821826

93 B

THE NORTHERN MINER

JULY 24, 1969

Do not date

Cariboo-Bell Copper extending zones in latest drilling

VANCOUVER — Initial drilling in the current campaign of Cariboo-Bell Copper Mines' property about 45 miles northeast of Williams Lake, B.C., indicates that substantial additional tonnages may be outlined.

The latest hole completed on zone 3 cut 280 ft. grading 0.75% copper (from 390-670 ft.). Within this section were 70 ft. grading 1.13% copper (460-530 ft.) and 60 ft. grading 1.05% copper (600-660 ft.).

The hole was put down at an angle in an area where previous drilling indicated only lower grade material. It was carried to a depth of 1,173 ft. and was in 'economic' mineralization throughout most of its length, according to a company statement. The hole is considered significant in extending zone 3, previously estimated to contain 17.3 million tons.

An inclined hole in zone 3 cut mineralization immediately after penetrating the overburden, with the first 100 ft. returning values ranging between 0.35%-0.49% copper.

An area where earlier results were disappointing, north of zone 2, is also being probed. Previously explored only by shallow percussion holes, this section is now being tested by diamond drilling. The first hole at 45° is collared about 200 ft. from previous drilling. The hole is at a depth of nearly 500 ft. and is encountering 'good mineralization', the statement adds.

Following extensive studies, it is believed that the attitude of the deposit has been determined, John Springer, executive vice-president, stated. New ore grade is being found where expected, even in completely new ground indicating that there may be tonnages much greater than the original 37,000,000-ton estimate.

The current program entails drilling in areas both previously explored and unexplored, checking old holes and deepening some of these.

The new program was laid out by C. J. Coveney, consultant, and Jules LaPrairie, Cariboo-Bell engineer, in an effort to extend the known tonnage. Cariboo-Bell is controlled jointly by **Highland-Bell** and **Leitch Gold Mines.**

Close Tuesday, July 22, 1969

It was another depressing week on the T.S.E. All indices were off, with its key industrial index dropping to a new low. Surprisingly, there were only 28 mining issues that reached new lows for the year or longer, but these included such blue chips as **International Nickel** and **Kerr Addison.** There were virtually no new highs except for one recently reorganized penny issue. In fact, there were very, very few issues that managed to post any gain at all on the week. Toronto, brokers say, is simply following the New York market. And the big board there has been hard hit as the result of a series of depressing economic factors, including a worsening budget picture. Even the fantastic success of Washington's moon fete failed to give a much-predicted psychological market lift. Anticipating a turnabout, Toronto did post a gain on Monday when New York was on a 'moon holiday'. But this proved short lived, with Tuesday's declines steep.

93 B

Cariboo Bell Copper

Williams Lake. BC

July 16 1969

JUL 16 1969

536 HOWE STREET
SUITE 203
VANCOUVER 1. B.C.
MU 3-7265

George Cross News Letter

"Reliable Reporting"

PUBLISHED DAILY
SUBSCRIPTION RATE
$140.00 PER YEAR

NO. 157(1969)
JULY 16, 1969

NO. 157(1969)
JULY 16, 1969

WESTERN CANADIAN INVESTMENTS

CARIBOO-BELL COPPER MINES LIMITED

ORE AREAS EXTENDED BY CURRENT DRILLING PROGRAM - New drilling on the Cariboo-Bell Copper Mines Limited property 45 miles northeast of Williams Lake has revealed economic grade copper ore in areas where expected.

One 70-foot section-from 460 to 530 feet-of an angle hole in a previously-drilled area which had shown lesser grades, assayed at an average of 1.13% copper. Another 60-foot section in the same hole(from 600 to 660 feet) assayed at an average of 1.06% copper. These sections were in a 280-foot length from 390 to 670 feet)which averaged 0.75%for the full distance.

The 1,173-foot hole carried economic mineralization through almost its entire length and is considered significant in extending Zone 3, previously estimated to contain 17,300,000 tons.

"Although much work remains to be done, " said John Springer, executive vice-president, "indications are that we can expect to extend the orebody. In every instance, the drills have hit ore where expected, so our studies toward discovering the "attitude" of the orebody-vital to re-assessing and expanding it-are proving out."

The new development program laid out by C.O. "Cece" Coveney,P.Eng., consultant on the project, and Jules LaPrairie, Cariboo-Bell engineer, is designed to increase the known orebody of 37,000,000 tons. This involves running new holes both in the previously explored and unexplored areas, checking old holes and drilling some of these to greater depth.

An angle drill in Zone 3 hit ore immediately after going through the overburden, and the first 100 feet revealed ore assaying from 0.35 to 0.49% copper which grade is above economic grade, said Mr.Springer.

Crews are also probing an area north of Zone 2 which earlier had shown disappointing results. This area had previously been drilled only with shallow percussion holes. A 45-degree angle hole is going down 200 feet away from previous drilling. It is now at nearly 500 feet and showing good mineralization.

"As a result of our engineers' intensive studies of the property", said Mr. Springer, "we believe the "attitude" of the orebody has now been determined. The ore is being found where expected, even in completely new ground and I am confident we will be able to indicate significant tonnage."

Cariboo-Bell is controlled by Highland-Bell Limited.

Working with a fracture density analysis done by D.A.Chapman, P. Eng., Cariboo-Bell staff are studying previously unexplored areas of the large property. The drill sites are being plotted, which will help determine the full extent of the orebodies.

Indications now are that the orebodies may be much greater than the original estimate of 37,000,000 ton grading 0.50% copper, 0.015 oz. gold, 0.50 oz. silver.

AMERICAN URANIUM LIMITED

DIRECTOR CONTROL SHIFTS. CURRENT INTEREST IS ATLIN COPPER/SILVER PROSPECT - The property of prime current interest to American Uranium Limited is the 72-claim copper-silver prospect 12 miles S of King Salmon Lake in Atlin M.D. of B.C. It comprises the Sutlahine property(Lin 1-8 and Ink 1-10 claims) optioned from Montana Mines Ltd. plus 54 contiguous claims staked by American Uranium. Following extensive prospecting and geological mapping in the past month, a report by Cordilleran Engineering is expected in about three weeks. Assays of some grab and chip samples have indicated impressive values in copper and silver. It is likely that the report will recommend induced polarity and geochemical surveys and then drilling as warranted.

Consideration for the option on the Lin and Ink claims was $6,000; work commitments of $50,000 by 1Dec69 plus $100,000 by 1Dec70 plus $100,000 by 1Dec71 and 30% of a new

REFERENCE MEMORANDUM

DATE May 20 19 69

THE ATTACHED PAPERS ARE REFERRED

TO Mr. J. N. Stovel ✓

BY /MK (ECJ)

PLEASE REPLY DIRECT	☐	PLEASE HANDLE	☐
PLEASE SEE ME RE THIS	☐	YOUR COMMENTS	☐
FOR YOUR INFORMATION	☑	FOR APPROVAL	☐
PLEASE RETAIN	☐	PLEASE RETURN ECJ	☑

Attached are two memos from Bill Sirola dated May 6th & May 9th re. the Caribou Bell deposit in B.C. There's no action we can take now. MK

MAY - 8 1969 93 B

KERR ADDISON MINES LIMITED

(FOR INTER-OFFICE USE ONLY)

attach to Prevous file July 1964 & update

W.S.R. ✓
J.H.S.
E.F.
R.D.S.
R.C.B.
P.M.K. ✓
G.W.M.
R.O.M.
C.K.W.
J.B.S.
G.P.R.
K.F.L.
R.E.H.
E.C.J.

To P. M. Kavanagh **From** W. M. Sirola

Subject Cariboo-Bell Copper Mines Limited, Quesnel Area, Cariboo District, B.C. (93-A/11) **Date** May 6, 1969.

I talked with John Springer on April 30th regarding this property and he advised me then that Cariboo-Bell having raised some money through an underwriting intended to pursue the next phase of work on their own. If this work produced the desired results, they would then be prepared to discuss a deal with other mining companies.

Pursuant to your telephone call of May 2nd at which time you spoke with Fred Chow, I phoned John again on May 5th and I will have a session with him in his office today.

You will recall that there were basically two problems:
a) the lack of a high grade core within the mineralized zone that would permit return of capital in the 3 year tax free period;
b) a metallurgical problem in the sense that there are copper carbonates in the upper part of the mineralized zone.

John Springer now feels that with the increased price of copper, the plant could be amortized in the 3 year period and that the carbonate copper mineralization could be removed from the primary zone and leached separately.

It is their intent to deepen those drill holes which had only reached depths of 300 to 400 feet thereby hoping to increase the known reserves from 37-million tons of 0.50% Cu to 50-million tons of 0.50% Cu.

Before venturing into the realm of changed economics and the overall merits of this situation, I will first go over the material facts and current thinking with John to see whether or not I agree in principle. I will then send you my recommendations one way or the other.

The Japanese departure from this picture is now thought to have been premature (in Springer circles) and John Springer contributes this to a failure to reach agreement on the continuing phases of the work at that time.

If a profit of $2,00 a ton could be realized from this deposit, then a plant could certainly be amortized in the tax free period even with a grade of .50% Cu.

Bill

W. M. Sirola.

WMS/lk

Mr. Stovel commented that Bill's plant costs appeared too low.
PMK May 21/69.

MAY 12 1969

KERR ADDISON MINES LIMITED

(FOR INTER-OFFICE USE ONLY)

W.S.R.
M.H.S.
E.F.
R.D.S.
R.C.B. ✓
P.M.K.
G.W.M.
R.O.M.
C.K.W.
J.B.S.
G.P.R.
K.F.L.
R.E.W.
E.C.J.

To P. M. Kavanagh *From* W. M. Sirola

Subject Cariboo-Bell Copper Mines Limited, Quesnel Area, Cariboo District, B.C. (93-A/11) *Date* May 9, 1969.

As a result of my discussions with John Springer on May 6th, my appraisal of this situation is as follows:

There is no basic change in this picture except that the Cariboo-Bell people now feel that with the price of copper varying between 60¢ and 65¢ per pound Canadian that the economics have improved considerably. They therefore hope to increase the ore reserve by deeper drilling (in excess of 400 feet) and by extending the drilling grid laterally. Their ambition now is to find a total of 50-million tons of 0.50% Cu and by so doing, increase the ratio of sulphide to nonsulphide copper.

John Springer suggests that there really is no metallurgical problem but my own feeling is that until such time as the drill core has been assayed to determine the true extent of the upper layer of nonsulphide copper, the metallurgy of the upper portion of the deposit remains in some doubt. An estimate of 10-million tons of nonsulphide copper has been made but this estimate is based entirely on drill logs and these in some cases are quite sketchy.

Since the price of copper is very vital in a low grade deposit I have compiled a short table showing the approximate economics at copper prices ranging from 45¢ to 65¢ Canadian per ton and based on a daily through-put of 7,500 tons.

ECONOMICS OF 7,500 TON/DAY OPERATION
BASED ON GRADE OF 0.50% CU - 90% REC.

Price of Cu in Can. Funds		45¢	50¢	55¢	60¢	65¢
Net Smelter Return		3.30	3.78	4.23	4.68	5.14
Operating Costs		2.25	2.25	2.25	2.25	2.25
Profit/Ton		1.05	1.53	1.90	2.43	2.80
Profit/Year	(Millions)	2,750	4,000	4,975	6,380	7,350

Probable Cost of Plant	$15,000,000
Interest @ 8% on basis of 3 year payback — P.M.K.	1,800,000
Total Cost	$16,800,000

Years of Operation to Amortize Plant	6.1	4.2	3.4	2.6	2.3

(continued - Page 2)

KERR ADDISON MINES LIMITED

(FOR INTER-OFFICE USE ONLY)

*To*_____ *From*_____

*Subject*_____ *Date*_____

The gold content of the ore assumes somewhat more importance with the current free world price of approximately $43.00 U.S. The average gold content is quoted at 0.015 oz per ton and John Springer states that it is 90% recoverable. If that is true and if the smelter pays 92% of the gold content, then the value of the gold is approximately 50¢ per ton. I have not shown this in the table above because I feel that it provides a very considerable safety factor in the case of unusual problems and changed economics. It would also cover such aspects as preproduction costs which I have not included.

From the above table it is apparent that the capital cost can be returned in 3.4 years of operation if the average price of copper is 55¢ Canadian.

Under these circumstances, the situation is attractive and I definitely recommend a continuing interest on the part of Kerr Addison. I must however, point out that other interests such as the Japanese who stand to make a considerable profit from fabricated products and American companies such as A.S. & R. who have their own smelter facilities are in a better position to negotiate with the Springer interests. This is simply a fact of life and not a negative attitude on my part. It is true that the consortium of Japanese companies who were involved in this picture in 1966-67 elected to move out, but according to John Springer they are attempting to renegotiate on a unilateral basis. Apparently, they, like occidentals, sometimes haggle amongst themselves and John suggests that this was the reason for their departure. Springer states that they are adequately financed to do the additional drilling this year and they expect to be open for offers if the program is successful and they themselves feel that the deposit is economically viable.

Bill

W. M. Sirola.

WMS/lk

JUN 22 1967

KERR ADDISON MINES LIMITED

(FOR INTER-OFFICE USE ONLY)

93B

To P. M. Kavanagh From W. M. Sirola

Subject Cariboo Bell Copper Mines Limited Date June 21, 1967

W.S.R.
K.C.G.
H.S.S.
E.F.
R.D.S.
B.C.B.
P.M.H.
G.W.M.
R.O.M.
C.K.W.
J.B.S.
G.P.R.
K.F.L.
E.C.L.

John Springer
682-4255 in Van.

Pursuant to our two telephone discussions on this subject, I enclose the following:

1) First Annual Report of 1966
2) The metallurgical report from the Mineral Processing Division of the Department of Mines in Ottawa
3) Copy of Dr. Sutherland-Brown's geologic report.

As I explained on the telephone this morning, the Springer organization maintain that they have been deluged with telephone calls from mining companies and that before they would consider a relationship with any mining company, they would first have to "put their own house in order" and then consider the possibility of a deal with other companies. I can appreciate their sentiments because it would be difficult for them to place a proper evaluation on the property in the light of the existing problems. These problems are:

1) The present ore reserve (37-million tons of 0.50% Cu (undiluted)) does not contain a sufficient tonnage of higher grade material to permit the return of capital in the three year tax free period. They have estimated that an additional 3 to 4-million tons grading 0.65 or better would be required. — which could be mined in the first 3 years.

2) The metallurgical testing in Ottawa has indicated that very fine grinding is required to liberate the copper from the rock. The testing also demonstrated that both flotation and acid leaching would be required.

3) The Cariboo Bell people have no records on the ratio of sulphide to non-sulphide copper from assays of the drill core. Since copper carbonates such as malachite are difficult to float, the recoveries in the upper part of the mineralized zones are unknown.

Despite the fact that these problems exist, it is my feeling that the possibilities of finding the additional 3 to 4-million tons of higher grade material are reasonably good and it is fairly commonplace to encounter problems in the preliminary stages of metallurgical work. I also know from experience that in most deposits in British Columbia, the presence of copper carbonates is not usually a real problem in milling. In other words, the percentage of such carbonates is usually relatively low. — close to the surface

(continued - page 2)

KERR ADDISON MINES LIMITED

(FOR INTER-OFFICE USE ONLY)

To ..... *From* .....

Subject ..... *Date* .....

Herewith all the statistics that I have at the moment:

Location:

32 miles northeast of Williams Lake on Mt. Polley.

Ownership:

Cariboo Bell Copper Mines - 100%.

Diamond Drilling:

48,301 feet in 123 holes. Average depth 400 feet. - some holes to 1000 ft. depth

Tonnage & Grade:

37-million tons grading 0.50% Cu and .015 ozs of Au. - without allowing for dilution.

Stripping Ratio:

From 1:1 to 1.9:1

Probable Dilution:

10%

Size of Ore Outlines:

Pit No. 1: 2,000 feet by 700 feet
Pit No. 2: 1,500 feet in diameter.

Geology:

Complex of syenodiorite and monzonite porphyries with accompanying zones of tectonic brecciation intruding volcanics.

Mineralization:

Chalcopyrite and minor bornite occur in the matrix of breccias and as disseminated grains. Pyrite occurs as a peripheral halo. Secondary minerals include malachite, azurite, cuprite, chrysocolla and native copper.

Possible Mill Size:

7,500 t.p.d.

(continued - page 3)

KERR ADDISON MINES LIMITED

(FOR INTER-OFFICE USE ONLY)

*To*_____ *From*_____

*Subject*_____ *Date*_____

Net Smelter Return per Ton of Ore:

(Canadian Funds) at $0.38 per lb. = $3.20

Operating Costs per Ton of Ore:

$1.95

Profit Per Ton:

$1.20

Profit Per Year:

$3,150,000.00

Probable Cost of Plant:

$15,000,000.00

Years of Operation Before Plant Amortized:

4.75

In order to amortize the $15,000,000. plant cost in 3 years, approximately 7,875,000 tons averaging 0.70% Cu would have to be located. Current thinking in the Cariboo Bell organization is that they have perhaps 3,7-million tons grading 0.65. Actually, a grade of 0.65 would be acceptable over a 4 year repayment period.

Conclusions:

Because of the favourable location, tonnage and grade found to date, the outlook for copper and the possibility of a smelter somewhere in that area, our interest in this situation is encouraged. Mr. Crowhurst, who is General Manager of Cariboo Bell, has told me verbally that we would have first refusal if Cariboo Bell should desire participation. He also said that if we so wished, he would keep us abreast of developments. It is my suggestion that we contact Mr. Crowhurst from time to time in order to indicate our continuing interest.

W. M. Sirola.

WMS/lk
Encl.

CARIBOO-BELL COPPER MINES

LIMITED

FIRST ANNUAL REPORT • 1966

Cariboo-Bell Copper Mines Limited

(Incorporated under the Laws of the Province of British Columbia)

Authorized Capital:

3,000,000 common shares without nominal or par value.

DIRECTORS

KARL J. SPRINGER	*Toronto, Ont.*
J. J. CROWHURST	*Vancouver, B.C.*
F. E. HALL	*Toronto, Ont.*
W. A. McELMOYLE	*Victoria, B.C.*
R. E. PURVIS	*Bremerton, Wash.*
R. J. SPRINGER	*Vancouver, B.C.*

OFFICERS

KARL J. SPRINGER	*President*
F. E. HALL	*Vice-President*
J. J. CROWHURST	*General Manager*
J. D. MUNROE	*Secretary-Treasurer*

AUDITORS

PEAT, MARWICK, MITCHELL & CO. - *Vancouver, B.C.*

SOLICITORS

DOUGLAS, SYMES & BRISSENDEN - *Vancouver, B.C.*

TRANSFER AGENTS

THE CANADA TRUST COMPANY - *Vancouver, B.C. and Toronto, Ont.*

BANKERS

CANADIAN IMPERIAL BANK OF COMMERCE - *Vancouver, B.C.*

REGISTERED OFFICE

SUITE 300, 999 WEST PENDER STREET, VANCOUVER 1, BRITISH COLUMBIA

Cariboo-Bell Copper Mines Limited

Report Of The Directors

To the Shareholders:

Effective 15th October, 1966, Cariboo-Bell Copper Mines Limited entered into a financing arrangement with three Japanese mining companies — Mitsui Mining & Smelting Company Ltd., Nippon Mining Co. Ltd., and Sumitomo Metal Mining Co. of Canada Ltd.—for the development and bringing into production of its copper property located approximately 50 miles northeast of Williams Lake in the Cariboo Mining Division.

Under a joint management committee with the Japanese group, the staff of Mastodon-Highland Bell Mines Ltd. directed the work.

The program was divided into three stages, the first consisting of the spending of $300,000. on development work, the second the spending of $500,000. on further development work, and the third stage financing the mine into production. The second and third stages are predicated on favourable results in the former stages.

The exploratory drilling of the first stage is finished. In the year March 1966 to March 1967, a total of 48,301 feet of diamond drilling using BX wireline equipment (123 holes) and 6,585 feet of percussion drilling (32 holes) was completed.

This drilling has indicated approximately 37,000,000 tons of an average grade of 0.50% copper and 0.015 ounces of gold before allowance for dilution.

Three separate blocks are included in this total: Block A contains 15,549,000 tons averaging 0.458% copper with a waste to ore ratio of approximately 1:1; Block B, 20,432,000 tons averaging 0.524% copper with a waste to ore ratio of approximately 1.9:1; Block C, 1,184,000 tons averaging 0.664% copper with a waste to ore ratio somewhat in excess of 2:1.

The above three blocks of ore may be mined by separate pits. Block A contains approximately 3,700,000 tons assaying 0.65% copper and 0.015 ounces gold with a waste to ore ratio of 1:1, which can be mined during the first years of production.

The final part of the first development stage is being devoted to metallurgical, geological and engineering problems related to proposed open pit designs. Composite samples of the drill cores have been made up and sent for analysis and metallurgical testing to Tokyo and to the Department of Energy, Mines and Resources in Ottawa. The results from these tests should be available by the end of the first stage of development.

Two more geochemical anomalies on the property remain to be tested by drilling.

An abundant water supply, good transportation and available power are very favourable factors when considering bringing the property into production.

Up to the present the first stage of the development program has been carried out under a preliminary agreement as detailed in the note to the balance sheet of the audited statement and as confirmed in the attached letters.

At present the final agreements, including the concentrate sales agreement, subject to approval by the Japanese Government, are being finalized.

It is a pleasure at this time to express our appreciation to your General Manager, Mr. J. J. Crowhurst; your resident Foreman, Mr. G. M. Newcombe; and to Mr. R. F. Lambert, Superintendent, Mastodon-Highland Bell Mines Ltd., and all employees for their cooperation and efficient work on behalf of your Company during the past year.

On behalf of the Board,

K. J. SPRINGER, President

Vancouver, B.C.
April 3rd, 1967.

CARIBOO-BELL COPPER MINES LIMITED

682-4255
AREA CODE 604

502—1200 WEST PENDER STREET
VANCOUVER 1, B.C.

October 19th, 1966

- Mr. T. Takabayashi, President
  Mitsui Mining & Smelting Co. Ltd.
- Mr. K. Kawakami, President
  Sumitomo Metal Mining Co. of Canada Ltd.
- Mr. Y. Mima, President
  Nippon Mining Co. Ltd.

I am pleased to learn that your companies have concluded a satisfactory Financing Agreement and Copper Concentrate Sales Agreement with Cariboo-Bell Copper Mines Limited. I am looking forward with pleasure to our future association.

You will find attached to this letter, the basic terms of the Financing Agreement and the Copper Sales Agreement. In addition to these terms, which we are in general agreement on, we would also like confirmation of our understanding that if the feasibility report and economic forecast, based on the sales contract, indicates great difficulty in reasonable re-payment of the senior financing with interest within a reasonable period of time, prior to any payment of dividends, that all parties of this agreement shall come together in good faith, during the period between completion of the second stage and commencement of the third stage, to re-discuss the terms and conditions of the Sales Agreement, in order to overcome such great difficulties.

Your signatures and seals on the attached copy of this letter will indicate your collective agreement, as my signature and seal indicates mine.

I look forward to meeting you in Japan for the formal signing of our agreements, in the near future.

Yours sincerely,

CARIBOO-BELL COPPER MINES LIMITED

K. J. Springer
President

Mr. T. Takabayashi, President
Mitsui Mining & Smelting Co. Ltd.

Mr. K. Kawakami, President
Sumitomo Metal Mining Co. of Canada Ltd.

Mr. Y. Mima, President
Nippon Mining Co. Ltd.

Signed

November 24th, 1966

Mr. K. J. Springer
President
Cariboo-Bell Copper Mines Ltd.
502 - 1200 West Pender Street
Vancouver 1, B. C.
Canada

Dear Mr. Springer:

We are pleased to inform you that we, Japanese group, have signed for confirmation the copy of your letter of October 19, 1966 accompanying the "basic terms" of the Exploration/Financing Agreement and the Sales Agreement.

We hastened to sign the said letter for confirmation responding to your kind consent to revise Stage 1 to be terminated on 15th June 1967 instead of 15th April 1967 notwithstanding the provisions in Paragraph I, stage 1 of the "Basic Terms" of the Exploration/Financing Agreement.

If the above understanding is correct, kindly affix your signature to one copy of this letter and return to this end.

We will soon forward to you for your reviewal a complete draft of our formal agreements which our counsellors have compiled in deference to the said "basic terms" and earnestly hope that the formal agreement will finally be executed between ourselves upon your approval in the nearest future.

With kindest regards,

Yours very truly,

Y. Mima, President
Nippon Mining Co., Ltd.

K. Kawakami, President
Sumitomo Metal Mining Co. of Canada, Ltd.

T. Takabayashi, President
Mitsui Mining & Smelting Co., Ltd.

Agreed and confirmed by
K. J. Springer, President
Cariboo-Bell Copper Mines Ltd.

BASIC TERMS OF COPPER CONCENTRATES SALES AGREEMENT

SELLER: Cariboo-Bell Copper Mines Limited.

BUYER: Mitsui Group, i.e. Mitsui Mining & Smelting Co. Ltd.; Sumitomo Metal Mining Co. of Canada Ltd.; Nippon Mining Co. Ltd.

This agreement refers to the Paragraph II - (a) of the Basic Terms of Exploration/Financing Agreement between Buyer and Seller dated October 15, 1966, and shall be executed provided the property is placed into production.

THE TERMS AND CONDITIONS

1. COPPER —

   (a) Terms of Contract: 5 years from the date of first commercial production.

   (b) Metal Price: E. & M.J. Export Refinery Price less 1 Cent U.S. per lb. of copper.

   (c) Copper content to be paid for:
      (1) at full amount less 1 unit, if copper content is less than 30%.
      (2) at full amount less 1.1 unit, if copper content is 30% or more, and less than 35%.
      (3) at full amount less 1.2 unit, if copper content is 35% or more.

   (d) Treatment charges per dry metric ton, FOB Vancouver loaded, stowed and trimmed, as follows:
      (1) For E. & M.J. Prices up to 32c U.S., the charge shall be U.S. $26.00.
      (2) For E. & M.J. Prices in excess of 32c and up to 36c U.S. an additional U.S. $0.50 shall be added to the U.S. $26.00 for each one cent U.S. increase in the E. & M.J. Price. This shall be applied proportionally.
      (3) For E. & M.J. Prices in excess of 36c U.S. and up to 40c U.S., the charge shall be U.S. $28.00.
      (4) For E. & M.J. Prices in excess of 40c U.S., an additional U.S. $1.00 shall be added to the U.S. $28.00 for each one cent U.S. increase in the E. & M.J. Price. This shall be applied proportionally up to a maximum of U.S. $35.00.

2. GOLD —

   If gold content per dry metric ton of the concentrates is more than 1 gram, pay for the gold content at the U.S. treasury price in accordance with the following scale:

1 gram and above but less than 2 grams	90%
2 grams and above but less than 3 grams	94%
3 grams and above	95%

RENEWAL OF THE TERMS AND CONDITIONS

It is agreed that the Terms and Conditions shall be re-negotiated at the end of each and every five calendar years dated from the day of first commercial production, such re-negotiation to be subject to arbitration procedures in the event of disagreement.

Cariboo-Bell Copper Mines Limited

Balance Sheet December 31, 1966

ASSETS

Current assets:		
Cash		$ 45,783
Accounts receivable		1,520
Prepaid expenses		1,914
Total current assets		49,217
Mining properties, at cost, acquired by the issue of 750,000 shares and $50,000 cash		800,000
Equipment, at cost		14,625
Deferred exploration, development and administration expenses, per Schedule 1		554,718
Incorporation and organization expense		2,812
		$ 1,421,372

LIABILITIES AND SHAREHOLDERS' EQUITY

Current liabilities:		
Accounts payable and accrued expenses		$ 30,867
Advances by a group of Japanese companies (Note)		153,000
Shareholders' equity:		
Capital stock:		
Shares without nominal or par value. Authorized 3,000,000 shares; issued 1,500,005 shares since incorporation on December 23, 1965 as follows:		
Cash - 750,005 shares	$ 487,505	
Mining properties - 750,000 shares	750,000	1,237,505
		$ 1,421,372

APPROVED ON BEHALF OF THE BOARD:
K. J. SPRINGER, Director
RALPH E. PURVIS, Director

SEE ACCOMPANYING NOTE TO BALANCE SHEET.

Cariboo-Bell Copper Mines Limited

Statement of Deferred Exploration, Development and Administration Expenses

Period from incorporation December 23, 1965 to December 31, 1966

Exploration and development:	
Diamond and percussion drilling	$ 278,272
Drill roads and site preparation	7,203
Trenching	12,452
Sampling and assaying	25,273
Prospecting	11,639
Engineering and geology	31,907
Temporary buildings	26,891
Freight	12,480
Road	16,479
Camp operations	40,272
Mine general	55,012
Water lines	3,579
	521,459
Administration	42,954
Total expenses	564,413
Less interest earned	9,695
	$ 554,718

AUDITORS' REPORT TO THE SHAREHOLDERS

We have examined the balance sheet of Cariboo-Bell Copper Mines Limited as of December 31, 1966 and the statement of deferred exploration, development and administration expenses for the period ended on that date. Our examination included a general review of the accounting procedures and such tests of accounting records and other supporting evidence as we considered necessary in the circumstances.

In our opinion, the accompanying balance sheet and the related statement of deferred exploration, development and administration expenses present fairly the financial position of the company at December 31, 1966 and the results of its operations for the period ended on that date, in accordance with generally accepted accounting principles.

Vancouver, British Columbia
March 17, 1967

PEAT, MARWICK, MITCHELL & CO.,
Chartered Accountants.

Cariboo-Bell Copper Mines Limited

Note to Balance Sheet

December 31, 1966

The company has exchanged letters of intent to enter into an exploration and financing agreement with a group of Japanese companies, subject only to the approval of the Japanese Government, as follows:

BASIC TERMS OF EXPLORATION/FINANCING AGREEMENT BETWEEN "MITSUI GROUP"

(i.e. Mitsui Mining & Smelting Co., Ltd.,
Sumitomo Metal Mining Co. of Canada Ltd.
and Nippon Mining Co., Ltd.

AND CARIBOO-BELL COPPER MINES LTD.

Paragraph 1

STAGE 1:

$300,000 to be spent between 15th October, 1966, and 15th April, 1967, and to be supplied by "Mitsui Group" upon request of Cariboo-Bell but within two months after execution of this agreement.

Stage 1 shall be considered to be terminated on 15th June, 1967 or any such earlier date when "Mitsui" has spent the total sum of $300,000 and has received full details of the exploration work for the period.

STAGE 2:

If "Mitsui" elects to proceed with Stage 2 within one month after the completion of Stage 1, and makes a firm commitment to spend $500,000 thereon, then 133,333 shares of Cariboo-Bell will be issued forthwith to the "Mitsui" group at a price of $2.25 per share, with respect to the money in Stage 1.

"Mitsui" will receive 181,818 shares at $2.75 per share during Stage 2 in proportionate amounts based on monthly expenditures.

The work will take place for the period of 6 months commencing the 30th day after the completion of Stage 1.

The $500,000 will be supplied by "Mitsui" in instalments commencing the 1st day of Stage 2 and regularly thereafter every 30 days.

Such monies shall be spent exclusively for the exploration work.

Stage 2 shall be considered to be terminated on either of such dates:
(a) when the total sum of $500,000 has been fully spent, or,
(b) when "Mitsui" decides to suspend, only to proceed with the next step, the exploration work of Stage 2 before spending the total sum of $500,000.

STAGE 3:

If "Mitsui" elects to proceed with Stage 3, within 3 months after the completion of Stage 2, then the following will take place:

(a) "Mitsui" will arrange the total sum of senior funds necessary to place the property into production. Such funds to be borrowed at the most favourable interest rate obtainable at that time.
(b) "Mitsui" will buy 533,333 shares of Cariboo-Bell at $3.75 per share.
(c) "Mitsui" shall be given such numbers of shares of "Free" stock of Cariboo-Bell, that may put "Mitsui" in the position to hold at any time, 47% of Cariboo-Bell's total issued shares, together with 848,484 shares already obtained in accordance with the provisions of paragraph Stage 2 and Stage 3 (b).

The stock position will then be as follows (example):

Cariboo-Bell Copper Mines Limited

	"Mitsui" Shares		Other shares		Total issued
1 Oct., 1966			1,500,005		1,500,005
Stage 1	133,333				1,633,338
Stage 2	181,818				1,815,156
Stage 3	533,333				2,348,489
"Free Stock"	481,708				
	1,330,192	(47%)	1,500,005	(53%)	2,830,197

(d) A voting trust to be established by Mastodon-Highland Bell and Leitch Gold in favour of "Mitsui" in order to give them voting control, i.e. 50.05%.

Paragraph II

(a) "Mitsui" shall have the right to purchase the total production of copper concentrates, including all metals contained therein or any other valuable constituents in the ore during the whole life of the mine. The copper concentrates sales agreement shall be determined by mutual agreement.

(b) All monies supplied in Paragraph I Stage 3 (a), shall be repaid first out of cash flow.

(c) Stage 3 will be completed in two years time.

(d) A management committee will be formed consisting of three members from the "Mitsui" group and two members from Cariboo-Bell. It is understood "Mitsui" will have management control during the course of the agreement.

(e) Cariboo-Bell will not, without written consent of "Mitsui", issue any stock or increase the authorized capital during the course of agreement other than that specified in the agreement.

(f) "Mitsui" will have the right to proceed more quickly than the dates mentioned in the agreement, but in the event it is deemed desirable to spend less than the $500,000 in Stage 2, the balance not expended shall be placed in the Cariboo-Bell treasury in exchange for treasury stock at $2.75 per share, and shall form a portion of the senior funds, if Stage 3 entered into.

(g) This agreement is subject to the approval of the Japanese Government.


WESTERN MINER
PRESS

CANADA

Department of Energy, Mines and Resources
Ministère de l'Énergie, des Mines et des Ressources

Mines Branch
Direction des mines

File Number
N° à rappeler

Mineral Processing Division

40 Lydia Street,
Ottawa 1, Ont.,
June 8, 1967.

Mr. John Springer,
Director-Cariboo-Bell Copper Mines Ltd.,
300-999 West Pender Street,
Vancouver 1, B.C.

Dear Sir:

The first shipment of samples received for test work consisted of four wooden boxes, each containing a number of individual samples of crushed drill core rejects in plastic bags.

Box	marked	Group	I	contained	67	samples
"	"	"	II	"	88	"
"	"	"	III	"	62	"
"	"	"	IV	"	42	"

The sample in each group were combined, crushed to -10 mesh; sampled for analysis and split into test-sized lots. The analyses of the head samples are tabulated below.

Group I -	Cu 0.37%;	Au 0.013 oz/ton;	Ag 0.027 oz/ton
Group II-	Cu 0.41%;	Au Trace ;	Ag Trace
Group III	Cu 0.60%;	Au Trace ;	Ag Trace
Group IV-	Cu 0.50%;	Au Trace ;	Ag Trace

In the preliminary test work, the emphasis has been on recovery by attempting to produce a low copper content in the flotation tailing. A satisfactory flotation tailing has not been obtained. The flotation tailings have ranged from 0.20% Cu to 0.22% Cu. Test 8 has been described to illustrate the results obtained.

Test 8 Group I

1000 grams of ore were stage ground to 98.6% -325 mesh in the laboratory rod mill. The ground pulp was conditioned for 5 minutes at 25% solids with 0.10 lb aerofloat 208/ton of feed, 0.10 lb aerofloat 238/ton of feed and 0.02 lb pine oil/ton of feed. A concentrate was removed for three minutes. The pulp was conditioned for 3 minutes with 0.10 lb reagent 425/ton of feed. An oxide concentrate was removed for 5 minutes. The pulp was further conditioned for 5 minutes with 0.20 lb reagent 425/ton of feed and then more oxide concentrate was removed for 10 minutes. The results are tabulated below.

	Weight %	Cu %	Distribution %
Sulphide Conc	1.9	6.40	33.3
Oxide Conc	3.7	1.50	15.0
Tailing	94.4	0.20	51.7
Feed	100.0	0.36	100.0

1867 1967

A sample of the flotation tailing was infrasized and the various size fractions assayed with the results as shown.

Microns	Weight %	Cu %	Distribution % This Test	Distribution % Total
-74 +56	0.7	0.20	0.6	0.3
-56 +40	0.8	0.13	0.5	0.2
-40 +28	13.0	0.12	7.4	3.8
-28 +20	20.8	0.13	12.7	6.6
-20 +14	16.1	0.14	10.6	5.5
-14 +10	11.3	0.16	8.5	4.4
-10	37.3	0.34	59.7	30.9
Tailing	100.0	0.21	100.0	51.7

The various size fractions were examined microscopically. Chaleopyrite comprised 95% of the copper minerals. There were minor amounts of chalcocite and bornite and 2 pieces of native copper and 2 pieces of covellite were seen. The copper minerals present in each size fraction were tabulated into three categories namely free, combined and inclusions. The percentages are shown in the following table.

Microns	Free %	Combined %	Inclusions %
+ 56	65.5	18.9	15.6
-56 +40	16.2	2.7	81.1
-40 +28	4.1	2.0	93.9
-28 +20	11.7	3.8	84.5
-20 +14	22.7	3.0	74.2
-14 +10	50.9	3.9	45.1
-10	not counted		

Test 4 Group I

1000 grams of ore were ground to 59% -325. A sulphide concentrate was floated with 0.30 lb areofloat 233/ton of feed and 0.01 lb dowfroth 250/ton of feed. An oxide concentrate was floated with 0.20 lb reagent 425/ton of feed and 0.20 lb $Na_2S \cdot 9H_2O$/ton of feed. The flotation tailing was leached with H_2SO_4 at pH 0.9 - 1.0 for 1.75 hours. The leached solids were filtered, washed, dried and assayed. The results are tabulated below.

Product	Weight %	Cu %	Distribution %
Sulphide Core	2.2	6.27	36.5
Oxide Core	2.3	1.76	10.7
Tailing	95.5	0.21	52.8
Feed	100.0	0.38	100.0

	Weight % or Volume	Analysis Cu	Distribution % This Test	Distribution % Total
Leach Residue	95.5	0.05 %	24.4	12.6
Leach Solution	7.1 L	2.03 g/L	75.6	40.2
Feed (Tailing)	95.5	0.21 %	100.0	52.8

Test 10 Group I Ore. Leach, Precipitation Flotation.

1000 grams of Group I ore were ground to 59% -325 mesh. The ground pulp was leached with H_2SO_4 for 45 minutes. The pH was maintained between 1.5 and 3.2. A total of 10 mls of concentrated H_2SO_4 was used. The dissolved copper was precipitated by the addition of 20 grams of powdered iron. The sulphide and precipitated copper was floated with 15 drops of Minerec A and 2 drops of Pine Oil. Concentrate was removed for 17 minutes. The results are tabulated below.

	Weight %	Cu %	Distribution %
Conc	5.8	3.80	62.5
Tailing	94.2	0.14	37.5
Feed	100.0	0.35	100.0

Test I on Group III Ore

1000 grams of Group III ore were ground to 64.7 % - 325 mesh. The pulp was conditioned for 3 minutes with 0.02 lb aerofloat 208/ton of feed and 0.02 lb aerofloat 238/ton of feed. A concentrate was removed for 5 minutes. The concentrate was cleaned once. Results are tabulated below.

	Weight %	Cu %	Distribution %
Cleaner conc	1.4	24.20	58.4
Cleaner tailing	1.9	2.05	7.0
Tailing	96.7	0.20	34.6
Feed	100.0	0.56	100.0

From the results of the limited number of flotation tests and the microscopical work, it appears that it will be difficult to make a satisfactory copper recovery by straight flotation. However Test 4, in which the flotation tailing was leached with H_2SO_4, had a final tailing assaying 0.05% Cu and a combined copper recovery of 87.4 % Test 10, which was a leach, precipitation and flotation process, showed better results than straight flotation.

It is proposed to continue to investigate the feasibility of the leach-precipitation-flotation process as well as flotation testing on the other samples.

Yours truly,

W. Arthur Wall

W. Arthur Wall P.Eng.,
Non-Ferrous Mineral Section.

cc Mr. J.J. Crowhurst
WAW/ig

NOTE: PAGE (1) NOT PROVIDED
V3

Title ANN. R

Author ASB (DR SUTHERLAND BROWN)

Date and Typist MAY 2-67 jm (2) page

CARIBOO-BELL

Drilling started in February, 1966, and most holes were drilled to 400 feet. The percussion holes were drilled wet to an equivalent depth. Total footage to the end of the first development stage in March, 1967, was: Diamond drilling, 48,301 feet, 123 holes; percussion drilling, 6,585 feet, 32 holes. At the time of the writer's visit in June only some 13,000 feet had been drilled. The following account depends largely on information gathered by the writer at that time but is augmented by company information of more recent date.

June of 1966 Assessment Rpt June 23/67.

Geology

The property is in a strip between Horsefly and the Quesnel River at Moorehead Creek in which outcrop, although scarce, is almost entirely Lower Jurassic purple and green andesite tuffs, breccias, and flows. In the vicinity of the property, at Mount Polley and Bootjack Mountain these volcanic rocks are intruded by a sequence of fine, quartz-free granitoid rocks and porphyries ranging from syenodiorite to syenite. Outcrop is fairly common on hill tops and steeper slopes but is rare elsewhere--hence the overall outline of the intrusions is not well known. Two centres that are not entirely separate are apparent, one on

Title ANN. REPT.

Author ASB

Date and Typist MAY 2-67 jm 3

Bootjack Mountain and one on Polley Mountain. The following description is concerned only with the Mount Polley stock and principally with the central area of this stock. There natural outcrop and extensive trenches reveal evidence of a sequence of intrusion, brecciation, metasomatic alteration, and mineralization so involved that only a most thorough study could unravel the details. This report is preliminary.

The Mount Polley stock is formed of a suite of ~~(hornely saturated)~~ rocks that have so many characteristics in common that a family relationship can be assumed. In particular all rock types contain similar augite as the main mafic mineral; all contain about 5 per cent magnetite, most specimens have some stubby apatite phenocrysts and an abnormal amount of sphene, and none contain quartz or feldspathoids. In composition they range from syenodiorite through at least three types of monzonite porphyries to syenite and pyroxene lamprophyre. Inclusions and screens of metavolcanic rocks, skarns, and early phases are abundant. Multiple intrusion, brecciation, intense alteration, and mineralization form part of the plutonic sequence. Unaltered rocks are either fine grained or have a fine matrix, and vugs and drusy cavities are abundant

..in the breccias and former miarolitic cavities occur in some specimens of porphyry; therefore the intrusions occurred at shallow depth.

Fig. 20

Figure 20 shows an interpretation of the geology of the central area. The oldest rocks are dark green slightly porphyritic massive or clastic andesites which occur in greatest amount in Trench 19 in the southeast, however, as metavolcanic skarns these are common as inclusions and screens particularly within the breccia areas. In such settings they are commonly irregularly banded or mottled rocks composed of varying amounts of garnet, pyroxene, magnetite, potash feldspar with clinozoisite, calcite, chalcopyrite, muscovite, plagioclase, apatite, and rarely some zeolites. Some volcanic rocks are so metasomatized in the breccia areas that they are distinguishable from intrusive porphyries in the same setting only by the rocks into which they grade.

The relative age of the various intrusive phases, the brecciation, and alteration are not fully known. The intrusive phases included a granitic textured syenodiorite, three monzonite porphyries, and a lamprophyre dyke phase. The main element of doubt is where the syenodiorite fits in the sequence.

Title ANN. REPT.

Author ASB

Date and Typist MAY 2-67 im 5

The following table shows the mineral composition of all fresh intrusive rocks. The porphyry phases will be described first from oldest to youngest. These are all similar and will be called monzonite porphyries although this name is not entirely suitable for the first phase (1). This is typically a foliated crowded porphyry with prominent plagioclase laths in an aphanitic matrix of grey, brown, or pink. On casual inspection it may look as if it is granitic textured. Normally the augite is fresh but may be partly altered to chlorite or hornblende. The plagioclase occurs in laths up to 5 millimetres long and stubby compound grains with complex twinning. It is nearly completely sericitized. It appears to have been zoned over the interval An_{50-30}. Potash feldspar occurs as rare phenocrysts and forms half the fine-grained matrix together with plagioclase. Magnetite is partly in large grains. Biotite is absent. Accessories include stubby phenocrysts of apatite and prisms of sphene. Common alteration minerals in small amounts include clinozoisite and prehnite.

The second phase (2) is also a crowded porphyry with an even smaller percentage of matrix and even less obviously a porphyry. It is normally grey with a fine intersertal texture. Occasional large white

(3 by 2 millimetres) plagioclase phenocrysts are characteristic. Augite may be fresh or partly altered to biotite or more rarely prehnite, chlorite, and epidote. Biotite is present also as a primary mineral as ragged middle-sized grains. The plagioclase was zoned andesine but is almost completely sericitized except for a thin rim. Potash feldspar occurs chiefly in the matrix. Accessory sphene and apatite are common. Zeolites occur in addition to the alteration minerals mentioned.

The third phase (3) as far as is known is a minor dyke phase. It is similar to (1) but contains fewer phenocrysts in a finely aphanitic, chocolate-coloured matrix. It is generally quite fresh but plagioclase may be partly altered to muscovite or prehnite. It appears to be a post-mineral phase.

The syenodiorite is a fine- to fine-medium-grained (0.5 to 2 millimetres) granitic-textured rock that is normally dark grey but without being greatly altered may be pinkish. Occasionally large mafic phenocrysts are common. At many localities it has a fair foliation, at others a lathy intersertal texture. Plagioclase was zoned from An_{70-30} but is now highly sericitized. Potash feldspar generally is interstitial. Mafic minerals

other than the magnetite are associated in a characteristic manner. Fresh pyroxene may be mantled by hornblende or biotite, and either one may extend away from the mantle as a large poikilitic grain with inclusions of small plagioclase laths. Biotite is more common than hornblende and all three may occur in one specimen. The biotite may be partly altered in an interleaved fashion to chlorite. Sphene and apatite are common accessories. Prehnite is a rare alteration after plagioclase.

The lamprophyre is an unusual rock of prominent zoned augite (1.5 millimetres) in a finer matrix of highly zoned sericitized plagioclase (An_{75-50}) and magnetite with interstitial potash feldspar. The rocks weather rapidly to a dark sand and some dykes can be identified in the trenches by this means. In addition a number of small post-mineral dykes occur that are unrelated to the main plutonic suite. These are mostly sugary textured, light greenish grey andesites.

On the geological map an additional unit is shown called breccias. This is a simple term for the complex of breccias and altered rocks that are of major importance in regard to the economic mineralization. The range of types present is large and the commonest feature is the

salmon colour of most rocks resulting from extensive potash metasomatism. The original rock type of many specimens cannot be definitely identified but amongst those that have been are the following:

(1) Metavolcanic skarns and breccias of these in a plutonic matrix.

(2) Breccias of porphyry in ~~a~~ different igneous matrix.

(3) Breccias of porphyry only slightly expanded with a drusy matrix filled with potash feldspar, biotite, amphibole, magnetite, chalcopyrite, and stilbite.

(4) Highly altered porphyry with or without many inclusions and with or without large poikilitic porphyroblasts of potash feldspar.

Where alteration is least it is the crowded porphyry (1) that is generally recognizable as the main type that occurs as breccia fragments or original host. In some cases this porphyry is entirely converted into a syenite or even an orthoclase rock with just patchy development of plagioclase, augite, or magnetite. This altered salmon porphyry may be contained in a greyer matrix composed chiefly of large irregular orthoclase or rarely microcline crystals with biotite. The porphyry (2) is present in lesser amounts and may contain definite fragments of porphyry (1).

Rocks of normal mineralogy and alteration may, upon brecciation, be subjected to further alteration in ~~w~~hich much plagioclase in the

matrix is replaced by potash feldspar and phenocrysts may be either only sericitized, or mantled, or entirely replaced by orthoclase. Augite may be fresh or replaced by clinzoisite, talc, serpentine, biotite, sphene, carbonate, or some combination. Prehnite is relatively common and apatite and sphene more common than in original porphyries. Many of the breccias and altered rocks are also fairly porous and most contain some chalcopyrite preferentially in the breccia matrix as well as in small seams and disseminated. Late zeolite veinlets are common.

The geological map, Figure , is partly diagrammatic. The geology in the breccia areas is very complex. The plutonic sequence that seems most likely is as follows:

(1) Intrusion of porphyry (1).

(2) Intrusion of porphyry (2) overlapped or followed by brecciation and main alteration and mineralization. Closely followed by,

(3) Intrusion of syenodiorite.

(4) Dykes of porphyry (3),

(5) Dykes of lamprophyre.

The cause of brecciation is most likely tectonic in that the belts of breccia are fairly linear, trending generally northward but

Title ANN. I

Author ASB

Date and Typist MAY 2-67 jm 10

seeming to diverge about a "core" of syenodiorite. Brecciation may have occurred in advance of intrusion of one of the later phases, either porphyry (?) or the syenodiorite. One of the unexplained complexities is that foliation in the syenodiorite appears disconformable with the contacts. This could be taken to indicate it was an early phase, later truncated although dykes of the porphyries have not been identified in the main syenodiorite masses, and alteration of the syenodiorite is slight. Both of the latter facts strongly support the syenodiorite was a late phase.

The lamprophyre dykes follow late small northerly trending steep faults. One fairly important shear zone follows the altered rocks in this same orientation.

Mineralization

The Mount Polley stock is extensively mineralized with chalcopyrite particularly in the breccia zones. Pyrite occurs as in a partly peripheral halo. Chalcopyrite is chiefly distributed in the matrix of breccia very commonly within biotite or in drusy cavities. It also coats dry fractures and occurs as disseminated grains. Extensive replacement has also occurred of some metavolcanic inclusions in breccia zones in which case calcite is the most readily replaced mineral. Bornite is present

Title ANN. REP.

Author ASB

Date and Typist MAY 2-67 jm 11

in very minor amounts. Pyrite either in the ore zone or peripheral halo tends to be more truly disseminated than chalcopyrite.

Many secondary copper minerals noteably malachite, azurite, traces of cuprite and chrysocolla, and native copper, occur in the outcrop and trenches, and in the upper part of drill holes.

The company has stated that drilling has outlined approximately 37,000,000 tons of ore of an average grade of copper, 0.50 per cent, and gold, 0.015 ounces per ton before dilution. This reserve is in three blocks that will be mined as separate open pits, two main pits and one small one. Block A contains 15,549,000 tons averaging 0.458 per cent copper with a waste to ore ratio of approximately 1 to 1, but has 3,700,000 tons assaying 0.65 per cent copper and 0.015 gold with a waste to ore ratio of 1 to 1 that can be mined in the first years of production. Block B contains 20,432,000 tons averaging 0.524 per cent copper with a waste to ore ratio of 1.9 to 1. Block C contains 1,184,000 tons averaging 0.664 per cent copper with a waste to ore ratio somewhat in excess of 2 to 1. The proposed pits for blocks A and B, pit 1 and 2 respectively, are outlined on the Geological Map. Block C is a small area about Trench 14.

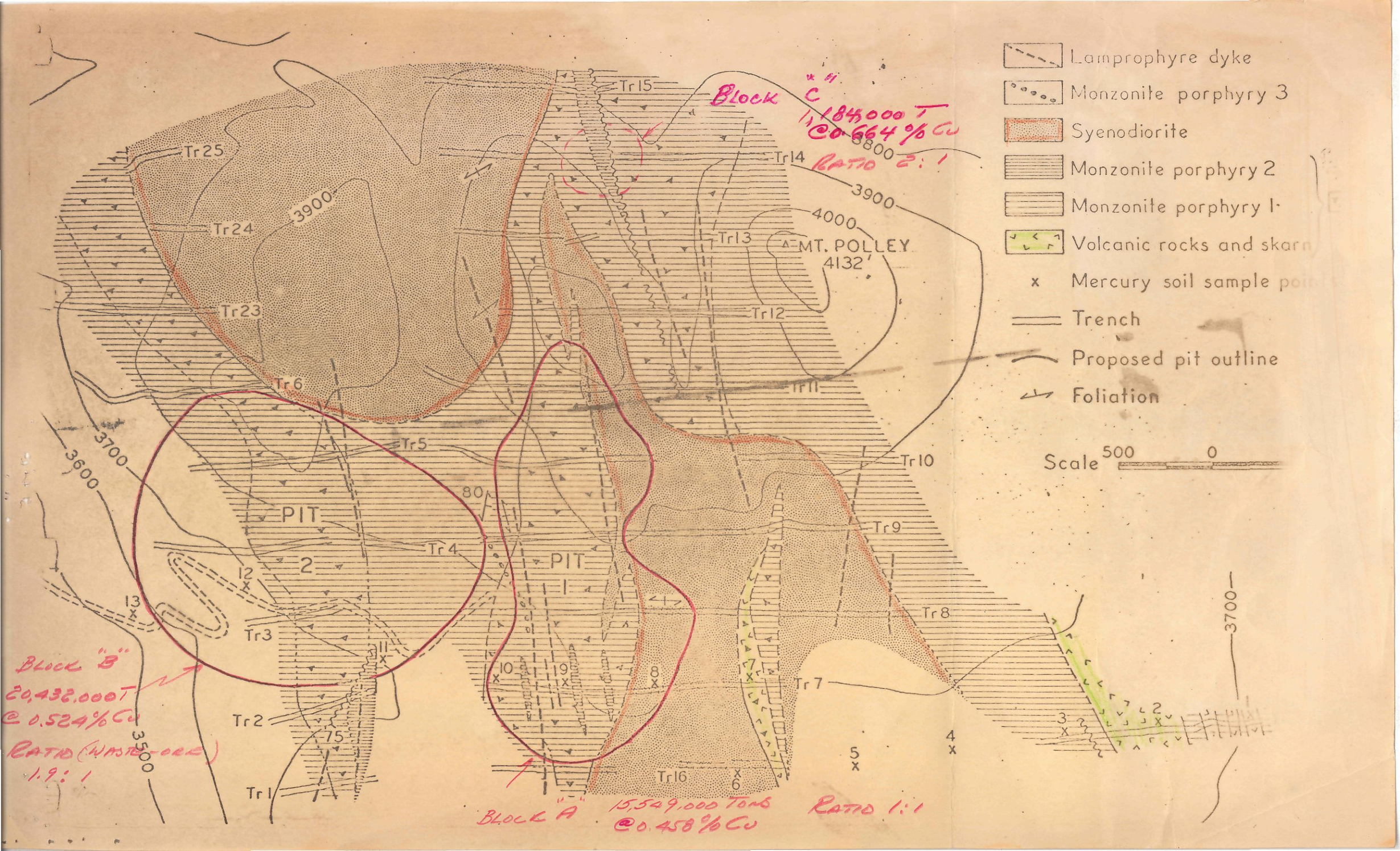
Title ANN. REP.

Author ASB

Date and Typist MAY 2-67 jm 1A)

→ Fig. 21

The writer collected samples for analysis by a lemaire SA1 Mercury Detector along a line from Trench 19 to Trench 16, then by Trench 7 to the access road and on down to Bootjack Lake. The profile is shown as Figure 21. A peak of 0.10 to 0.11 was recorded from a sample from the west end of Trench 16. (See Annual Report, ~~Reference: Minister of Mines, B.C., Ann. Rept.~~ 1965, pp. 140-141.)


Lamprophyre dyke
Monzonite porphyry 3
Syenodiorite
Monzonite porphyry 2
Monzonite porphyry 1
Volcanic rocks and skarn
Mercury soil sample
Trench
Proposed pit outline
Foliation
Scale 500 0
MT. POLLEY 4132'
PIT 1
PIT 2
Tr1
Tr2
Tr3
Tr4
Tr5
Tr6
Tr7
Tr8
Tr9
Tr10
Tr11
Tr12
Tr13
Tr14
Tr15
Tr16
Tr23
Tr24
Tr25
3900
4000
3800
3700
3600
3500
BLOCK "C" 1,184,000 T @ 0.664 % Cu RATIO 2:1
BLOCK "B" 20,432,000 T @ 0.524 % Cu RATIO (WASTE-ORE) 1.9:1
BLOCK "A" 15,549,000 TONS @ 0.458 % Cu RATIO 1:1