William C. Martin

Rec'd from Jack Gauthier on Sept 28/73.

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Bralorne

ORE POTENTIALITIES

BRALORNE - PIONEER MINES LIMITED

(Nov. 5, 1960)

SUMMARY AND CONCLUSIONS

1. POTENTIAL OF LOW GRADE MATERIAL AVAILABLE IN THE OLD WORKINGS

It is estimated that there in a tonnage potential of approximately 2,000,000 tons of 0.25 oz. gold material lying in the extensions of producing veins and in narrow veins on which little development or stoping has been done in the workings of both Bralorne and Pioneer. If 0.30 oz. material were desired, the above tonnage would have to be cut to a few hundred thousand tons.

The above estimate was reached after studying the assay plans. These show that ore shoots do not generally grade into waste but the values tend to drop off rapidly to barren material often with surprisingly little gold. Lenses of low grade do occur however in places. There is very little material beyond the stoped out sections which would average .30 oz. but there are substantial lengths averaging 0.25 oz. and these total up to about half the stoped length. The average width of the .25 oz. material is about half that of the stoped out section, hence the total tonnage of 0.25 oz. material would amount to about a quarter of the tonnage mined out to date of 6,000,000 tons from both mines.

+ 7.5 - 8 million tons up to 1971.

Narrow veins 2 feet wide or less have not been developed extensively on the Bralorne as generally the grade falls off in narrow veins and costs go up. The same is true at the Pioneer but here the veins are generally narrower and smaller widths of ore were stoped. Narrow veins were more plentiful on the upper parts of the Bralorne. It would be difficult to estimate the tonnage

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which might be developed of .25 oz. ore in narrow veins but it could be substantial if extensive exploration were carried out. It is assumed that narrow veins might total half the length of producing veins and yield about one-third the tonnage per vertical foot in the upper half of the mines, or about 500,000 tons of 0.25 oz. ore.

2. ORE POTENTIAL OF UNDEVELOPED SECTIONS OF THE BRALORNE-PIONEER PROPERTIES

It is estimated that the virtually unexplored blocks of ground lying on either side of the Bralorne Mine and between the Pioneer Mine and the Pacific Eastern Boundary have an ore potential of 3,700,000 tons in round figures. The grade of this ore should average .70 oz. per ton, that is near the overall average of ore taken from both mines.

The production from Bralorne Mine has come from a length of 3500 feet along the gold bearing structure. Between the Bralorne Mine and the King Mine there is a virtually unexplored length of 3000 feet, which will be referred to as the King - Bralorne Block. Between the Bralorne and Pioneer Mines there is a length of 3000 feet approximately, which is under exploration and encouragement is being met with in finding ore at least in the deeper part. The upper part has had little exploration. This block will be referred to as the Bralorne - Pioneer Boundary Block. South of the Pioneer there is a length of 3500 feet to the Pacific Eastern Boundary, which is virtually unexplored. This will be referred to as the Pioneer Pacific Block. The tonnage potential given above of the unexplored blocks is estimated on the basis of what has been produced on either side or on one side as follows:

a) King-Bralorne Block

The Bralorne Mine has produced about 3,500,000 tons and the King Mine has produced about 400,000 tons. It is estimated that the King-Bralorne Block, therefore, might yield 1,500,000 tons.

b) Bralorne-Pioneer Boundary Block

The Bralorne has produced 3,500,000 tons and the Pioneer about 2,300,000 tons. It seems reasonable to expect that the Boundary Block, which is not quite as long as either the Bralorne or Pioneer, will produce 1,500,000 to 2,000,000 tons, say 1,700,000 tons.

c) Pioneer-Pacific Block

This block is about 3500 feet long, equal in length to about the productive section of the Pioneer Mine, which produced 2,300,000 tons. I am sceptical that the Pioneer Mine will plunge east so that the Pacific Eastern Block would get all the Pioneer ore. I suspect that the ore zone at Pioneer plunges east at around 60° but that the ore structure weakens and that the tonnage and ore grade will fall off on its plunge to the southeast. It is too earlyto be certain, but results to date in the southeast part of the Pioneer have so far been disappointing. I doubt that any of the Pioneer ore will extend as far as the Pacific Eastern Boundary. The Pacific Eastern property, however, has a prospecting potential. There is a possibility that a new centre of mineralization might be found on this property but that it will probably be a independent ore centre, separated from the Pioneer ore structure by what might be a considerable length of barren or near-barren ground.

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3. ORE POTENTIAL BELOW THE PRESENT BRALORNE-PIONEER WORKINGS

The ore potentialities do not look promising at Bralorne below the 35th level. The indications are that the grade will fall off below this and the ore will become marginal in grade below the 38th level. The 77 vein at Bralorne is being followed to depth from the 35th level to the 39th. The ore here is 1000 to 1200 feet long and is plunging northwest at about 65°.

wrong

The 77 vein appears to be the big vein of the Bralorne and the heart of the mine. The ore shoot being followed to depth is like a deep root or feeder for this big vein, its branches, and the other veins nearby. The branch veins increase in number in the upper workings and near surface. This upward branching of vein structure strongly suggests the bottoming of the mine, and that only roots will be found much below the 26th level.

good point (wrong)

Probably the Bralorne-Pioneer ore structure is best visualized as a mushroom with the cap tilted so that the high end is at the King Mine and the low end at the Pioneer Mine and the stem and the root of the mushroom lies in the southeast part of the Bralorne property.

4. SUMMARY OF ORE POTENTIAL AND ORE RESERVES BRALORNE AND PIONEER SECTIONS

	Tons	Gold Oz.
Estimated ore potential of unexplored blocks:	3,700,000	.70
Estimated ore potential of sub-marginal grade ore in productive veins and narrow undeveloped veins which would be available if the price of gold is increased :	2,000,000	.25
Estimated low grade potential in unexplored blocks :	1,000,000	.25
Published ore reserves in the Bralorne and Pioneer Mines, December, 1959 :	650,000	.85

5. IMPORTANT ASPECTS OF THE GEOLOGICAL STRUCTURE - ORE CONTROL

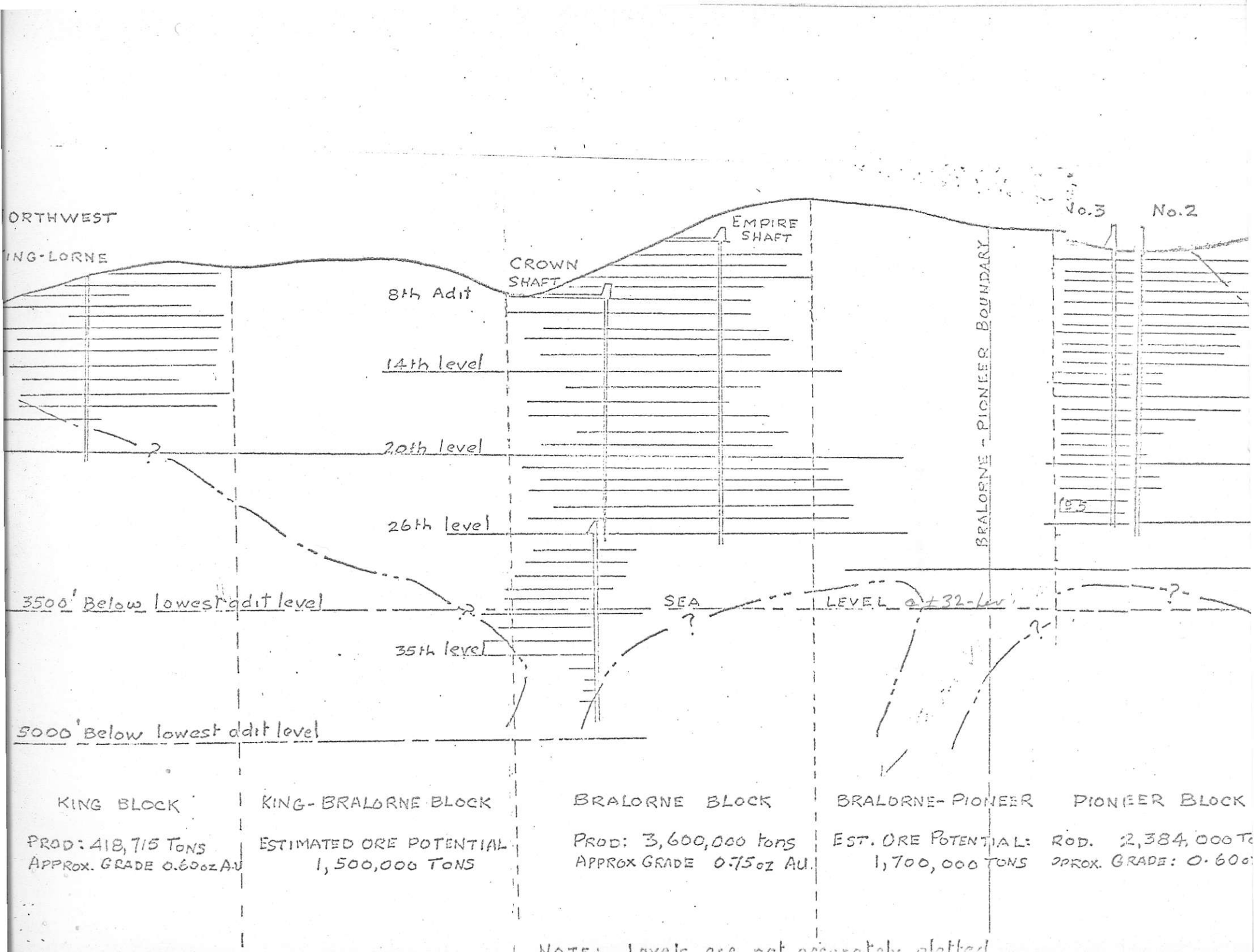
It is a striking and highly important feature of the Bralorne-Pioneer ore structure that all the ore within the veins on the two properties lies within 1000 feet of the Serpentine fault, although the veins persist to the Argillite fault and some veins have a length of 3500 feet or more, such as 51 vein and 77 vein on Bralorne and the main vein on Pioneer. The veins in some cases contained exceptionally high grade ore close to the Serpentine fault. This fault has an average dip of 75° southwest but locally may have very flat rolls. The Serpentine fault would seem to have been the main channel along which ore solutions rose to work out along the veins a limited distance from this fault. The indications point to the solutions being more concentrated in the southeast part of the Bralorne property as though the source area lay below this section. It is possible that the soda-granite may have had its source in this area but this is conjectural. In any case from an exploration point of view it would seem that the deposits are unlikely to be continuous along the Serpentine fault but rather they will be related to source areas perhaps occurring intermittently along the Serpentine fault.

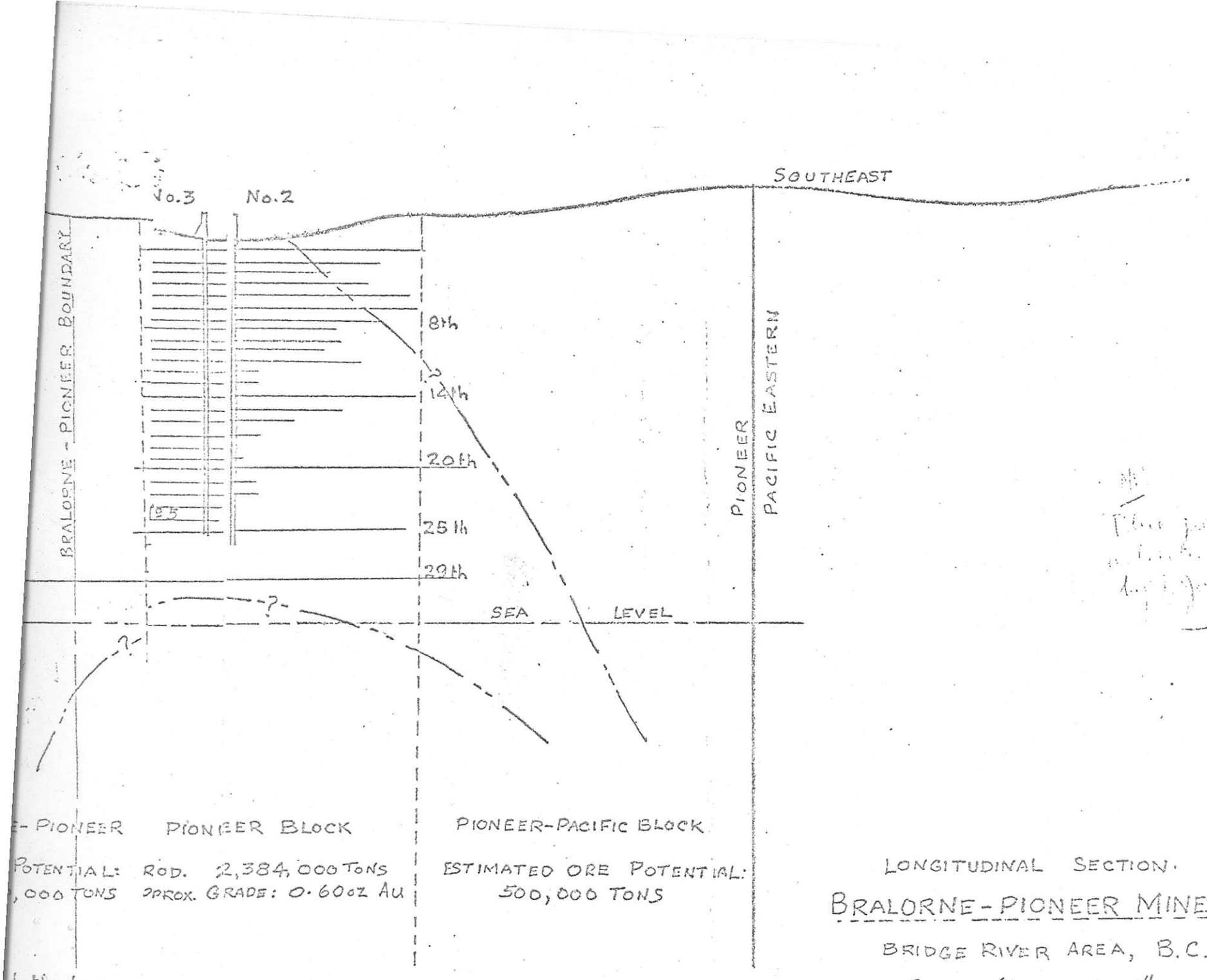
prob source of soda granite + sodic ore-bearing solns

Much geological work and diamond drilling will probably be required to locate other source areas along the extension of the Bralorne-Pioneer Serpentine fault. Exploration, in my opinion, should be confined to this fault vicinity, particularly where acid intrusives or soda-granite is apparent.

6. INCREASING ROCK TEMPERATURE WITH DEPTH A SERIOUS PROBLEM

The temperature on the 35th level is 100° F. Working conditions are most uncomfortable on this level and will become increasingly so below this level. It was apparently necessary after stope preparation to leave the 35th level workings


ORTHWEST
ING-LORNE
CROWN SHAFT
EMPIRE SHAFT
No.3
No.2
8th Adit
14th level
20th level
26th level
BRALORNE - PIONEER BOUNDARY
3500' Below lowest adit level
SEA LEVEL at +32-Lev
35th level
5000' Below lowest adit level
KING BLOCK
PROD: 418,715 TONS
APPROX. GRADE 0.60oz Au
KING-BRALORNE BLOCK
ESTIMATED ORE POTENTIAL
1,500,000 TONS
BRALORNE BLOCK
PROD: 3,600,000 tons
APPROX GRADE 0.75oz Au.
BRALORNE-PIONEER
EST. ORE POTENTIAL:
1,700,000 TONS
PIONEER BLOCK
PROD. 2,384,000 To
APPROX. GRADE: 0.60o
NOTE: Levels are not accurately plotted



LONGITUDINAL SECTION.

BRALORNE-PIONEER MINES LTD.

BRIDGE RIVER AREA, B.C.

SCALE (APPROX): 1" = 1100'

W.C.M.

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open for nearly a year before proceeding with stoping, due to the heat. The thermal gradient in the mine vicinity is said to be 1° F. per 75 feet of vertical depth. This is a steep gradient and will result in increased cost for ventilation if any mining is carried on on any considerable scale below the 32nd level which is approximately 3300 feet below the lowest adit level. The 35th level, where working temperature is 100° F., lies approximately 4000 feet below the lowest adit level. There are no big stopes available in the near surface workings where ice could be made and used for ventilating the mine at depth. It would be necessary to either purchase expensive refrigeration equipment or make a large opening using the waste for backfill. In any case, deep mining ventilation would probably add another $1.00 a ton to costs on the basis of a production rate of 150,000 to 200,000 tons a year.

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November 5, 1960