

BACON & CROWHURST LTD.
CONSULTING ENGINEERS

861745

M E M O

April 25th, 1973.

To: J.B. Redpath ✓
W. Bruce

From: W.R. Bacon

(to accompany W.R. Bacon
letter to J.B. Redpath
of April 25, 1973)

Re: BRALORNE-PIONEER

1. By any standards, the Bralorne-Pioneer has been one of Canada's major gold-producing sources, yielding 8 million tons of 0.5 oz. ore. ✓

2. The controlling structure, or environment, has been productive over a vertical range of 6500 feet, giving the lie to the old belief that only PreCambrian gold mines can be "trusted" to go to depth. ✓

Exploration at the lowermost levels has not indicated any change in geological environment, i.e. any reason to anticipate a "bottoming" of the ore bearing quartz vein, either structurally or mineralogically.

3. Externally, the potential environment is defined by certain definite geological features. In length, the environment extends a distance of 3 miles, from the King to the Pioneer, i.e. the distance in which soda granite, a distinct intrusive rock type, occurs in Mesozoic sediments and volcanics. ✓

Transversely, the potential environment is 1200-2100 feet wide at the surface. It is marked on the northeast by the presence of the Fergusson sediments and on the southwest by the presence of a serpentine belt. These formational contacts are also fault planes, i.e. the Fergusson Thrust and the Cadwallader Fault Zone.

Whatever other geological features maintain significance to the lowermost levels explored, it is certainly noteworthy that the potential environment expands transversely with depth, i.e. the Fergusson Thrust dips northeastward whereas the Cadwallader Fault dips southwestward.

Internally, the soda granite imposes restrictions on the size and shape of the ore environment by virtue of the fact that it is not a host rock. The vein structures "make" in the diorite (Bralorne) and the greenstone (Pioneer). Although they are not productive in the soda granite, proximity to this rock type is significant. Likewise proximity to the serpentine has always carried a lot of weight with the operators.

4. Except in depth, the geological facts outlined in (3), clearly define the potential environment, so much so that any new search for ore is essentially "geometric".

Minor faulting does offset vein structures but it is significant that only one fault in the Bralorne has merited a name - the Empire fault. A similar fault, the No. 1, occurs in the King workings. Both are right hand faults.

5. In the ore-making environment there are more than two dozen veins or vein branches that warranted naming. The most noteworthy are as follows:

- | | | |
|----|-------|----------|
| 1. | 77-53 | Bralorne |
| 2. | 51-55 | " |
| 3. | Main | Pioneer |
| 4. | 27 | " |
| 5. | King | King |
| 6. | Shaft | " |

6. The vein structures dip north and northeasterly and rake northwestward. On average, the productive portions are 3 to 5 feet wide and about 220 feet long - with a grade of 0.5 oz. Au per ton.

The better veins, of course, were wider, had longer ore shoots and, particularly, a greater vertical range. Thus, the "51" vein extended from surface to the Bralorne 20th level, a vertical distance of 2700 feet. The "77" vein was traced from the 20th level up to the 14th and mined down to the bottom of the Bralorne, a vertical distance of 4600 feet. On the bottom level, No. 45, the "77" vein has been exposed over a length of 500 feet in which it averages approximately 1 oz. Au per ton across 5 feet.

* As far as I am aware from a perusal of the maps, the vein structures do not stop abruptly but may fray beyond productive portions. The non-commercial portions generally, but not always, contained much less quartz. *

7. Exploration Possibilities

(a) Shallow

Under (4) above, it has been intimated that any search for new ore will be largely "geometric". This is particularly true in the shallower, more extensively explored sections between the 3 deposits.

Largely because of access, the proposed shallow program (D.D. Campbell, Feb. 1, 1973) is intended for the Bralorne 800 level. Twelve flat holes are recommended as an absolute minimum to investigate this horizon and the success of the program will involve finding a new vein. The possibility of finding a major ore shoot in a known vein structure is not considered good. Joubin probably tested the best possibility here when he extended the Bralorne 451 drift southward to Pioneer ground with largely negative results. (The "51" was certainly the best of the veins that outcropped, producing more than 1 million tons to the 20th level.)

Campbell has chosen the obvious areas to explore on the 800 level but, in my opinion, the chances "of intersecting (new) ore-type quartz veins that will warrant follow-up drilling" are much less than his suggested 50 per cent. Most of the known veins were discovered and named in the upper levels and, statistically, the possibility that the proposed, shallow program will lead to a brand new productive vein is just not good.

On a more positive note, the shallow program does have some merit provided that the initiation of a much more extensive, deeper program does not hinge entirely on the success or failure of the shallow program. It is only a deeper program, below the Bralorne 20 level, that has sufficient potential to have any real bearing on the future of the property.

(b) Deep

The King has been explored to the 14th level with good ore occurring on the 9th level and short lengths on the 10th and 11th. No ore was found on the 12th and 14th levels and from there, no further work was done until the Taylor Bridge River XC which was a northward extension of the 20th level from the Bralorne. This working rather thoroughly explored the King ground at this elevation (2500 feet below the surface outcrop) but the ground below is totally unexplored. ✓

The Pioneer was explored over a vertical range of 3700 feet. It was unusually well drilled (compared to Bralorne) and a great deal of attention was paid to geology. Beyond this, it is difficult to make positive statements, particularly with respect to the potential for finding ore, as many level plans, etc., were not available for examination. ✓

The Bralorne has the best potential for deep ore as the known ore persists in the lowest working - 2000 feet below sea level.

The possibilities for new ore are mainly in the "77-53" vein and to a much lesser extent in the "51". The latter should be thoroughly explored eastward between the 15 and 26 levels because this vein, though a good one, tends to be frayed here and there, and more lensy than the "77". A great tonnage, however, is not expected from this source - it could be a plus factor. ✓

Below the 26 level is "77" or "77-53" country. (The "53" is considered to be the faulted offset of the "77", beyond the Empire fault). With the exception of the 32 level westward and the Pioneer XC eastward on the 38 level, there has been insufficient exploration west and east of the known ore in the main "77" structure. As at least one very productive branch ("79") is known, as well as a more modest hangingwall structure ("93"), the ground on the immediate footwall and hangingwall of the main structure should be closely drilled. ✓

It is therefore my contention that a good possibility for finding substantial quantities of new ore is in the "77" vein structure itself, below the 26 level. Furthermore, both the hangingwall and footwall of this productive structure warrant a pattern of long holes (where these have not already been drilled) in a search for the new "77". ✓

CONCLUSION

Certain numbers such as the eventual price of gold and the total of federal-provincial taxes are unknown at the moment. If one supposes, however, that 1,000,000 tons of 0.5 oz. Au ore can be found over 4 ft.+ mining widths (which I consider a reasonable expectation), and that a price of \$90+ per ounce obtains throughout the life of a new operation, surely a profitable venture would result.

In any event, there is no gold prospect or dormant gold operation in B.C. and Yukon that is presently in the same promising category as the Bralorne-Pioneer.



W.R. Bacon

