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THIS IS THE STUDY THAT SUPPORTS THE SECTIONS WE REVIEWED ON MONDAY.

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TARGET EVALUATION

HARPER CREEK DEPOSITS

JOINT VENTURE

QUEBEC CARTIER MINING COMPANY

NORANDA EXPLORATION COMPANY, LIMITED

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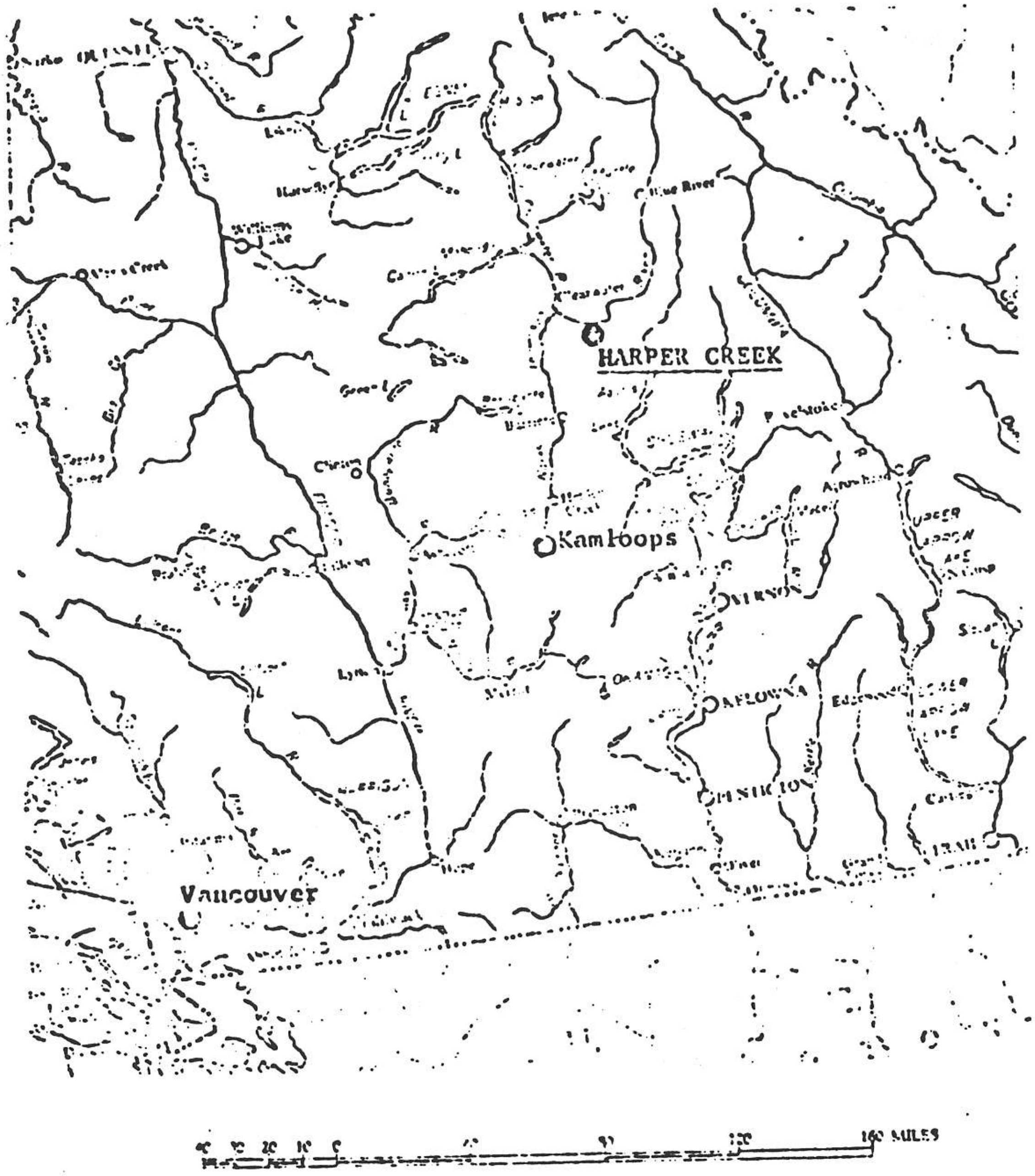

LOCATION MAP

INTRODUCTION AND TERMS OF REFERENCE:

The Harper Creek property, located approximately 60 miles north of Kamloops, British Columbia, contains copper deposits which are jointly and equally owned by Quebec Cartier Mining Company and Noranda Exploration Company, Limited.

There are two main deposits which total at least 100,000,000 tons of ore grading approximately 0.43% copper.

Because of the attitude of the deposits, it is questionable whether the entire reserve can be mined within an acceptable stripping ratio.

Exploration on the property has progressed to a point where a target evaluation is required in order to determine the feasibility of continued development.

This evaluation should be directed toward the following objectives:

(a) the determination of the optimum ore tonnage that can be mined by open pit methods.

(b) the determination of the viability of mining the optimum tonnage under current conditions.

(c) the determination of the conditions that will be necessary to provide an economical operation if the reserve is not viable under present conditions.

CONCLUSIONS & RECOMMENDATIONS:

The optimum ore tonnage which is extractable from these deposits, cannot be mined as a viable operation under current economic conditions.

It would appear that an improvement of at least 15¢/lb. in the price of copper will be necessary before any additional work is warranted on the deposits.

SUMMARY:

An optimum pit design developed for the deposits has been estimated to contain the following material:

1,870,000 cubic yards of overburden
165,920,000 tons of waste
85,500,000 tons of ore grading 0.43% copper

A larger pit containing additional down-dip ore, was evaluated under current conditions and was found to be distinctly subordinate to the above optimum. This would indicate that, at the present time, further drilling is not warranted.

The rate of return from a production investment on the optimum reserve has been determined at three copper prices and the following basic parameters:

Production: 5,700,000 tons per year (15,500 T/D)
Capital Cost: $62,700,000 (includes $16,670,000 preproduction)
Operating Cost: $1.38/ton ore (excluding waste)

The results of these calculations are as follows:

a) with copper @ $0.50/lb (market) the rate of return is 0.09%

b) $0.65/lb 9.59%

c) $0.70/lb 12.12%

In addition to the above evaluation, the sensitivity of capital costs, operating costs and stockpiling procedures, was tested using one copper price ($0.50/lb. market) with the following results:

a) at 10% reduction to operating costs - the rate of return is 2.01%

b) at 10% " " capital costs - " " " " " 0.99%

c) with the incorporation of stockpiling - " " " " " 0.13%

d) with a, b and c above - " " " " " 2.72%

The above results would indicate that no amount of detailed investigation into costs and stockpiling procedures will result in a viable indication in terms of the current copper market.

In an attempt to determine the copper price at which the project warrants review, a $0.65 market price was used with (d) above and a return of 12.32% was calculated. This would indicate that further, detailed study is not warranted while the copper market is below $0.65/lb.

A final calculation was conducted to test the effect of a second, identical deposit, should such be discovered. In this event, a single [illegible] ~~33,000~~ T.P.D. plant would be employed to mine both ore bodies. At the [illegible] current basic assumptions, this return would be 5.31%.

APPROACH:

It will be noted from the attached sections that the ore zones dip to the north at an angle which is steeper than the surface topography. Thus, in an open pit operation, any increase to mineable ore reserves, by virtue of depth, will be at the expense of an increased stripping ratio. At some point, where the net revenue is maximized, the optimum conditions will be attained.

In an attempt to approximate this condition, a series of pits was designed which progressed in depth and, correspondingly, in size.

The progressive increments are described and numbered one to nine on the attached sections.

The progressive pit outlines are described and designated phase one through nine on the attached plans.

The ore intersections described on the sections, have been transferred to the pit plans and, with the aid of a planimeter, the overburden, waste and ore reserves have been estimated for each increment. This data is presented in Table I.

The incremental data has also been accumulated to provide cumulative information to any phase of the progressive pit design. This data is presented in Table II.

A tonnage factor of 12.0 was used to determine the ore and waste.

Having established a series of progressive pit designs and determined the contained material, each cumulative pit was evaluated on a present value basis.

In this manner, it was determined that the most attractive design was phase 8.

This phase was then used to test the sensitivity of cost estimate, copper prices, etc.

The parameters used to evaluate these pits are described in detail further in this study.

A summary of evaluation results follows this page.

Also following is a cash flow spread sheet on the basic case illustrating the finacial evaluation approach.

SUMMARY OF EVALUATIONS PHASES 1 - 9 AND SENSITIVITY ANALYSES

(in 1000's)

PHASE	P.P. YEARS	TONS ORE	AVERAGE GRADE	OVERBURDEN CU. YDS.	WASTE TONS	STRIPPING RATIO WASTE/ORE	PRODUCTION RATE TONS/DAY	LIFE YEARS	$ PRESENT VALUE CAPITAL REQUIREMENTS DISCOUNTED 10%	$ OPERATING COST/TON	$ PRESENT VALUE OF CASH FLOW DISCOUNTED 10%	$ NET P.V. AT 10%	NET P.V. LOSS PER TON ORE	% RATE OF RETURN
At $0.50 copper (market)														
1	1.5	10,000	0.49	441	6,222	0.62/1	3,500	8	20,804	2.00	4,221	-16,583	-1.66	less than
2	2.0	22,500	0.45	704	17,100	0.77/1	7,000	9	30,918	1.75	12,739	-18,179	-0.81	"
3	2.5	35,000	0.44	850	38,200	1.11/1	10,000	10	37,828	1.57	14,339	-23,489	-0.67	"
4	2.5	37,400	0.44	1,050	44,375	1.18/1	10,000	11	38,262	1.57	14,216	-24,046	-0.64	"
5	2.5	53,300	0.43	1,263	80,648	1.52/1	11,500	13	37,691	1.48	16,639	-21,052	-0.39	" "
6	2.5	72,000	0.42	1,430	128,176	1.77/1	13,500	15	47,366	1.42	19,306	-28,060	-0.39	" "
7	3.0	84,000	0.42	1,785	162,049	1.93/1	15,500	15	51,419	1.38	23,163	-28,256	-0.34	" "
8	3.0	85,500	0.43	1,870	165,918	1.96/1	15,500	15	51,815	1.38	23,648	-28,167	[illegible]	0.09
9	3.0	92,800	0.43	2,071	202,756	2.19/1	16,000	16	54,396	1.37	23,652	-30,744	[illegible]	0.06
At $0.65 copper (market)														
6									47,366		42,164	- 5,202		8.74
7									51,419		48,895	- 2,524		9.11
8									51,815		50,619	- 1,196		9.59
9									54,396		51,535	- 2,861		9.08
At $0.70 copper (market)														
6									47,366		48,415	+ 1,049		11.34
7									51,419		56,047	+ 4,628		11.61
8									51,815		58,018	+ 6,203		12.12
9									54,396		59,273	+ 4,877		11.53
At 10% reduction to capital - $0.50 copper (market														
8									46,634	1.38	23,373	-23,261		0.99
At 10% reduction to operating cost - $0.50 copper (market)														
8									51,815	1.28	28,952	-22,863		2.01
At stockpiling low-grade - $0.50 copper (market)														
8									51,815	1.38	23,318	-28,497		0.13
At 10% reduction to costs and stockpiling - $0.50 copper (market)														
8									46,634	1.28	27,580	-19,054		2.72
At 10% reduction to costs and stockpiling - $0.65 copper (market)														
8									46,634	1.28	52,710	+ 6,076		12.32
At 10% reduction to costs, stockpiling and 2 pits - $0.50 copper (market)														
10	3.10	171,000	0.43	3,740	331,836	1.96/1	31,000	15	82,640	1.18	61,964	-20,676		5.31

DERIVATION OF PARAMETERS:

The attached tables describe many of the parameters selected for the evaluation of the various pits.

Pre-production Period - varies from 1.5 to 3.0 years - see Table V.

Fixed Assets - factored on a dollar per ton of annual capacity basis - - see Tables VI and VII.

Pre-production Costs - based on contract overburden stripping (25% of total O.B. removed during p.p.) at $1.00 per yard and on waste stripping at cost plus 50% (which will cover administration, etc.). Pre-production waste stripping capacity based on 75% efficiency of total loading equipment available for production. - see Tables IV, V and VII.

Working Capital Cost - assumed to include stores and calculated on basis of 4 months operating cost - see Table VII.

Rate of Return Base - assumed to be the total capital required and taken at a point two-thirds of the way through the pre-production period.

Production Rate Daily - varies from 3,500 to 16,000 - see Table VIII.

Ore Reserves - see Tables I & II.

Waste Tonnage - see Tables I & II.

Overburden Yardage - see Tables I & II.

Annual Mill Feed Grades - It was assumed that, in any eventual pit, the increments to that point would be mined in sequence. The annual mill feed grade was calculated on this basis. - see Table III.

Stockpiling - A very broad assumption was made to test the validity of stockpiling. It was assumed that 20% of the production could be stockpiled over life and that this material would grade 0.35% Cu. Mill feed grades were adjusted accordingly and a pick-up treatment and administrative charge of $1.10/ton was assigned to milling the stockpile.

Net Smelter Return - was taken at $0.35/lb., $0.50/lb. and $0.55/lb. after a consideration of $0.15/lb. smelter toll.

Mill Recovery - constant at 90%.

Operating costs - see Table VIII.

British Columbia Mining Tax -

30% declining balance depreciation on fixed assets

100% write-off on pre-production

15% processing allowance /

15% tax rate

Federal Taxes -

100% Capital Cost Allowance

Automatic depletion to end of 1976.

Earned depletion after 1976 - being 1/3 of fixed assets

37% tax rate

TABLE I

ORE & WASTE IN EACH PIT INCREMENT

(in 1000's)

Increment	Yards Overburden	Tons Waste	Tons Ore	Grade	Waste /Ore
1	1,762	6,222	9,987	0.49% Cu	0.62
2	1,053	10,908	12,340	0.41	0.88
3	584	21,123	12,283	0.44	1.72
4	800	[illegible] ~~6,108~~ [illegible]	2,973	0.42	2.08
5	853	36,223	15,346	0.39	2.36
6	665	47,200	19,194	0.41	2.46
7	1,422	34,293	11,795	0.43	2.91
8	342	3,896	860	0.59	4.53
9	804	36,851	7,731	0.43	4.77

TABLE II

ORE & WASTE IN EACH CUMULATIVE PIT

(in 1000's)

Cumulative

Phase	Yards Overburden	Tons Waste	Tons Ore	Grade	Waste /Ore
1	1,762	6,222	9,987	0.49	0.62
2	2,815	17,130	22,327	0.45	0.77
3	3,400	38,253	34,610	0.44	1.11
4	4,200	44,433	37,583	0.44	1.18
5	5,052	80,656	52,929	0.43	1.52
6	5,717	127,856	72,123	0.42	1.77
7	7,139	162,149	83,918	0.42	1.93
8	7,481	166,045	84,778	0.43	1.96
9	8,285	202,896	92,509	0.43	2.19

TABLE III

ANNUAL MILL FEED GRADES FOR PROGRESSIVE PITS

	PHASE								
YEAR	1	2	3	4	5	6	7	8	9
1	.49	.49	.49	.49	.49	.49	.49	.49	.49
2	.49	.49	.49	.49	.49	.49	.47	.47	.47
3	.49	.49	.48	.48	.44	.42	.41	.41	.41
4	.49	.49	.41	.41	.40	.41	.41	.41	.44
5	.49	.41	.41	.41	.41	.42	.44	.44	.44
6	.49	.41	.41	.41	.42	.44	.44	.44	.46
7	.49	.41	.43	.42	.44	.44	.42	.41	.39
8	.49	.41	.44	.44	.44	.42	.39	.39	.39
9		.41	.44	.44	.43	.39	.39	.39	.40
10			.44	.44	.40	.39	.40	.40	.41
11				.42	.39	.39	.41	.41	.41
12					.39	.41	.41	.41	.42
13					.39	.41	.41	.42	.43
14						.41	.43	.43	.45
15						.41	.43	.46	.43
16									.43

TABLE IV

OVERBURDEN STRIPPING SCHEDULE

(in 1000's)

PHASE	PREPRODUCTION Cu. Yds.	Per Each PRODUCTION YEAR Cu. Yds.	NO. PROD. YEARS	TOTAL CU. YDS.
1	441	300	4.0	1,650
2	704	469	4.5	2,814
3	850	510	5.0	3,400
4	1,050	573	5.5	4,201
5	1,263	586	6.5	5,072
6	1,429	571	7.5	5,712
7	1,785	714	7.5	7,140
8	1,870	748	7.5	7,480
9	2,071	777	8.0	8,287

Notes 1 25% of total stripped during preproduction period

2 75% " " " " production in equal annual amounts over 1/2 production life.

TABLE V

WASTE STRIPPING SCHEDULE

(in 1000's)

PHASE	PROD. PER YEAR	ORE & WST. CAPACITY/T PRODUCTION	PRE-PRODUCTION YEARS	TOTAL PRE-PRODUCTION STRIPPING AFTER 75% EFFICIENCY FACTOR	PROD. STRIP. TONS	PROD. STRIP. YEARS	PROD. STRIP. /YEAR
1	1,250		1.5	2,222	4,000	8.0	500
2	2,500	1.60	2.0	6,000	11,100	7.4	1,500
3	3,000	2.00	2.5	13,000	25,200	7.2	3,500
4	3,400	2.10	2.5	13,333	31,042	8.3	3,740
5	4,100	2.40	2.5	18,656	61,992	10.8	5,740
6	4,800	2.75	2.5	24,856	103,320	12.3	8,400
7	5,600	2.75	3.0	34,649	127,400	13.0	9,800
8	5,700	2.75	3.0	35,245	130,673	13.1	9,975
9	5,800	3.[illegible] ~~2.00~~ JFK	3.0	39,196	163,560	14.1	11,600

/c

TABLE VI

FACTORS TO DETERMINE FIXED ASSETS

PHASE	PROD. TONS/DAY	MILL $/TON DAILY PRODUCTION	PLANT	EQUIPMENT & OTHER	TOTAL	TOTAL COST
1	3,500	2,000	1,600	2,760	6,360	22,260,000
2	7,000	1,750	1,300	1,25[illegible] ~~1,240~~ 3511	4,340	30,370,000
3	10,000	1,475	1,075	1,000	3,550	35,550,000
4	10,000	1,475	1,075	1,000	3,550	35,750,000
5	11,500	1,300	900	1,075	3,275	37,670,000
6	13,500	1,250	850	951	3,050	41,190,000
7	15,500	1,150	750	900	2,800	43,332,000
8	15,500	1,150	750	900	2,800	43,383,000
9	16,000	1,150	750	890	2,790	44,640,000

Note: The equipment portion of the above costs was determined on the basis of the total tons of material to be removed per day.

TABLE VII

CAPITAL COST SCHEDULE

PHASE	FIXED ASSETS	PREPRODUCTION WASTE @ COST + 50% O.B. @ COST	WORKING CAPITAL	TOTAL
1	20,260,000	1,773,700	850,000	[illegible] ~~22,883,700~~ J.K.
2	30,370,000	3,853,750	1,450,000	35,673,750
3	35,550,000	7,089,750	1,850,000	44,489,750
4	35,750,000	7,449,590	1,800,000	44,999,590
5	37,670,000	9,658,200	2,000,000	49,328,200
6	41,190,000	12,241,610	2,275,000	55,706,610
7	43,382,000	16,337,330	2,500,000	62,219,330
8	43,383,000	16,673,150	2,650,000	62,706,150
9	44,640,000	18,533,570	2,650,000	65,823,570

TABLE VIII

OPERATING COSTS

PHASE	T/D	MILLING	MINING	ADMIN.	TOTAL
1	3,500	1.10	0.40	0.50	2.00
2	7,000	0.95	0.35	0.45	1.75
3	10,000	0.85	0.32	0.40	1.57
4	10,000	0.85	0.32	0.40	1.57
5	11,500	0.80	0.30	0.38	1.48
6	13,500	0.77	0.29	0.36	1.42
7	15,500	0.75	0.28	0.35	1.38
8	15,500	0.75	0.28	0.35	1.38 ✓
9	16,000	0.75	0.28	0.34	1.37