

KERR ADDISON MINES LIMITED

(FOR INTER-OFFICE USE ONLY)

JUN 17 1982

820320

To Mr. D.A. Lowrie From Mr. W.M. Sirola

Subject O.K. PROPERTY - HIGHLAND VALLEY, BRITISH COLUMBIA Date June 10, 1982

92 I



Our files on this property go back to 1970 when the property belonged to Alwin Mining Company Ltd.

We enclose copies of the following:

- 1) Feasibility study by Bacon & Crowhurst dated March, 1970
- 2) Report by Fred Chow dated March 6, 1968
- 3) Memorandum from W.M. Sirola to P.M. Kavanagh dated March 7, 1968
- 4) Memorandum from P.M. Kavanagh to W.M. Sirola dated March 29, 1968

The Bacon & Crowhurst estimate was 1,051,949 tons assaying 2.51% Cu and 0.375 ozs Ag undiluted.

Fred Chow's estimate of mineable material indicates 7 or more parallel zones in an area 400' by 1,200' to a vertical depth of 500'. The total tonnage in these 7 zones was 313,320' averaging 2.15% Cu.

At no time have we considered this property to be a viable entity and we have no particular reason to feel that it is mineable today.

Apart from what we are sending you today, we have a fairly thick file including diamond drill sections, composite plans of ore reserves etc., which we will be pleased to forward at your request.

Encl.

*This is an update for review
of de Kalb's sale of the property*
WMS
June 18/82

W.M. Sirola
W.M. Sirola,
Regional Exploration Manager.

JUL 31 1970

1720-1055 West Hastings Street
Vancouver 1, B.C.

92 I

BACON & CROWHURST LTD.
CONSULTING ENGINEERS

*attach to previous
of April 1970
July 27th, 1970.
Do not update*

J.H.S.	
P.M.K.	<input checked="" type="checkbox"/>
G.M.H.	
R.D.S.	
B.C.B.	
I.D.B.	
M.D.R.	
J.H.F.	
E.C.J.	

Alwin Mining Company Ltd.,
807 - 409 Granville St.,
Vancouver, 2, B.C.

Attention: Mr. H.E. Jacques, President

Dear Sir:

On reviewing the Alwin Mining Company report after its completion, we have noted certain adjustments were required to the cash flow calculation. These adjustments have subsequently been made, and the revised sheet is enclosed.

Would you please insert this page in your report at the appropriate place.

Yours truly,

BACON & CROWHURST LTD.

J.J. Crowhurst
J.J. Crowhurst

JJC/ic
Encl.

TRACKLESS METHOD
CASH FLOW REVISED
COPPER PRICE BASED ON 60¢ U.S. AVER. OF EMJ & LME

Years	<u>1/2</u>	<u>1</u>	<u>1½</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>
Operating profit	1541	1542	1448	1449	2208	1985	1876	1876	1872	1872
Investment income	-	-	-	-	77	69	66	66	66	66
Total income	1541	1542	1448	1449	2285	2054	1942	1942	1938	1938
Replacement of assets (non capital)	-	50	-	50	50	50	50	50	50	50
Interest	396	181	116	52	-	-	-	-	-	-
Total other deductions	396	231	116	104	50	50	50	50	50	50
Operating profit prior to dep'n & taxes	1145	1311	1332	1345	2235	2004	1892	1892	1888	1888
Depreciation						873	612	428	300	210
Write off preproduction expense						997	1127	1133	-	-
Total other write-offs						1870	1739	1561	300	210
B.C. mining tax						134	153	177	193	204
Taxable income for Federal tax base								154	1395	1474
Depletion								51	465	490
Federal tax	N11	N11	N11	N11	N11	N11	N11	52	465	490
<u>B.C. Mining Tax</u>										
Taxable income for B.C. mining tax	1145	1311	1332	1345	2158	1062	1214	1398	1522	1612
Write off preproduction expenses	1145	1311	799	-	-	-	-	-	-	-
Basic taxable income			533	1345	2158	1062	1214	1398	1522	1612
Processing allowance + 10000 allowed			200	212	345	170	192	220	238	251
Taxable income sub. to B.C. Min. tax			333	1133	1813	892	1022	1178	1284	1361
B.C. mining tax			50	170	272	134	153	177	193	204
<u>Cash Disbursed</u>										
Debt	4766	3621	2310	1028						
Cash available for repayment	1145	1311	1282	1175	1963	1870	1739	1563	1230	1194
Debt balance	3621	2310	1028							
Cash available for shareholders				147	1963	1870	1739	1563	1230	1194

July 21, 1970.

92 I
JUL - 3 1970

KERR ADDISON MINES LIMITED

(FOR INTER-OFFICE USE ONLY)

To P. M. Kavanagh From W. M. Sirola
Subject Alwin Mining Limited, Highland Valley, B.C. Date April 70 *attach to previous of June 30, 1970*

<input checked="" type="checkbox"/>	J.H.S.
<input checked="" type="checkbox"/>	P.M.K.
<input checked="" type="checkbox"/>	G.M.H.
<input type="checkbox"/>	R.D.S.
<input type="checkbox"/>	B.C.B.
<input type="checkbox"/>	I.D.B.
<input checked="" type="checkbox"/>	M.D.R.
<input type="checkbox"/>	J.H.F.
<input checked="" type="checkbox"/>	REHL
<input type="checkbox"/>	E.C.J.

Do not update

Prior to telephoning you on June 17th regarding my impressions of the Bacon & Crowhurst feasibility report, I had spent about three hours reading the information and computing present values over a 6½ year period. I mention 6½ years because the report states that the present ore reserves will suffice for that length of time with a further 1.43 years anticipated. The present value of 6.5 years of production at a rate of 175,000 tons per year and based on a grade of 2.51% Cu and the copper price of 50¢ U.S. per pound is so close to the capital cost of \$5,402,226.00 that any prolonged period of labour unrest, dilution or hazard of any kind would reduce the Alwin picture to a salvage operation. In other words, I do not think that the ore reserve allows for a sufficient margin of safety.

Coupled with these very basic observations is the reticence on the part of Mr. Jacques, the Alwin president, to relinquish control.

In the light of these circumstances, I do not recommend that Kerr Addison become financially involved in this operation. I would appreciate the final results of the other studies which were made at head office and someone should advise Mr. Jacques of our decision.

Lynnda Krupp
for
W. M. Sirola.

cc: W.M.Sirola WMS/1k

We made a brief review of the Bacon & Crowhurst feasibility report here & concluded that the project was not attractive for the following four reasons:

- 1) less ore than Toutel*
- 2) less grade than Toutel*
- 3) no available custom mill as in Toutel's case*
- 4) greatly underestimated percentage of dilution.*

I advised Mr. Ridings of Bache & Co of our negative decision & he said he would advise Mr. Jacques. PMK July 4/70

KERR ADDISON MINES LIMITED

(FOR INTER-OFFICE USE ONLY)

MAY - 4 1970

921

attach to previous
of March '68 &
update:

<input checked="" type="checkbox"/>	J.H.S.
<input checked="" type="checkbox"/>	P.M.K.
<input type="checkbox"/>	G.M.H.
<input type="checkbox"/>	R.D.S.
<input type="checkbox"/>	B.C.B.
<input type="checkbox"/>	I.D.B.
<input type="checkbox"/>	M.D.S.
<input type="checkbox"/>	J.H.F.

(E.C.J.)

To P. M. Kavanagh From W. M. Sirola
Subject Alwin Mines Limited, Highland Valley, B.C. Date April 30, 1970

At your request I contacted Harold Jacques who is president of Alwin and he advised me that he would prefer to wait until the current feasibility study by Bacon and Crowhurst is completed. He estimated the completion date to be approximately two weeks hence. He said that he would forward a copy to us at that time.

It was his feeling that the capital cost for this operation would be between \$4- to \$5-million and he seemed to think that the Japanese would commit half of this amount.

In the light of this information, if you still wish to investigate this property further, we can do so when the new reports are received.

Lynda Kuss
W. M. Sirola.

WMS/lk

To

P. M. K.

Could we be interested ^P_A

Joe

DAVID L. CHANDLER
VICE-PRESIDENT & DIRECTOR
E. DOUGLAS HUYCKE
VICE-PRESIDENT & DIRECTOR
R. G. HENDERSON
VICE-PRESIDENT
R. F. KELLEHER
RESIDENT VICE-PRESIDENT



18 KING STREET EAST
TORONTO 1, ONT.
860-3000

April 16, 1970

Mr. J. H. Stovel,
President,
Kerr Addison Mines Ltd.,
44 King Street West,
Toronto, Ontario

J.H.S.
P.M.K.
G.M.H.
R.D.S.
B.C.B.
I.D.B.
M.D.R.
J.H.F.

E.C.J.

Dear Mr. Stovel:

Following our telephone conversation of yesterday, I am enclosing the relevant financial and feasibility data concerning Alwin Mining's copper deposit near Ashcroft, B.C.

If further information is required, please do not hesitate to call me.

Yours sincerely,

BACHE & CO. INCORPORATED

Milton B. Ridings

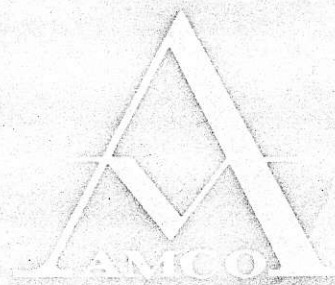
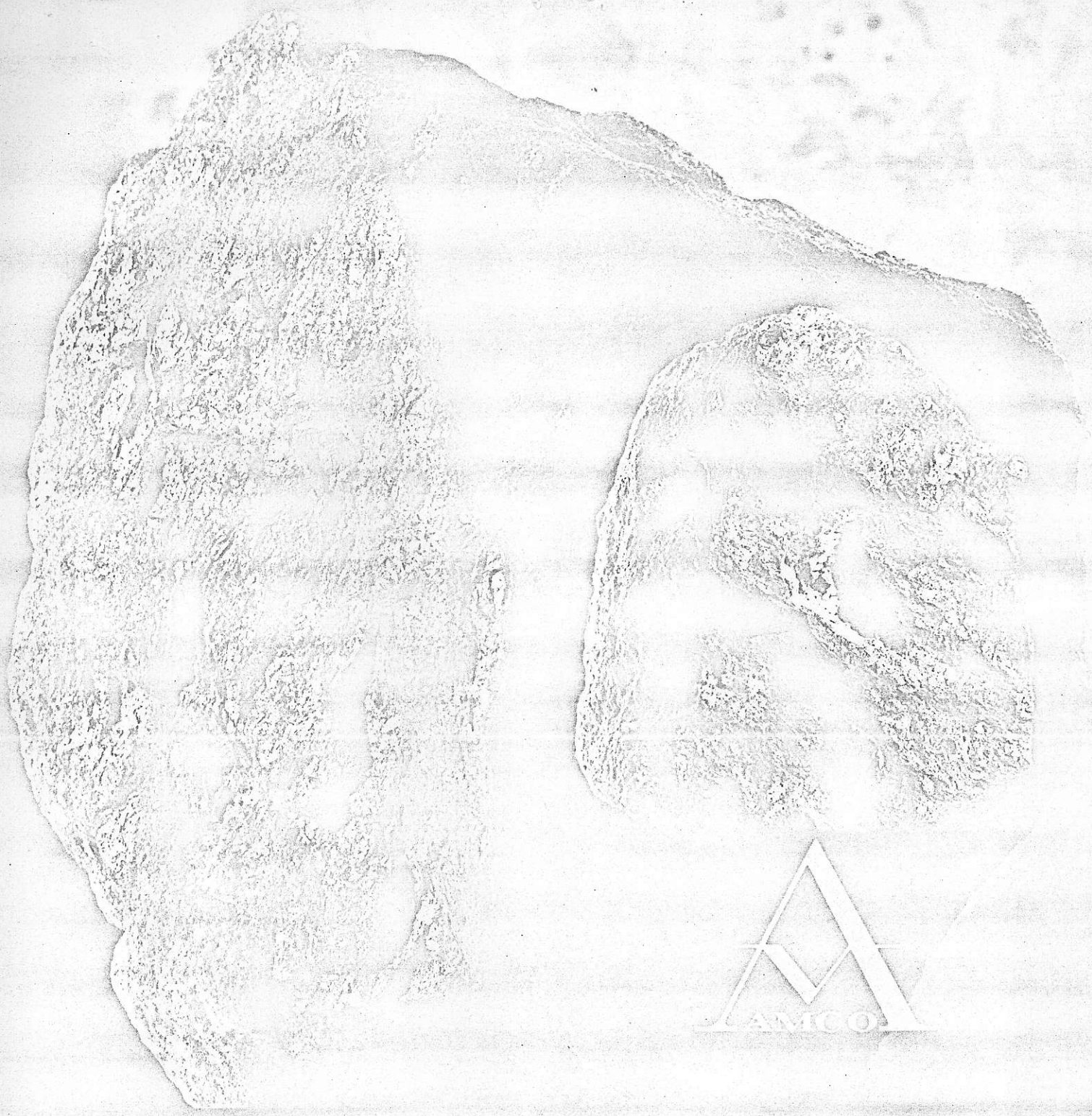
Milton B. Ridings
Institutional Department

MBR/mf

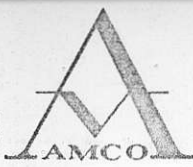


MILTON B. RIDINGS
INSTITUTIONAL SALES
860-3150

APR 17 1970



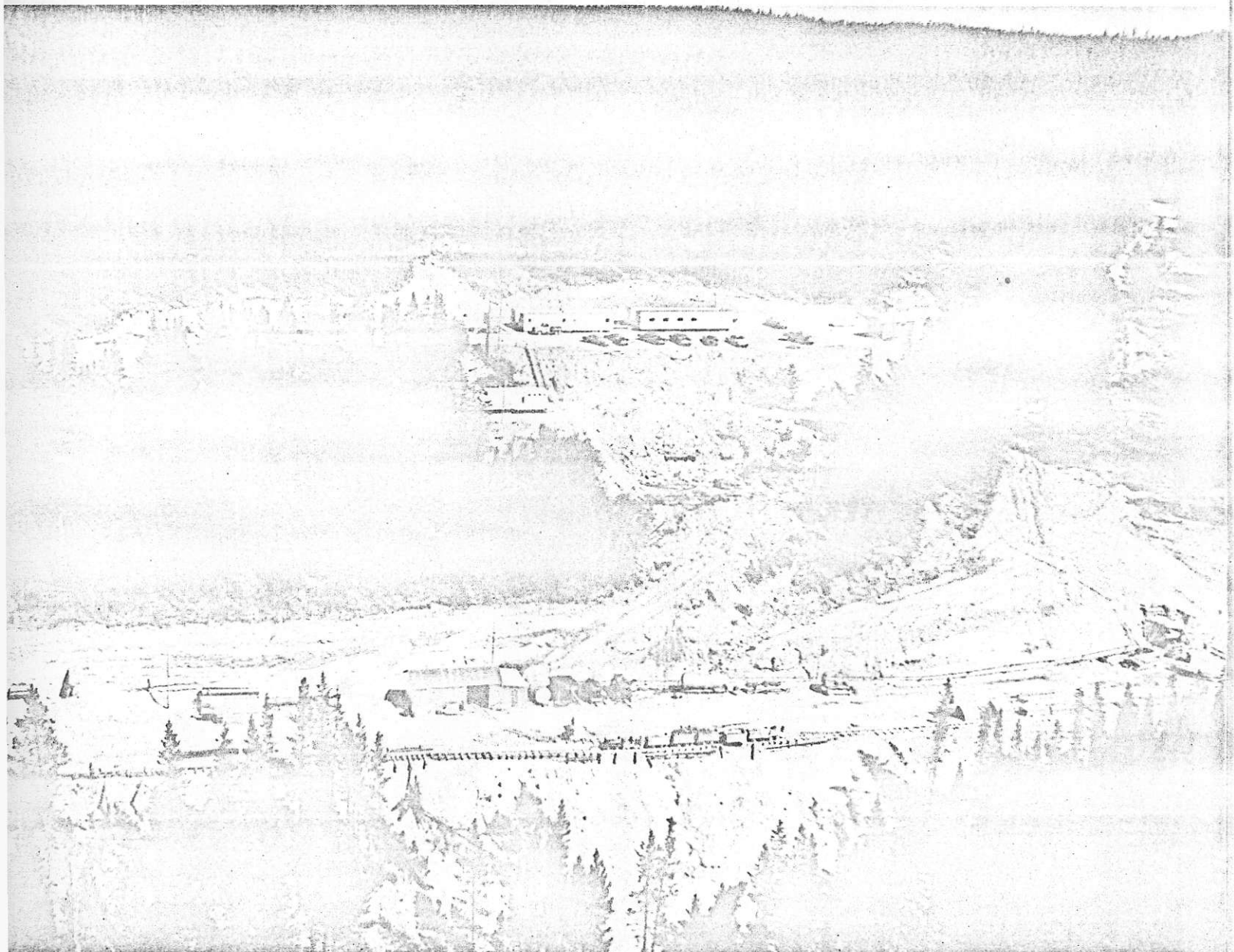
ALWIN MINING COMPANY LTD. (N.P.L.)
3RD Annual Report 1969



ALWIN'S CAMPSITE

Located about 4 miles west of the large Bethlehem low-grade copper producer and some 3 miles northwest of the Lornex property, Alwin's fully-winterized campsite has been greatly expanded since this photograph was taken in 1968. Modern mobile engineering offices, living quarters and recreational, cookhouse and dining units are seen in background. In lower foreground is the waste material

and ore dumpsite beside the rail line to portal at extreme right. Alwin's 4,600 ft. adit runs under the campsite, intersecting the original high-grade workings of pioneer hand miners who shipped ore to smelters in the early 1900s. Portal is at 4,680 ft. elevation. Alwin is favored with economical access, as well as ample water and power services.



ALWIN MINING COMPANY LTD. (N.P.L.)

3rd ANNUAL REPORT — SEPTEMBER, 1969



COVER DESIGN:

Produced in natural color on the cover are two specimens of copper ore from Alwin Mining Company's Highland Valley underground workings. They were selected to depict the two types of copper mineralization in Alwin's high-grade orebody. The bluish specimen is Bornite, the golden one being Chalcocopyrite.

HEAD OFFICE:

807 UNITED KINGDOM BLDG.
409 Granville Street,
Vancouver 2, B.C.

REGISTERED OFFICE:

1250 - One Bentall Bldg.
Vancouver, 5, B.C.

CAPITALIZATION:

3,000,000 Shares without nominal or par value

SHARES ISSUED AND OUTSTANDING:

2,675,003 Shares

OFFICERS AND DIRECTORS:

H.E. Jacques, President and Managing Director
J.A.C. Ross, B.A.Sc., P.Eng., Vice-President
Douglas N. Cameron
Barry D. Speton, Secretary
Morris M. Menzies, B.A.Sc., M.A.Sc.

CONSULTING ENGINEERS:

Bacon and Crowhurst
Vancouver, B.C.

AUDITORS:

Dunwoody & Co.

BANKERS:

Bank of Montreal

REGISTRAR AND TRANSFER AGENT:

Canada Trust Company

SOLICITORS:

Armstrong, Brawner & Speton
Vancouver, B.C.



PRESIDENT'S REPORT TO THE SHAREHOLDERS:

It becomes my privilege to invite and welcome you to your Company's Third Annual Meeting, details of which are announced in the accompanying official Notice of Meeting:

The geological, technical and other reports to be presented at this meeting, coupled with the ensuing discussions, will, we feel sure, reflect the very important stage which your Company has attained this year in the development of its Highland Valley high-grade copper property.

To date, we have expended approximately \$1,500,000 in bringing the property from its original status as merely a hopeful prospect when the claims were first acquired in 1965. At that time Alwin was an unknown private company. Early in 1966 it was converted to a public company. In the intervening years, gradually accelerated exploration and development programs have been carefully planned and carried out on the recommendations and under the direction of professional engineers, geologists and mining personnel of long experience and high repute. We are very proud of their association with us in this exciting B.C. mining venture and I would be remiss in not paying tribute to their diligent service and loyalty as members of the Alwin team.

Financing to date has been provided by a series of public stock underwritings. During the current year, we have also welcomed the financial participation of our associates — Nippon Mining Company and the B.O. Brynelsen syndicate group known as Combined Capital Resources Ltd. The latter group is also represented on our Board of Directors as well as the Management Committee. Substantial support such as this is indicative of the measure of confidence held in your Company's property by all concerned.

Since our last annual meeting, rapid progress has been achieved in both the major underground development program and new exploration work beyond the established high-grade ore zones. We are now preparing for the third stage of the current season's \$690,000 pre-production program. This is to include further underground development and a feasibility study. This study will determine the most efficient mining factors along with other essential technical data. It also should provide the information required for the finalizing of senior financing for construction of production facilities. Your directors are in discussion with capital financing sources, the results of which, of course, may be dependent — for the time being at least — on the present monetary situation.

An up-to-date report on current ore reserves, to be presented at this meeting by our consulting engineers, is a source of much gratification to your directors and field personnel. Suffice it to state here that Alwin's prospects of becoming a profitable copper producer are brighter, by far, than at the time of our last annual meeting. Despite the current monetary difficulties which obviously are retarding industrial and resource developments, your directors remain confident that Alwin will become the second producer in B.C.'s rich Highland Valley copper camp.

In conclusion, may I urge you to attend this Third Annual Meeting and participate in the discussions. If you are unable to be present, please complete and return the enclosed proxy form so that your vote may be duly recorded on the various resolutions to be presented.

Respectfully submitted on behalf of the Board of Directors.

Yours sincerely,

ALWIN MINING COMPANY LTD. (N.P.L.)

PRESIDENT.



Harold E. Jacques
President and Managing
Director



John A.C. Ross,
B.A.Sc., P. Eng.
Vice-President
and Director



Douglas N. Cameron
Director



Barry D. Speton
Director and Secretary



Morris M. Menzies,
B.A.Sc., M.A.Sc.
Director



BALANCE SHEET
as at 30 June 1969

	1969	1968
CURRENT ASSETS		
Cash on hand and in bank	\$ 12,990	\$ 39,202
Funds on deposit with underwriter, with accrued interest	—	154,784
Bank term deposit receipts	325,000	—
Accounts receivable	2,222	—
Supplies inventory	2,901	—
Accrued interest receivable	1,559	—
Assistance claim - Government of Saskatchewan	—	12,268
Prepaid expenses	11,997	971
	<u>\$ 356,669</u>	<u>\$207,225</u>
PAYMENTS ON OPTION TO PURCHASE MINING CLAIMS, Note 1		
	<u>\$ 35,000</u>	<u>\$ 35,750</u>
MINING PROPERTIES AND CLAIMS, at cost		
	<u>\$ 25,459</u>	<u>\$ 24,026</u>
FIXED ASSETS, at cost less accumulated depreciation, Note 2		
	<u>\$ 68,352</u>	<u>\$ 61,905</u>
OTHER ASSETS AND DEFERRED CHARGES		
Exploration and development costs	\$1,671,299	\$641,959
Leasehold improvements, net of amortization	985	693
Finance charges	—	320
Organization expense	3,119	3,119
Commission on sale of shares	14,127	14,127
	<u>\$1,689,530</u>	<u>\$660,218</u>
	<u>\$2,175,010</u>	<u>\$989,124</u>

ALWIN MINING COMPANY LTD. (N.P.L.)

	1969	1968
CURRENT LIABILITIES		
Accounts payable and accrued expenses	\$ 122,946	\$ 69,810
ADVANCE ON FINANCING OF EXPLORATION PROGRAM, Note 3	<u>230,000</u>	
SHAREHOLDERS' EQUITY		
Share capital		
Authorized		
3,000,000 shares without nominal or par value		
Issued and fully paid		
1,992,503 shares for cash	\$1,828,252	
582,500 shares for mining properties	<u>14,562</u>	<u>1,842,814</u>
<u>2,575,003</u>		<u>919,314</u>
Deficit	<u>(20,750)</u>	
	<u>1,822,064</u>	
Approved on behalf of the Board		
" H. E. JACQUES" Director		
"J. A. C. ROSS" Director	<u>\$2,175,010</u>	<u>\$989,124</u>

Note - 5 Other financial information



ALWIN MINING COMPANY LTD. (N.P.L.)

STATEMENT OF DEFERRED EXPLORATION, DEVELOPMENT AND OTHER EXPENDITURES for the six months ended 30 June 1969

EXPLORATION AND DEVELOPMENT

Grand Forks, British Columbia			
Balance, beginning of period		\$ 72,149	
Expenditure during the period			
Lease on claim		63	\$ 72,212
		<hr/>	
Highland Valley, British Columbia			
Balance at beginning of period		955,392	
Expenditure during period			
Assaying	\$ 673		
Camp operation	75,827		
Engineering and geological fees and expense	66,235		
Government fees, licences and tax	661		
Depreciation of mining equipment	7,266		
Road building	16,616		
Underground development and diamond drilling	286,157	453,435	1,408,827
	<hr/>	<hr/>	
Uranium City, Saskatchewan			
Balance at beginning and end of period			60,980
Alwin-Siniloops joint venture, Highland Valley – Note 5(b)			
			<hr/> 9,500
			<hr/> \$1,551,519



NOTES TO THE FINANCIAL STATEMENTS

as at 30 June 1969

1. Payments on option to purchase mining claims

The company has paid \$35,000 on an option to purchase three crown granted mineral claims situated in the Kamloops Mining Division of B.C. A balance of \$140,000 remains payable in varying instalments over a period ending 12 December 1971. Instalments of \$50,000 are payable within one year.

2. Fixed assets

	1969	1968
Trucks, at cost	\$10,699	\$ 7,486
Less – accumulated depreciation	5,064	3,227
	<u>\$ 5,635</u>	<u>\$ 4,259</u>
Equipment, at cost	\$84,551	\$61,125
Less – accumulated depreciation	21,834	3,479
	<u>\$62,717</u>	<u>\$57,646</u>
Total cost less accumulated depreciation	<u><u>\$68,352</u></u>	<u><u>\$61,905</u></u>

3. Advance on financing of exploration program

Under the terms of an agreement, the company received \$230,000 to assist in the financing of its exploration and development program on certain of its properties in the Highland Valley area of British Columbia. This advance was convertible at any time into shares of the company at \$2.30 per share.

Subsequent to 30 June 1969, the conversion to shares was effected. The same agreement provides (a) for a further contribution of \$250,000 to be made to the company, convertible to shares at \$2.50 per share, (b) for obtaining one-third of the major financing for bringing the property into production, should the company elect to do so, and (c) for the company to sell all the ore concentrate to Nippon Mining Co. Ltd. for a period of ten years.

4. Share capital

- (a) During the six months ended 30 June 1969, the company issued 205,000 shares for cash to net the treasury \$421,750.
- (b) 464,000 shares were held in escrow at 30 June 1969.

(continued on next page)



ALWIN MINING COMPANY LTD. (N.P.L.)

STATEMENT OF DEFERRED EXPLORATION, DEVELOPMENT AND OTHER EXPENDITURES for the six months ended 30 June 1969

c/f \$1,551,519

ADMINISTRATION

Balance at beginning of period		\$101,509	
Expenditures during the six month period			
Bank charges	\$ 33		
General administration	2,888		
Legal and audit	4,307		
Office rent and power	3,261		
Office supplies and expense	2,379		
Promotion	5,596		
Salaries and employee benefits	15,466		
Telephone	1,283		
Travel	4,405		
Trust company fees	1,355		
Depreciation — equipment	697		
Amortization of leasehold improvements	638		
	<u>\$42,308</u>		
Deduct — administration recoveries	2,600	39,708	141,217
			<u>\$1,692,736</u>
Deduct interest income			
Balance beginning of period		10,702	
Interest earned during the period		10,735	21,437
			<u>\$1,671,299</u>



ALWIN MINING COMPANY LTD. (N.P.L.)

STATEMENT OF SOURCE AND APPLICATION OF FUNDS for the six months ended 30 June 1969

	1969	1968
WORKING CAPITAL, BEGINNING OF PERIOD	\$ 90,842	\$180,140
SOURCE OF FUNDS		
Issue of share capital for cash	421,750	352,500
Advance on financing of exploration program	230,000	
	<u>\$651,750</u>	<u>\$352,500</u>
APPLICATION OF FUNDS		
Exploration, development and other expenditures, excluding depreciation and amortization	483,369	336,773
Payments on truck finance contract		478
Mining properties and claims	37	2,340
Purchase of equipment and leasehold improvements	15,463	50,634
Option payments on claims	10,000	5,000
	<u>\$508,869</u>	<u>\$395,225</u>
INCREASE (DECREASE) IN WORKING CAPITAL FOR THE SIX MONTHS	<u>\$142,881</u>	<u>\$ (42,725)</u>
WORKING CAPITAL, END OF PERIOD	<u><u>\$233,723</u></u>	<u><u>\$137,415</u></u>



NOTES TO THE FINANCIAL STATEMENTS

as at 30 June 1969

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4. Share capital

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- (b) 464,000 shares were held in escrow at 30 June 1969.

(continued on next page)



4. Share capital (cont'd)

- (c) An option is outstanding to a company director to sell him 15,000 shares at \$1.35 per share, at the rate of 5,000 shares per year for each of 1970, 1971, and 1972.
- (d) As referred to in Note 3, an option is outstanding to issue 200,000 shares on conversion of financing loans. Subsequent to 30 June 1969, a portion of the option was exercised for 100,000 shares.

5. Other financial information

- (a) Aggregate direct remuneration paid to directors and senior officers for the six months period in 1969 was \$7,000.00.
- (b) The company entered into a joint exploration agreement with a syndicate to each contribute \$9,500 to carry out exploratory work on certain of the company's mineral claims in the Kamloops Mining Division of British Columbia. Should further development of the property be warranted, the company and the syndicate shall contribute additional monies.
- (c) Subsequent to 30 June 1969, the company arranged to purchase a crawler tractor and a diesel electric plant on which it had made rental — purchase payments. The balance payable shall be \$55,900.



ALWIN MINING COMPANY LTD. (N.P.L.)

25 August 1969

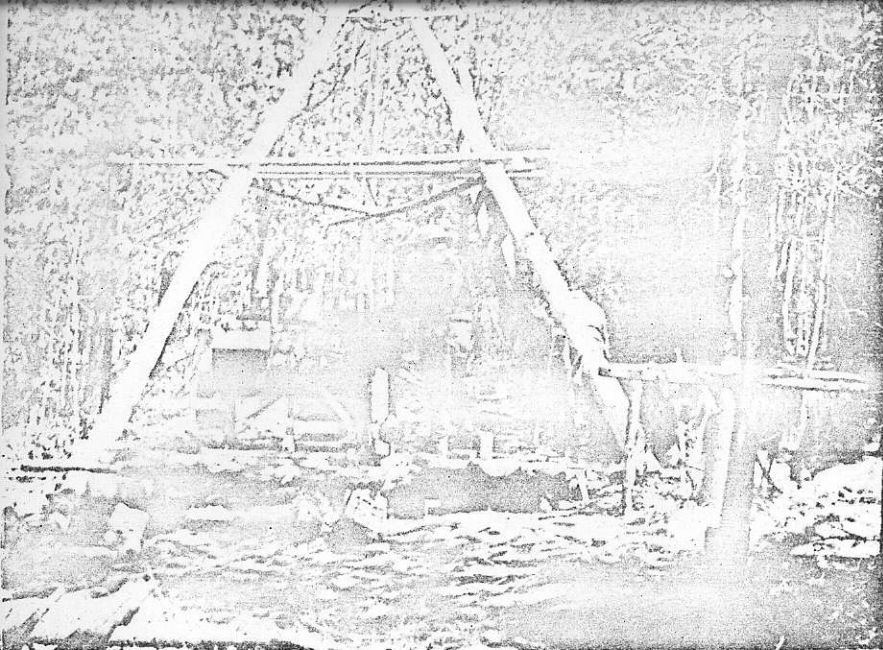
To the Shareholders,
Alwin Mining Company Ltd.,
(Non-personal liability)
Vancouver, B.C.

We have examined the balance sheet of Alwin Mining Company Ltd. (Non-personal liability) as at 30 June 1969 and the statements of deferred exploration, development and other expenditures and source and application of funds for the six months then ended. Our examination included a general review of the accounting procedures and such tests of accounting records and other supporting evidence as we considered necessary in the circumstances.

In our opinion these financial statements present fairly the financial position of the company as at 30 June 1969, and the results of its operations and source and application of its funds for the six months then ended, in accordance with generally accepted accounting principles applied on a basis consistent with that of the preceding period.

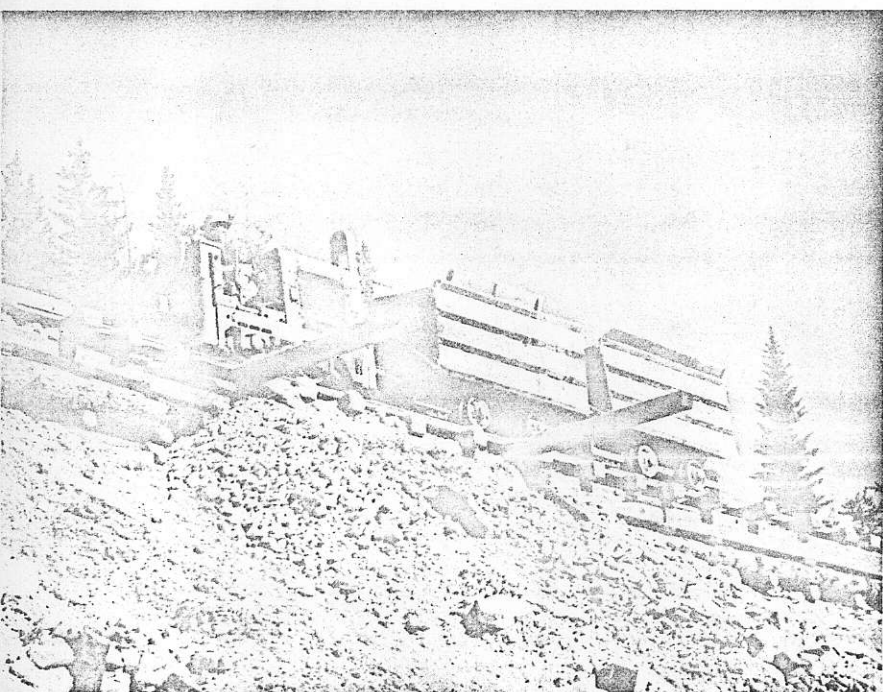
"DUNWOODY & COMPANY"

Chartered Accountants.



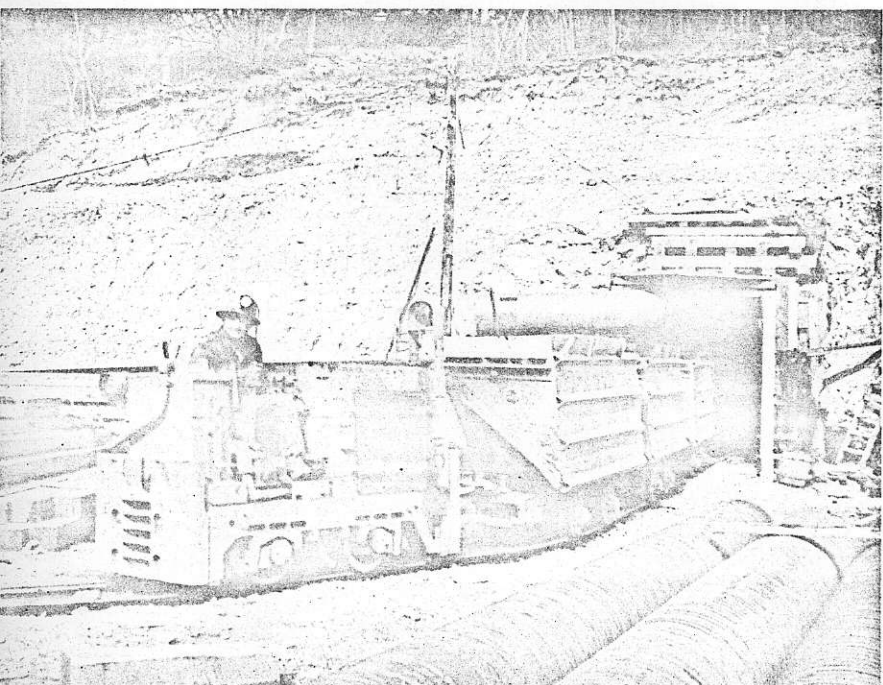
DISCOVERY DRILL HOLE

Excitement permeated the Alwin camp as No. 1 diamond drill hole was spotted and drilling commenced in the summer of 1967. This discovery hole — drilled at minus-45 degrees south — revealed three intersections of heavily-mineralized ore containing chalcopyrite and bornite over three individual vein type structures. Assays - eagerly awaited on what was obviously a much higher grade than other copper ore occurrences in the Highland Valley area - returned values of 1.65% copper over 3 ft., 4.5% over 26 ft. and 6.5% over 10 ft. This good news launched Alwin's initial full scale surface drilling program. To date, over 90,000 ft. of surface and underground drilling has consistently maintained an average grade of 2.4% copper, before dilution, and 0.30 oz. silver per ton.



ORE DUMPSITE

Three-ton Granby ore cars have been used initially in Alwin's underground development program. Shown is the dumpsite which is also being utilized for storage of high-grade ore as drifting and raising progresses on the ore zones. This photo was taken last year when a portion of the site was first being used for disposing of waste material as the adit was being driven.



ALWIN GOES UNDERGROUND

First phase of Alwin's underground development schedule, launched in 1968, consisted of a line drive adit parallel to the known ore zones, specially designed to be used as a main haulage way for later production yet serving immediately as access for exploring and developing the ore zones at depth. The program also included cross-cutting and drifting on the veins for sampling and structure, plus establishing drill stations every 100 feet on section for further depth exploration. In recent months the underground program has been concentrated on more extensive drifting, raising, and continued diamond drilling to prove up continuity at depth and probe extensions of the known vein systems.

SUMMARY

Feasibility Report 1970.

Ore reserves as re-estimated during March 1970 by Mr. W.W. Cummings, P. Eng., Chief Geologist for the Alwin Mining Company, and Mr. T.E. Swanson, P. Eng., Consulting Engineer, acting for Bacon & Crowhurst Ltd., amount to 1,051,949 tons assaying 2.51% copper and 0.375 ounces of silver per ton of material in place, and 1,138,910 tons assaying 2.33% copper and 0.346 ounces of silver per ton after allowance for mining dilution.

It is conservatively estimated that a minimum of 250,000 tons of similar material will be found by future exploration.

Capital Costs

Using trackless diesel-powered equipment and a decline system, it is estimated that a total investment of \$4,766,586 will be required to prepare the underground workings for production, and to construct a concentrator with related facilities, including townsite requirements, capable of processing 500 tons of ore per day (175,000 tons per year).

The present ore reserves will suffice for 6.51 years operation at this rate, with a further 1.43 years anticipated, for a total of 7.94 years.

The sum of \$90,000 representing inventory of supplies, and the sum of \$344,992 representing two months' operating costs for working capital are included in the \$4,766,586 total.

Similarly, it is estimated that developing the mine by a vertical shaft and horizontal levels will require a total investment of \$5,402,226 including costs related to concentrator and plant services.

The sum of \$90,000 representing inventory of supplies, and the sum of \$363,727 representing two months' operating costs for working capital are included in the \$5,402,226 total.

During the first four years, the total operating cost for the trackless method is estimated to be \$11.829 per ton of ore milled, and \$12.472 per ton of ore milled for the shaft method. It is estimated this will increase to \$12.451 per ton milled (trackless) and \$13.094 per ton milled (shaft).

The estimated operating profit for each method and the estimated resulting cash flow has been calculated as shown in the tables on the succeeding pages.

It is estimated that nine months time will be required to place the mine in production from the time that suitable finances are provided.

TRACKLESS METHOD

SUMMARY - ESTIMATED CAPITAL COSTS

1. Mine		
a. Equipment- including installation	\$ 536,730	
Government Sales Tax	33,950	
Freight	<u>5,400</u>	
		\$ 576,080
b. Preproduction Development & Stopping		
- Direct Cost	\$ 744,082	
- Indirect Cost	<u>345,825</u>	
		\$1,089,907
 Total Mine		 \$1,665,987
2. Crushing Plant		
a. Equipment	\$ 246,869	
b. Building	<u>126,394</u>	373,263
3. Concentrator		
a. Equipment	\$ 298,606	
b. Building	<u>184,233</u>	482,839
4. Plant Services & Administration - Buildings & Equipment		306,459
5. Water Supply, Fire Protection, & Tailings Disposal		140,000
6. Power Transmission & Distribution		323,100
7. Camp Buildings & Housing		256,400
8. Preproduction Plant Services & Administration Cost		166,836
9. Vancouver Head Office - 9 months at \$4,064		<u>36,576</u>
		\$3,751,460
Contingencies at 10%		<u>375,146</u>
		\$4,126,606
Engineering on Applicable Items		<u>204,988</u>
		\$4,331,594
Inventory of Supplies		<u>90,000</u>
		\$4,421,594
Working Capital - 2 months Operating Costs (i.e. 1/6 x \$2,069,955)		<u>344,992</u>
Total		\$4,766,586

SHAFT METHOD

SUMMARY - ESTIMATED CAPITAL COSTS

1. Mine		
a. Equipment - including installation	\$ 669,515	
Government Sales Tax	36,374	
Freight	<u>12,168</u>	
		\$ 718,057
b. Preproduction Development & Stopping		
- Direct Cost	\$ 996,092	
- Indirect Cost	<u>437,881</u>	
		\$1,433,973
Total Mine		\$2,152,030
2. Crushing Plant		
a. Equipment	\$ 241,513	
b. Building	<u>115,340</u>	356,853
3. Concentrator		
a. Equipment	\$ 303,494	
b. Building	<u>144,550</u>	448,044
4. Plant Services & Administration - Buildings & Equipment		339,449
5. Water Supply, Fire Protection, & Tailings Disposal		140,000
6. Power - Including Electrical Distribution		344,400
7. Camp Buildings & Housing		280,900
8. Preproduction Plant Services & Administration Cost		183,373
9. Vancouver Head Office - 9 months at \$4,064		<u>36,576</u>
		\$4,281,625
Contingencies at 10%		<u>428,163</u>
		\$4,709,788
Engineering		<u>238,711</u>
		\$4,948,499
Inventory of Supplies		<u>90,000</u>
		\$5,038,499
Working Capital - 2 months Operating Costs (i.e. 1/6 x \$2,182,363)		<u>363,727</u>
Total		\$5,402,226

ESTIMATED NET SMELTER RETURNS
PER SHORT TON OF CONCENTRATES
FOR MINESITE

	<u>Price of Copper - ¢U.S. per lb</u>				
	50.00	55.00	60.00	65.00	70.00
<u>Content & Price Paid For</u>					
a. Lbs of copper contained/ton of concentrate	640	640	540	640	640
b. Lbs of copper paid for/ton of concentrate	(620)	620	620	620	620
c. Price of copper less deduction of 1.20¢/lb	48.80	53.80	58.80	63.80	68.80
<u>Value of Metals Contained</u>					
d. Value of copper - (item "b") x (item "c") - \$U.S.	\$ 302.56	\$ 333.56	\$ 364.56	\$ 395.56	\$ 426.56
e. Value of silver - 5.40 ozs x \$1.90/lb x 90%	9.23	9.23	9.23	9.23	9.23
f. Value of gold - less than 1.0 gr/dry m. ton	-	-	-	-	-
g. Total - item "d" + item "e"	311.79	342.79	373.79	404.79	435.79
<u>Deductions</u>					
h. Treatment Charge = \$27.00/dry metric ton					
i.e. = $\frac{27.00 \times 2000}{2204.6} = 24.49/\text{dry short ton}$	24.49	24.49	24.49	24.49	24.49
<u>Net Value</u>					
(FOB Ship Vancouver, B.C.)					
i. Item "g" - item "h" - \$U.S./short ton concentrate	287.30	318.30	349.30	380.30	411.30
j. Plus Canadian/U.S. exchange @ 7.75%	22.27	24.67	27.07	29.47	31.88
k. Net value - \$Canadian/short ton concentrate	\$ 309.57	\$ 342.97	\$ 376.37	\$ 409.77	\$ 443.18

	<u>Price of Copper - ¢U.S. per lb</u>				
	50.00	55.00	60.00	65.00	70.00
<u>Loading & Freight</u>					
(Mine to Vancouver, B.C. to Ship)					
	<u>Per Wet Ton of Concentrate</u>				
l. Loading at mine - included in mill operating costs					
m. Trucking (or rail) - mine to Vancouver, B.C.	\$ 6.45				
n. Sampling, warehousing & shiploading (Vancouver Wharves - \$3.50) + (stevedoring = 17¢)	<u>3.67</u>				
Sub Total	\$ 10.12				
	<u>Per Dry Ton of Concentrate</u>				
o. Loading & freight per dry ton of concentrate*	\$ 10.88	\$ 10.88	\$ 10.88	\$ 10.88	\$ 10.88
<u>Net Smelter Returns</u>					
(FOB Minesite)					
p. Per short dry ton of concentrate (item "K") - (item "o") = \$Canadian	298.69	332.09	365.49	398.89	432.30
q. Per lb of copper contained - $\frac{\text{item "p'}}{640} = \text{¢ Canadian}$	46.67	51.89	57.11	62.33	67.55

Assumptions

Grade of copper concentrate = 32% Cu. + 0.035 ozs Au/ton + 5.40 ozs Ag/ton.

* Moisture content = 7% of wet weight.

Price of silver = \$1.90 U.S. per ounce.

TRACKLESS METHOD

ESTIMATED OPERATING COST - 500 TPD OR 175,000 TPY

	<u>First 4 Years</u>		<u>Next 4 Years</u>	
	<u>Amt/yr</u>	<u>Per Ton Milled</u>	<u>Amt/yr</u>	<u>Per Ton Milled</u>
Mining	\$1,325,248	\$ 7.573	\$1,443,125	\$ 8.195
Milling	301,175	1.721	301,175	1.721
Power	93,996	.537	93,996	.537
Mine Administration, Plant Services and Townsite	300,768	1.719	300,768	1.719
Vancouver Head Office	<u>48,768</u>	<u>.279</u>	<u>48,768</u>	<u>.279</u>
Totals	\$2,069,955	\$11.829	\$2,187,832	\$ 12.451

TRACKLESS METHOD

ESTIMATED OPERATING PROFIT - CANADIAN FUNDS
PRICE OF COPPER - 50¢ US

<u>Year:</u>	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>Total & Average</u>
Tons milled - 000's	175	175	175	175	175	175	175	175	1,400
Tons concentrates sold	14,098	13,589	11,705	11,095	11,095	11,095	11,095	11,095	94,867
Net smelter returns - 000's \$Can. at \$298.69/ton of concentrates	4,211	4,059	3,496	3,314	3,314	3,314	3,314	3,314	28,336
Net smelter returns per ton of ore milled	24.063	23.194	19.977	18.937	18.937	18.937	18.937	18.937	20.240
Operating cost per ton of ore milled	11,829	11,829	11,829	11,829	12,451	12,451	12,451	12,451	12,140
Operating Profit per ton of ore milled	12.234	11,365	8,148	7,108	6,486	6,486	6,486	6,486	8,100
Operating Profit - 000's \$Can.	2,141	1,989	1,426	1,244	1,135	1,135	1,135	1,135	11,340

TRACKLESS METHOD

ESTIMATED CASH FLOW
PRICE OF COPPER - 50¢ US

ALL FIGURES ARE 000'S \$ CANADIAN

	<u>1/2</u>	<u>1</u>	<u>1-1/2</u>	<u>2</u>	<u>2-1/2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>
Operating Profit	1,070	1,071	994	995	713	713	1,244	1,135	1,135	1,135	1,135
Investment Income	-	-	-	-	-	-	14	39	39	39	39
Total Income	1,070	1,071	994	995	713	713	1,258	1,174	1,174	1,174	1,174
Replacement of Assets (Non-Capital)	-	50	-	50	-	50	50	50	50	50	50
Interest	396	205	164	122	81	53	14	-	-	-	-
Total Other Deductions	396	255	164	172	81	103	64	50	50	50	50
Operating Profit Prior to Dep'n. & Taxes	674	816	834	823	632	610	1,194	1,124	1,124	1,124	1,124
Depreciation	-	-	-	-	-	-	873	612	428	300	210
Write-off Pre-Production Expenses	674	816	834	823	108	-	-	-	-	-	-
Total Other Write-offs	674	816	834	823	108	-	873	612	428	300	210
Taxable Income for B.C. Min. Tax	-	-	-	-	605	610	307	473	657	785	875
Processing Allowance + \$10,000 Allowance	-	-	-	-	101	92	59	81	109	128	141
Taxable Income Sub. to B.C. Min. Tax	-	-	-	-	504	518	248	392	548	657	734
B.C. Mining Tax Payable at 15%	-	-	-	-	76	78	37	60	82	98	110
Taxable Income for Federal Tax Base	-	-	-	-	-	-	284	452	614	726	804
Depletion	-	-	-	-	-	-	95	151	205	242	268
Federal Income Tax at 50%	-	-	-	-	-	-	95	151	205	242	268
Cash Repayment											
- Debt	4,766	4,092	3,276	2,442	1,619	1,063	531	913	837	784	746
- Cash Available for Repayment	674	816	834	823	556	532	1,062	-	-	-	-
- Balance	4,092	3,276	2,442	1,619	1,063	531	-	-	-	-	-
- Cash Available for Shareholders	-	-	-	-	-	-	531	913	837	784	746

FUNDS REQUIRED - BY MONTHS

<u>Months</u>	<u>Trackless Method</u>	<u>Shaft Method</u>
1	\$ 448,226	\$ 659,994
2	448,226	427,523
3	493,312	523,387
4	424,233	465,774
5	424,728	509,721
6	459,902	631,177
7	614,204	627,385
8	625,533	690,842
9	<u>828,222</u>	<u>866,423</u>
Totals	\$ 4,766,586	\$ 5,402,226

GEOLOGY AND MINERALIZATION

The adit area is in the eastern part of the Alwin property, in Bethsaida granodiorite. This rock is fractured along steeply dipping, N60° E and N70° W, planes.

At least seven (and possibly more) mineralized zones of economic significance have been discovered, which occupy such fractures and vary from one foot to over thirty feet in width.

Chalcopyrite and lesser amounts of bornite are present with generally abundant sericite in the fracture fillings. Pyrite occurrence is quite minor.

A north-south dyke of feldspar porphyry, twenty feet wide, traverses the various mineralized zones. It dips 45° easterly and has the effect of segmenting the ore. Another lesser dyke of similar rock is known in the underground workings.

ORE RESERVES

(1) SUMMARY

As of March 1970, the ore reserves are estimated to be 1,051,949 tons in place, containing 2.51% copper and 0.375 ounces of silver per ton. Including an allowance of 86,961 tons assaying 0.10% copper (8.27% average) for mining dilution, these reserves are estimated at 1,138,910 tons assaying 2.33% copper. This represents 1539 tons per vertical foot of depth. All of the ore will have to be mined by underground methods.

Drifting and raising conducted along and upwards from the 5130 level has confirmed much of the results indicated by previous diamond drilling and has demonstrated that the mineralization possesses good continuity.

It is conservatively estimated therefore that an additional 250,000 tons of similar material will be found by further exploration.

(2) GENERAL

The zones vary from about one foot to thirty-two feet and average about 10.5 feet in true width. They are spread along a total strike length of about 1,700 feet, and although some appear to have weakened or have been delimited by the exploration work completed to date, several are still open in strike and in depth.

From the present underground openings it has been possible to probe the structure of long diamond drill holes to about 800 feet below the surface. No change in the favourable geological environment has been observed at this depth and some zones are still open.

The lower limit of this deep diamond drilling represents an approximate economic limit for further exploration by this means.

Along the strike of the favourable structure possibilities still exist relative to the discovery of additional zones of the extension of the present ones.

Four surface diamond drill holes situated about 400' easterly from the underground work cut interesting copper values worthy of further investigation.

Similarly, several diamond drill holes directed across the structure about 500' westerly from the main mineralized zones cut narrow widths of good grade mineralization with extensions as yet not fully determined.

Summarizing, additional ore as stated will undoubtedly be found therefore both easterly and westerly of the presently explored zones with depth extensions possible.

Extensive work was carried on in the 1969 in an effort to prove or disprove the presence of disseminated or "porphyry" type copper deposits on other parts of Alwin's claim group.

Tractor trenching at regular intervals followed by surface diamond drilling, designed to explore several areas showing copper geochemical anomalous values, failed, however, to disclose anything of any economic significance.

(3) CALCULATIONS

The principles used in the ore reserve calculation were as follows:

1. Length of intersections and assay values determined from a total of close to 200 diamond drill holes, both surface and underground, were combined with lengths and assay values obtained from chip and channel sampling of mineralization exposed by underground work. It should be noted that diamond drilling was directed so as to cut the zones at 100' intervals.

2. Areas of influence for any one intersection have been extended halfway to adjacent holes and up to a maximum of 100' (chiefly in depth) where no other drilling exists.

3. True widths of mineralization have been obtained by multiplying the drill hole intersection lengths by factors related to the angle of the drill hole and the angle of the mineralization.

4. If the true width amounted to less than 4.0', which is considered to be a minimum mining width, the grade of copper has been reduced proportionately.

5. If the grade of copper so calculated amounted to less than 0.90%, the intersection was disregarded except as noted below.

6. Material containing 0.70% copper has been included if adjacent to an acceptable block.

7. A factor of 11.2 cu. ft. per ton has been used, as per specific gravity determinations reported by the Department of Energy, Mines and Resources, Ottawa.

8. Mining dilution has been calculated by considering the relative dimensions of the ore zones in relation to the proposed method of mining, and the physical characteristics of the mineralization together with that of the wall rocks. It is considered that both the ore and the wall rocks are competent and will stand well if mined as proposed.

Dilution was therefore calculated as follows: -

- (a) Blocks 200' and less in length, with widths less than 9', limited tonnage and no pronounced bends along the strike - shrinkage stoping to be used and dilution factor of 12%.
- (b) Blocks over 9' in width, all blocks over 200' in length, blocks too close to other blocks to permit shrinkage stoping - cut and fill stoping to be used and dilution factor of 7%.
- (c) Blocks up to 9' in width, but not in category (a) - cut and fill stoping to be used and dilution factor of 10%.

SUMMARY - ORE RESERVE ESTIMATE

<u>Block</u>	<u>Section</u>	<u>Tons</u>	<u>Grade % Copper</u>	<u>Width Feet</u>	<u>% Dilution</u>	<u>Tons Including Dilution</u>	<u>Grade % Copper</u>
1	46	5,625	4.48	6.0	12	6,300	4.01
2	46	3,107	1.61	4.0	12	3,480	1.45
3	46	1,787	1.61	4.0	12	2,001	1.45
4	46	7,303	5.10	5.8	12	8,179	4.56
5	46	2,232	1.66	5.0	12	2,500	1.49
6	46	2,232	1.66	5.0	12	2,500	1.49
7	47	7,152	2.58	7.7	12	8,010	2.31
8	47	4,107	2.51	4.0	12	4,600	2.25
9	47	3,285	0.73	4.0	12	3,679	0.66
10	47	3,125	1.36	7.0	10	3,438	1.24
11	47	3,125	1.36	7.0	10	3,438	1.24
12	47	2,678	0.93	6.0	10	2,946	0.85
13	47	2,678	0.93	6.0	10	2,946	0.85
14	47	3,571	1.01	4.0	10	3,928	0.93
15	48	4,500	3.00	7.0	12	5,040	2.69
16	48	4,464	1.22	5.0	12	5,000	1.10
17	48	2,625	1.09	4.9	12	2,940	0.98
18	48	2,411	1.09	4.9	12	2,700	0.98
19	48	20,464	1.65	19.1	12	22,920	1.48
20	48	3,821	0.77	4.0	12	4,280	0.70
21	48	1,786	2.55	4.0	12	2,000	2.29
22	48	1,786	2.55	4.0	12	2,000	2.29
23	48	8,571	1.76	6.0	12	9,600	1.58
24	48	11,910	2.35	12.7	7	12,744	2.20
25	49	9,036	1.84	9.2	12	10,120	1.65
26	49	1,008	7.18	4.5	12	1,129	6.42
27	49	1,008	7.18	4.5	12	1,129	6.42
28	49	20,035	2.85	18.7	7	21,437	2.67
29	49	23,000	2.63	28.0	7	24,610	2.46
30	50	4,464	4.38	5.0	12	5,000	3.92
31	50	5,893	2.85	4.4	12	6,600	2.55
32	50	12,286	2.24	17.2	7	13,146	2.10
33	50	11,054	4.82	27.5	7	11,828	4.51
34	50	5,357	1.82	20.0	12	6,000	1.63
35	50	24,107	2.62	20.0	7	25,794	2.45
36	50	23,571	4.09	16.0	7	25,221	3.82
37	50	13,500	2.04	14.4	7	14,445	1.91
38	50	3,348	2.15	10.7	7	3,582	2.01
39	50	5,312	2.15	7.0	7	5,684	2.01
40	50	3,214	0.95	4.0	12	3,600	0.89
41	50	30,357	1.06	13.6	7	32,482	0.99
41A	50	17,678	6.27	9.0	7	18,915	5.87
42	50	7,036	1.08	7.5	12	7,880	0.98
43	50	3,571	0.88	4.0	12	4,000	0.80
43A	50	3,482	2.07	3.9	10	3,830	1.89
44	51	9,107	2.89	10.2	7	9,744	2.70
45	51	3,839	0.76	4.3	12	4,300	0.69

<u>Block</u>	<u>Section</u>	<u>Tons</u>	<u>Grade % Copper</u>	<u>Width Feet</u>	<u>% Dilution</u>	<u>Tons Including Dilution</u>	<u>Grade % Copper</u>
46	51	5,455	3.43	4.7	12	6,110	3.07
47	51	4,875	1.52	4.2	12	5,460	1.36
48	51	24,339	1.17	23.7	7	26,043	1.09
49	51	5,089	5.15	7.6	7	5,445	4.81
50	51	4,071	2.42	7.6	7	4,356	2.26
51	51	8,250	2.94	7.7	7	8,827	2.75
52	51	2,678	2.14	5.0	12	3,000	1.92
53	51	2,455	2.14	5.0	12	2,750	1.92
54	51	5,545	1.24	4.6	10	6,100	1.11
55	51	23,661	2.21	17.7	7	25,317	2.07
55A	51	15,267	0.66	11.4	7	16,336	0.62
56	52	3,821	3.14	4.5	7	4,088	2.94
57	52	6,750	2.30	6.3	7	7,223	2.15
58	52	21,152	4.28	20.6	7	22,633	4.00
59	52	13,392	4.28	30.0	7	14,329	4.00
60	52	5,000	1.90	7.0	10		
		2,143	2.80	4.0	10	7,857	1.98
61	52	16,071	3.29	20.0	7	17,196	3.08
62	52	2,321	1.29	5.2	7	2,483	1.21
63	52	4,821	0.94	4.0	12	5,400	0.85
64	52	3,143	5.88	4.4	12	3,520	5.26
65	52	6,696	4.96	7.5	10	7,366	4.52
66	52	4,750	1.92	5.6	10	5,225	1.75
67	52	5,946	2.71	7.4	10	6,541	2.47
68	52	7,553	1.36	8.9	10	8,308	1.24
69	52	5,830	2.78	8.7	12	6,530	2.49
70	52	6,670	1.67	8.3	12	7,470	1.50
71	52	6,223	1.90	8.2	12	6,970	1.71
72	52	3,455	1.13	8.6	12	3,870	1.02
73	52	7,678	1.13	8.6	12	8,600	1.02
74	52	2,857	1.96	4.0	12	3,200	1.76
75	53	1,785	1.30	4.0	12	2,000	1.17
76	53	1,785	1.90	4.0	12	2,000	1.71
77	53	12,223	4.89	8.4	10	13,445	4.45
78	53	8,500	0.90	8.9	10	9,350	0.83
79	53	7,473	0.77	4.7	10	8,220	0.71
80	53	3,786	1.40	4.0	10	4,165	1.28
81	53	3,571	3.27	4.0	12	4,000	2.93
82	53	1,357	1.30	4.0	12	1,520	1.17
83	53	2,571	1.19	4.0	12	2,880	1.07
84	53	32,848	2.83	28.3	7	35,147	2.65
85	53	9,643	2.38	5.4	12	10,800	2.12
86	54	6,071	4.47	4.0	10	6,678	4.07
87	54	5,098	3.52	5.1	12	5,710	3.15
88	54	8,062	2.16	7.4	12	9,030	1.94
89	54	5,714	1.34	8.0	12	6,400	1.20

3

<u>Block</u>	<u>Section</u>	<u>Tons</u>	<u>Grade % Copper</u>	<u>Width Feet</u>	<u>% Dilution</u>	<u>Tons Including Dilution</u>	<u>Grade % Copper</u>
90	54	6,428	2.60	4.0	12	7,200	2.33
91	54	3,098	1.04	5.1	12	3,470	0.94
92	55	6,955	1.78	4.4	10	7,650	1.63
93	55	2,750	1.51	4.0	10	3,025	1.38
94	55	3,214	1.51	4.0	10	3,535	1.38
95	55	6,071	1.43	4.0	12	6,800	1.29
96	55	5,223	4.03	4.3	12	5,850	3.61
97	55	13,286	1.18	8.7	7	14,216	1.10
98	56	10,178	2.95	19.0	12	11,400	2.64
99	56	7,696	1.61	8.8	12	8,620	1.45
100	56	10,348	4.59	9.5	12	11,590	4.10
101	56	2,901	5.30	5.0	12	3,250	4.74
102	56	2,901	1.20	5.0	12	3,250	1.08
103	56	6,152	2.52	5.1	12	6,890	2.26
104	56	6,071	0.75	4.0	12	6,800	0.68
105	56	5,714	1.47	4.0	12	6,400	1.32
106	56	14,571	8.95	10.2	7	15,591	8.37
107	56	5,714	0.92	4.0	12	6,400	0.83
108	57	3,286	1.10	4.0	12	3,680	0.99
109	57	12,143	2.65	8.5	12	13,600	2.38
110	57	3,571	3.14	4.0	12	4,000	2.81
111	57	2,857	3.14	4.0	12	3,200	2.81
112	57	5,714	3.70	4.0	12	6,400	3.31
113	58	19,973	2.41	23.3	12	22,370	2.16
114	58	4,393	2.02	4.0	12	4,920	1.81
115	58	4,714	0.94	4.0	12	5,280	0.85
116	59	7,607	0.87	7.1	12	8,520	0.79
117	42	3,571	1.47	4.0	12	4,000	1.32
118	42	4,732	1.08	5.3	12	5,300	0.97
119	44	2,857	1.75	4.0	12	3,200	1.57
120	44	<u>1,428</u>	1.75	4.0	12	<u>1,600</u>	1.57
Reasonably Assured		900,169	2.57			985,540	2.36
Probable		151,780	2.17			153,370	2.15
Total:		1,051,949	2.51			1,138,910	2.33

TRACKLESS METHOD

ESTIMATED OPERATING COST SUMMARY - MINING

	<u>Total Per Year</u>	\$. <u>Per Ton Milled</u> <u>(175,000 TPY)</u>
<u>DIRECT COSTS</u>		
Development	\$ 149,867	\$.856
Diamond Drilling	35,000	.200
Stope Preparation	83,470	.477
Stoping	670,707	3.833
Ore Loading	68,275	.39
Ore Hauling	43,057	.246
Fill Plant	<u>20,996</u>	<u>.120</u>
Sub Total	\$ 1,071,372	\$ 6.122
 <u>Indirect Costs</u>		
Mine Maintenance	\$ 62,431	
Mechanical Maintenance	76,019	
Engineering	62,289	
Supervision	<u>53,137</u>	
Sub Total	<u>253,876</u>	<u>1.451</u>
Total	\$ 1,325,248	\$ 7.573



ALWIN MINING COMPANY LTD. (N.P.L.)

807 United Kingdom Bldg., ■ 409 Granville Street, ■ Vancouver 115, B.C.

March 23rd, 1970.

Mr. Milton Ridings,
Bache & Co.,
18 King Street East,
Toronto 1, Ontario.

Dear Mr. Ridings:

As discussed on the telephone today, please find enclosed information abstracted from the Preliminary Feasibility Report prepared by our consulting engineers, Bacon and Crowhurst Ltd., dated October, 1969 and covering basic operation at 500 ton-per-day.

As at present we are in the midst of preparing the Final Feasibility Report there have been areas in the Preliminary Report which now require updating. The following are the areas with which we feel you should be aware in any discussions you might have using the enclosed information:

- (a) Grade after mining dilution is likely to rise significantly.
- (b) Copper recovery is improved to 97%.
- (c) Metallurgy is easier than anticipated.
- (d) A study of the decline shaft method is almost completed.
- (e) The capital cost will be reduced to a figure well below \$5 million, particularly resulting from the use of used equipment in specified areas and the deletion of working capital as a capital cost.
- (f) Further information is now available on water supply and pollution control.
- (g) Power is still under negotiation.
- (h) Cost of transportation of concentrates at Port of Vancouver has been reduced significantly.

March 23rd, 1970.

- (i) There appears a good possibility of additional ore being discovered in view of the orebody being still open at depth and to the east of the main showings.

As proposed on the telephone, Mr. Crowhurst and myself would be available to come to Toronto should the need arise.

We look forward to hearing from you further in this matter.

Yours very truly,

ALWIN MINING COMPANY LTD. (N.P.L.)

PER:



P. L. Hazell,
Comptroller.

PLH/sd
Encl.

CHAPTER I
SUMMARY & FINANCIAL

SUMMARY

Ore reserves as at 1st of October 1969 are estimated at 1,127,700 tons assaying 2.49% copper and 0.375 ounces of silver per ton of material in place, and 1,369,600 assaying 2.04% copper and 0.300 ounces of silver per ton after allowance for mining dilution.

It is conservatively estimated that a minimum of 200,000 tons of similar material will be found by future exploration.

(A) TREATMENT RATE - 500 TONS OF ORE PER DAY

Capital Costs

It is estimated that a total investment of \$5,161,900 will be required to prepare the underground workings for production, and to construct a concentrator with related facilities, including townsite requirements, capable of processing 500 tons of ore per day (175,000 tons per year).

The present ore reserves will suffice for 7.83 years operation at this rate, with a further 1.17 years anticipated, for a total of 9.00 years.

The sum of \$70,000 representing inventory of supplies, and the sum of \$474,700 representing three months' operating costs for working capital is included in the \$5,161,900 total.

Operating Costs and Operating Profit

Operating costs are estimated at \$10.851 per ton milled for the first three years, and \$11.623 per ton milled thereafter.

Operating profit before allowances for depletion, depreciation, financing charges, royalties, or taxation, is estimated as follows in 000's \$ Canadian funds.

	<u>Price of Copper</u>		
	<u>50¢ U.S.</u>	<u>55¢ U.S.</u>	<u>60¢ U.S.</u>
Year 1	\$1,914	\$2,362	\$2,811
2	1,914	2,362	2,811
3	1,031	1,375	1,720
4	1,031	1,375	1,720
5	822	1,158	1,493
6	797	1,130	1,463
7	798	1,131	1,464
8	797	1,130	1,463
9	<u>798</u>	<u>1,131</u>	<u>1,464</u>
Totals	\$9,902	\$13,154	\$16,409

(B) TREATMENT RATE - 750 TONS OF ORE PER DAY

Capital Costs

It is estimated that a total investment of \$6,410,700 will be required to prepare the underground workings for production, and to construct a concentrator with related facilities, including townsite requirements, capable of processing 750 tons of ore per day (262,500 tons per year).

The present ore reserves will suffice for 5.22 years operation at this rate, with a further 0.78 years anticipated, for a total of 6.00 years.

The sum of \$90,000 representing inventory of supplies, and the sum of \$637,800 representing three months' operating costs for working capital is included in the \$6,410,700 total.

Operating Costs & Operating Profit

Operating costs are estimated at \$9.719 per ton milled for the first three years, and \$10.317 per ton milled thereafter.

Operating profit before allowances for depletion, depreciation, financing charges, royalties, or taxation, is estimated as follows in 000's \$ Canadian funds.

	Price of Copper		
	<u>50¢ U.S.</u>	<u>55¢ U.S.</u>	<u>60¢ U.S.</u>
Year 1	3,168	3,841	4,513
2	2,370	2,949	3,527
3	1,706	2,206	2,707
4	1,549	2,049	2,550
5	1,549	2,049	2,550
6	<u>1,549</u>	<u>2,049</u>	<u>2,550</u>
Totals	11,891	15,143	18,397

SUMMARY - ESTIMATED CAPITAL COSTS 500 T.P.D.

(1) Mine		
(a) Equipment	577,400	
(b) Preproduction development & stoping	<u>990,300</u>	
Total Mine		\$1,567,700
(2) Crushing Plant		356,400
(3) Concentrator		633,100
(4) Mine Backfill & tailings disposal		37,500
(5) Plant Services		483,700
(6) Water Supply		130,000
(7) Power		252,000
(8) Camp buildings & housing		223,000
* (9) Mine administration - 12 months @ \$27,100/month		325,200
* (10) Vancouver Head Office - 12 months @ \$4,500/month		<u>54,000</u>
Sub-total		\$4,062,600
Contingencies @ 10%		<u>406,300</u>
		\$4,468,900
Engineering @ 5% on Items 1(b), Items 2 to 7 inclusive, part of Item 8 (\$82,000) - i.e. 5% x \$2,965,000		<u>148,300</u>
		\$4,617,200
Inventory of supplies		<u>70,000</u>
		\$4,687,200
Working Capital - 3 months operating costs or 3 x 14,583 tons/month x \$10.851 per ton		<u>474,700</u>
Total		\$5,161,900

Note: * If all negotiations and arrangements can be concluded at an early date, the design, mine development and plant construction can be completed in about 10 months.

ESTIMATED TONS OF CONCENTRATES PRODUCED - 500 T.P.D.

<u>Year</u>	<u>MILL FEED</u>				<u>CONCENTRATES</u>	
	<u>Tons</u>	<u>Assay % Cu.</u>	<u>Tons of Copper</u>	<u>000's lbs Copper</u>	<u>000's lbs. Cu Recovered @94%</u>	<u>Dry Tons @ 32% Cu</u>
1	175,000	2.530	4,427.5	8,855	8,324	13,006
2	175,000	2.530	4,427.5	8,855	8,324	13,006
3	175,000	1.944	3,402.0	6,804	6,396	9,994
4	175,000	1.944	3,402.0	6,804	6,396	9,994
5	175,000	1.895	3,316.2	6,632	6,234	9,741
6	175,000	1.879	3,288.2	6,576	6,181	9,658
7	175,000	1.879	3,288.3	6,577	6,182	9,659
8	175,000	1.879	3,288.2	6,576	6,181	9,658
9	<u>175,000</u>	<u>1.879</u>	<u>3,288.3</u>	<u>6,577</u>	<u>6,182</u>	<u>9,659</u>
TOTAL	1,575,000	2.040	32,128.2	64,256	60,400	94,375

ESTIMATED NET SMELTER RETURNS

Assumptions

Grade of copper concentrate - 32.0% Cu + 0.035 ozs. Au/ton + 5.40 ozs. Ag/ton
 Moisture content - 2%
 Price of copper - 50.0¢ U.S. - 55.0¢ U.S. - 60.0¢ U.S. per lb.
 Price of silver - \$1.73 U.S. / per oz.

(a) Price of Copper - 55.0¢ U.S. per lb.

Gross Value

Per Short Ton of Concentrate

Copper contained - 640#
 Copper paid for - 640 - 24# = 616#
 Value of copper - 616 x (55¢ - 1¢) = \$ 332.64 U.S.
 Value of silver - 5.40 ozs. x 1.73 x 90% = 8.40 U.S.
 Value of gold, since content is less than requirements -
 \$ 341.04 U.S.

Deductions

(1) Treatment Charge - \$25.00 / dry metric ton
 i.e. Less $\frac{25.00 \times 2000}{2204.6}$ per dry short ton = 22.68 U.S.
 Net \$ 318.36 U.S.
 Plus U.S. - Can. exchange at 7-3/4% 21.67
 Net \$ 343.03 CAN.

(2) Concentrate handling and Freight

Per wet ton of concentrate

Loading 0.75
 Trucking (4¢ per ton mile x 250 miles to Vancouver 10.00
 Sampling, warehousing, shiploading 3.50
 14.25
 or - per short dry ton of concentrate 14.25 x 1.08 = 15.39 CAN.
 Net value per short dry ton of concentrate 327.64 CAN.
 Net value per lb of copper contained = $\frac{327.64}{640}$ = 51.19¢ CAN.

ESTIMATED NET SMELTER RETURNS (Cont'd)

(b) Price of Copper - 50.0¢ U.S. and 60.0¢ U.S. per lb.

Since it will be noted that at 55.0¢ U.S. or 59.26¢ Can/lb, net value per lb amounts to 51.19¢ Can/lb, for expediency it has been assumed the same deduction will apply to the other two prices, i.e.:

<u>Price Copper - ¢ per lb.</u>		<u>Net Value per lb. of Copper Contained</u>	<u>Difference ¢ Can/lb</u>	<u>Net Value per</u>
<u>U.S.</u>	<u>Can. @ 1.0775xU.S.</u>			<u>Short Dry Ton Of Concentrate \$ Can.</u>
50	53.88	45.81	8.07	293.18
55	59.26	51.19	8.07	327.64
60	64.65	56.58	8.07	362.11

ESTIMATED OPERATING COST - 500 TPD or 175,000 TPY

	<u>First 4 Years</u>		<u>Next 5 Years</u>	
	<u>Amt./yr.</u> <u>000's \$</u>	<u>Per Ton</u> <u>Milled</u>	<u>Amt./yr.</u> <u>000's \$</u>	<u>Per Ton</u> <u>Milled</u>
Mining	1,190,700	6.804	1,325,800	7.576
Milling	329,000	1.880	329,000	1.880
Mine administration, Plant Services & townsite	325,100	1.858	325,100	1.858
Vancouver Head Office	<u>54,000</u>	<u>0.309</u>	<u>54,000</u>	<u>0.309</u>
	\$1,898,800	10.851	\$2,033,900	11.623

These costs have been calculated on the basis of labour and supplies as estimated to cost during 1970-71. No allowances have been included for escalation in the costs as it has been assumed these will be offset by improvement in mining technology and general increases in the price of metals.

500 T.P.D.

ESTIMATED OPERATING PROFIT - CAN. FUNDS

PRICE OF COPPER - 50¢ U.S.

<u>Year</u>	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	<u>Total & Avge</u>
Tons milled - 000's	175	175	175	175	175	175	175	175	175	1,575
Tons concentrates	13,006	13,006	9,994	9,994	9,741	9,658	9,659	9,658	9,659	94,375
Net smelter returns 000's \$ Can. @ \$293.18 / ton of concentrates	3,813	3,813	2,930	2,930	2,856	2,831	2,832	2,831	2,832	27,668
N.S.R. per ton of ore milled	21.789	21.789	16.743	16.743	16.320	16.177	16.182	16.177	16.182	17.567
Operating Cost per ton of ore milled	<u>10.851</u>	<u>10.851</u>	<u>10.851</u>	<u>10.851</u>	<u>11.623</u>	<u>11.623</u>	<u>11.623</u>	<u>11.623</u>	<u>11.623</u>	<u>11.280</u>
Operating Profit per ton of ore milled	10.939	10.939	5.893	5.893	4.697	4.554	4.559	4.554	4.559	6.287
Operating Profit - 000's \$ Can.	1,914	1,914	1,031	1,031	822	797	798	797	798	9,902

500 T.P.D.

ESTIMATED OPERATING PROFIT - CAN. FUNDS

PRICE OF COPPER - 55¢ U.S.

<u>Year</u>	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	<u>Total</u>
Tons milled - 000's	175	175	175	175	175	175	175	175	175	1,575
Tons concentrates	13,006	13,006	9,994	9,994	9,741	9,658	9,659	9,658	9,659	94,375
Net smelter returns 000's \$ Can. @ \$327.64 / ton of concentrates	4,261	4,261	3,274	3,274	3,192	3,164	3,165	3,164	3,165	30,920
N.S.R. per ton of ore milled	24.349	24.349	18.709	18.709	18.240	18.080	18.086	18.080	18.086	19.632
Operating cost per ton of ore milled	10.851	10.851	10.851	10.851	11.623	11.623	11.623	11.623	11.623	11.280
Operating profit per ton of ore milled	13.499	13.499	7.858	7.858	6.617	6.457	6.463	6.457	6.463	8.352
Operating profit - 000's \$ Can.	2,362	2,362	1,375	1,375	1,158	1,130	1,131	1,130	1,131	13,154

500 T.P.D.

ESTIMATED OPERATING PROFIT - CAN. FUNDS

PRICE OF COPPER 60¢ U.S.

<u>Year</u>	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	<u>Total</u>
Tons milled - 000's	175	175	175	175	175	175	175	175	175	1,575
Tons concentrates	13,006	13,006	9,994	9,994	9,741	9,658	9,659	9,658	9,659	94,375
Net smelter returns 000's \$ Can. @ \$362.11 per ton of concentrate	4,710	4,710	3,619	3,619	3,527	3,497	3,498	3,497	3,498	34,175
N.S.R. per ton of ore milled	26.914	26.914	20.680	20.650	20.154	19.983	19.989	19.983	19.989	21.698
Operating cost per ton of ore milled	10.851	10.851	10.851	10.851	11.623	11.623	11.623	11.623	11.623	11.280
Operating profit per ton of ore milled	16.063	16.063	9.829	9.829	8.531	8.360	8.366	8.360	8.366	10.418
Operating profit - 000's \$ Can.	2,811	2,811	1,720	1,720	1,493	1,463	1,464	1,463	1,464	16,409

BACON & CROWHURST LTD.
CONSULTING ENGINEERS

September 8th, 1969.

The Directors,
Alwin Mining Company Ltd.,
807 - 409 Granville St.,
Vancouver 2, B.C.

Gentlemen;

During the past year exploration work on your company's properties in the Highland Valley area, near Ashcroft, British Columbia, proceeded continuously. This work included the further extensions of the underground openings which explore the high grade copper zones outlined on the O.K. and I.O.U. crown granted mineral claims, together with surface exploration directed at the remainder of your 27 claim group situated in the western part of the Highland Valley area.

A diamond drilling program was also carried out in conjunction with the Siniloops Syndicate on the Guichon group of mineral claims owned by Alwin in the eastern part of the Highland Valley area.

It is gratifying to be now able to report that the 1969 exploration and development work has confirmed the presence of copper bearing zones on the O.K. and I.O.U. crown grant mineral claims sufficiently large and of good enough grade to sustain a profitable milling operation for several years.

As a result of careful and detailed exploration, and investigation of the various factors involved, enough information has now been obtained to permit the initiation of a feasibility study, which will outline the optimum daily processing rate and the profit potential resulting therefrom.

The possibilities of combining the extraction of ore from your company's property with ores obtained from other relatively high grade deposits in the area should be carefully studied with the idea that a larger milling operation with attendant financial benefits would be constructed.

DIAMOND DRILLING & DEVELOPMENT

The following table summarizes exploration and development work on the O.K. group of claims during the periods shown:

	<u>1967</u>	<u>1968</u>	<u>1969 to</u>	<u>Total</u>
	<u>feet</u>	<u>feet</u>	<u>Aug. 31</u>	<u>feet</u>
			<u>feet</u>	
Diamond Drilling				
Surface	8,179	24,747	16,097	49,023
Underground	-	23,826	20,551	44,377
Drifting & Crosscutting	-	4,399	1,039	5,438

	<u>1967</u> <u>feet</u>	<u>1968</u> <u>feet</u>	<u>1969 to</u> <u>Aug. 31</u> <u>feet</u>	<u>Total</u> <u>feet</u>
Raises (incl. sub drifts)	-	77	838	915
Tractor trenching	-	1,800	8,650	10,450
Linecutting (miles)	14	21	12	47

ORE RESERVES

Drifting and raising conducted along and upwards from the 4680 level has confirmed much of the results indicated by previous diamond drilling, and has demonstrated that the mineralization possesses good continuity.

Although the change in total ore reserves is not great, it will be noted that a significantly large part of the tonnage previously classed as "inferred" has now been transferred to the "reasonably assured" category.

It must also be noted that it is reasonable to expect that an estimated 200,000 tons of similar grade material in addition to the "reasonably assured" and "inferred" categories will eventually be discovered by further exploration.

SUMMARY

	<u>1968 Estimate</u>		<u>1st Sept. 1969 Estimate</u>			
	<u>Before Dilution</u>		<u>Before Dilution</u>		<u>After Dilution</u>	
	<u>Tons</u>	<u>% Cu</u>	<u>Tons</u>	<u>% Cu</u>	<u>Tons</u>	<u>% Cu</u>
Reasonably assured	686,800	2.44	972,400	2.61	1,169,500	2.18
Inferred	700,000	2.44	161,900	2.17	207,300	1.70
Totals	<u>1,386,800</u>	<u>2.44</u>	<u>1,134,300</u>	<u>2.55</u>	<u>1,376,800</u>	<u>2.11</u>

The zones vary from about 4 feet to 32 feet and average about 10.5 feet in true width. They are spread along a total strike length of about 1,700 feet, and although some appear to have weakened or have been delimited by the exploration work completed to date, several are still open in strike and in depth.

From the present underground openings it has been possible to probe the structure by long diamond drill holes to about 800 feet below the surface. No change in the favourable geological environment has been observed at this depth and some zones are still open.

The lower limit of this deep diamond drilling represents an approximate economic limit for further exploration by this means.

Along the strike of the favourable structure possibilities still exist relative to the discovery of additional zones or the extension of the present ones.

Four surface diamond drill holes situated about 400' easterly from the underground work cut interesting copper values worthy of further investigation.

Similarly, several diamond drill holes directed across the structure about 500' westerly from the main mineralized zones cut narrow widths of good grade mineralization with extensions as yet not fully determined.

Summarizing, additional ore will undoubtedly be found therefore both easterly and westerly of the presently explored zone with depth extensions possible.

DRIFTING & RAISING SAMPLING RESULTS

The copper assay results pertaining to various sections of 4680 elevation drifts and raises are shown in the following table:

<u>Drifts & X-Cuts</u>	<u>Sampled Length - Feet</u>	<u>Average Width - Ft. Sampled</u>	<u>Weighted Assay % Copper</u>	
			<u>Channel</u>	<u>Muck</u>
501 Drift E & 50 X-Cut	140	4.52	1.15	0.72
501 Drift W	25	3.65	2.95	2.94
502 Drift E (a)	75	3.50	4.10	2.87
(b)	75	6.77	4.28	6.97
503 Drift E	80	4.38	1.10	0.90

Note - The mineralization is greater in width than the average sampled widths shown.

<u>Raises - Name</u>	<u>Sampled Length - Feet</u>	<u>Average Width - Ft. Sampled</u>	<u>Weighted Assay</u>
			<u>Channel Samples % Copper (Cut Values)</u>
5011 Raise E	135	4.1*	4.25
5012 Raise	64	2.9	6.65
5022 Raise	95	5.0*	5.15
5041 Raise E	51	3.8	2.07
5042 Raise	83	4.9*	5.30

* Mineralization greater in width than raise width.

PAUC HAZEL
685 6281

SURFACE EXPLORATION

Extensive work was carried on in 1969 in an effort to prove or disprove the presence of disseminated or "porphyry" type copper deposits on other parts of your company's claim group.

Tractor trenching at regular intervals followed by surface diamond drilling, designed to explore several areas showing copper geochemical anomalous values failed, however, to disclose anything of any economic significance.

Similarly, a limited diamond drilling program carried out in conjunction with the Siniloops Syndicate to explore copper soil sample results on your company's Guichon group of mineral claims in the eastern part of the Highland Valley area gave inconclusive results.

METALLURGICAL WORK

Samples were submitted to the Department of Energy, Mines and Resources in Ottawa, Ontario, and preliminary test work completed.

From the results submitted it is apparent that the ore will not present any problem in recovering plus 92% of the copper in a copper concentrate assaying from 32% to 34% copper. The ore is relatively soft and requires a grind of 50 to 55% minus 200 mesh.

This work was so encouraging that submission of further samples was delayed until the drifting and raising program in the mineralized zones had been completed. Further work will now be carried out.

CAMPS, TRANSPORTATION & WATER SUPPLY

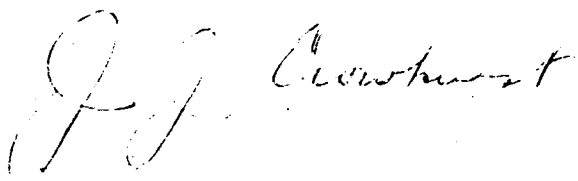
A complete trailer type camp capable of accommodating 30 men has been purchased and erected at the property, complete with change-house facilities.

Under the 50% cost sharing arrangement provided by the Provincial Department of Mines, the access road from the Ashcroft to Highland Valley highway has been widened, gravelled and graded, and brought up to good all-year-round standards.

Applications to the Provincial Government have been made relative to securing an adequate water supply for milling operations.

Respectfully submitted,

BACON & CROWHURST LTD.



J.J. Crowhurst, P.Eng.

KERR ADDISON MINES LIMITED

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W.S.R.
K.C.G.
J.H.S. ✓
E.F.
B.D.S.
B.C.B.
P.M.K. ✓
G.W.M.
R.O.M.
C.K.W.
J.B.S.
G.P.R.
K.F.L.
J.B.
E.C.J.

To..... W. M. Sirola..... From..... P. M. Kavanagh.....
Subject..... Alwin Mining Company - Copper Property,..... Date..... March 29th, 1968.....
Highland Valley, B.C. (92/1).

This is just to advise you formally that I agree with your recommendation that this property does not warrant any further interest from us. The Alwin principals should be advised accordingly.

Paul M. Kavanagh

PMK:sw

MAR 8 1968

KERR ADDISON MINES LIMITED

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W.S.R.
✓ K.G.G.
J.H.S.
E.F.
R.D.S.
B.C.B.
P.M.K. ✓
G.W.M.
R.O.M.
C.K.W.
J.B.S.
G.P.R.
K.F.L.
J.L.B.
Ⓞ E.C.J.

To P. M. Kavanagh From W. M. Sirola
Subject Alwin Mining Company - Copper Property, Date March 7, 1968
Highland Valley, B.C. (92-1)

Enclosed is Fred Chow's report and map on this property.

Fred has estimated that the deposit contains 313,320 tons averaging 2.15% Cu to a depth of 500 feet below the surface. This tonnage is contained in seven separate zones. The largest of these zones (D-1) contains 153,000 tons averaging 1.77% Cu.

We see little hope of a commercial operation on this property because of the discontinuous lenticular nature of the mineralized zones. It is even doubtful that a nearby operation like Bethlehem could option the property, truck the ore to their mill, and make a profit.

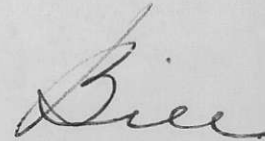
I should point out that in making the calculations on the non-profitability of this situation, a price of 40¢/lb was selected as being realistic and the net smelter return was estimated to be 32¢/lb.

This situation, because of its erratic nature, could only support a very small plant and this means that mining costs, and in particular development costs, would be quite high.

I have not seen any of the statistics on Joutel but from what you have told me over the telephone, there are certain similarities between Joutel and the Alwin property.

The northeast limit of the mineralization has not been defined but anything additional in that direction will not really change the nature of the beast.

Our participation in this situation is not recommended.



W. M. Sirola.

WMS/lk
Encl. Chow's Report
& Composite Plan Map.

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MAR 8 1968

W.S.R.
K.C.G.
✓ J.H.S.
E.F.
R.D.S.
B.C.B.
P.M.K. ✓
G.W.M.
D.O.M.
J.B.S.
G.P.R.
K.F.L.
J.I.B.
E.C.J.

To W. M. Sirola From Fred Chow
Subject Report on Alwin Mining Co. Copper Property at Highland Valley, B.C. (92-I) Date March 6, 1968

INTRODUCTION:

Alwin Mining Co. holds by staking and acquisition, 25 mineral claims in the Highland Valley, B.C., located approximately 12 miles west of Bethlehem Copper. The O.K. claims were acquired on the basis of an I.P. survey done on surrounding "EZZ" group. Diamond drilling of the I.P. anomaly was started in June - July, 1967 and is still continuing. A total of 47 holes have been completed. On January 22, 1968, ore reserves were reported to be 1,246,000 tons grading 2.7% copper.

Mr. H. E. Jacques, President of Alwin Mining Company advised that Alwin Mining may consider other company participation.

The writer visited the property on February 12th and 13th, 1968 to obtain up to date information and to examine the drill core.

I.P. SURVEY:

An I.P. survey by Seigel & Associates Ltd., was completed on an area 1,000 feet (NS) by 1,200 feet (EW), extending eastward from the old "OK" Mine workings. An anomalous area, bounded by the 5 millisecond contour, measures 50 feet wide over the old adit and extends eastward 1,000 feet to a width of 200 feet.

GEOCHEMICAL SURVEY:

A soil sampling program was conducted over the eastern section of the I.P. survey area. The 100 ppm Copper contour outlines the mineralized area indicated by the drilling to date, and closely follows the trend of the 5 millisecond I.P. contour.

Two recent holes on Line 50+00E, south of the main mineralized zone, have intersected ore-grade material about 150 feet below the surface which is not indicated by the geochemical nor I.P. results.

(continued - Page 2)

KERR ADDISON MINES LIMITED

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To _____ From _____

Subject _____ Date _____

Page 2...

Two anomalous readings (more than 100 ppm Cu) show up on the NE corner of the survey which is worthy of further investigation by expanding the soil sampling program.

DIAMOND DRILLING:

The zone has been drilled 400 feet past the eastern limit of the anomaly and the last line showed no mineralization. Initial drilling was to prove continuity and grade 150 feet below the surface, and recent drilling is trying to establish continuity down-dip.

GEOLOGY AND MINERALIZATION:

The area is underlain by quartz diorite and is thought to be cut by two major faults running N-S and E-W. Most of the quartz diorite is altered, showing varying degrees of feldspar alteration to kaolin and talc, and biotite alteration to chlorite.

Chalcopyrite is the main copper mineral; bornite is present in negligible amounts except for intersections on Line 50+00E (Block F-1) where chalcopyrite to bornite ratio is about 2.5/1. Other metallic minerals are 1 - 3% pyrite and 1 - 2% specularite. The gangue minerals in the ore zone consist of 35 - 55% sericite and 45 - 65% quartz. The sulphides occur in specks and blobs and are more or less disseminated in the zone.

The mineralized zones show a distinct dark green color, large amount of sericite with quartz, and no wall rock. The quartz diorite walls show decreasing alteration from the mineralized zone and often hematite staining.

The mineralization probably occurs as fillings in fractures which lie parallel or en echelon in an easterly direction.

(continued - Page 3)

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To _____ From _____

Subject _____ Date _____

Page 3...

RESULTS:

Present drilling has indicated seven or more parallel zones of mineable copper ore, in an area 400 feet by 1,200 feet, and to a depth of 500 feet below the surface.

The ore shoots vary from 50 feet - 390 feet in strike length, 5 - 22 feet in width, and 45 - 370 feet in dip length. Most of them occur as small lenses at different elevations. Only one, the D-1 Zone, appears to show continuity down dip.

Aside from the small pods, the more common orebodies average around 20,000 tons grading about 2.5% copper. The largest is about 153,000 tons grading 1.77%.

The writer has blocked out the indicated ore as tabulated below:

<u>Block</u>	<u>Length</u>	<u>Weighted Av. Width Ft.</u>	<u>Average Height Ft.</u>	<u>Tons</u>	<u>Weighted Grade Percent Cu.</u>
A-1	75	8.0	50	2,500	0.86%
B-1	350	15.4	45	18,870	2.99
B-2	370	8.6	47	11,135	1.58
C-1	390	6.5	163	36,680	3.19
C-2	50	5.0	130	2,700	0.82
D-1	295	14.2	370	153,145	1.77
E-1	125	22.5	93	21,650	2.75
F-1	455	13.3	108	53,240	2.43
G-1	150	5.5	195	<u>13,400</u>	<u>1.45</u>
				313,320	2.15

It is possible to find more ore down dip between Line 50E to 53E and probably NE of the present survey limit where another parallel pattern may exist on strike.

The ore is reported to contain silver values (1 - 6 oz./ton in one intersection mentioned) but only a small number of samples have been assayed for this metal.

(continued - Page 4)

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To From

Subject Date

Page 4...

PROBABLE COSTS AND RETURNS:

Estimated worth of 313,000 tons of copper ore =

2.15% Cu @ 95% recovery = 2.15 (0.95) (20) = 40.85 lbs.
40.85 lbs Cu @ 32¢ net smelter = 40.85 (0.32) = \$13.07/T
\$13.07/T for 313,000 tons = \$4,090,910.

Estimated Costs =

Development -	\$ 1.50/Ton
Mining -	8.00/Ton
Milling -	1.00/Ton
Overhead -	.50/Ton
	<u>\$11.00/Ton</u>

\$11.00/Ton for 313,000 tons = 3,443,000.

ESTIMATED NET (not including exploration and plant costs) \$ 647,910

Plant

(3 yr. Mine Life) 300 tons mill @ \$1,500/ton capacity = \$ 450,000
(4 yr Mine Life) 200 tons mill @ \$1,500/ton capacity = \$ 300,000

Exploration to date, approximately = 150,000

From the above figures, little or no return is expected by placing the property into production.

(continued - Page 5...)

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To From


Subject Date

Page 5...

RECOMMENDATIONS:

Since little or no return can be expected from this investment, the property is not recommended for further consideration.

Only by increasing the ore reserve tonnages substantially can the property be economically attractive. No doubt that more ore will be found but it is likely to be in small lenses. Probably the best place to explore for larger orebodies would be, down dip in the area of Block D-1, near the vicinity of the two fault junctions.



Fred Chow.

FC/1k
Encl.

THE NORTHERN MINER

February 22nd, 1968.

Feasibility Study For Alwin Mining

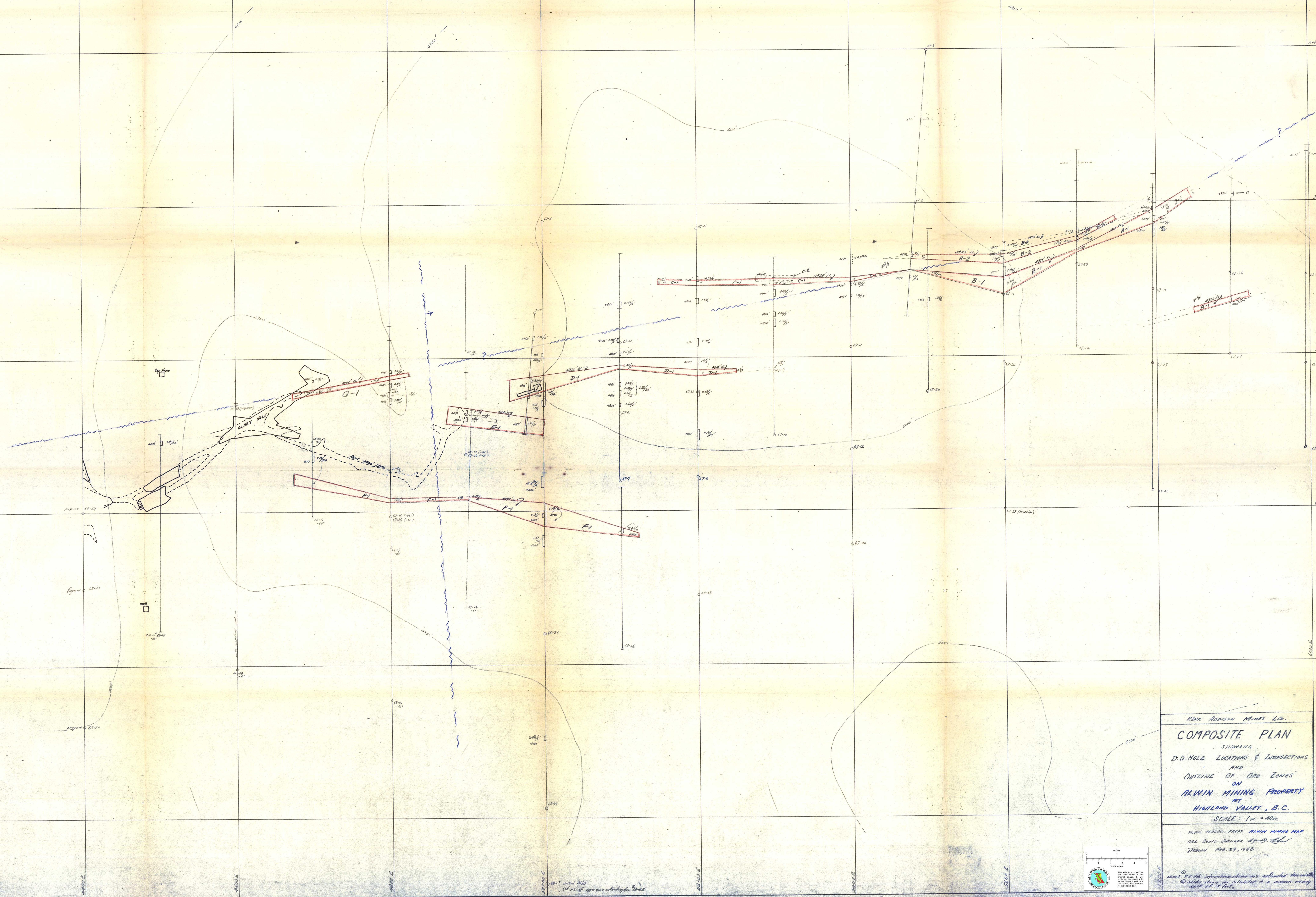
Alwin Mining is to carry out a feasibility study over its OK copper property in the Highland Valley of British Columbia. The study is to get under way shortly, advises H. E. Jacques, president.

The company is also negotiating for senior financing on either a loan or participation basis.

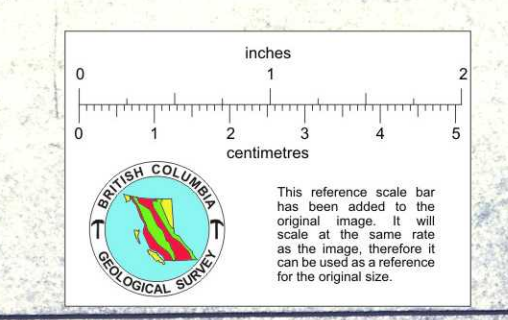
Alwin has outlined an estimated 1,246,000 tons grading 2.7% copper to a depth of 350 ft. The tonnage has been estimated on the basis of 8,000 ft. of diamond drilling. Drilling is continuing.

TUNNAGES AND GRADES
 Calculated from D.D. Hole Locations, February 1968
 by P. J. Adams

BLOCK	LENGTH	WIDTH	DEPTH	TUNNAGE	GRADE
A-1	2.25	8.0	50	2,500	0.86
B-1	5.50	18.4	45	18,810	0.99
C-1	5.70	8.6	47	11,155	1.58
D-1	8.20	6.5	143	36,680	3.17
E-1	30	5.0	150	2,700	0.82
F-1	2.85	14.2	370	153,165	2.77
G-1	1.85	22.5	83	21,650	2.75
H-1	4.35	12.3	100	55,290	2.43
I-1	1.20	5.2	150	12,600	1.65
				313,320	2.15



KERR ADRIAN MINES LTD.
 SHOWING
COMPOSITE PLAN
 SHOWING
 D.D. HOLE LOCATIONS & INTERSECTIONS
 AND
 OUTLINE OF ORE ZONES
 ON
ALWIN MINING PROPERTY
 HIGHLAND VALLEY, B.C.
 SCALE: 1" = 40M
 PLAN TIEED FROM ALWIN MINING MAP
 ORE ZONE DRAWING BY P. J. ADAMS
 DRAWN MAY 25, 1968



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