

673001

May 28th, 1970.

Mr. D.M. Tully, President,  
Empire Mercury Corporation Ltd.,  
202 - 569 Howe St.,  
Vancouver, 1, B.C.

Dear Mr. Tully:

Pursuant to your request, an approximate preliminary analysis concerning the economic possibilities of your Bridge River mercury property has been prepared and is presented herewith.

In our opinion, sufficient justification has been obtained to warrant continuing the exploration work with the objective of proving up ultimately between 500,000 tons and 1,000,000 tons of ore containing from 2.5 to 4.5 lbs. of mercury per ton in the form of cinnabar.

The deposits as now known are tabular and steep dipping with an average width of from 20 to 30 feet. The structure and the general geology is sufficiently favourable to suggest that good continuity in the ore zones can be expected and that reasonable mining costs will therefore result.

No metallurgical work has been completed but visual inspection suggests that little or no difficulty will be experienced in producing a flotation concentrate assaying approximately 10% mercury, which can then be retorted resulting in a final liquid mercury product

containing inconsequential impurities. The possibilities of shipping flotation concentrates vs. retorting at the mine should be studied.

The width and nature of the mineralized zones and the wall rocks suggest shrinkage stoping (and/or cut & fill) for a suitable mining method, with a reasonable amount of dilution resulting therefrom. Trackless equipment using a ramp-decline system is suggested.

Hydro electric power, available about 18 to 19 miles away, is contemplated, but the alternate possibilities of diesel electric power generated at the mine with accompanying lower initial capital cost and higher operating cost should be studied.

(1) Ore Potential

Insufficient exploration work has been completed to date to permit the calculation of a proper ore reserve estimate at this time, but it will be noted from the Bacon & Crowhurst Ltd. report dated November 21st, 1969, in relation to the Main zone, that "drilling results confirm that a grade of approximately 3 lbs. of mercury per ton across 25-30 feet can be expected in this zone."

Using these preliminary figures and recognizing that underground drifting and cross-cutting together with diamond drilling has shown the zone to be quite consistent in dimensions and mercury content, it is reasonable to assume that a total of 101,625 tons exists above the 4000 level together with 205,000 tons below the 4000 level down to the 3800 elevation. The total indicated to date for this zone is therefore 306,625 tons averaging 3.0 lbs. of mercury per ton above the lowest possible adit level.

A second parallel zone, also apparently 20 feet in width and with similar mercury content, has been located by recent diamond drilling. It should be noted that this is in addition to several other mineralized zones previously discovered on the property, which have good potential but have not to date received adequate exploration attention.

(2) Rate of Production

It is assumed that 500 tons of ore per day will be milled for 350 days/year, or 175,000 tons per year.

(3) Marketing

The approximate current price quoted in Metals Week for mercury is assumed, with no deductions for impurities, to be paid f.o.b. mine.

(4) Wage Scale

Current labour wage scales are used with no allowance for escalation. It is assumed that improvements in mining technology and metal price increases will offset increased labour costs.

(5) Operating Costs

	<u>Per Ton of Ore Milled</u>
Mining	\$7.50
Milling	1.70
Power	0.70
Mine administration, incl. plant services	1.85
Vancouver head office	<u>0.30</u>
	\$12.05

(6) Capital Costs - 175,000 tons of ore milled/year or 14,583 tons/month.

1. Mine

(a) Equipment - including installation - \$450,000  
Sales tax & freight 3,000  
\$480,000

(b) Preproduction development & stoping 1,060,000

\$1,540,000

2. Crushing plant & concentrator 850,000

3. Plant service & administration buildings & equipment 300,000

4. Water supply, fire protection & tailings disposal 50,000

5. Power transmission & distribution 300,000

6. Camp buildings & housing 250,000

7. Preproduction plant services & administration 160,000

8. Head office expenses (9 months preproduction period) 36,000

\$3,486,000

Contingencies @ 10% 349,000

\$3,835,000

Inventory of supplies 70,000

\$3,905,000

Working capital - 2 months operating costs  
(i.e. 2 x 14,583 x \$12.05) 351,000

Total \$4,256,000

Note - The use of good, second-hand, tested and inspected equipment is visualized where applicable.

(7) Revenue & Operating Profit (175,000 tons of ore treated per year)

Average grade of ore - # Hg/ton in place	3.00	3.50	4.00	4.50
Grade of ore milled (10% mining dilution)	2.70	3.15	3.60	4.05
Recovered lbs. of Hg/ton of ore @ 85%	2.30	2.68	3.06	3.44
Revenue - \$Can./ton of ore @ \$475 U.S./flask of 76# @ 7.75% exchange = \$6.72/lb. of Hg	\$15.46	18.01	20.56	23.12
Operating cost per ton of ore	<u>12.05</u>	<u>12.05</u>	<u>12.05</u>	<u>12.05</u>
Operating profit per ton of ore	3.41	5.96	8.51	11.07
Operating profit per year	<u>\$596,750</u>	<u>\$1,043,000</u>	<u>\$1,489,250</u>	<u>\$1,937,250</u>

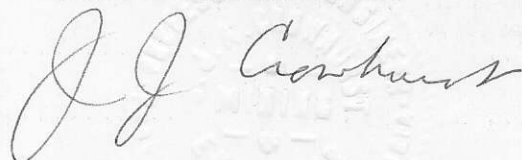
It should be noted that no allowance has been made for preproduction exploration, financing charges, depreciation or depletion, government income or mining taxes.

It is to be stressed that this economic analysis is preliminary in nature only, without proper detailed investigation. It is evident however that this study does outline the target ahead, and shows that the property is attractive.

It is our firm recommendation therefore that further funds be allocated toward continuing exploration.

Respectfully submitted,

BACON & CROWHURST LTD.



J.J. Crowhurst, P.Eng.



Mr. D. Jolly  
President  
Empire Mercury Corp. Ltd.

Dear Mr. Jolly <sup>we have conducted</sup>  
At your request, a brief analysis ~~of~~  
concerning the economic possibilities of  
the Manitowish property of Empire Mercury ~~to~~  
~~be conducted~~; the purpose being to consider  
the economics of attempting to prove sufficient  
ore to justify a small mill <sup>of 100-150 tons per day</sup> and the production  
costs involved in setting up & operating the milling  
plant.

In the Nov 21/69 report by W.R. Bacon <sup>Per.</sup> & R.W.  
Phendler P. Eng., they report that there is an indicated  
zone 20-30' wide grading 2.5-3.0 pounds/mercury per  
ton. Using the width of 20' and dimensions as  
indicated in the longitudinal section, the following  
estimated tonnage may be available for mining.

Above the 4000 level:

Block ①  $\frac{1}{2} \times 450 \times 215 = 48375$  sq ft

Block ②  $\frac{1}{2} \times 210 \times 120 = 12600$  sq ft

60,975  $\times 20'$  width  $\div 12 = \underline{101,625}$  Tons

## Tonnage Estimate

In calculating tonnages on this property, an estimated width of 20' has been used to define the "Main zone" mineralized structure. This zone was described in a Nov 20, 1969 report by Dr. W.R. Bacon P.Eng. & R.W. Penderley P.Eng. as having an indicated width of 20-30', & an indicated grade of 2.5 to 3.0 pounds mercury per ton. An average grade of 2.75

lb/ton has ~~also~~ been assumed, and all milling & mining costs have been calculated using this anticipated grade. From the longitudinal section, the following tonnage estimate has been calculated:

Blocks ①  $\frac{1}{2} \times 450 \times 215 = 48,375$

②  $\frac{1}{2} \times 210 \times 120 = 12,600$

$60,975 \times 20 \div 12 = \underline{101,625}$  tons above 4000 Level.

Blocks ③  $470 \times 200 = 94,000$

④  $\frac{1}{2} \times 290 \times 200 = 29,000$

$123,000 \times 20 \div 12 = \underline{205,000}$  tons below 4000 level to 3800 elevation.

Total Main Zone

306,625 tons to 3800 elevation

A second <sup>20'</sup> wide mineralized zone paralleling the Main zone & lying 100' to the east - was located in diamond drilling during 1969, in addition to 4 mineralized zones ~~in the area~~ located <sup>on surface</sup> elsewhere on the property. This potential has definite merit in