

PROVINCE OF BRITISH COLUMBIA

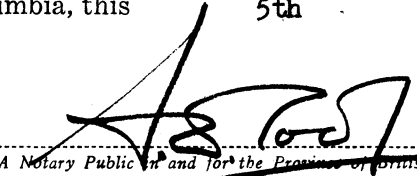
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TO ALL TO WHOM THESE PRESENTS MAY COME,
BE SEEN OR KNOWN:

I, **Arthur Donovan Pool** a Notary Public,
by Royal authority duly appointed, residing at the City of **Vancouver** in the
Province of British Columbia, do certify and attest that the paper writing hereto annexed, is a true
copy of a document produced to me by **W.H. Tolin** of **5710 Willingdon Place, Vancouver,**
British Columbia
purporting to be a **Report to the Granby Consolidated Mining, Smelting & Power Co. Ltd.**

made by **J. Austen Bancroft** and
dated the **14th** day of **September** A.D. 19 **25** . The said copy having
been compared by me with the said original document, an act whereof being requested I have
granted under Notarial form and seal of office to serve and avail as occasion may require.

DATED at **Vancouver** , British Columbia, this **5th** day of
September , A.D. 19**47** .


A Notary Public in and for the Province of British Columbia.

R E P O R T

To the

GRANBY CONSOLIDATED
MINING, SMELTING & POWER CO. LTD.

Name of property

OUTSIDER MINE

Maple Bay

Division Portland Canal

Owners

American Securities Corpn. Ltd.

Examined by

J. Austen Bancroft

Date Sept. 14, 1925

Anyox, B. C.
Sept. 14, 1925

THE OUTSIDER MINE

MAPLE BAY, B. C.

1. From January 1st, 1924, to the end of August, 1925, the Anyox smelter has been provided with 57,448 dry tons from the Outsider mine, carrying an average of 1.75% Cu; 72.2% SiO₂; 3.13% Al₂O₃; 10.9% Fe; 6.7% S; 2.39% CaO; 1.99% MgO.

Of the above total, 27,946 tons of 1.33% Cu. were shipped in 1924, while from January 1st, to August 31, 1925, there were shipped 29,502 tons of 2.14% Cu.

From September 1st, to September 13th, inclusive, the smelter has used 1,853 dry tons carrying about 1.81% Cu. At present there are 1,455 tons of undetermined grade in storage at Anyox and at least 7,000 tons are broken in the stopes. Hence, since Granby assumed control of this property, there has been mined a total of 67,756 tons.

2. Of the total of 57,448 dry tons smelted from January 1st, 1924, to August 31st, 1925, 20,982 tons or 36.4% were used by the smelter during five months (April 1st to August 31st, of this year) and 13,057 tons or 22.72% of the total production were used during June, July, and August of this year. There is no doubt that the good smelting record of the past five months has in a large measure been due to this rather free use of Outsider ore, which in addition to being a most excellent flux carries copper values.

In my opinion, the recent rate of consumption is depleting the "probable readily available reserves" too rapidly for the present

state of development of the property. It has been repeatedly emphasized by the writer that the Outsider vein is of a type which demands that in order to maintain steady and uniform production, development work must be carried on well in advance of mining operations that pertain to the shipping of ore.

3. Assuming a generous attitude toward the present state of development of the property, the probable readily available reserves may amount to 40,000 tons of 1.81% Cu and this includes the 7,000 tons of ore at present broken in the stopes. It also includes 3,000 tons of possible ore of 2.5%, in Block L (see Patton's map) which lies between the 1070 and 1178 levels, and demands a raise from the 1070 level, where the vein is less than two ft. in width, toward the 1178 level, where in this stretch, the vein is over five ft. in width; how far upward from the 1178 level, the vein will here continue to be narrow no one can tell. It also includes probable tonnage of 11,000 tons of 1.3% Cu in Block A and 6,000 tons of 1.2% Cu in Block B, both of which lie above and toward the portal of the 900 level, which in my opinion would not have had to be mined had development work been extended northward on upper levels where the vein carries at least twice as high ^{average} copper values. To the present, mining has ~~been~~ ^{been} quite naturally ^{been} practically restricted to the widest portions of the vein which below the 1070 level and in parts of the "glory hole" carry relatively low copper values. AST
AST

4. Owing to lack of adequate power for mining operations, very little of the development work recommended in my report of March 1st, 1924 (Granby's report No. 658) has been executed. Had it been possible to do this work and follow it up, a higher average grade of ore could have been shipped and there would not now be such

a pressing need for development to insure uniform tonnage production, that advice has to be given which pertains to probing for the vein with a diamond drill rather than working out its position by the accumulation of geological data. During the past fifteen months none of the levels have been extended a foot.

5. During the early part of 1924, the 900 level was extended for 165 feet, when the vein rather suddenly narrowed to a foot in width - sooner than expected in Item 1, page 26 of that report. Stopping operations between the 900 and 1070 levels have essentially established the conditions desired under Items 2, 3 and 4 of that report. Item 5, viz. "The straightening out of the sharp curve to the westward in the drift on the 1178 level between Mellen's survey stations 38 and 42 by drifting along the segment of the vein between dykes G and H" will very soon have to be done in order to facilitate the mining of the ore referred to in Item 6, which involves the best block of readily available ore in the workings today - probably a total of 6,700 tons (not allowing for pillars) of at least 2.1% Cu. Work has now progressed in stopes between the 900 and 1178 levels so that ore from this block will only have to be trammed for 240 to 350 ft. and dumped direct to the 900 level. Item 8 has been fulfilled in part but the 1295 tunnel has not been extended far enough to encounter dyke M - another dyke was passed through and mistaken for M. Dyke M must be a very few feet ahead of the present face.

6. I especially regret that the work outlined in Item 7 of my report of March, 1924 (No. 658) has not been done. Even if the vein had not been encountered by the oblique cross-cut to N 45° W, data valuable for deciphering the present situation would have been

obtained.

The upward advance of the stope on that stretch of the vein along the innermost portion of the 1070 level has been pleasing because of the grade of ore encountered (probably 3.5% average) but its approach to the 1178 level will not, I think, more than merely emphasize alternative interpretations of the geological conditions at the face of the 1178 level. Either the "roll" or ~~the~~ flattening ^{AS} of the schistosity has here caused the vein to practically pinch out or split up into stringers as was the case in the vicinity of the portal of the 1295 level (see report No. 658, page 23, item 3); or is there here a repetition of overlapping portions of the vein similar to that which has been encountered in several places during the progress of the development of this vein on the various levels.

7. Hence the following advice:

(a) From a point 45 ft. back from the present face of the 1070 level, extend the drift towards N 12° E for 85 ft. (see accompanying plan). If the vein is encountered, follow it, if not from the face, put in a horizontal drill hole A towards N 50° W - should not exceed 300 ft. and will possibly meet vein within less than half of this distance. If the vein is met in drill hole A, then put in a horizontal hole B due West for such distance as vein should be met with according to result obtained from hole A. If vein is not encountered in drill hole A, then put in a horizontal hole C due East, and vein should be met within 110 ft. If it has proved necessary to put in hole C, then drill hole D towards N 40° E for such distance as vein should be met according to results obtained from hole C. Turn drift and follow the vein.

(b) The flat dips ^{of} in the schistosity in the present face of ^{AS?}

this level are responsible for the pinching down of the vein, but this flat or roll should not persist for a great distance ahead; if it does, the condition is different from anything yet encountered in the development of this property.

Extend face of the 1178 level for 60 ft. following if at all possible, the small stringer of ore in the present face - it may be that it will increase in size and especially if it does so and is turning gradually to the left, northward to northwestward, continue to follow it. If it proves impossible to follow this stringer and if vein does not show tendency to swing to left as one proceeds, then general direction to be assumed by drift should be N 10° to 15° E, for 60 ft. from present face; then turn drift to an oblique X-cut towards N 60° W with the hope of meeting the vein within 50 ft. further. If vein is not encountered, watch for the steepening up of the schistosity of the greenstone or the bedding of the argillites whichever may be encountered. I hope that even if the vein is not encountered within 50 ft. in this oblique X-cut, the dips will have steepened to 40° or more; if they have not done so, the X-cut will have to be extended further. If vein has not been met in X-cut and dips have steepened as above, extend (a) a drill hole "E" towards N 70° W until the vein is encountered or for not more than 120 ft. If vein is not met in the hole E, put in an upper hole towards the west and at right angles to the dip of the schistosity or bedding until vein is penetrated. Drifting should then be extended in accord with determined position of the vein. I sincerely hope that the work will not be interfered with by dyke M, which is so irregular that its strike and dip cannot be prognosticated and its presence might permit a drill hole to pass through a place where the dyke masked the vein.

I regret that the urgency of the situation makes the above diamond drilling advisable, as the Outsider is a type of vein which may yield results of doubtful value from the drill. There are places both along the dip and the strike where the vein pinches out and other places where overlapping portions of the vein have a gap between them. In such places the drill could pass through without meeting the vein.

8. While the diamond drill is on the property it would be well to put in a few short holes in addition to those mentioned:
- (a) on the 1070 level, in small X-cut to the westward on coordinate 12100 N of plan in mine office, put in a 60° upper hole towards the east for 50 ft. more or less with hope of penetrating upward extension of the vein as shown on the X-cut nearly opposite to the eastward.
 - (b) In face of small X-cut on eastern wall of 1070 drift (approx. coordinate 11870 N) - put in a horizontal hole due E, for not more than 35 ft. to see if vein stringers in longer X-cut to east in the vicinity of coordinate 12000 N extend back this far.
 - (c) On western wall of 1070 level in small niche at coordinate 11940 N put in a test hole for 20 ft. to determine character of rock.

9. It is impracticable to state definitely just how much drifting along the vein should be done as development work in a given year. This will depend much on the width of the vein which varies much. In my opinion, however, during the coming year upwards of 1,000 ft. should be done on the 1070 and 1178 levels - to be apportioned to each level, according to the results of the work outlined above.

Northward from the portal of the 1455 level, for at least 350 ft., work done in open cuts at the surface show the vein in this stretch to have an average width of $4\frac{1}{2}$ ft. and carrying about 3.5% copper. It is to be hoped that the lower levels will in this stretch, find the vein at depth as regular as it is at the surface, if such proves to be the case, relatively little development work will have to be done to yield the required tonnage, as the 1070 level for example would have 400 to 700 ft. vertically of "back" to surface with vein dipping about 45° to 50° average.

CALCULATION RE VOLUME vs WEIGHT OF OUTSIDER ORE.

There has been some discussion concerning this topic. The vein is essentially composed of quartz, pyrrhotite, and chalcopyrite. Any wall-rock that becomes mixed with the ore in the course of mining operations is heavier than the mineral quartz.

Hence, the following is a conservative calculation:

Chalcopyrite contains:	Cu	34.5 %
	Fe	30.5 %
	S	35.0 %

Pyrrhotite (Fe_7S_8) contains	Fe	60.4%
	S	39.6%

Average analysis Outsider ore to date involves:

1.75% Cu; 10.9% Fe; and 6.7% S.

$1.75/34.50$ or $7/138$ or 5.07% of the vein matter is chalcopyrite which will take up 1.57% Fe and 1.77% S.

There will remain:	10.9 - 1.57	=	9.33% Fe
	6.7 - 1.77	=	4.93% S

For pyrrhotite (Fe_7S_8) 4.93% S required 7.5% Fe.

This is equivalent to $7.5/60.4$ or 12.41% of pyrrhotite in the vein.

The balance of $9.33 - 7.5 = 1.8\%$ Fe is present as silicates and

disseminated dusty particles of magnetite in the wall rock and dyke fragments that come in the ore.

Therefore, on basis of shipments to August 31st, 1925, the vein is composed of:

82.52 %	Quartz
12.41 %	Pyrrhotite
5.07 %	Chalcopyrite

Vein quartz of this character has specific gravity of 2.60

Chalcopyrite " " " " 4.2

Pyrrhotite " " " " 4.6

5.07 %	of the vein has specific gravity of	4.2
12.41 %	" " " " " "	4.6
82.52 %	" " " " " "	2.6

Hence, vein matter has specific gravity of 2.95

Weight of 1 cubic foot of water = 62.5 lbs.

Weight of 1 cubic foot of Outsider ore (62.5 x 2.95) = 184.37 lbs.

Number of cu. ft. per ton previous to mining
 $2,000 / 184.37 = 10.85$ cu. ft.

Therefore, for practical purposes, one is thus safe in calculating 11 cu. ft. of the Outsider vein to the ton.

Broken ore of this character represents increase in volume of 30% to 40%.

On basis of 40% - broken Outsider ore in stopes will run 15.19 cu. ft. per ton.

Hence, it is very conservative to regard this figure as 16 cu. ft. per ton.

SILICA PERCENTAGE vs COPPER CONTENT OF OUTSIDER ORE.

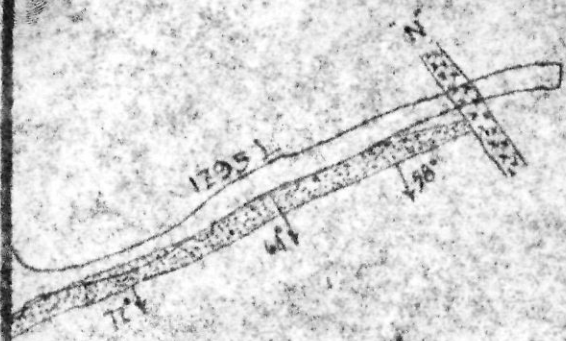
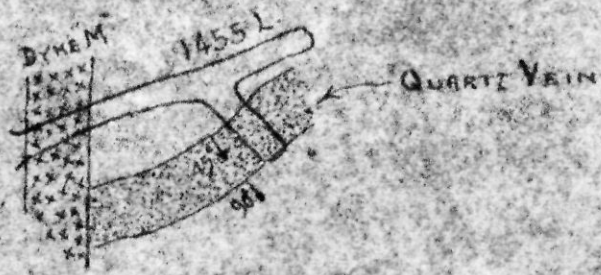
It may be of interest to note that based on analyses of shipments for the first six months of this year, while in general,

as the copper content increases there is a decrease of a few per cent in the percentage of SiO₂ present, there are numerous outstanding exceptions to any such general rule. This is due to the fact that the amount of pyrrhotite in the vein is even more variable than the chalcopyrite. Whereas shipments carrying 1.5 to 1.9% Cu varied from 73.3% to 75.5% SiO₂, those with:

<u>% Cu</u>		<u>% SiO₂</u>					
1.9 - 2.0	varied from	71.3 to 73	%	and averaged	71.9%	SiO ₂	
2.0 - 2.1	" "	68.4 - 73.4%	" "	" "	70.8%	"	"
2.1 - 2.2	" "	67.7 - 70.9%	" "	" "	69.7%	"	"
2.2 - 2.3	" "	64.6 - 71.1%	" "	" "	69.3%	"	"
2.3 - 2.4	" "	67.4 - 70.0%	" "	" "	69.3%	"	"
2.4 - 2.5	" "	65.0 - 70.2%	" "	" "	67.1%	"	"

Respectfully submitted,

J. Austen Bancroft



SCALE 1" = 40'

GRANBY CONSOLIDATED MINING, SMELTING & POWER CO., LTD.

LOCATION MAPLE BAY

MADE BY

APPROVED

TITLE PROPOSED DEVELOPMENT - OUTSIDER

DATE Sept. 19, 1925

NO.