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To	W. M. Sirola	From	P. M. Kayan	agh
Subject	Holberg Mines Limited Copper Holberg Inlet, Vancouver Isla		(1) Data	F-1 06161
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Duncan Crone, who for several years after graduating from university worked mainly with the I.P. method in the southwestern U.S.A. under Dr. Brant, a developer of the method, yesterday reviewed the data which you submitted on this subject, and he reported his impressions to me verbally.

His overall impression is that the I.P. results are not very exciting to say the least. Many of the anomalies are noticeable on the 50 foot spread but barely evident on the 200 foot spread. Many of the anomalies are associated with low resistivity suggesting overburden effects or undue effect of the Metal Factor they used. He considers that when the effect of the Metal Factor is depressed many of the anomalies disappear.

Although I have in mind the favorable aspect of the bornite mineralization which you have mentioned, I consider that that aspect is more than off-set by the probably very difficult deal negotiations which would be involved. I feel that we should not pursue this situation further and wish that you would advise Holberg's principals accordingly. Attached are the data which you submitted. We have made a copy of Chaplin's memorandum.

mt.

Paul M. Kavanagh Chief Geologist - Exploration

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	D M	KAVANAGH	From W.M. SIROLA
To	Telle	IVW A WINT CALL	Hrom Wells Dilloth

Subject HOLBERG MINES LTD. - HOLBERG INLET, VANCOUVER ISLAND Date February 21st, 1964.

B.C. (92-L-12)

Under seperate cover I am forwarding the following material:

- (1) McPhar I.P. Survey dated April 4th, 1963.
- (2) Chapman, Wood & Griswold's Report dated May 14th, 1963.
- (3) Holberg Mines Brochure.
- (4) Noranda Explorations' Assay Plan and Report by M. Menzies.

C.K.W.

G.P.R.

1.1.B.

(5) Memo written by R. Chaplin, February 12th, 1964.

You will find all the pertinent information regarding location, nature of mineralization, previous work, etc., in the above reports. I wish to add only that I consider the known mineralization to be economically unimportant. The fracture patterns, which localize the pods and stringers of bornite, appear to be too discontinuous to result in mineralized zones of any size either along strike or down dip.

The McPhar report states that only metallic conductors are picked up by their equipment. They, therefore, have interpreted the anomalies as being metallics, of one sort or another, in a fault zone. Presumably, this interpretation results from the fact that, in places at least, the anomalies are on or close to the hanging wall of the known fault, and tend to have northerly dips. Since most of the I.P. work was done on 200 ft. spreads, it is not possible (for me at least) to suggest what the actual width of the mineralized? zone might be. It would be necessary to reduce the spread in order to pin down the width more accurately.

If the mineralization were all chalcopyrite, I would tend to wash this situation out, because I would feel that the anomalies were too weak to be important. Since the known mineralization is bornite, it is not so easy to shrug it off as being unimportant. In the absence of magnetic data, we do not know if magnetite contributes to the anomaly. I doubt that there is any contribution from graphite. I say this because none was mapped in the workings, and a limited S.P. survey, done by Franklin Price over the known mineralization, did not record any graphite. I do not understand Chapman, Wood & Griswold's statement that the I.P. anomalies correlate well with known geology, since there is no outcrop underneath the anomalous zone.

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I would suggest that you contact McPhar, to see if anything can be added to the interpretation already shown in their report.

The Holberg Mines people make no bones about being highly promotional. They are seeking an underwriting, and, probably, a listing on the Vancouver Exchange. As you probably know, a listing will be considered by the Exchange if the applicant has at least 200, well distributed shareholders, and an engineers' report which states that \$45,000. or more, should be expended in the way of work on the property. I believe Holberg Mines can fulfill both of these requirements. They do not seem in any hurry about a major company taking on their property, and are happily selling stock under the counter. They will not stipulate the type of deal they want, but state they are open to offers. I would imagine that they might be fairly tricky to deal with.

I would prefer to have the I.P. data reviewed by someone who considers himself an I.P. expert, before recommending or rejecting this situation. Perhaps you could find someone in Toronto who considers himself in that light. If your collective thinking is still favourable, then perhaps we could make Holberg Mines some type of offer.

b.b. William M. Sirola.

Ineve Wilson

WMS/iw.

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To	W.M. SI	IROLA	***************************************	From	R.E.	CHAPLIN			
Subject.	HOLBERG	COPPER.				Date	February	12th,	1964.

Enclosed is a copy of Chapman, Wood & Griswold's latest report dated May 14th, 1963, and the interpretive data from McPhar's I.P. report. The accompanying sketch map, together with the above data, will give you an idea of the situation to date.

Mr. Peter Wishart was very generous in supplying all of the above data, but hedged on the details of a deal, although he indicated that any deal would necessarily involve the listing of Holberg Mines on some stock exchange. Stock is being sold under the counter for prices up to 75¢ per share (according to Wishart).

I phoned Dave Barr of Kennco to ask him about the McPhar I.P. interpretation in general. He has had a lot of experience with McPhar and he proffered the following information:

METAL FACTORS are not in themselves foolproof, but that his experience relies on the I.P. and resistivity configurations and the PERCENT FREQUENCY EFFECT (% f.e.). The effect is arrived at by the following formula:

Apparent M.F. X Apparent Resistivity =
$$\%$$
 f.e.

He claims that as an example, Bethlehem's Jersey ore body would have a % f.e. in the order of 10.

I calculated about 50 % f.e.'s for the Holberg I.P. anomalies. This effect varies from a background of about 2 - 3, to a high of alightly under 9. The average % f.e. in other anomalous zones is between $5\frac{1}{2}$ -6, and the % f.e. in areas of known mineralization appear to vary from $4\frac{1}{2}$ -6.

In conclusion, there appears to be some chance of a relatively persistent, fault controlled sulphide replacement zone between lines 15 W. and 5 W. Since the known mineralization is largely bornite in fractures - but some pyrite does occur locally - the property, at this date, is a geophysical bet within an area of known mineralization and indicated favourable geological structure.

I contacted Chapman, Wood and Griswold today, and their summary opinion more or less corresponds with my ideas. I also learned that Holberg Mines has been unable to get an underwriting, due, possibly, to complexive reasons including Wishart's lack of experience and the fact that Ike Schulman, who represents Wishart in this venture, is not particularly interested in Holberg activities until he receives a stock position, which, apparently, is not yet forthcoming. Holberg Mines are planning to drill 2 holes in the

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immediate future and, according to Chapman, Wood & Griswold's representative, these holes should be very interesting.

Mr. Peter Wishart intimated that they were negotiable.

Robert E. Chaplin.

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