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A. E. BULLER LTD.

CONSULTING GEOLOGISTS

SUITE 1715 - 25 KING ST. WEST

TORONTO 1, CANADA

TELEPHONE
(416) 366-0861

*Art would appreciate having
copies of all (memo) compilation
by WMS.*
Kam-Kotia
801378

Notes: phone call from art on July 6/72 -

*He agrees our phone call is sufficient
acknowledgement of following
letter - However, idea must be
eventually tested - so keep on
ground over the field my copy on ret. to office
long range*

June 23, 1972.

Mr. William Hogg, Manager,
Kam-Kotia - Burkam Joint Venture,
P.O. Box 189,
New Denver, B.C.

Dear Bill:

This is to confirm and elaborate on some of the very tentative ideas about the possible relationship between the lode we are mining in the Joint Venture and the Wakefield lode, which first occurred to me during my last visit to New Denver. I have been playing with prints of the old Kelowna maps which I have here and reviewing Hedley's Bulletin 29, as well as Cairnes' property descriptions from his Memoir 184, in the hope that I might be able to come up with something more definite. So far everything I have done has encouraged me, but it has by no means yet proved my ideas correct. However, I will comment below on various points that need further study to help prove or disprove my theses.

First, with regard to the Mascot workings which Plen mapped very sketchily the other day because of the lack of an accurate survey. I wonder if the geology as mapped doesn't show that the steep fault (lode?) at the east end of the workings cuts off the gently dipping fault (lode?) which appears in the western workings but has not been connected through to the steep fault by any mapping to date. This shallow dipping fault could be our flat lode on the footwall side of the steeper "Carnation" lode and our flat lode on the hanging-wall side of the fault may have been dropped only a few feet to put it out of sight, since there is no question but that the lode appears to have a constant 20° dip from where intersected in Hole P212 from 4755 E. Lat. to the Mascot workings. An offset of a few feet or even a few tens of feet would not show up in the hundred scale section I made, and could easily exist along the steeper fault.

This fault could be the "link lode". Plen seems to have forgotten that he did map about half of the 4855 level leading to the Mascot and that at about Lat. 5180 he shows a 5-ft. fault striking N 63° E and dipping 65° SE. This is close to the projected position of the link lode from the ⁴⁶²⁵⁻¹⁵ adit level. I am attaching a little sketch of the Mascot workings with my interpretation for Plen to take with him when he re-maps it.

With regard to the Wakefield, you should re-read both Hedley's and Cairnes' description of the Carnation and Wakefield lodes and workings. There is no question but that the Wakefield is a flat (about 15°) lode which links the steep Carnation and the steep Adams lode to the south. The junction with the Adams is described by Hedley as being on the Oakland claim, just off his mapped area,

Frank Miller

and there is no description that I can find of any workings on this claim. Its junction with the Carnation lode is shown by Hedley to be just above the Carnation 6600 level on the west slope of Read Peak, but he admits in his text that it is not certain exactly where this junction is nor what its character is. The Kelowna 100-scale map No. 4 of the Carnation area shows that a 45° dipping lode was developed on three levels above the 6500 level near its west portal and that this lode dipped about 40°. Its trace on surface to just below the 6500 south portal is identical with Hedley's trace of the Wakefield lode in this area. I am virtually certain that the structure being explored in this area was, in fact, the Wakefield and that the Carnation is steeper than this, and just as in my interpretation of the Mascot, it may cut through the flatter Wakefield, offsetting it with normal motion so that the "Wakefield" on the footwall side of the Carnation exists only between the west Carnation and the east Carnation portals. If you re-read all the reports on this area, including Billingsley's and Mayo's, you will find that nobody quite understood what lode they were on and where the junction between the Wakefield and the Carnation really is. If you draw vertical cross-sections through the various Carnation workings near the east portal and including the 5480 level, you will find that the lode flattens sharply from 60° or more to about 40° at the 6500 level and there is some evidence that there is a flatter lode in the footwall at that location. I think there is enough evidence of monkey business here to warrant someone going back to re-map all available openings near the surface with this new idea in mind.

Hedley p. 120 text says junction just below 6300 level

No. 1 between the West Carnation and 5480 portal area at least + poss. continuation. Hope to ENL.

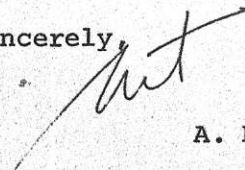
I just can't believe that a lode which has an outcrop length of about 5000 feet from the Carnation to the Oakland should not have at least an equal strike length, and this should carry it at least into the vicinity of our workings. If you assume that the elevation of the lode on the Oakland was about 4700 feet and connect some point about in the middle of the Oakland claim to the centre of the Joint Venture east stope area, you get a strike pretty close to that which we know from our drilling on 4755 E.

This whole idea opens up so many new concepts and new possible approaches that I know you agree with me that it should be pursued as rapidly as possible until we either prove or disprove it. For this reason, I am sending a copy of this letter to Bill Sharp, and since I know Bill Douglass will be greatly interested, I am sending him a copy as well. I will continue to work with the information I have here and I think we should all keep each other closely informed on the progress of our thinking along this line so that there is the minimum of waste effort involved.

but what about another report

With best regards,

Sincerely,



A. E. Buller.

AEB:WS

cc:-MP Dickson
WmCDouglass

WMSHarp
RNFIGueroa
GWWalkey

W.M. Sharp

Spare

KAM-KOTIA - BURKAM JOINT VENTURE
New Denver, B.C.

Summary of Exploration Meeting
held in New Denver August 24/72.
Present: G.W. Walkey, A.E. Buller,
W.M. Sharp, W. Hogg.

Following discussion of the results of the exploration program to date and, a review of alternative areas of exploration the following program in continuing exploration was agreed upon.

1. Cut a diamond drill station at the face of 4625 #2 X-CUT and suspend further advance pending drilling results.
2. Crews from the 4625 #2 X-CUT to advance 4625 West Lateral 185' on a bearing of $S80^{\circ}W$ for possible ore recovery down dip of the 4690 West series of stopes.
3. Upon completion of 2 above, extend ⁴⁶²⁵~~4625~~ East Lateral a minimum of 1000' to the east in the footwall of the lode and approximately 70 feet vertically below the lode. Advance of 4625 E. Lateral to be alternated with the probable advance of 4625 #2 X-CUT, & /or, the proposed advance of the 4625 #3 X-CUT. Centre-line of the #3 X-CUT is laid out at $S40^{\circ}E$ from the south wall of 4625 E. Lateral at co-ordinate 11,250 E.
4. Continue the 4690 #2 X-CUT on its due south bearing to co-ordinate 4360 North and cut diamond drill station. Defer further advance pending diamond drilling.
5. Further advance of 4690 W. Lateral to be deferred pending completion of diamond drilling from the face of this heading.
6. Provided a suitable drilling site can be located on surface at a point approximately mid-way between the 4690 W. Lateral and the 5480 Level at an elevation of 5700-5750 feet:
 - a) Drill a short hole to the northwest to check for the lode at a shallow depth.
 - b) Drill a deep ($\pm 1400'$) hole to the southeast at -50° (\pm) to intersect the lode at approximately the 4700' foot elevation.

(Cont'd)

(Cont'd)

range -70° to -90°

7. a) From the face of the Carnation 5480 X-CUT drill a hole at $\pm N25^{\circ}W$ to test the flat (North) Lode on the north side of the steep (60°) Carnation lode.
- b) Drill a steep hole at $\pm S25^{\circ}E$ to test the Carnation lode and, the possible continuation of the North lode on the south side of the Carnation lode down dip of the 5480 Level. Total drilling ± 1300 feet.

Wm. Hogg

Rec'd Sept 8/72

September 5, 1972.

Mr. William Hogg, Manager,
Kam-Kotia - Burkam Joint Venture,
P.O. Box 189,
New Denver, B.C.

Dear Bill:

Thanks for the memorandum summarizing the exploration program we agreed on on August 24th. It contains one error, which you have probably picked up by now - namely, the first line of paragraph 3 should refer to the 4625 East Lateral, not the 4690.

The rest of the program is as I remember it, but I wonder about the order of your 7a. My feeling was that this hole should be drilled to check the dip and characteristics of the Carnation lode and that it might be carried through to the footwall side and, with luck, intersect the flat lode. I don't think it is going to be possible to hit the flat lode on the hangingwall of the Carnation lode, but we must be sure of the dip of the Carnation before drilling the deeper hole to the south parallel to it.

I called Bill Douglass on Saturday and he told me he had been talking to both you and Bill Sharp. I have sent him a copy of your memorandum, and I told him I would remind you that he would like to have a 100-scale plan on which to plot monthly advances. I believe he would like a copy of Bill Sharp's new compilation, if this can be arranged.

Would you please thank Bankie for mailing me my notes and papers, which arrived safely several days ago? Would you also send me the geological notes for the 4625 No. 2 X cut and for the 4690 No. 2 X cut beyond the lode when they are available?

Best luck!

Sincerely,

A. E. Buller.

AEB:WS
cc:-WMSsharp ✓
Gwalkey

C
O
P
Y

August 15, 1972

Mr. G. W. Walkey,
Kam-Kotia Mines Ltd.,
Suite 416 - 25 Adelaide Street, West,
Toronto 1, Ontario.

Dear Mr. Walkey:

RE: KAM-KOTIA-BURKAM JOINT VENTURE

This in reply to your letter of August 9, 1972. I regret that my recent field commitments have not permitted me to reply more promptly to your questions concerning the specific and general proposals contained in Interim Report No. 72-2.

The following are my structural-geological bases for proposing hangingwall (dia. drill) crosscuts at the designated locations on the 4625 East and 4690 West Laterals (Item 3, sub-items 1 and 2 on Page 4).

Sub-item 1: From my 100-scale geological compilation, I interpret a S.S.E. to S. plunge of lode and lode-bedding flexures through the 200-foot point of advance on this crosscut. Pronounced flexuring within this area, for a short distance above and an unknown distance below the '4625' lode-contour, is indicated by the presence (via X-section set) of a second lode strand, or 'hangingwall split' of the lode. The down-dip extension of the principal (no.'s 2-3-4 stopes) easterly orebody is probably reflected by the indicated lode patterns @ the '4625' horizon.

Sub-item 2: On similar bases, I interpret a S.W.-plunging 'ore axis' through the principal westerly (no.'s 8-9-10-11) orebody. This is partly substantiated by the corresponding interval of the '4690' lode contour; the lack of drill holes on the sub-4690 region of this inferred ore axis, however, precludes any interpretations re lode or lode-bedding structures at the '4625' horizon (lode contour).

Continued.....

My reason for proposing a southerly drive from the face of 4690 No. 2 crosscut largely hinges on my current inferences of the probable plunge of the west ore zone (ore axis). The trend of recent stoping operations and the positions of ore intersections made by d.d. holes K 131 and K 132 suggests that the west ore could very possibly bend to a W.S.W. plunge at the '4625' horizon - and which would be most readily intercepted by driving due south from the existing face. Also, the proposed crosscut would expose a new section of the footwall country, whereas a crosscut closely under the existing stope would not.

My reason for proposing certain 'exploration beyond the mine workings via the current report largely hinges on my estimate of how much time remains for surface exploration before snow again covers the high country, and the fact that if some surface work is to be undertaken then specific proposals or alternatives should be considered as soon as possible.

My reasons for proposing sub-item 4 of Item 4 (Page 4) is:

Like Art Buller, I am inclined to think that our 'flat strand' of the generally-designated 'Carnation lode' is the productive unit, and that the structure followed by Kelowna is essentially a 'tear-fault' which merely offsets-deflects the flat lode. However, I feel that their (zone of) intersection comprises a legitimate target which is within drilling range, via an extension of the 5480 crosscut. Also, an intersection of the flat strand south of the Carnation 'fault' might provide some valuable information on the position and character of our mine lode well ahead (west) of the current 4690 face.

Respectfully submitted,

W. M. Sharp, P. Eng.

Rec'd accum. mail Aug. 11/72

August 9, 1972.

Mr. W. M. Sharp, M.A. Sc., P. Eng.,
171 W. Esplanade,
North Vancouver, B. C.

Dear Mr. Sharp:

Re: Kam-Kotia-Burkam Joint Venture.

I have your interim report No. 72-2 dated July 31, 1972. I note you have only sent copies of your report to the Management Committee of the Joint Venture. Please send copies of any reports you make, to Bill Hogg at New Denver, in the future, including interim reports, proposals etc.

I refer to section - "Specific Proposals" on page 3 and 4 of your report, and specifically to item 3, Hanging wall-cuts, sub items 1, 2 & 3. As I read section 3, the proposal for the two x-cuts from 4625 E. lateral is based on "current drill hole data and ore-short projections" in your words. I agree with you that diamond drill hole information and the plunge of the east ore zones make the location of these two x-cuts perhaps the most favourable of locations currently available. I am wondering if you have other reasons for proposing these two x-cuts, and, if so, I would like to know your logic. I know, for instance that you believe we require hanging wall information in addition to F.W. information if we are to develop a better understanding of the lode. You, of course, pointed out that we have very little H.W. information and this is true. You also told me that you were impressed with what you saw of the lode as exposed by work from the west end of the 3990 level.

I am wondering why you selected item 2, i.e. driving due south from the current face of 4690 No. 2 cross-cut. The plunge of the west ore may be south 30 west, but, I would have thought a x-cut located farther east, at, say 4690 No. 1 x-cut and driven at south 30 west would have merit. I realize, of course, that to collar such a x-cut the 4690 W. lateral would have to be suspended while collaring. Again, I would appreciate knowing your reasons for selecting 4690 No. 2 x-cut for the H.W. x-cut in the west sections.

In regard to your proposals for exploration beyond present mine workings, item 4 sub items 1 to 4, items 1 to 3 are related of course, and items 2 & 3 depend on the results of item 1. Before any action is taken on item 1, I think your proposal must be considered and discussed by myself, Bill Hogg and Art Buller.

Mr. W. M. Sharp, M.A. Sc., P. Eng. - 2 - August 9, 1972.

Sub item 4 may have a great deal of merit. However, again I would like to know your reasons for proposing this work and, a complete discussion on this proposal will be required.

I am told by Bill Hogg and Art Buller that, in the drilling from the west end of the 4690 west lateral, it is very difficult to identify the lode, or indeed to identify any change in rock types that could be expected from a fault and the resulting movement. I know this is not uncommon, i.e. a very tight lode, but, I am wondering if the drilling has been carried deep enough to intersect the lode. After all, surface data does suggest a major change in strike to the west in the vicinity of co-ordinates E. 9900, and, if the change has occurred, the lode could be farther away from the 4690 lateral than we think.

I look forward to seeing you again at New Denver in the week of August 21st.

Yours very truly,



G. W. Walkey,
Management Committee,
Kam-Kotia-Burkam Joint Venture.

GWW/rk

July 19, 1972.

Mr. W. M. Sharp, M.A., P.Eng.,
171 W. Esplanade,
North Vancouver, B. C.

Dear Bill:

Re: Kam-Kotia-Burkam Joint Venture.

I have a copy of your interim report No. 72-1 dated July 8, 1972.

I was very pleased that we could have a session last Saturday, July 15, at the mine office, to discuss the situation at Kambur and the role we would like you to play. In defining your engagement on paper the tendency is to become too rigid and restrictive, and, while the role must be defined, we want it to be flexible. As a result of our meeting last Saturday, I feel you know now what we want you to do.

This letter will confirm our discussion and outline most of the priorities we discussed, for the record, without too much detail.

1. We want you to work directly with the mine staff on the site. We also want you to spend your time at the mine in concentrated periods, i.e. not brief visits of a day or so at frequent intervals. This view may change in the future when short visits at specific intervals may be in order.

2. For the present, we prefer that you spend your time on acquiring background information, developing ideas, etc., and, not on writing reports to the Management Committee. Currently, your reports should confine themselves to an outline of your activity on this project, and should be, in effect an outline of your diary in so far as Kam-Kotia-Burkam is concerned. As to frequency, I suggest you report once a month, or, if conditions merit you could report on specific matters that may develop, as they develop on an interim basis. As an example, if you have a specific recommendation re. current program, you should report same at once. In the longer term, we will expect you to report your recommendations and proposed program complete with supporting data. *later (Aug. 24) states that Committee interested in knowing my current geol. thoughts and reasons for proposing*

3. As you know, we have hired Mr. Don Redshaw to replace P. Dickson who has resigned as of July 21, 1972. As I told you, Redshaw is inexperienced in working in the field and we want you to help train Redshaw so that he can carry out his duties as geologist for the Joint Venture. *specific exploration*

July 19, 1972.

4. Some Specifics.

a) Hanging wall exploration. We believe H.W. exploration is required, particularly as to exploring the lode down dip from the 4625 level. Our policy for the time being is to use four development crews on exploration, i.e. drive two headings on a two shift per day basis. As the 4855 Dr.W. heading should be completed before the end of July and we want to use these crews on H.W. development, we want your proposal for locating a H.W. heading or x-cut within the next two weeks.

b) Location of the exploration or drill have, to the west of present workings, i.e. the 4690 W. lateral.

Currently, the policy is to locate this F.W. lateral about 100 ft. perpendicular to the dip of the lode in the F.W. Depending on the lode dip this allows the lode to be drill tested over a dip length of 300 to 350 ft. depending on actual dip. Should we try and increase the lode dip length that can be explored from this drill base? What spacing would you propose for drill sections along the strike? Additional dip length can be explored by x-cuts in the H.W. what spacing would you propose for such x-cuts along lode strike?

c) The use of surface diamond drill holes to explore the lode. We mentioned this specifically in regard to checking below the Carnation workings, i.e. below the 5480 level. There may be other applications which could eliminate or make more productive U.G. laterals as exploration basis.

5. In a broad sense, it is probably necessary that we review and update our exploration parameters. Most of the theories that have been developed in the past have been applicable and productive. Many, if not most, of the criteria developed by Kelowna are still valid. However, we now know there are exceptions to the Kelowna theories. Certainly it is necessary to have a lode system to explore, and, then to get maximum exposure to the lode at the lowest possible cost, to find an ore body. However, it is financially impossible to explore all the known lodes on the property, to even try and locate mineralized sections, let alone ore deposits. It seems to me we must develop priorities based on potential and probabilities. To do this, all available information must be compiled, and ultimately judgement and opinions will vary. Whether or not we have been exploring and mining the "Main Lode", i.e. the Hope Carnation section of the main lode is not in my opinion too important. This lode has been, and still is productive. An understanding of why this lode has been productive where it has, is most important even tho it is difficult to project when the conditions may be repeated.

Very good analysis!

July 19, 1972.

6. Exploration costs and exploration technique.

Funds are not unlimited. However, any proposals or recommendations you make should stand on their merits, and, not the cost. Perhaps new drill bases at new elevations are required. It is obviously good business to locate drill bases where they can serve as exploration bases and ultimately as production openings. However, we can't plan extraction and production until we find ore.

*Specifically
P.W. later
and raise*

I know you will work closely with Bill Hogg and the mine staff. You can call me at anytime at Toronto, at 362-4581. I expect to be at New Denver again in the last half of August, probably the latter part of the month. It will be helpful if we can get together again at that time.

Yours very truly,

KAM-KOTIA MINES LIMITED,

G.W. Walkey
G. W. Walkey,
Vice-President & General Manager.

GWV/rk

c.c. Mr. Bill Hogg

Mr. A. Buller,
1715 - 25 King St. West,
Toronto, Ont.

A. W. White

July 14, 1972.

Mr. William M. Sharp, P. Eng.,
171 West Esplanade,
West Vancouver, B.C.

Dear Bill:

I was glad to get your report 72-1 on the Exploration and Development Program at the Joint Venture, and I look forward to further reports as your work continues. I also look forward to working with you to the greatest extent possible.

I note that you have started a compilation of geologic data from our workings westward to the Carnation, the purpose of which you say is "to facilitate short, and long-range correlations of lode and bedding structures within the general claim block".

You will remember the part flippant, part serious warning which I attached to your copy of my letter to Bill Hogg, in which I said that I was ready to throw out all the old Kelowna criteria for ore control and that you were really going to have to do a hard sell if you want to apply them to our operation. I was serious to this extent, namely that I really do think we must look at this whole problem with new eyes, and not just accept all the old ideas uncritically. For this reason I wonder if your objective may not be too narrow.

Have you read my letter to Arthur White dated December 23, 1971, in which I say in the first sentence on page 3 that we must understand "the overall geologic setting of the deposit"? This to me means an awful lot more than just the bedding to lode relationships. A copy of this is in the geological files at New Denver.

This may sound like heresy, but don't you think Kelowna's work can be criticized for having paid too much attention to bedding structures and too little attention to the lodes themselves?

The trouble with wall rock structures, quite aside from the very great difficulty of interpreting those you can see, is that it is practically impossible to project them anywhere with any confidence. For example, Kelowna, with all its staff of experienced geologists, still picked the wrong elevation for the Carnation 5480 level - and this was aimed, not at a minor structure, but at one of the major structures in the camp - the Queen Bess axial plane.

*rel. to interpretation
See to lode
displacement?*

In any case, it is far from proved that bedding-lode relations are the critical factors in ore control. How many ore bodies have been found on this theory since 1940? Have you re-read Evans Mayo's conclusions in his 1951 Summary of all Kelowna's work in the Slocan? There is also a copy of this in the geological files at New Denver.

Admittedly our knowledge of the stope geology in the Joint Venture is woefully lacking, but whatever are the important factors in ore control, they are certainly not obvious and we have only a vague idea of what may have localized the ore.

Plen's early idea that cross faults were critical may still be valid, despite the fact that he tended to discount this in the last few months. I was interested to note, just a few days ago, on re-reading Ambrose's paper on the Viola Mac in Vol. II of Structural Geology of Canadian Ore Deposits, that he puts a lot of importance on cross faults. However, I'm not sure a) how widely this applies throughout the Viola Mac workings and b) whether the Viola Mac structures can strictly be compared to those in the Joint Venture workings, the geometric relationship between bedded structures and lode being so different in the two mines.

Plen's structures could be accurately termed minor cross-faults

These, to me, indicate where lode - panel bedding most interesting crumpled - re fold -> fault

We have been tacitly assuming that our lode is the down dip extension, very much reduced in dip, of the Carnation-Mascot-Hope-Silversmith lode. But is it?

rel to flat slope lode, but not to the

And even if it is, is there any real reason to expect that lode-bedding relationships when the lode is steep would be at all comparable in their effect to those when the lode dips 20°?

Carnation - massive steeper than fault.

All this is to urge that we all try to bring new thinking to the problem of finding ore in the Joint Venture ground. And let's start it by keeping our attention focussed on the lode we are exploring and on its setting in the lode system. Until we understand it and are sure of where it fits in the scheme of things, I'm not sure that other factors can be interpreted with any degree of confidence.

I hope we can arrange to visit the operation together in August. I could be there the week of August 20th or the week of August 27th, but not the week-end in between. Would you please keep both Bill Hogg and me posted as to your plans so we can arrange a joint session with the minimum of inconvenience for everyone?

Best luck.

A. E. Buller.

AEB:WS
cc:-RNFIGueroa
WHogg
GWWalkey
AWWhite

Letterhead

July 8, 1972.

Management Committee,
Kam-Kotia-Burkam Joint Venture Operation.

Gentlemen:

*See new report outlines
per 72-2.*

INTERIM REPORT NO. 72-1
EXPLORATION-DEVELOPMENT PROGRAM

General

The following notes relate to my initial visit to the Sandon property, from June 26 - July 4, 1972 - excluding one day's work for another client on July 2nd. During this period time was spent on inspection and familiarization tours of the mine workings with the mine staff, underground geological mapping, discussions concerning the mine geology and current exploration headings and procedures, and on the assembly and compilation of various geological data.

Underground Geological Mapping

Headings personally mapped at a scale of 1 inch = 20 feet comprised:

- (a) No. 17 stope raise and A-16 crosscut from the 4690 laterals.
- (b) 4855 X-C, 4950 X-C and connecting raise.
- (c) Various exposures of the lode on 4625 and 4690 levels and related short exploratory raises.

At the same time, P. Dickson kept up his mapping of the currently-advancing 4690, 4815, and 4855 W. Laterals, and working stopes.

mapping + geological direction

Field-Office Geological Compilations

Principally, this comprised the reduction of the 20-scale mine geology and stope outlines to a scale of 1 inch = 100 feet, with concurrent 'averaging' of much of the 20-scale mapping. The present pencil compilation will be traced (ink) on to Simonsac Mines Ltd. Map No. 8 - a 100-scale geological composite (linen) contoured plan showing surface and underground workings and geology of, and between the West Garnation and Hope workings. The expanded compilation is being prepared to facilitate short, and long-range correlations of lode and bedding structures within the general claim block.

Continued.....

With the above, plan and section plots of currently unplotted diamond drill holes were made, and abbreviated plots of the more recent 20-scale cross-sections were traced. The reduced detail will be incorporated into the above-noted 100-scale composite and supplementary cross-sections.

Remarks

The 4690 West Lateral is being advanced on the same N70W bearing and in the footwall of the lode (80' normal to the footwall at 10,225E). Where tested, the westerly extension of the lode appears relatively tight; to date, there is no indication that it might bend to a more westerly strike - as might be expected on the basis of the 'average' Carnation-Hope trend. The recent advance occurs within a favourably 'brittle' assemblage of argillites and siliceous argillites (quartzites).

The 4855 West Lateral advance is being continued towards the d.d.h. S.S. #1 intersection with the lode; the advance continues in strong siliceous (quartzitic) rocks.

Minor lode structures exposed within the east end of the 4690 level indicate an almost horizontal easterly (relative) hanging wall displacement.

Respectfully submitted,

W. M. Sharp, P. Eng.

- 1 CC: Mr. G. W. Walkey, Kan-Kotia Mines Limited, Toronto, Ontario.
- 2 CC: Mr. A. W. White, Kan-Kotia Mines Limited, Toronto, Ontario.
- 3 CC: Mr. Roy N. Figueroa, Burden Investors Services Inc., New York.
- 4 CC: Mr. A. E. Buller, Toronto, Ontario.

1. Suite #16, 25 Adelaide St. West, Toronto 1, Ont.
2. - Same address as above
3. 630 Fifth Avenue, New York, N.Y. 10020 U.S.A.
4. Suite 1715 - 25 King Street West, Toronto 1, Ont.

June 27, 1972.

To: Bill Hogg

From: G. W. Walkey

Subject - Operating Policy - Kam-Kotia - Burkam.

1. Re: attached letter from R.A.C. Douglas, what property do the tax notices apply to? Is this the property in New Denver, i.e. the land you purchased last year for the two houses?
2. The Management Committee held their meeting last Tuesday, June 20.

Both parties are in general agreement as to the immediate action to be taken covering the operation.

The proposal presented by A. Buller, with your co-operation, to reduce milling to a one shift per day 5 day per week basis, effective July 1, 1972, was not acceptable to us. The objective, as presented was to allow 600 ft. of drifting and x-cutting and 2,500 ft. of diamond drilling to be completed per month, at a cost of about \$45,000. Unless the daily tonnage to be milled was reduced to a one shift/day basis, you and Buller advise that the scheduled exploration, could not be carried out; due to your limit of 10 (ten) miners. My objection to this schedule is that 1) from a milling standpoint it is inefficient and costs more per ton. 2) it reduces our credibility with the smelter (Cominco).

I would prefer to go to stockpiling and milling 24 hours per day at frequent intervals, say 10 days in a row per month, if mill crew is available.

3. The Committee is firm on getting close to 600 ft. of drift advance per month. This requires 4 (four) development crews per day, on a 5 day/week basis, which should give a footage between 500 & 600 ft./month. With one drill working on contract, two shifts per day, we should get from 1,000 to 1,500 ft./month, plus some packsack drilling as long as targets are within packsack range. It is possible that we will ultimately require a second contract drill to maintain sufficient drill footage.

June 27, 1972.

4. As I told you on the telephone, I propose that the mill schedule be changed to a 5 day work week at the beginning of July and planning for this schedule is underway and, the new schedule will be effective July 3. I hope we can mill close to 2,000 tons/month on this schedule.

5. In regard to development, the target of 4 shifts per day on drifting must be met. I understand the manpower problem and its relation to housing and, you must take any reasonable action to provide the necessary men.

The 4,850 drift, as at May 31st, must be advanced a further 300 ft. or so to reach the area of S.S. # 1. The crews from this heading will then be used on another heading, probably a ~~F.W.~~ drift to the ^{west} south to check ^{up} dip on the lode. Bill Sharp's ideas on locating this heading will be of value.

In regard to the location of the 4,690 drift in relation to the lode, I suggested it be placed 100 ft. perpendicular to the lode, in the F.W. Depending on the actual lode dip, this would allow for checking up to 350 ft. of dip length with holes up to 250 ft. long. The longest holes would be drilled up the dip and give a poor angle of intersection. If we went to 150 ft. perpendicular to the F.W; we could cover 550 ft. on the lode with a maximum hole length of 350 ft. This should be discussed with Sharpe as he will have some views on the value of maximum dip exposure. Check this out carefully.

6. As I told you, it is agreed that Bill Sharpe be engaged to work with you, on the basis that he spends a minimum period of consecutive days at the mine, at reasonably frequent intervals. Our original idea was for Sharpe to work with Dickson, but, as Dickson is leaving on July 21st, he should work closely with you. All we expect from Sharpe are brief program reports, and not a final report on a field study with specific recommendations, although ultimately we might request such a report.

7. We must try and replace Dickson, preferably with someone already in the west. If I have any ideas, I will advise you at once.

8. The plan of a vacation shutdown from July 17 to 28 is approved.

*
 8-10/10/72
 per Bill
 confirmed by

Bill Hogg


- 3 -

June 27, 1972.

9. Concentrate marketing You have Mr. Siddall's letter of June 20, 1972. This will confirm my instructions given orally by phone on Monday, June 26 re: advising Siddall of our intentions to ship lead concentrates to Trail, using B.M.C. as our agent. I will, of course, acknowledge his letter and send you a copy of my letter. I expect that B.M.C. will arrange a contract with Bunker Hill covering zinc concentrates and we will continue shipping zinc to Bunker Hill. Ship all June's production of lead to Bunker Hill, and then ship to Trail.

10. I plan on visiting New Denver the week of July 10, but will confirm in advance.

GWW/rk


G. W. Walkey.

WILLIAM M. SHARP, M.A.Sc., P.Eng.
CONSULTING GEOLOGICAL ENGINEER
171 W. ESPLANADE, NORTH VANCOUVER, B.C.

November 9, 1972

Management Committee,
Kam-Kotia - Burkam Joint Venture

Gentlemen:

INTERIM REPORT No. 72-5

RE: EXPLORATION-DEVELOPMENT PROGRAM

General

The current report deals with exploratory work accomplished since October 1st - including detail personally recorded during my October 25-27 visit and subsequent advices from Mr. Hogg.

Summary - Personal Field & Office Work

- Oct. 16: N. Van office - Plot current drill-hole detail on 20-scale plan & cross section from drill hole logs received; revise local interpretations.
- Oct. 19: N. Van office - Summarize data; start compilation of Interim Report No. 72-4.
- Oct. 20: N. Van office - Complete above; arrange steno, copies and mail.
- Oct. 23: N. Van office - Add to, and continue inking South X-Sec. set.
- Oct. 24: Assemble maps and notes, travel to New Denver.
- Oct. 25: Mine - With D. Redshaw on geological mapping 4625 East and West Laterals; check cores d.d. holes P330 and K124.

Office - Complete field-mapping sheets; discuss current exploration results and planning with Messrs. Walkey and Hogg; add current detail to 20-scale plan and cross - sections.

Oct. 26: Mine - With D. Redshaw to check core K143 and layout K150; examine drill cores and check logs on K124 - 134 - 146 - 147 - 149.

Office: With Messrs. Walkey and Hogg on discussion of current exploration results, objectives and layouts.

Oct. 27: Office - Up-date 100-scale composite plan; confer on exploration plans and schedules with Messrs. Walkey and Hogg; up-date dia-drill file.

Oct. 27/28 Return to Vancouver with Mr. Walkey.

Nov. 3: N. Van office - Discuss (phone) current exploration with Mr. Hogg and review via plans.

Nov. 6: N. Van office - Reply to Mr. Buller's letter of Nov. 2nd.

Nov. 8 : N. Van office - Plot recent d.d. holes in plan & section on 8½" x 11" (file) sheets. (Similar plots of all K-series holes could be done by the mine geological staff, and copies mailed to the non-resident geologists).

Nov. 9: N. Van office - Compile Interim Report No. 72-5.

Notes - Current Exploration

4690 West Lateral

Hole K-124, extended to 247', intersected a stronger and more typically mineralized lode (strand) between 182' - 200' - comprising a somewhat planar breccia of chert and argillite, which is veined and filled by quartz and siderite; a very minor amount of ZnS occurs at approx. 186'. From this intersection the '4690' lode contour is plotted through 10,100 E at 4583N. Between this point and its position in 4690 #2 X-C, it has probably been offset (L.H.) by the southwesterly - trending, 30-33 degrees S.E. - dipping fault through this same working. The trend of the lode westward of K-124 is still in doubt, but appears to be westerly (N80W to west) as far as K134 and southwesterly beyond this point. As noted in Report 72-4, this might be delineated by a +15 degrees south hole from the K-143 drill station - at such time as it is considered advisable to resume exploration westward.

4690 #2 X-C

Holes K148 and 150 intersected barren lode at 4610 and 4604 (F.W.) elevations respectively. An interpretation at its 4604' contour suggests that the lode, where intersected, strikes about N63 degrees W. and dips about 32 degrees southwest - or sub-parallel to the interpolated '4690' contour up-dip and north of the steep '4625-West' faults. Hole K151 has been drilled (from the K150 set-up)

at N75 degrees E. - 45 degrees to intersect the lode at some 50'-60' southeast of the K150 intersection - results pending.

4625 East (F.W.) Lateral

The recent (Oct. 27) section advanced lies within flat-lying intermittently sheared and broken argillaceous quartzites. It is planned to advance this particular heading to approx. 11,500 E, where a station will be cut and a fan of holes drilled to test possible local extensions of No. 17 stope mineralization.

4625 #2 X-C and East H.W. Lateral

From the most recent (4165N) station in the cross-cut Hole K144 has been drilled @ - 90 degrees; K145 @ N10 degrees W, -45 degrees; K146 west @ -44 degrees; K147 east @ -45 degrees, and K149 southwesterly @ -45 degrees with marked strike and minor dip deflections (and no evident lode intersection). All except K149 intersected sub-economic widths or grades of mineralization. However K147 results are encouraging, by reason of four separate intersections of good Ag-Pb-Zn mineralization - which could merge eastwards.

The K147 results warrant further drilling on more easterly, up-dip, and down-dip parts of the lode. to accomplish this, the cross-cut will be extended (+ 130') to coord, 11,300 E; thence *N80 E or* easterly for about 200 feet. Stations will be cut to allow drill - exploration of the lode at 100' strike - intervals and and possibly wider dip-intervals while in the area of possible down-dip extensions of existing ore zones. The bearing of future increments of 4625 East (H.W.) Lateral will be adjusted on the basis of the drilling results.

Office Compilations

The extension of the existing 20-scale map set by the addition of southerly (over-lapping) sheets will facilitate plotting and interpretation of current and future exploration in the 4625-East area of the mine.

Tracings comprising the (20-scale) South X-Sec. set have been left at the New Denver office, with the request that a coloured set of prints be provided for personal use and reference. On receipt of this set current drill holes may be plotted.

Respectfully submitted

W.M. Sharp
W.M. Sharp, P.Eng.

*Bell note
this being
prepared
rec'd*

WILLIAM M. SHARP, M.A.Sc., P.Eng.
CONSULTING GEOLOGICAL ENGINEER
171 W. ESPLANADE, NORTH VANCOUVER, B.C.

October 19, 1972

Management Committee,
Kam - Kotia - Burkam Joint Venture

Gentlemen:

INTERIM REPORT No. 72-4

RE: EXPLORATION - DEVELOPMENT PROGRAM

General

The current report deals with exploratory work in progress during my September 21 - 30, 1972 visit to your New Denver operation. It includes the usual outline of field work and related office compilations personally undertaken during and since this visit.

A total advance of some 600 feet on four headings exposed a variety of rock types and structures - providing a good situation for joint - mapping with D. Redshaw.

Summary - Personal Field & Office Work

- Sept. 21: Office - Review current exploration and development with Messrs. Walkey and Hogg; later, continue review with Mr. Hogg and discuss work requiring geological attention.
- Sept. 22: Mine - Inspect 4625 #2 X-C, 4625 West and East laterals, and 4690 #2 X-C with Messrs. Walkey, Hogg, and Redshaw; thence, with Messrs. Walkey and Hogg, to 5480 X-C to inspect tunnel and air conditions, and to discuss provision of access, air, and water for the scheduled - 90 degrees, 500'-600' hole to be drilled from the south end of the main crosscut. Office - Discuss general exploration possibilities and technical factors with Messrs. Walkey & Hogg; plot recent tunnel advances on 20 scale working maps; prepare field sheets for geological mapping.
- Sept. 23: Office - Up-date preliminary cross-sections through 4690 and 4855 West Laterals; complete prep. of field-mapping sheets with additions of local geological and drill hole detail, plan field work for following week, continue up-dating 20 scale working prints inspect field map sheets and drill hole logs by D. Redshaw.
- Sept. 24: Office - Start preparation of South X Sec. set-to adjoin and extend (southward and downward) current mine set over the anticipated range of the projected "hanging wall exploration program".
- Sept. 25: Mine - On geological mapping of 4625-#2 X-C with D, Redshaw; inspect core K 142 (+65 degrees - S hole from west end 4855 W. Lat.w D. Redshaw. Office - Discuss general exploration with mine staff; continue on South X-Sec set; plan packsack drill layouts on Link Vein through (5500N) 4625 Main X-Cut.
- Sept. 26: Mine - Make lay-outs for holes on Link Vein - drilling scheduled for first opportune weekend. Map 4625 W. Lateral with Don Redshaw; map part of west wall 4625 #2 X-C and make prelim. inspection of K 144 core. Office - Continue prep. South X-Sec. set with local correlations with Mine set.
- Sept. 27: Mine - with Don Redshaw on detail mapping 4690#2 X-C; continue via mapping of west wall detail. Check progress on current exploration headings and drill holes; discuss general mapping procedures and specific geological features (or detail) with D. Redshaw;

- Discuss current exploration with J. Heichert. Office - Continue prep. South X- Sec. set.
- Sept. 28: Mine - Complete mapping west wall 46 25 #2 X-C; Assist D. Redshaw on detail mapping 4625 E. Lateral and map corresponding north-wall exposures; layout p.s. drill holes 4625 W. Lateral. Office - Continue prep. South X - Sec. set, incl. phone - discussion with W. Hogg on current exploration progress.
- Sept. 29: Mine - Continue mapping 4625 E. Lateral with D. Redshaw, assist on setting survey control for next (N30E) section of this heading. Check core Kl44 (-90 degrees hole, 4625 #2 X-C - noting lack of evidence of structure or mineralization comparable to that intersected by cross-cut; advise on lay-out for hole Kl45 @ N 10 degrees W, -45° Office - clean up and ink field mapping sheets. Discuss current exploration with Messrs. Redshaw and Heichert. Continue compilations on South X-Sec. set.
- Sept. 30: Office - complete inking field map sheets; transfer 20-scale geol. details to 20 scale work prints; continue compilation and transfer of detail to South X Sec. set. Discuss current exploration with Don Redshaw and prepare memos on same. Depart New Denver @ 6:15 p.m.
- Oct. 1: Travel to North Vancouver.
- Oct. 7: N. Van. - Transfer balance of current geological detail to 20-scale work prints.
- Oct. 10: N. Van. - Complete above; start reductions to 100 - scale and plot on 100-scale composite map.
- Oct. 11: N. Van. - Complete transfers to 100 - scale; start inking 100 - scale sepia and print.
- Oct. 12: N. Van. - Complete inking 100 - scale detail; clean up 100 - scale sepia for possible printing at New Denver; plot current tunnel and drill hole geology, etc. on South X Sec. set.
- Oct. 13: N. Van. - Continue plotting on South X - Sec. set.
- Oct. 14: N. Van. - Continue on above, with explanatory notes; revise 'lode contours' on 20 - scale work prints per detail on South X-Sec. set.
- Oct. 16: Plot recent diamond drill detail on 20 - scale work plan and (South) cross-sections, with indicated correlations of geological detail from drill logs received today from Mr. Hogg.
- Oct. 19: N. Van. - On preparation current interim report.

Interim Notes - Current Exploration

4855 West Lateral:

The log of Hole No. Kl41, drilled @ + 90° to 172', notes a possible (but barren) lode structure between 170' - 172'. The combined plots of Hole No's Kl39 - Kl40 - Kl41 indicate that mineralized elements of the lode, if they persist up-dip, lie above Hole K-141; hence, an extension of Kl41 to at least 200' is indicated. Any decisions in regard to exploration of higher and/or more westerly parts of the lode could be influenced by the results from extension of Kl41. The results might also indicate that further drilling should be done from underground or surface set-ups.

4690 West Lateral

The log of Hole No. Kl43 indicates a possible lode structure between 179' - 193' (plus 1" with minor Pb-Zn-Cu at 202'). At 30° apparent-dip projection (Sec. 9725 E) of the indicated lode structure places its '4690 contour' through 4542 N; similarly, at an apparent-dip of 40°, through 4633 N. On the basis of either projection the lode - strike has apparently changed from a probable westerly trend at about Sec. 9925E. ~~to a south-westerly trend at about Sec. 9925 E~~ to a southwesterly trend through Sec. 9725 E-

or to a position at possible 295' to 385' due south of the 4690 West Lateral at the '4690' horizon. The above indicates that the next (conditional) advance of the lateral should be on a S.S.W. bearing to a point where the lode-to-lateral (dip-normal) separation is 150' or less. A plus 15° south hole on Sec. 9725E and an extension of Hole K124 (Sec. 10075E) to approx. 195' are required to more closely define its dip and trend within this interval of the '4690' horizon. The scheduled -90° hole from the 5480 X-C may also provide the information on which its general trend westward of the K143 intersection may be estimated.

4690 No. 2 X-Cut

On a ^{apparent} dip-projection of -25° (Sec. 10300E) the indicated point of intersection via the scheduled -90° hole is at 110 ft. (approx). Drilling experience in the 4625 #2 X-C suggests that, in view of the large dip-projection involved, that it might be advisable to test the lode closer to its exposure in the crosscut-specifically by a -90° hole from a station near 4500N. With this, additional holes directed at -45° N.W. and -45° S.E. would serve to test possible dip-extensions of the West orebody.

4625 West Lateral

Drilling to date has not disclosed any really significant down-dip extensions of the West ore zone. However, a considerable area of the lode is relatively unexplored - particularly south of the lateral and over the 4625 Main X-C; therefor a systematic relatively wide-spaced pattern of holes from these headings will eventually be required for a minimum test.

The recommended southwesterly extension of the 4625 W. Lateral will provide a station from which the down-thrown segment of the lode and the northwesterly extension of these steeply-dipping mineralization through the west end of the lateral may be tested.

4625 East Lateral

The intersection (2.0' @ 22.2 0.4 12.5) made by Hole P324 indicates that the lode, at least at the '4690' horizon, has deflected from a N.E. to N.N.E. strike at approx. 11425E. Consequently, the bearing of the next section of advance (100' - 200') has been set at N30°E. A vertical fan of drill holes from a station at the 200 foot point of advance is currently planned. Considerations of further (detailed) drilling from the lateral, or from an additional hanging wall cross-cut will hinge largely on the results from this drilling.

4625 No. 2 X-C

Intersections made by Holes K144 (-90°) and K145 (minue 43° - 22') indicate that the lode intersected in the cross-cut persists down-dip at approx. 25° and, at least on Sec. 11200 E, is relatively tight and weakly mineralized for some 200 feet down-dip of its exposure in the cross-cut. However, the east and west strike - extensions of the lode intersected by K144 should be investigated via -40° holes from the K144 station. From these intersections it may be possible to plan the additional distance, optimum bearing, and timing of the next section of the cross-cut to be advanced.

The general lode and mineralization intersected by Holes K144-145 lies closely under a thick sheet or prong of relatively soft brown (biotite) porphyry. Porphyry is absent from the footwall rocks which, at least locally, are not so conspicuously massive or altered as to form an effective buttress.

Carnation 5480

The tunnel was seen to be in remarkably good condition and free from bad air. No major obstacles to drilling the (initial) -90° hole are apparent - provided the section to be drilled is not too severely sheared or fractured.

Respectfully submitted,



W.M. Sharp, P.Eng.