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Re Mineral Properties at Hedley, B. C.

I hope the following notes will be of some help to you in determining what should be done at Hedley. They result from our visit there from the afternoon of last Friday till noon on Sunday.

CONCLUSIONS

AN effort should be made to consolidate some or all of the holdings of Highpoint, Nickel Plate and French Mines with a view to a cooperative attempt to determine the ore potential of major blocks of ground rather than let the various holdings lie dormant indefinitely. The first step should be the compilation and analysis of pertinent data existing in Company files, published reports and the files of some geologists who have had experience in the area. Two principal parts of the area should be considered first - (a) The southern side of Nickel Plate Mountain, between Cahill and Hedley creeks, encompassing much of what is known as the southern rim of the Nickel Plate skarn bowl; (b) The area south of Cahill creek covered by French Mine and Highpoint claims. These two parts could be considered as separate projects but it would be better if they were included in a larger consolidation of holdings by the three groups and possibly other claims.

Mr. J. S. Biggs has very valuable first-hand knowledge of much of the area and his assistance should be enlisted.

Area (a) above includes the ground on which Dundee Mines worked recently and records of their work would be needed. It includes known showings of copper ore such as that on the WarHorse claim and reported gold values on the Rollo and Horsefly claims. A budget of about \$2500 should cover the preliminary compilations and limited surface examination and sampling of showings.

Area (b) above includes the Good Hope workings and molybdenite-bearing skarn to the southwest, as well as the French Mine. A budget of \$4000. should cover compilations of information, some additional cleaning out and mapping of old workings on the Highpoint claims and any necessary surface sampling, as well as some additional surface mapping of outcrops.

At the earliest opportunity someone should determine the ownership and status of all claims in the area.

Record of our visit to Hedley, June 10 to 12.

On the evening of the 10th we visited Mr. Biggs at his home and obtained from him valuable information on locations of claims and showings, on recent activities in the area, and on operations up to its closure in 1961 of the French Mine, including copies of reports by Paul Billingsley and D. D. Campbell.

We spent the 11th south of Cahill creek with Mr. Biggs and Jim

Taylor. First we went to the French Mine which is reached by a road about a mile in length that leaves the Nickel Plate road above the rock bluffs. The upper workings are at elevation 3900 on a steep slope and we observed there some exposures of high grade copper ore in skarn, the copper minerals being chalcopyrite and bornite. This ore carries appreciable silver and Mr. Biggs believes that there is a potential reserve of about 10,000 tons that will average the equivalent of 2% copper, including the silver. There is no known reserve of gold ore on the property though at least two additional occurrences of skarn have not been exhaustively tested and much of the northern part of the holdings has little rock exposure. It is worth noting that government reports say that during the first five years of its operation by Nickel Plate, from 1950 to 1955, ore from the mine yielded an average of about 0.8 ounces gold per ton, a grade that would be of commercial interest even today. Later on the grade was less, for example; in 1959 and 1960 the 29,505 tons recorded production averaged 0.47 ozs. and the final 5366 tons produced in 1961 averaged 0.36 ozs. The mine was closed in May of 1961. Some excellent geological reports and maps by D.D. Campbell and Paul Billingsley, and several published reports are available.

En route from the French mine to the Good Hope we stopped at Rattlesnake Slope to visit Moybdenite Showings about which Jim Taylor had written to you. These showings are about 1000 feet south of a claim post reported by Mr. Taylor as No. 1 post of the Nighthawk No. 1 claim. Presumably they are on what is now Lot 3937S, Star No. 3 claim or possibly on Nighthawk No. 2, Lot 3913S. Three old cuts expose skarn and several granite dykes with some quartz veins. Most of the skarn exposed is barren of sulphides but in a deep cut, partly caved, at the south end of the workings, brown garnet skarn contains scattered grains of moybdenite and possibly some other fine grains of silvery mineral. At least 10 feet thickness of skarn is exposed here and a sample grabbed from the best mineralized parts has returned an assay of:

Trace Gold: ~~0.1~~ ozs; Silver: 0.1 ozs; Molybdenum: 0.11 per cent.

Mapping would be necessary here before one could judge whether or not granite dykes or a main body seriously reduce the prospecting potential but we did observe considerable exposures of altered tuff 100 feet or more above the cuts. I saw no limestone but exposures on much of the hillside are not abundant. These old cuts are some 4000 feet southwest of the Good Hope opencut, as near as I can judge from the maps I have at present.

At the Good Hope Workings, where we went next, I was chiefly interested in checking the existence of the Shaft fault, shown on Skerl's maps. It is well exposed at the northwest corner of the main workings. From the main cut we went 100 yards southeast on the road to an old excavation below the opencut where Skerl mapped some exposures of oxidized ore-type skarn beneath a granite sill. We found some poor exposures of tight-looking pyroxene skarn in the bottom of the stripping and took a few grab samples that contain some very fine grained, disseminated sulphide, presumably iron sulphide, that have assayed:

Gold: 0.01 ozs. and Silver: 0.11 ozs.

We then visited three long, old bulldozer trenches within about three hundred yards to the southwest, to and beyond the southern extension of the Shaft Fault. Exposures in them are poor but do indicate to me that the limestone, in part altered to skarn, may continue in that direction ~~franklin~~ and that some additional surveying, cleaning of the old trenches and mapping should be part of any work that is done at the Good hope, in an effort to clarify the potential of this lower

in zone. See also my letter of March 18, 1963, for additional remarks this and the Good Hope in general.

It is not clear to me when these long bulldozer cuts on the Good Hope were made. They are shown partly, but not completely, on Skerl's map which he says is based on one made by Frank Whiting in 1947. Yet Skerl's map does not seem to show the geology completely as exposed at present. Can it be that the trenches were put in originally in the 40's and perhaps extended by Wheeler after Skerl made his report? If that is so there should be additional data on them available in Nighthawk records.

From the Good Hope we made a quick trip to Canty Mine merely to see its location and to observe the dilapidated surface buildings and the shaft flooded to within about 50 feet of surface. The headframe still stands but presumably is worthless to any future operation.

On the morning of Sunday, June 12 Mr Biggs and Jim Taylor took us along the Dundee Mines road on the south slope of Nickel Plate Mountain to the area in which Dundee Mines worked recently, west of the old Nickel Plate tramline. After passing two dozen valuable drill rods lying on the side of the road we followed a trail to the south slope of Horsefly canyon where some drilling had been done and went south and east on an old survey line marked by metal tags. On the side of a small gulch, near an old collapsed cabin and station P44 on the survey line, we saw a number of old workings and some exposures of skarn well mineralized with chalcopyrite; a pile of broken ore of this kind contains perhaps 10 tons of good material. These showings were said to be on the War Horse claim, Lot 2478. Jim Taylor reported that some gold values of interest have been obtained from showings on the Rollo claim, adjoining the War Horse on the East and that there are other showings on the Horsefly claim, Lot 1927, next to the east, which belongs to Highpoint. We did not see these, but followed the old survey line southeast back to the Dundee road a short distance west of the Nickel Plate tramline.

On the Dundee road east of the tramline there are many excellent exposures of grey limestone with some gabbro sills or dykes. Random observations I made in passing indicate that there is here a major fold or fold and fault structure details of which I hope are available in maps and reports held by previous operators.

We returned to Hedley for lunch and left after lunch. I enjoyed the entire trip, especially my reacquaintance with the beautiful mountain slopes, and was very favourably impressed by Jack Biggs, as a person, as a knowledgeable mine operator and with his background of experience and knowledge of Hedley district. Mr. Taylor at 82 is a tremendous person, a real prospector of the old school whose knowledge of the showings in the area could be most helpful.

H. C. Gunning.

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May 31st, 1960.

Report on Nighthawk Gold Mines Limited

(Abstract by H. C. Gunning, 1963)

At the request of W. R. Wheeler two days were spent on an examination of the Good Hope, mostly on new bulldozer cuts. Several days were spent on examination of Hedley Mascot maps and sections of 40 out of 49 drill holes. Previous reports by Allen, White and others were consulted. The producing French Mine was visited. The property consists of 31 claims and fractions 3 miles ESE of Hedley. Its maximum elevation is 5120 feet.

Nickel Plate mine to the northwest gave \$48 million from 3.8 million tons of ore from an area 4000 feet by 2000 feet. There, Triassic limestone, limy argillite and quartzite form the west-dipping limb of an asymmetrical anticline with a northeast axis and rest on a floor of granodiorite that outcrops on the lower slopes of the mountain. There are sills and dykes of dioritic composition. The major Bradshaw Fault strikes NNE, dips steep W, to the west of Nickel Plate Mountain. Flatter thrusts branch from it into the mountain. The higher members of the sedimentary assemblage have been altered to various types of skarn in which gold occurs closely related to flat and steep dykes or sills, steep faults and crests and troughs of thrust folds.


LOCAL GEOLOGY

At the showings there is a series of cherty tuffs, tuffs, hornblende and feldspar porphyry, at least two limestone beds now altered to marble and 20 to 80 feet thick and a granodiorite sill at least 60 to 80 feet thick. The normal dip is 15 degrees to the west with gentle rolls.

The upper limestone (20 feet thick) and the adjacent tuffs are in part converted to skarn in which one mineral - magnetite, quartz, epidote, wollastonite or pyroxene - usually predominates.

The Shaft Fault strikes N5W and is vertical. It separated known mineralization into two areas. Apparently the sediments were upfaulted on the east side, 60 feet at first and then another 20 feet after intrusion of the granodiorite sill. This is on the assumption that a 20 ft. bed of limestone on the the west side of the fault is the same as limestone on top of the ore in No. 1 orebody, even though the ore is on top of the limestone on the west side of the Fault. Irregular shapes of the strata indicated in the sections of No. 2 orebody suggest that the limestone there has been crumpled by a thrust fault N.B.

A second fault with a smaller throw strikes N5E and probably is a branch of the Shaft Fault. It seems to form the west boundary of No. 2 and No. 3 orebodies though this is not proven.

Elevations shown on the Company plans and sections are 100 feet less than the actual elevations. 

700 feet west of the Shaft Fault a north-south contact between tuffs and granodiorite may indicate another fault, raising the west side some 350 feet. Hole 37 was drilled to 504 feet 100 feet east of this contact. It showed the normal succession. At 245 feet there was 10 feet of limestone above 15 feet of ore-type skarn - see section 998. (6 ft. ran 0.04 oz.) This appears to be the same skarn as that in Nos. 1 and 2 orebodies. (Dr. Skerl had no logs for holes 38 and 39).

Just west of the SW corner of the map (by Whiting) are several old cuts showing mineralized skarn in marble. W.H. White (1947) reports nil gold in a sample here with pyrrhotite, chalcopyrite, hematite and molybdenite. This may be the skarn of hole 37 or it may be the skarn, usually barren, below the granodiorite sill.

MINERAL DEPOSITS

The known gold values all occur within 100 feet of the Shaft Fault and apparently in any kind of skarn. Drill logs for a statistical study are not available. Some sampling of the outcrop of No. 2 orebody indicates that a tough pyroxene-garnet-calcite-chalcopyrite skarn carries gold and not the associated fine grained siliceous garnetite that resembles much of the ore at French Mine.

A remnant of ore on the east side of the pit where No. 1 orebody was mined shows fine gold associated with bismuth telluride (Hedleyite) Allen reports here a number of minerals (see his report). It is hard to tell tellurides from molybdenite. There may be graphite in the so-called molybdenite trench.

OREBODIES

No. 1 orebody is isolated on top of a hill at 5000 feet elevation. The north slope of the hill may be a dip slope and may have ore under the surface cover. The ore was largely overlain by limestone that has been removed. The east boundary of the ore is quite irregular so far as known and ore apparently passes into barren skarn. The west boundary is the Shaft Fault, although mining did not reach the Fault. There may be 2000 tons left in this orebody but sampling is needed to prove it. No. 2 drill hole failed to find ore west of the Fault. Hole No. 46, 50 feet to the SW cut 2 ft, assaying 0.34 ozs. at elevation 4970 on top of limestone

Fifty feet south again, holes 43, 44, 45 found ore in No. 3 orebody at the same elevation, bounded on the east by the Shaft Fault and on the west by the other fault. Approximately 2600 tons of ore grading 0.83 oz is indicated here. See section 1006. The interpretation of the drilling is uncertain but there may be here a split in the limestone with two horizons in No. 2 orebody, the lower of which may be the same as No. 3 orebody and the upper a hanging wall split. The hanging wall seems to be more consistently mineralized. Surface stripping here was not successful due to mud. The upper ore at the surface shows as a series of boulders. Three chip samples over a length of 70 feet averaged 0.32 Oz gold compared to 0.36 over 5½ feet in holes 13 and 14. The lower horizon here returned in drill holes the following values: Hole 11 - 5½ ft. @ 0.66 oz., Hole 28 - 3 ft. @ 0.30 oz., Hole 29 - 3 ft @ 0.67 oz. The average of these is 0.35 oz over 6 feet mining width. The extent of both the upper and lower orebodies is limited. Probably much of the ore has been eroded. The upper horizon contains about 1000 tons and the lower about 700 tons. Experience at the French Mine and at Good Hope No. 1 suggests that each orebody will be more extensive and richer than indicated by drill holes.

DISCUSSION

The Shaft Fault seems to be the major ore control. Limestone altered to skarn carries gold near faults in certain areas, possibly where rolls occur. Some of the sections show upward bulges of granodiorite under the ore. The granodiorite sill is in a position similar to that of the important Midway Sill at Nickel Plate mine.

There could be more ore west of Shaft Fault and north of No. 3 ore body. Short surface drill holes or underground work would be necessary to find it. The ore bed here should come to the surface about 400 feet north of No. 1 orebody. Drilling would be the best method of exploring for it.

The orebodies are small. There may be as much as 6000 tons in the three orebodies and there could be as much more west of Shaft fault. There is up to 15 feet or more overburden in places. X-ray drills would be satisfactory for depths up to 50 feet. Self-potential geophysical testing might work on sulphides in skarn if the ore is somewhat weathered but would need some testing on known occurrences. X

DEVELOPMENT

If a crosscut were driven due north from a point on surface at 7350 East, 4850 North (see map) for 500 feet No. 3 orebody would be 5 feet above it and No. 2 would be 20 feet above it. A crosscut driven 20 feet at 470 feet from the portal could be connected to the bottom of the old shaft by a crosscut ten feet long, thereby allowing mining of lower remnants of No. 1 orebody. Such a crosscut would be in granodiorite to 60 feet, then volcanic rocks to 200 feet, then limestone. A 7'x7' tunnel should cost about 30 to 40 dollars a foot or say \$1800. Equipment necessary: 600 cu.ft. compressor, loader, air trammer, 4 mine cars, 2 slushers, 4 jackleg machines - cost about \$10,000 to \$20,000. An ore bin would be needed near the portal for loading trucks.

Costs: Mining, \$4.00 per ton
 Trucking 1.50 "
 Milling 4.50 " (contracted at French Mine mill.)
 Development \$3.00
 Total \$13.00 per ton.

Assuming ore carrying 0.60 oz per ton and a net recovery of \$18. per ton there would be a profit of \$5.00 per ton.

The French Mine mill, to which it is assumed above that the ore would be trucked, is a straight cyanide mill. If the Good Hope ore contains too much sulphide it would be necessary to add flotation cells to make a sulphide concentrate. If possible the mill should be rented on a monthly basis to avoid the difficult business of agreement on metal content of ore treated on a custom basis.

The minimum capital needed to operate on a basis of 1000 tons a month from the Good Hope would be about \$50,000.

Enquiries should be made to find out if the property would qualify for the three-year tax exemption granted to new mines.

(A. C. Skerl)

The above is not a verbatim copy

H.C.G.