MR-058-05 MR Fairbanks 58

CLEARY HILL MINES COMPANY
FAIRBANKS, ALASKA

MINING PROPERTIES:
QUARTZ
CLEARY HILL ALASKA
PLACER
TOFTY, ALASKA
EUREKA, ALASKA

April 8, 1942

Mr. R. E. Wyer, Manager
Cleary Hill Mines Company
Fairbanks, Alaska

Dear Mr. Wyer:

Attached hereto is a brief discussion, or report, regarding Mr. Stepovich's Nada Gulch tungsten prospect.

I have set up the report in four exhibits:

Exhibit A - A brief factual statement outlining what we know about the property now.

Exhibit B - A brief review of pertinent geological features of important tungsten producers in the States. This is also intended to supply data for inductive logic to be coordinated with geological data supplied in Exhibit A.

Exhibit C - Appraisal and Comments for speculative thinking.

Exhibit D - Provided you are sold on Exhibits, A, B, and C, this exhibit contains recommended steps for preliminary exploration.

Sincerely yours,

R. C. Gebhardt

RCG/tw
Encl.

THE NADA GULCH TUNGSTEN PROSPECT

Exhibit A

A Brief Factual Statement

IKT-58-4
58-159

LOCATION

This prospect is located fourteen miles northeast of Fairbanks, Alaska, between the head waters of Gilmore, Fish, and Smallwood Creeks. It also lies six and one half miles south southeasterly of the Cleary Hill Lode Mine. The elevation is about 2470 feet above sea level.

(Refer to the geological map found with U.S.G.S. Bulletin 849-B "Lode Deposits of the Fairbanks District".)

ACCESSIBILITY

The prospect may be reached by a very passable road that serves placer operations in Gilmore Creek, or by an old wagon road that branches from the main Steese Highway, about two miles southeast of Cleary Summit. By the latter route, the distance from Cleary Hill Mine is ten miles, and requires an hour's travel by auto pickup. By the Gilmore Creek road, the distance is twice as far, although the rate of travel is much faster.

At this time of year (early April) there is still two or three feet of snow in that area.

OWNER

Mike Stepovich, of Fairbanks, Alaska.

EXTENT

Seven patented claims which, end to end, cover nearly 9,000 feet of mineralized belt. Five unpatented, adjoining claims and one mill site, are also held (see accompanying map).

TITLE

Title of the seven patented claims is vested in Mike Stepovich; title of the six unpatented claims is held by annual assessment work recorded by the same owner.

HISTORY OF PRODUCTION

It is reported by Stepovich that during the last war, he shipped 257 tons of mine-run ore with an average tungsten trioxide content of eight percent.

Before the war ended, a 25-ton steam-powered concentrating plant was erected with wich ten tons of high grade concentrate were produced before a drastic drop in the demand for tungsten forced a shutdown.

The milling equipment consisted of crushing rolls, jigs, and concentrating tables. I have not seen this equipment, but I would guess that its depreciation is practically complete.

This has been the only tungsten producer in the Fairbanks district.

DEVELOPMENT

Two shafts and one tunnel are evidence of past work on the prospect. All of these openings are caved, and filled with ice and snow. The shafts are reported to be 50 and 190 feet in depth, and are about 300 feet apart. The tunnel is said to be about 100 feet long. All of the production is said to have come from the shafts.

GENERAL GEOLOGY

Thus far, I have not been able to make a geological field study of the prospect. However, there are other workers, including government and private, who have.

It appears from their reports that the most salient, geological feature of the prospect, and the source of all tungsten ore production to date, is a horizon of our well-known Birch Creek schist, in which limestone, a sedimentary rock, is present in relatively high percentages.

Various descriptions indicate that the limestone may occur as an impure, thin bed, interlayered with other sedimentary rock, or as irregularly shaped, lens-like bodies of relatively pure limestone found at irregular intervals; or even as a bed of relatively pure limestone of uniform thickness. The indicated average widths of this limestone belt are under ten feet.

This belt of limestone has been plotted by geologists on the map and locations given earlier herein, and appears as a sort of isolated sedimentary remnant.

It is also shown here that two large and important masses of granite are found within one half mile distances, both to the north and to the south of the limestone.

The chief ore-making mineral of tungsten in the limestone is scheelite. This statement is supported by ultra-violet light examinations of rock which I have recently collected from dumps on the prospect, and of high grade specimens loaned to me by various collectors, including the owner.

The mineral scheelite consists of 80.6% tungsten trioxide, also designated as WO_3 in market quotations, and 19.4% lime. It is presumed in this case that the tungsten bearing solutions originated in the adjacent granite intrusions during the period of their invasion from below, and from which they found their way into the limestone belt. The resultant chemical processes formed scheelite in masses, the size and grade of which may be of real economical importance.

Exhibit B

Notes regarding the General Geology of Important
Scheelite Producing Mines

INTRODUCTION

At this juncture, it is interesting to read and compare what has been observed and reported by eminent workers on geological relations that exist in some of our leading scheelite mines of the States.

Adolph Knopf, in U.S.G.S. Bulletin 640, in a discussion of the general geology of the important Inyo County, California, Pine Creek tungsten deposits, writes on Page 232, "The prevailing rocks of the tungsten bearing area are granitic . . . . scatter d through the granitic rocks are masses of sedimentary rocks ranging in size from a cubic yard to a cubic acre. They are remnants of the roof that formerly extended as a continuous cover over the granite. Under this roof the molten granitic magmas came to place and cooled; the roof rocks became highly metamorphosed as a result of the high temperatures at which they were subjected, and of the hot gases that permeated them. Strata of limestone occurred in these roof rocks and were particularly susceptible to chemical reaction with the gaseous eminations, and where these eminations carried tungsten they fixed it as scheelite . . ."

Frank L. Hess and Esper S. Larsen, in a general discussion of Tungsten deposits, recorded in U.S.G.S. Bulletin 725, on Page 245, "Contact - metamorphic tungsten deposits have been formed through the combined action of the heat and solutions eminating from a cooling intrusive granitic magma on limestone and the other intruded rocks, and to a lesster extent on the granite rock itself . . . . most deposits of this size are at or very near the contacts, and they clearly represent replacement of the limestones and other rocks. The tungsten mineral of such deposits is invariably scheelite."

These observers further describe, on Page 247, "The contact metamorphic deposits are nearly all at or near the contact between a body of granular quartzose intrusive rock and other rocks, chiefly limestone."

On Page 248 of the same Bulletin, they write "The sedimentary rocks from which the ores are derived are nearly all limestone or dolomite. In some places the limestone is in thin beds intercalated between other sediments, as at Mill City, Nevada; in other places limestone makes up most of the beds for a thousand feet or more in thickness, as at Pine Creek, near Bishop, California. The ore may replace any limey bed that is intruded by a granitic rock . . . ."

On Page 258, under "Hints for Prospecting", they write: "In prospecting for such deposits, it should be remembered (1) that the deposits are at or near the contact between granitic rock and sedimentary rock, generally limestone (2) that the zone about a rather small outcrop of granitic rock is especially favorable for ore, particularly where several small outcrops are close together and separated by sediments, indicating a large granitic body barely exposed by erosion (3) that the ore may occur in small outcrops of sediments, surrounded by granitic rock . . or in a thin bed between barren slates, as in the Mill City type . . . ."

Finally, on Page 295, and still in the same report which describes the general geology of the Mill City, Nevada tungsten deposits, "The main production comes from contact metamorphic deposits in an area of about a square mile . . . the principal rocks in the vicinity of the scheelite deposits are a series of dark outcropping sediments, made up mostly of hornfels grading into slates, some interbedded quartzite and some comparatively thin layers of limestone."

Exhibit C

Appraisal and Comments for Speculative Thinking

APPRAISAL

In an attempt, even this early, to appraise the merits of this prospect with the idea of gambling a few thousand dollars for preliminary exploration, I want to review briefly and compare pertinent geological observations presented in Exhibit A and Exhibit B.

Exhibit B points out that our large tungsten mines of today, in which Scheelite is the chief ore mineral, have two important geological features that are common and characteristic to all the mines. In other words, a certain type of geology must exist before Scheelite can even be expected to occur.

Thus it is shown:

(1) That an older sedimentary rock with high limestone content must be present to furnish part of the ingredients of the tungsten mineral.

(2) That a younger granite or related rock, molten at one time, must lie in contact with the limestone, or nearly so; in order to permit easy access to and reaction with the limestone, of those solutions that will provide whatever else is necessary to make tungsten ore.

If, then, we consider the general geology of the Nada Gulch Prospect, as described in Exhibit A, we find:

(1) That an important limestone belt is present.

(2) That two important areas of younger granitic rock are in contact, or nearly so, with the limestone belt.

(3) Finally, we cannot ignore the fact that the property has already produced high grade tungsten ore.

An appraisal of the prospect is further aided by Mr. George Crerar, Chief Geologist and Engineer for the Nevada-Massachusetts Company, of Mill City, Nevada, now operating the second largest tungsten producer in the States today. Mr. Crerar visited the Fairbanks area during the summer of 1941 and wrote the following letter, a copy of which was kindly given us by the Glenn Carrington Company of Fairbanks:

RESEARCH DIVISION
OF THE
NEVADA-MASSACHUSETTS COMPANY

Sonora, California
March 21, 1942

Mr. Arthur F. Erickson
Glenn Carrington & Co.
91 Columbia St.
Seattle, Washington

Dear Arthur:

Your letter of March 12th addressed to Mill City has been forwarded to me here. Glad to hear from you. I have been doing research work for the Company since I returned from the north last summer with the exception of occasional weeks in the field examining tungsten prospects.

I have no notes on the tungsten prospects of the Fairbanks District with me, but my impressions were definitely favorable. The Stepovich prospect is the outstanding one, from a geological standpoint. The thin metamorphosed scheelite bearing limestone members interbedded with the schists and quartzites and the nearby contacts with the invading granite make the prospecting possibilities quite attractive. The dumps at the collars of the old inclines contained comparatively few tons, indicating that most of the tonnage excavated had been milled or shipped. I was unable to get any definite or dependable figures on the tonnage or grade of the ore milled or shipped. It was my impression that the miners did not know what they were mining and made no effort to either selectively mine or sort the ore. The Ultra-Violet light would nowadays make it a simple matter to stay on the ore. I did see some high grade specimen of scheelite on the main dump, indicating a comparatively coarse scheelite crystal, which would simplify the milling of the ore. It was my impression that grinding to 1/10" would liberate the scheelite. A magnetic separator would have to be installed to remove residual garnet, if the production of a high grade concentrate should be deemed advisable. I saw no evidence of phosphorous bearing mineral (apatite) nor minerals of copper, bismuth, tin, molybdenum, or other interfering elements.

It was my opinion that the ore bearing zones could be prospected by core drilling and that, if a mine should be developed, it would be entirely feasible to operate throughout the year.

The geological conditions of the Stepovich property are quite similar to our Mill City deposits which have produced a great many million pounds of tungsten trioxide (WO_3) and are still producing.

The Government is now crowding the Company to double their output. Tungsten is needed for armor piercing projectiles, and it now looks as if we would need a lot of them. If any strong Company can put Tungsten on the market today, they should do it. A strong company should risk some money on a favorable tungsten prospect.

Best wishes to Mr. Carrington, Gustafson and yourself.

(signed) George Crerar

Thus the appraisal, in the light of known geology of important tungsten mines and in the light of comments made by an experienced and reliable engineer working with several of those mines, indicates that the prospect certainly has merits.

COMMENTS FOR SPECULATIVE THINKING

In giving this prospect further thought, especially the speculative kind, we ought briefly to recognize certain considerations:

(1) Reported past production and geology indicates a reasonable possibility for ore in low cost mining widths that may contain from two to four percent tungsten trioxide (WO_3).

(2) Such a grade of ore would require only 40 to 80 pounds of WO_3 to be contained in each 2,000 pounds of rock.

(3) Assuming only eighty percent recovery in a modest concentrating plant, WO_3 recovered per ton of rock would then range from 32 to 64 pounds.

(4) The Metals Reserve Corporation, of the R.F.C., says that, to encourage small mines to get into production, it would pay $24.00 per unit (per each 20 pounds) of WO_3 until December 31, 1943.

(5) This, then, would mean a recovered value that ranges from $38.00 to $76.00 per ton of tungsten ore mined and treated until the end of 1943.

(6) Marketable concentrates must contain a minimum of sixty percent WO_3. Thus, within the range of speculation constructed by Item 3 above, it would require the treatment of from 38 to 19 tons of ore to make one ton of marketable concentrates worth a minimum of $1,440 on the ground.

(7) If we only treat half of that amount of rock daily, our gross take in dollars will compete comfortably with Cleary Hill Lode Operations only six and one half miles away.

Then there is the matter of operating priorities for material and occupational deferments for key men.

Our production in dollars now is over 70% in gold and silver, and thus we are assigned a blanket priority rating of A-10, which can be wiped out any time, for simple reasons, by a decree from Washington. The same is true of our men.

If, however, the dollar value of our yearly production consists of more than 30% returned for strategic mineral production, then W.P.B. will arrange to give us a special priority. This might enable us to keep hammering away at our gold properties as well, for the duration, and furnish us conscientious reasons to ask for occupational deferments for our key men.

A review, then, of such speculative thinking in general would incline one to subscribe to the opinion that if the prospect has any merits at all, it might make us some money and help keep our gold properties in operation as well.

Exhibit D

Recommendations

INTRODUCTION

On the basis of what has been presented under Exhibits A,B, and C, I recommend that you seriously consider an exploration program to be carried out by Cleary Hill Mines Company on the Nada Gulch Tungsten Prospect.

BUSINESS ARRANGEMENTS

We must first recognize that drastic price surges of tungsten metal today are due to the great demand as a war metal; therefore, any deal that we made with the owner should place us in a flexible position which will permit us, at all times, to so manoeuver our plans and operations for the prospect in a way that will always be in maximum harmony with the market conditions of tungsten.

I recommend a deal with the owner in the nature of a long term, (25 years or more), liberal working lease, omitting, if possible, excessive minimum royalty payments, definite work schedules defined in feet of underground work, and any option to purchase at fixed payment schedules.

In other words, we do not want to buy the property and be saddled with option payments during a sour tungsten market; we do not want to have to carry out excessive minimum footages of various kinds of underground work at any time; we do not want to pay excessive minimum royalties during shutdown periods; but we do want to be able to get in or get out of the tungsten market whenever we see fit, without actually buying the property. I happen to know the owner's last asking price for the property was $300,000.

PRELIMINARY EXPLORATION

The purpose of preliminary exploration would be:

(1) To locate other bodies of commercial ore that might occur in the limestone belt;

(2) To gather data regarding their grade, extent, and general behavior;

(3) To gather data regarding the nature, if any, of objectionable impurities;

(4) If encouraging amounts of ore are indicated, such work will produce enough sampling faces on the basis of which preliminary treatment studies can be made;

(5) Such work will indicate either

a. Ore with a safe margin of profit.

b. Ore with a risky margin of profit.

c. No ore at all.

The course of action after any one of the last three possible disclosures has been made will not be difficult to lay out.

METHODS OF EXPLORATION

Surface Trenching. This should be the first method of attack on this problem, since bed rock is usually found less than one foot under the moss cover. Such work can be easily carried out by the use of our company bulldozer, and if fresh rock cuts are needed, the company's portable gas compressor and a jackhammer can be easily placed on the job in two or three hours.

Such trenching should be located at regularly spaced intervals, say 50 feet, along the described limestone belt. The idea here would be to intersect any and all encouraging masses of tungsten ore which may outcrop. The cost of such work would be very modest.

Diamond Drilling. If any encouraging exposures are thus made, the next step would be to investigate them at depth. For such work, diamond drilling with a gas power drill should be considered. For deep holes we can probably make arrangements for the large drill belonging to the Independence Mine, and for shallow holes, we may be able to make arrangements for the Longyear Pioneer gas-powered drill stored in Fairbanks.

Tunnelling, or Shaft Sinking. I would not consider these two methods for exploration until indicated targets, studied from all their angles, are indicated by the surface trenching and diamond drilling suggested above.

ESTIMATED COST

At this time, it is necessary only to consider the cost of a surface trenching program. The extent of this work should be such that enough reliable data is gathered to either kill the prospect or invite diamond drilling as the next step.

I consider that from two to four thousand dollars, carefully expended on surface trenching, will cover the cost of that phase of exploration on this property.

Alaskaner
4-28-42

SUMMARY

(1) The prospect is six and one half miles from Cleary Hill

(2) It has produced about $50,000 in tungsten concentrates during the last war.

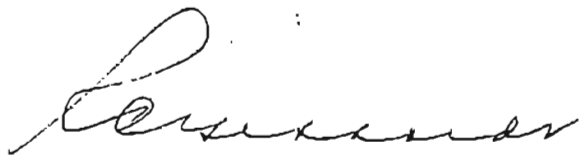
(3) Certain rocks necessary for the occurrence of tungsten minerals are present.

(4) It is shown in a preliminary way that similar rock occurrences are found in our leading tungsten mines in the States.

(5) It is shown that modest operations would be competitive with Cleary Hill Lode Operations in dollars returned.

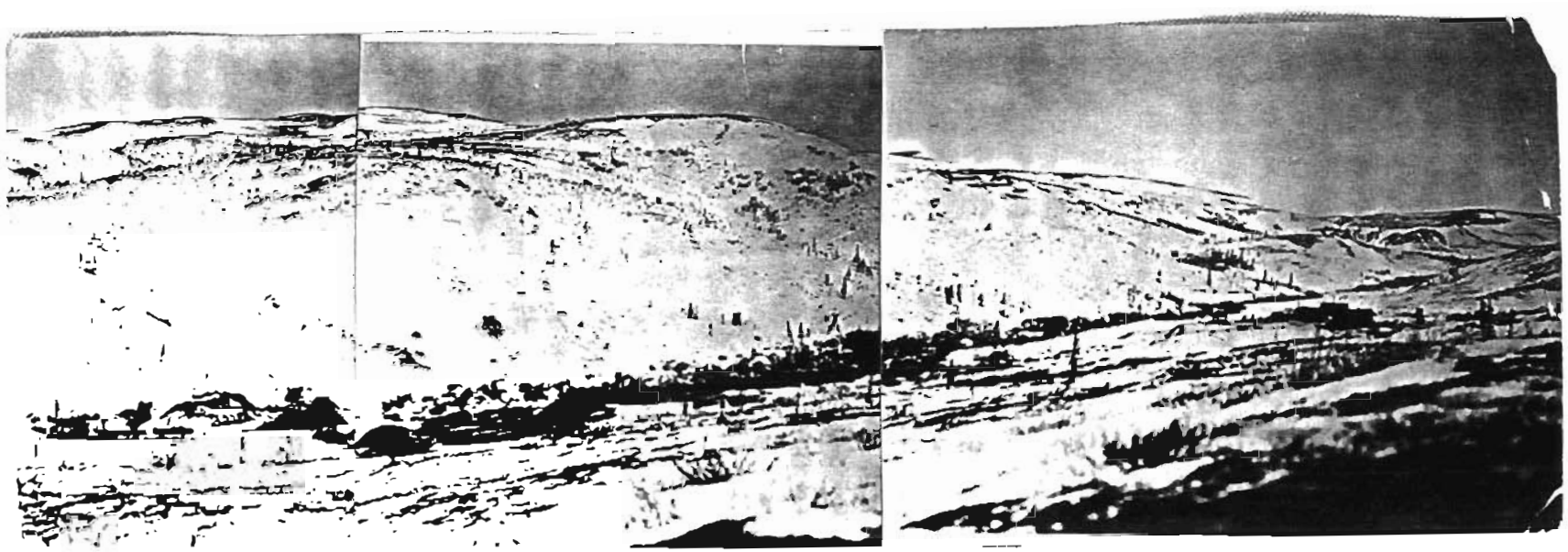
(6) Priority Ratings for a Company working on such a prospect are vastly improved over those given a simple gold producer.

(7) Plans for preliminary exploration are suggested that will satisfy initial investigation for an amount not to exceed $4,000.00.



Liberty Bell Camp
looking down Eva Creek

Cook House
Liberty Bell Mine



Liberty Bell Mine
And Evo Creek.
Tunnel + dump in foreground