of andesite and granite porphyry, and in places are faulted, folded, and considerably distorted, but have a general strike of about N. 63° W. and dip to the north-east at an average angle of about 35 degrees.

"Two large, central, compound veins or hubs consisting of quartz and intercalated and brecciated shale, slate, and altered rocks occur, from which several veins radiate, most of them in north-westerly and south-easterly directions. In addition, a number of veins have been discovered which are not, as yet, traceable to any central quartz area.

"Hub A is at least 200 feet wide at its widest point and is over 300 feet in length. The mass consists largely of quartz, but also contains a large proportion of intercalated bands of shale slate.

"Hub B is very similar in appearance to hub A, contains a large amount of intercalated and brecciated shale and slate, and is in reality a compound vein. It is at least 270 feet wide. Toward the edges of the vein the proportion of rock gradually increases, producing walls of indefinite character.

"The majority of the narrower veins are compounded almost entirely of quartz, with comparatively little calcite. The quartz is characteristically well crystallized and long delicate prisms are very common; these occur in parallel bands with comb-structures or radiate from a central mass or particle of ore or rock. In the intercrystal spaces that thus result the metallic minerals have largely been deposited.

"Native gold is the most common metallic mineral in the veins, and is in places plentifully distributed through pockets or shoots of ore either in fine grains or thin scales. Associated with the gold in places are imperfect prismatic forms or brass-yellow tellurides, probably calaverite."

Development-work done on the property consists of a great number of open-cuts and strippings and several tunnels driven on the most promising-looking veins. This surface work has exposed about twenty-five veins, varying in width from a few inches up to 4 feet, the majority of them showing visible gold at some place in them and a few of them containing shoots and pockets of bonanza ore. Two of these are especially rich, the "boulder vein" and the "shaft vein." The greater part of development so far has been on vein E. (See sketch.) A shaft has been sunk 275 feet from the surface, from which four levels have been run. No. 1 level is 50 feet below the collar of the shaft and is driven from the surface at 460 feet elevation above the lake. This is the working-level to which all ore and waste is hoisted from the underground workings. From the mouth of the tunnel to the shaft is 115 feet, and the tunnel has been continued beyond the shaft for 355 feet, all on the vein. At 270 feet beyond or south of the shaft a raise has been put through to the surface. No. 2 level, 45 feet below No. 1, has been driven 100 feet north and 190 feet south of the shaft, on the vein both ways. A manway has been put through from the end of the north drift to the No. 1 level, coming out about 30 feet from the portal. No. 3 level, 50 feet below No. 2, has a short drift of 30 feet, north from which a

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* Dominion Geological Survey, Memoir 37, 1913, by D. D. Cairnes. Minister of Mines' Report, 1904.

1919

8-15 men employed - "marking time" - Captain Alexander (recorded owner) died

1920

"Marking time" - limited expl.

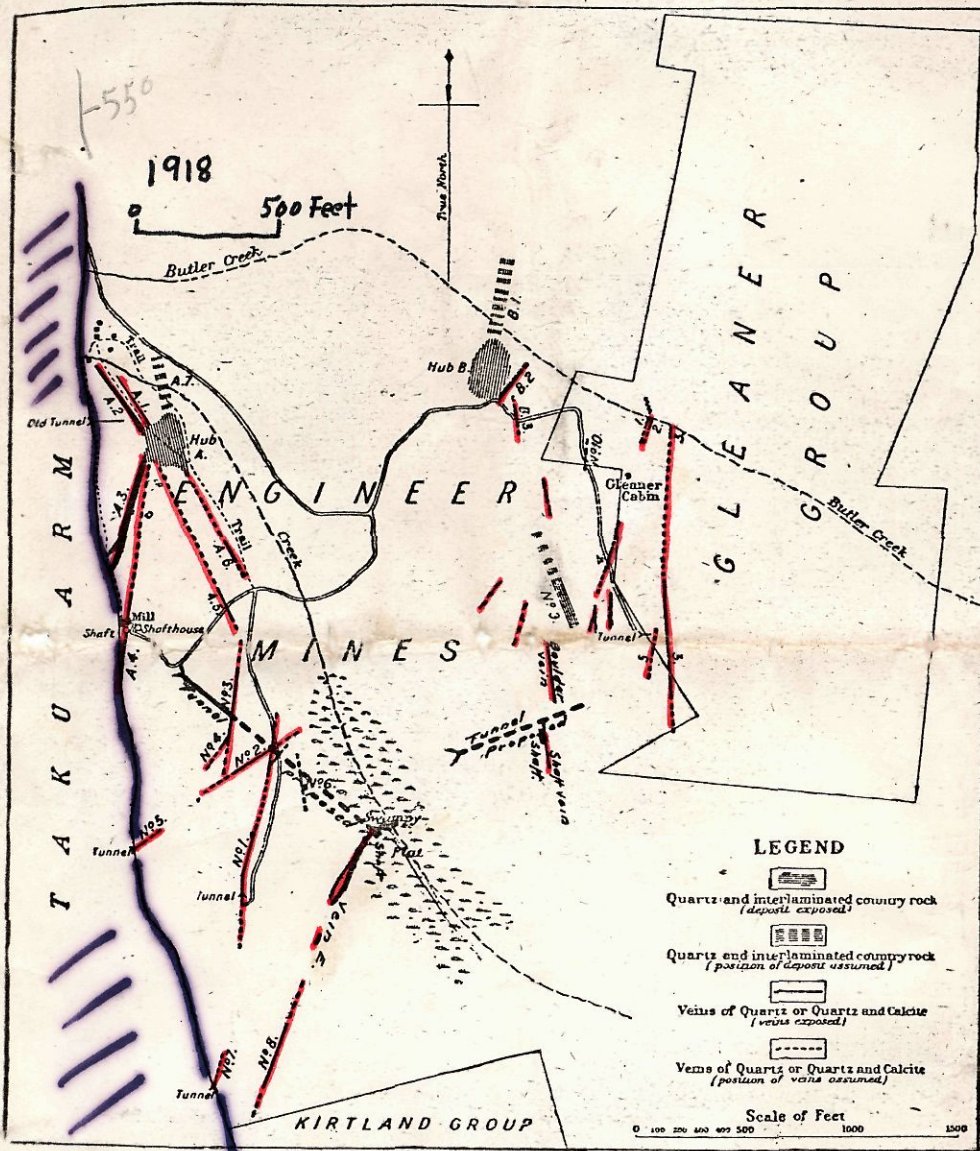
1921

Title + ownership (litigation) = no work

1922

Litigation ended in favour of Captain Alexander's heirs, the Smiths, but option by Timmins of Montreal + examined.

bottom. This was full of water at the time of my visit, but I was able to procure the results of a very carefully taken set of samples down the shaft. These were taken at regular intervals of 10 feet and averaged a trifle over \$15 a ton in gold and silver values (silver, 60 cents an oz.) for an average width of 2½ feet, corresponding very closely to values and width of the Venus vein, possibly with a trifle higher gold values. The ore will concentrate about 10 or 12 into 1.



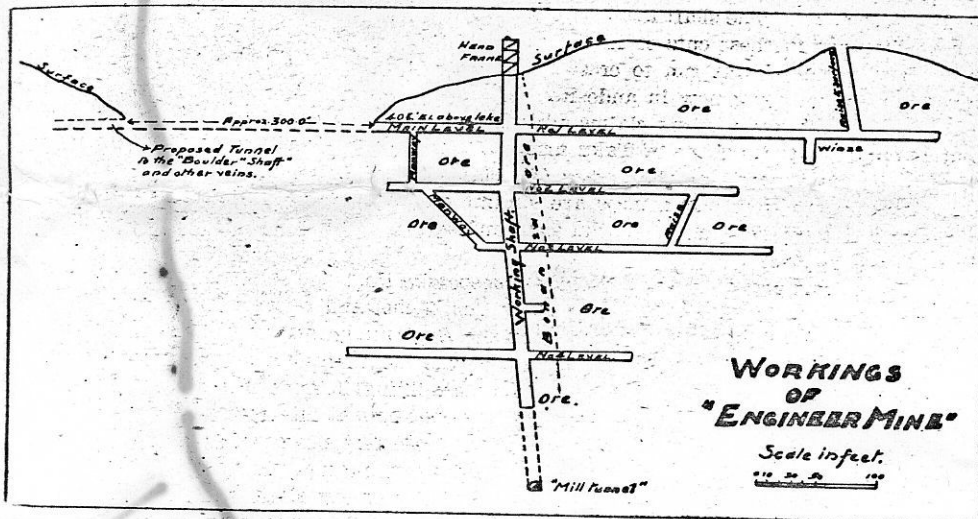
Map showing Vein-outcrops on Engineer and Gleaner Groups, Atlin Mining Division.

The property is equipped with a compressor and boiler plant, installed on the lake-shore, similar to the one on the Venus, and connected with the mine by a 4-inch air-line. There are good reasons to believe that, under conditions which will prevail after the war, this property, equipped with a modern concentrator and efficiently handled, can be made a good profit-producing enterprise.

No. E Vein
 No. 8 Vein
 No. 5 Vein

sloping manway has been put up connecting with a manway from No. 2 level, and a drift sunk of 210 feet, from which a raise has been driven to No. 2 level. No. 4 level, 90 feet below No. 3, has a drift north of 140 feet and south 90 feet, both on the vein. The shaft has been continued for 40 feet below the No. 4 level during the past summer, showing the vein to be 2 feet in width, with visible gold on each wall. All this underground work has been in ore. There is a bonanza shoot of ore showing for a length of about 30 feet on all the levels on the south side of the shaft, varying in thickness from a knife-blade to 6 inches of heavy gold, in one place reaching a width of 18 inches.

In development-work the waste is broken about 10 feet ahead of the ore, which is afterwards taken down with as little shooting as possible and taken to the sorting-tables, where it is broken up and sorted into three grades. The first grade is that showing visible gold, which is sacked for treatment in a ball-mill. The second grade, no visible gold, is known to be high grade, from \$125 to \$175 a ton, and is sacked for shipment. The balance or third grade is put on the dump for future treatment. The first grade is accumulated until there is sufficient for a run of the mill, from 600 to 1,000 lb. being the usual charge. It is first put through a small jaw-crusher which crushes to about $\frac{1}{4}$ inch size; then into a 5-foot ball-mill using steel balls, where it is pulverized in from two to two and a half hours. Two or three flasks of mercury (from 150 to 225 lb.), according to the estimated gold content of the ore, are then added and the barrel revolved for twenty or thirty minutes (a longer time flours the mercury) for amalgamation. The contents are then thoroughly washed and the amalgam removed, squeezed, and retorted. The record run of this mill was 24 lb. 8 oz. (troy) of gold from 160 lb. of ore. The tailings from the ball-mill are washed into tanks, settled, dried, and shipped to the smelter with the second



grade of sorted ore. The amalgamation in the ball-mill is a great improvement over the old 2-stamp Joshua Hendy mill previously used, the polishing effect on the gold of the ball-mill grinding being of great assistance in the amalgamating. The old stamp-mill was supplied with ore taken for the most part from the surface cuts and packed to the mill on men's backs.

A very comprehensive scheme of development had been carefully planned and considerable of it done this year. (See map.) What is termed the "mill tunnel" was started from a point above the old mill, and driven 309 feet on a line toward a point directly under the working-shaft on vein E. This tunnel, when completed, will be about 1,200 feet long, and will not only tap five or six intervening veins showing on the surface, but will furnish haulage-way for all the ore from vein E when connection is made by sinking the shaft to connect with this tunnel. It is proposed to install a concentrating plant on the site of the old mill. Further development consists of a crosscut tunnel, called the "boulder vein" tunnel, on the same level as the shaft tunnel, No. 1 level, east into the hill to undercut the series of veins exposed farther up the hill, the principal ones being the "boulder and shaft" veins. This will provide for transportation of ore from these upper veins to the shaft, to the "mill tunnel," to the mill. This tunnel has only

been worked at intervals and a distance of 50 feet been driven, requiring probably 300 feet farther to reach the "boulder" vein, and about 900 feet to reach the farthest of the upper series of veins, and obtaining a depth of 460 feet under it. The old 3-compartment shaft at the head of the mill will be sunk from its present depth of 75 feet to intersect a very rich vein cropping at the water's edge, and on which a shallow shaft was sunk a short distance back from the water. This vein is known to run into hub A; consequently can be drifted on from the shaft to the hub, and all ore developed from it hoisted through the shaft to the mill storage-bins. This appears to be a very commendable plan of development, for it will not only provide haulage, but will expose any number of working-faces of ore, from which a large capacity mill can be supplied.

Altogether it is a wonderful showing of gold, and there is every reason to believe that it can be developed into one of the greatest gold-producers on the continent.

This group consists of three claims lying east of and adjoining the *Engineer* **Gleaner Group.** group up the hill. There is a good wagon-road to the *Gleaner* cabin from the shore of Taku arm at the mine landing. The rock formations on these claims are identical with those of the *Engineer* mine; that is, slates and shales intruded by dykes of andesite and granite porphyry. Two or three quartz veins have been discovered and some work done on each of them. A tunnel has been driven for 35 feet on a small 8-inch quartz vein from the north side of a small creek, from which, it is said, several sacks of free-gold quartz was taken. There are several open-cuts and strippings on quartz-outcrops around this creek, none of which apparently amount to much.

Further south, on a lower vein, which is possibly the extension of the *Mickey* vein of the *Engineer* group, some 200 feet of open drifting has been done north of the shaft and also a short drift south of the shaft. The shaft is about 40 feet deep and full of water. It is not known what values were obtained in these cuts or in the shaft. This vein strikes N. 50° W. About 50 feet vertically lower a tunnel was run to crosscut the vein, which, however, was not encountered, the face of the tunnel being now in andesite.

This group of six claims adjoins the *Engineer* group on the south and extends **Kirtland Group.** along the shore of Taku arm. Comparatively little work has been done, and that mainly on the *Jersey Lily* claim, adjoining the end claim of the *Engineer* group. Formation and vein occurrences are similar on both groups. I understand some gold has been found, but it looks as if all the surrounding properties were content to rest on the reputation of the *Engineer*.

This group of seven claims—*Sweepstake No. 1* to *Sweepstake No. 6*, inclusive, and *Golden Hope*—is owned by Ben Nicfol and Jack Dunham. The group is located north of and adjoining the *Engineer* group, two claims back from the lake, extending along the side of the mountain. The vein, which attains a width of 25 feet in places, is brecciated quartz and slate filling, in some cuts the quartz and slate showing a banded structure. The vein is exposed by open-cuts at intervals of 50 feet, and has a strike of N. 20° W., dipping slightly to the west. At 3,030 feet elevation, or 830 feet above the lake, the vein shows a width of 30 feet of banded slate and quartz. At 3,175 feet elevation the vein is 25 feet wide, and at 3,200 feet the vein is predominantly slate, with some quartz. At 3,450 feet elevation a tunnel has been driven 35 feet on a 12-inch cross-vein of quartz, striking at N. 55° E., in which free gold is said to have been found. Flakes of free gold have also been found in the main vein, but no extent of high grade has yet been exposed. It is a big vein and would produce a big tonnage if the values were sufficient.

This group consists of three claims—*Crackerjack*, *Gold Hill*, and *Gold Bullion*—**Happy Sullivan** and is situated about a mile and a half from the lake on the north bank of **Group.** Sheep creek. The showing is a big quartz vein 22 feet wide lying beside a diorite dyke on the west; the east wall appears to be an altered, soft, greyish rock through which are small veins of white watery-looking quartz. The vein shows up the hill for a length of 50 feet, at an elevation of 3,600 feet at the lowest exposure. A sample was taken across here by breaking off as average as possible with a prospecting-pick; it gave returns of only a trace each of gold and silver. A tunnel has been started from a gulch below, and is in 48 feet, crosscutting toward the vein. This is a strong vein, and it is to be hoped that, at the depth which the tunnel will obtain, the values will improve, for it is well situated for mining and transportation.

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