

W.A. No.

NAME

VEN, GOTCH, TONEY

SUBJECT

REPORTS

8255121-07
PROPERTY FILE

001293

82ESE121-07

PROPERTY FILE

?
G

PERCUSSION DRILLING RESULTS
AND PRELIMINARY COST STUDY

GOTCHA PROPERTY, CLEARWATER AREA, B. C.

FOR

NCA MINERALS CORP.
P. O. Box 371
Station "A"
Vancouver, B. C.

BY

J. P. Elwell, P. Eng.
1030 - 510 West Hastings Street
Vancouver, B. C.
V6B 1L8

March 2, 1978

TABLE OF CONTENTS

	<u>Page</u>
SUMMARY	1A
INTRODUCTION	1
DRILL HOLE ASSAYS	1
ORE RESERVES	3
COST STUDY	6
CONCLUSIONS AND RECOMMENDATIONS	7
CERTIFICATE	9

MAPS

Estimated tonnage for Upper Band
Estimated tonnage for Lower Band
Detail Plan of Mineral Zone
Plan of Trenches, D. D. & Percussion Holes

APPENDIX

- A - Bearing, Dip and Length of Percussion Holes
- B - Assay Certificates
- C - Preliminary Cost Study, dated February 20, 1978.

4

PERCUSSION DRILLING RESULTS AND
PRELIMINARY COST STUDY, GOTCHA
PROPERTY, CLEARWATER AREA, B. C.

Summary

An analysis of the assay results of the percussion drilling program on the Gotcha scheelite property indicate the total reserves in the mineral zones without further exploration to be 23,900 st.u WO_3 of which 19,900 st.u are drill indicated, and the remainder classed as probable and possible.

The net value of the drill indicated reserves only after recovery of capital and deduction of 10% royalty is \$1,974,200 on a 75% recovery basis and \$2,260,760 with 85% recovery.

Total operating costs including mining, milling and overhead are estimated at \$37,35/ton. Allowing for 25% dilution, the total tons to be extracted to yield the 19,900 st.u is 11,500. Using these figures the indicated net profit per ton before taxes on a 75% recovery basis is \$149.59, and on an 85% recovery basis is \$174.45.

It is recommended that metallurgical tests should be proceeded with to determine the actual recovery rate and grade of concentrate that can be expected from actual production.

Development drifts should be driven over both the Upper and Lower bands to open up the part of the ore zones which will be mined by underground methods and also to provide access for further exploration of the mineral zones beyond the limits delineated by drilling.

Introduction

On February 14, 1978 the writer submitted a progress report on the exploration of the scheelite mineral deposits on the Gotcha claims located in the Clearwater area of the Kamloops Mining Division. This report covered the percussion drilling program completed in January 1978, and a preliminary ore estimate was compiled on the basis of a visual estimate of the grade of the drill hole samples along with the results of the previous diamond drilling by Union Carbide Corp.

A preliminary cost study and profit estimate was submitted on February 20, based on the above ore reserve data and cost estimates believed to be conservative. Since this data, the assays of the percussion drilling samples have been received and this report consists of an updated ore estimate and cost analysis based on the assay data.

Drill Hole Assays

The drill cuttings from each hole were taken in 5 foot sections for examination by ultra-violet light, and then grouped into sections of 10 feet or more according to the intensity of fluorescence, as being submarginal, marginal, or ore grade. These grouped samples were assayed for % WO_3 by Can-Test Ltd., Vancouver. The results are tabulated as follows:

<u>Hble No.</u>	<u>Footage</u>		<u>% WO_3</u>
	<u>From</u>	<u>To</u>	
1.	20	30	0.03
	30	50	1.58
	50	60	0.85

<u>Hole No.</u>	<u>Footage</u>		<u>% WO₃</u>
	<u>From</u>	<u>To</u>	
2.	15	20	0.03
	20	25	0.03
	25	75	0.04
4.	45	60	0.06
5.	10	30	0.57
	30	45	0.14
	45	75	0.03
7.	25	35	0.03
	35	50	1.07
9.	25	50	4.30
	50	75	5.07
	75	95	1.47
10.	40	50	0.89
11.	10	30	2.84
	35	60	0.12
	60	75	0.10
12.	0	10	1.12
	10	20	1.25
13.	0	15	3.23
14.	0	10	3.05

<u>Hole No.</u>	<u>Footage</u>		<u>% WO_3</u>
	<u>From</u>	<u>To</u>	
17.	0	15	0.06
	15	30	0.35
18.	5	20	0.14

The samples from holes 3, 6, 8, and 16 were not submitted for assay, as they showed only very minor fluorescence, and their location indicated that they were in either the footwall or hanging wall of the mineralized structure. No sample was recovered from Hole No. 15. The bearing, dip, and total length of each hole is tabulated in Appendix "A" of this report, and their location is shown on the detail plan. Copies of the Can-Test assay certificates are included as Appendix "B".

Hole No. 2 resulted in surprisingly low assays, considering it was parallel, and only about 20 feet from Hole No. 1 which averaged 1.37% WO_3 over 30 feet, and it is suspected that the structure may have rolled so that the drill hole remained in the hanging wall its entire length, or possibly, the mineral band has been split by a horse of waste at this point.

Ore Reserves

1. Lower Band

In the block diagrams which accompany this report, each block designated Drill Indicated has been cut by one or more drill holes and the grade has been calculated by taking the average of the weighed averages of the drill hole sections within it.

From the cubic volume of each block and the average mineral content, the short ton unit equivalent has been arrived at. These are tabulated below, and are also shown on the block diagrams.

<u>Block</u>	<u>Tons</u>	<u>Avg. Assay % WO_3</u>	<u>S.T.U. Equivalent</u>
2	800	0.68	544
4	600	0.57	342
5	900	1.62	1456
7	700	1.84	1287
8)			
9)	2200	3.76	8272
10)			
Total drill indicates			11,900 s.t.u.

2. Upper Band

Holes #12 to #18 were drilled to test the Upper Band. The ground in this area was found to be badly shattered, and it was not possible to drill beyond about 30 feet and still obtain satisfactory sample returns, and in one case, hole #15, no sample was returned.

Holes #16, 17 and 18 were in the footwall of the structure and showed only low values in WO_3 , but the assays from holes #12, 13 and 14 averaged 2.28% WO_3 , therefore, for the purposes of the ore estimate, the original tonnage figure of 3,000 has been maintained, but an average grade of 2.0% WO_3 is used, giving a total of 6,000 s.t.u. WO_3 for this zone.

3. Float Ore

The estimate for the float ore remains the same as in the report of February 14, 1978 or 2,000 s.t.u.

4. Probable and Possible Ore

The block diagrams for the Lower Band show 900 tons classed as probable ore and 1,100 tons classed as possible ore. If a provisional assay value of 2% WO_3 is assigned to these, a total of 4,000 s.t.u. WO_3 is indicated.

5. SummaryEstimated Reserves in S.T.U. WO_3

	<u>Drill Ind.</u>	<u>Probable</u>	<u>Possible</u>	<u>Total</u>
Upper Band	6,000			6,000
Lower Band	11,900	1,800	2,200	15,900
Float	2,000			2,000
Totals	19,900	1,800	2,200	23,900

6. Additional Ore Possibilities

In the Lower Band, no ore has been projected beyond a reasonable zone of influence of the present drilling, but from a geological stand point, considerable additional ore is expected to be found downslope to the northeast and also at depth, and the possibility for extension of the zone to the southeast ore are far from being eliminated.

The Upper Band zone is still very incompletely outlined by drilling and there are indications that it may prove to be of equal grade and size to the Lower Band, but without further

confirmed data, the original conservative estimate must stand.

Cost Study

On the bases of revised ore estimated above, the cost study and indicated return, from a mining operation on the property, has been updated from the report of February 20, which is attached as Appendix "C" to this report.

1. Ore Reserves - Drill Indicated only = 19,900 s.t.u.
Current market value @ \$C. 160/s.t.u. = \$3,184,000.

	<u>75% Rec.</u>	<u>85% Rec.</u>
2. Recoverable value	\$2,388,000	\$2,706,400
3. Less 10% Royalty	\$ 238,800	\$ 270,640
4. Net value to company	2,149,200	2,435,760
5. Capital cost estimated		<u>175,000⁽¹⁾</u>
6. Net after recovery of capital (total amortization in one year)	\$1,974,200	\$2,260,760
7. Indicated tons of ore to be mined to realize.		
above net -	9,200	
Dilution, 25%	<u>2,300</u>	
	11,500 tons	
8. Net value/ton (75% rec.) = \$186.89		
(85% rec.) = \$211.80		

9. Mining costs (100 tons/day basis)	\$21.75/ton ⁽²⁾
10. Milling costs (100 tons/day basis)	8.00/ton ⁽³⁾
11. Mine Development	2.60/ton ⁽⁴⁾
12. Overhead	<u>5.00/ton⁽⁵⁾</u>
13. Total operating costs before taxes	\$37.35/ton
14. Indicated net profit per ton before taxes	
75% rec. bases = \$186.98 - \$37.35 = \$149.59	
85% rec. bases = \$211.80 - \$37.35 = \$174.45	
15. Indicated total net profit before taxes assuming <u>only 11,500 tons</u> <u>will be found.</u>	
75% rec. bases = \$149.59 x 11,500 = \$1,720,285	
85% rec. bases = \$174.45 x 11,500 = \$2,006,175	
16. <u>Pre Production Cash Requirements</u> ⁽⁶⁾	
Purchase of capital equipment and plant construction	\$175,000
Pre production stripping	10,000
Engineering, administration, etc.	<u>15,000</u>
	\$200,000

Conclusions and Recommendations

The exploration program to date has indicated a small, but highly profitable orebody with excellent possibilities for substantial additional reserves to be developed by further exploration.

The next phases of work recommended for the property are:

- (1) Drive development adits over the ore in both the Upper and Lower bands. These should be located to serve as haulage tunnels for the part of the orebody which will be mined by underground methods, and provide access for further exploration.
- (2) Metallurgical tests should be carried out on representative ore samples to determine the actual recovery and concentrated grade which can be achieved. It is expected that the concentrated grade will fall somewhere between the 75% and 85% limits used in this report.

March 2, 1978


J. P. Elwell, P.Eng.

Footnotes:

- (1) Appendix "C" - Paragraph 5.
- (2) Appendix "C" - Paragraph 6.
- (3) Appendix "C" - Paragraph 7
- (4) Appendix "C" - Paragraph 9
- (5) Appendix "C" - Paragraph 10
- (6) Appendix "C" - Page 4

CERTIFICATE

I, James Paul Elwell, of 4744 Caulfield Drive, West Vancouver, B. C., do hereby certify that:

1. I am a Consulting Mining Engineer residing at 4744 Caulfield Drive, West Vancouver, B. C., and with an office at 1030 - 510 West Hastings Street, Vancouver, B. C. V6B 1L8.
2. I am a graduate in Mining Engineering from the University of Alberta in 1940, and am a Registered Professional Engineer in the Province of British Columbia.
3. I have no personal interest, directly or indirectly in the properties or in NCA Minerals Corp. securities, nor do I expect to receive directly or indirectly any interest in such property or securities....
4. The findings in the report are from data obtained from the reports and maps acknowledged.

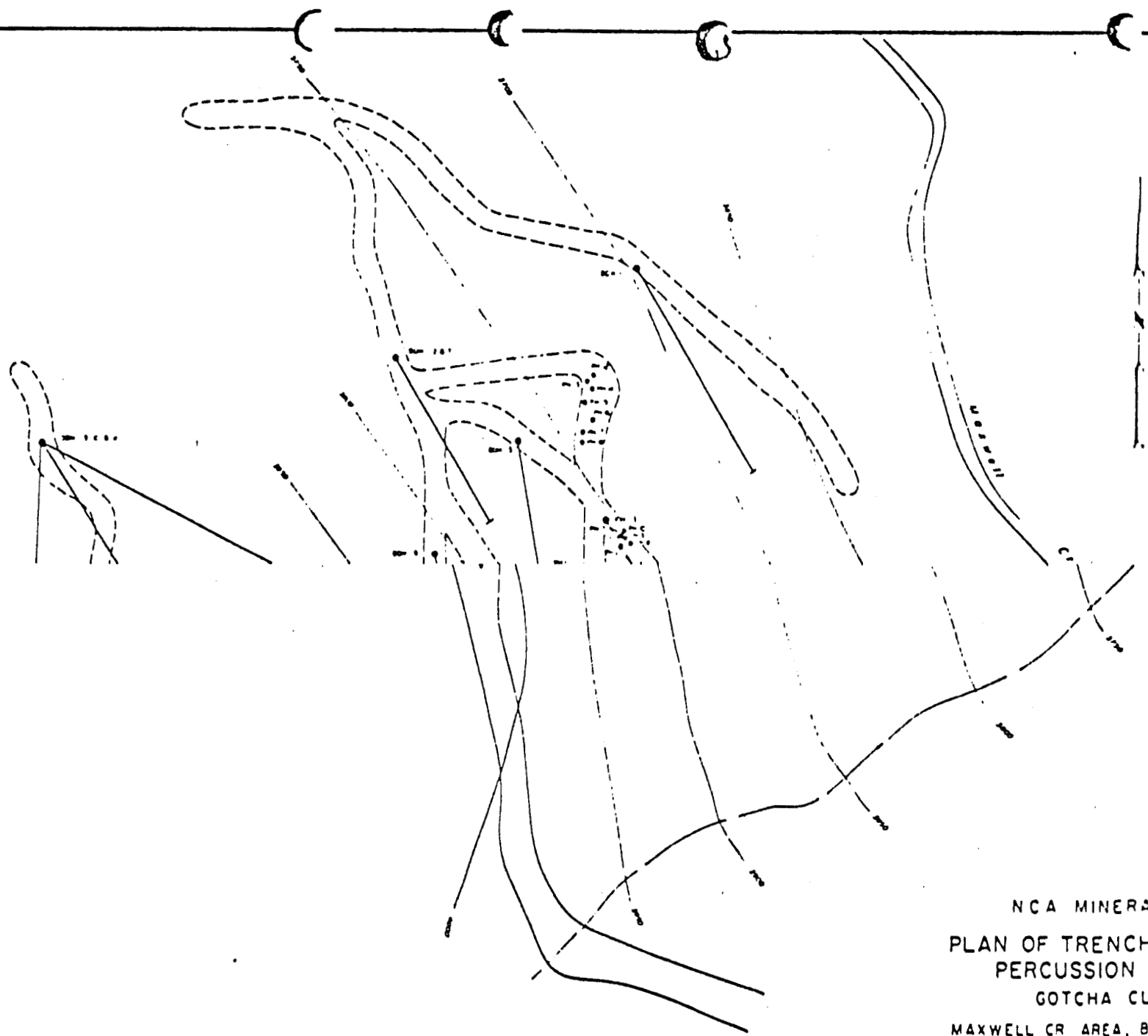
DATED at VANCOUVER, BRITISH COLUMBIA, this 2nd day of March, 1978.


JAMES PAUL ELWELL, P.Eng.

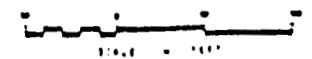
J. P. Elwell, P.Eng.

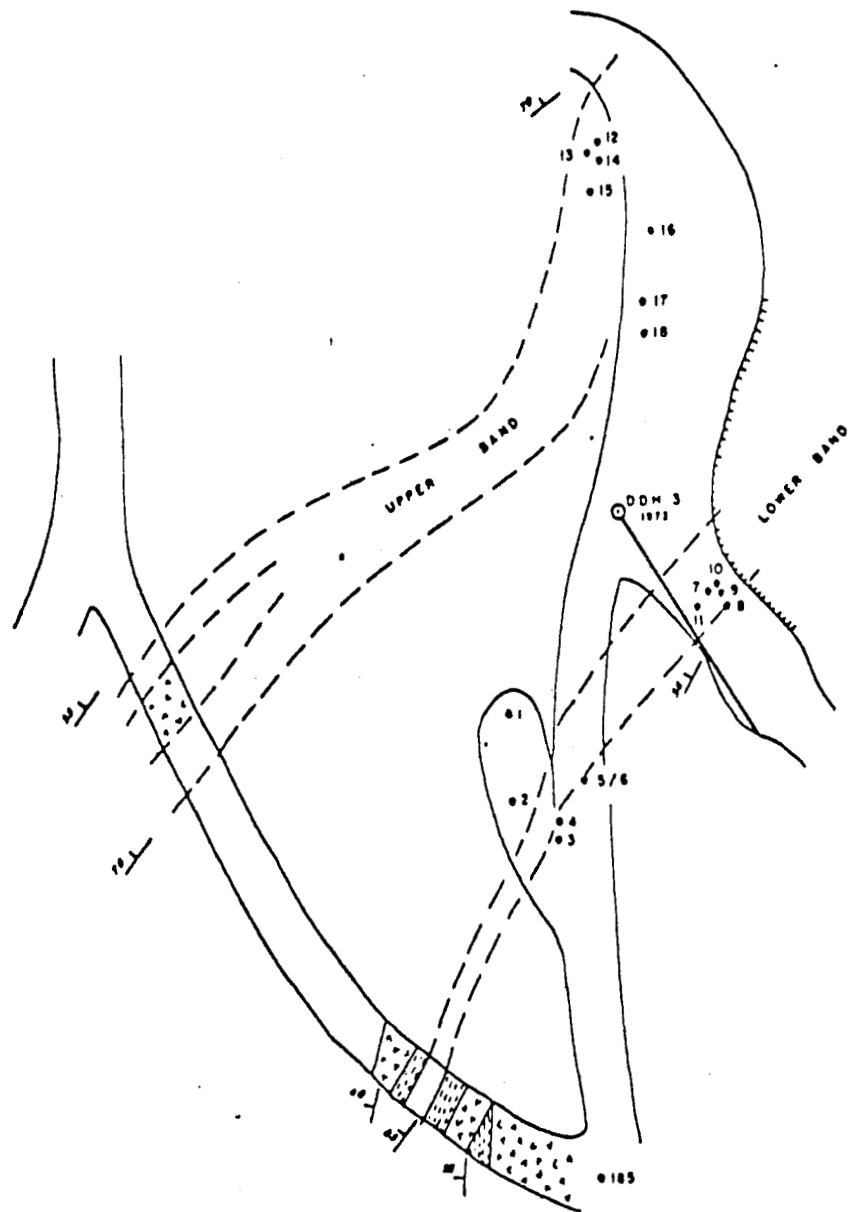
RESUME OF QUALIFICATIONS

- 1946 - 1950: Employed by Cerro de Pasco Corp., Peru, as Mine Foreman and General Mine Forman in underground lead-zinc-copper mines using square set, cut-and-fill, and shrinkage stoping methods.
- 1950 - 1953: Volcan Mines Co., Peru as Mine Superintendant to General Superintendant in 300 ton/day underground lead-zinc mine using cut-and-fill stoping method. Also acting manager of 190 ton/day gold mine and cyanide mill. Mining by room and pillar method.
- 1953 - 1960: Minas de Matahambre, Cuba, as Mine Superintendant to General Manager. Mine produced 1000 tons/day from underground stopes to the 4,000 level using square-set and cut-and-fill methods.
- 1960 - 1967: Registered Professional Engineer, Province of B. C. Independant Mining Consultant for various mining exploration projects in B. C., Yukon, N.W.T. and South America.
- 1967 - 1969: Employed as Mining Expert by United Nations in Mexico; duties consisted of making an economic evaluation of the various mining properties, both metallic and non-metallic in the State of Oaxaca, Mexico, and making recommendations on properties which showed economic potential.
- 1969 - Present: Continued as Self-employed Mining Consultant on exploration projects in Canada and Mexico.

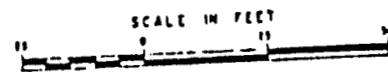


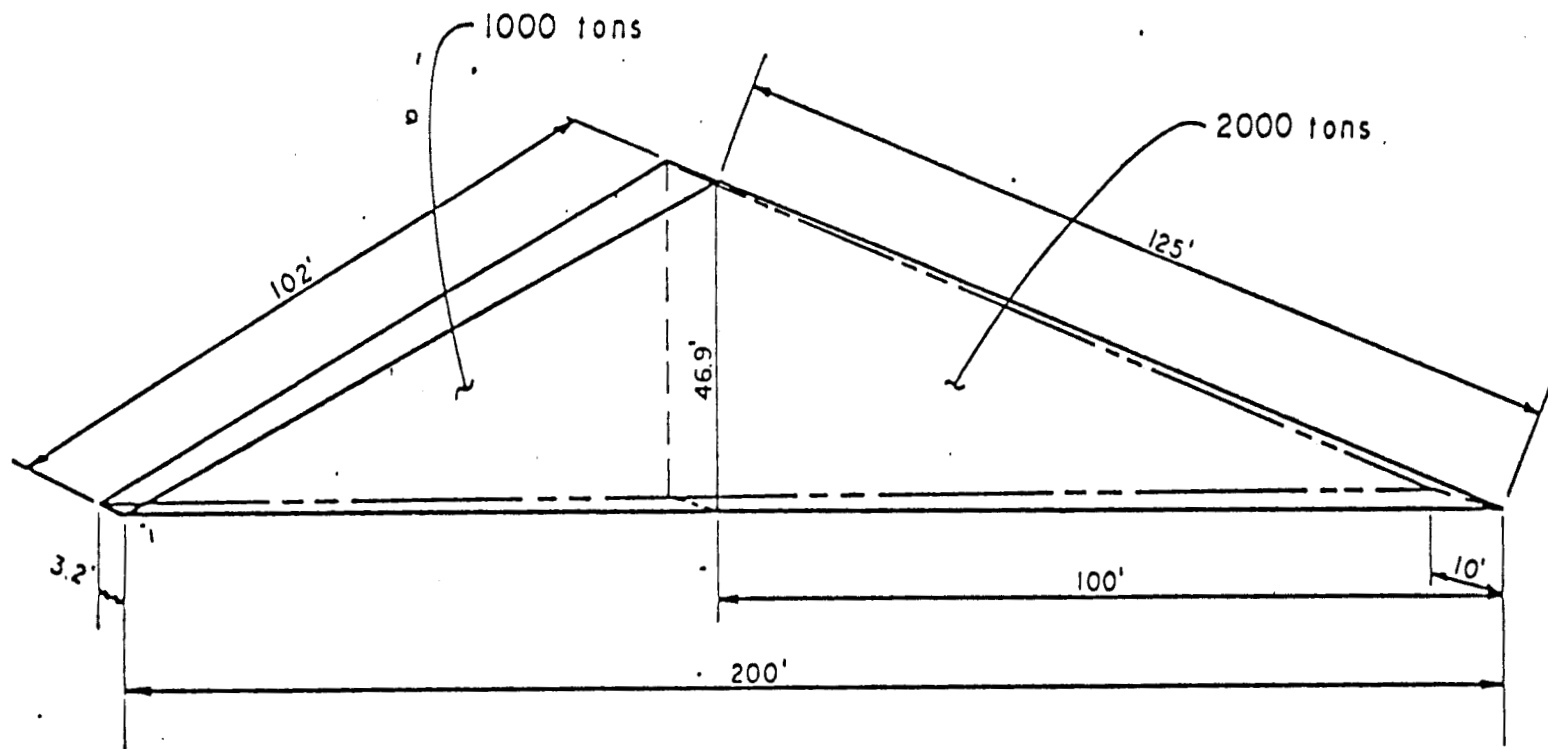
NCA MINERALS LTD
PLAN OF TRENCHES, D.D. &
PERCUSSION HOLES
GOTCHA CLAIM
MAXWELL CR AREA, BRITISH COLUMBIA





NCA MINERALS LTD
 DETAIL PLAN OF MINERAL ZONES
 SHOWING PERCUSSION AND D.D. HOLES





TONNAGE \approx 3000 tons

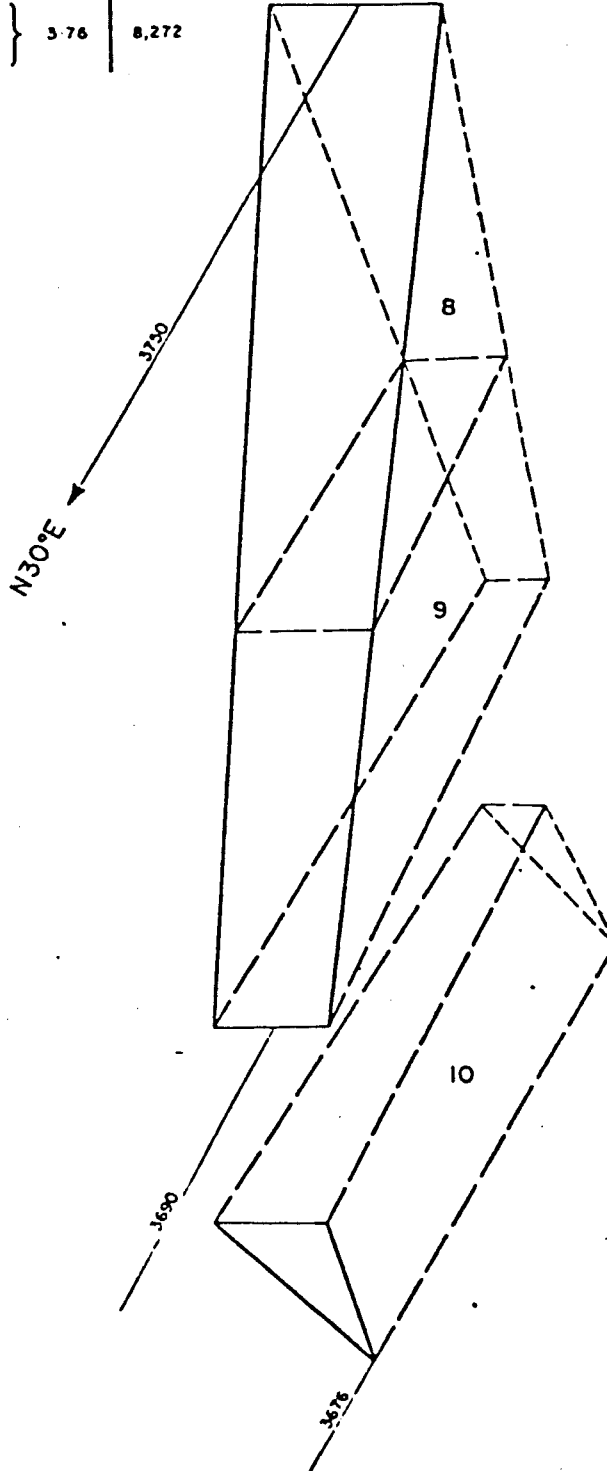
NCA MINERALS CORP.
 ESTIMATED TONNAGE FOR UPPER BAND
 GOTCHA MINERAL CLAIM

FEBRUARY, 1978



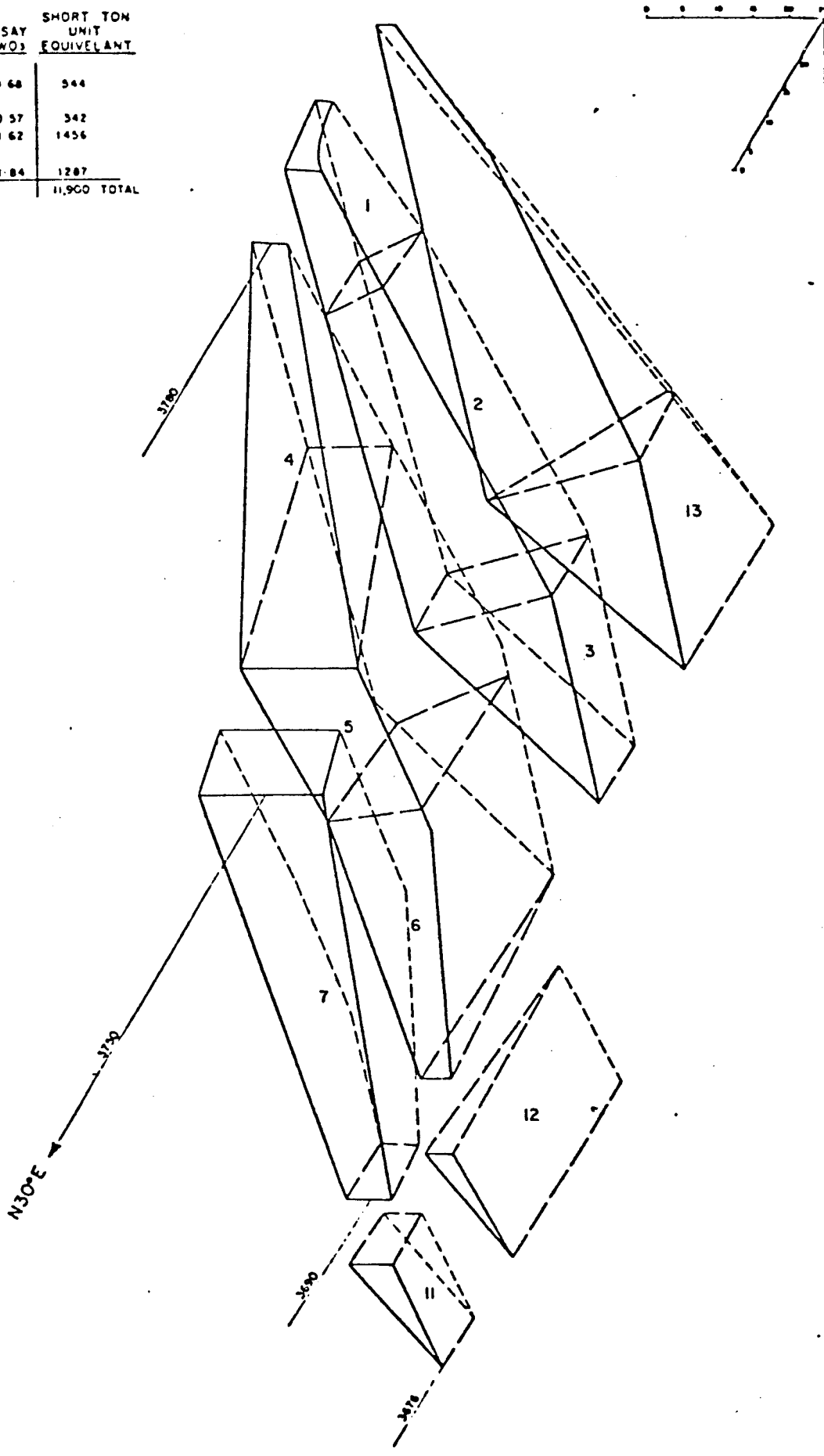
BLOCK	ESTIMATED TONNAGE	CLASS	ASSAY % WO ₃	SHORT TON UNIT EQUIVELANT
8.	700 T.	DR IND	3-76	8,272
9.	1300 T.	DR IND		
10.	200 T.	DR IND		

DRILL IND 5200 TONS
 PROBABLE 900 TONS
 POSSIBLE 1110 TONS



NCA MINERALS CO
 ESTIMATED TONNAGE FOR LOWER
 GOTCHA MINERAL CLAIM
 FEBRUARY 1978.

BLOCK	ESTIMATED TONNAGE	CLASS	SHORT TON UNIT	
			ASSAY % W ₂ O ₃	EQUIVALENT
1.	100 T	PROBABLE		
2.	800 T	DR IND	0.68	344
3.	300 T	PROBABLE		
4.	600 T	DR IND	0.57	342
5.	900 T	DR IND	1.62	1456
6.	500 T	PROBABLE		
7.	700 T	DR IND	1.84	1287
11.	50 T	POSSIBLE		
12.	60 T	POSSIBLE		
13.	1000 T	POSSIBLE		
			11,900 TOTAL	



NCA MINERALS CORP.
 ESTIMATED TONNAGE FOR LOWER BAND
 GOTCHA MINERAL CLAIM
 FEBRUARY 1978.

APPENDIX "A"

Percussion Drilling

Lower Band

<u>Hole No.</u>	<u>Bearing °</u>	<u>Dip °</u>	<u>Depth in ft.</u>
1		vert.	70
2		vert.	80
3	256	56	75
4	270	66	65
5	310	70	80
6	214	70	90
7	N	48	50
8	N	55	45
9	N	51	95
10	30	60	55
11	230	52	80

Upper Band

<u>Hole No.</u>	<u>Bearing °</u>	<u>Dip °</u>	<u>Depth in ft.</u>
12	310	60	25
13	236	50	30
14	292	54	20
15	186	54	20
16	290	50	30
17	270	43	35
18	340	55	25

0:



can test ltd.

Telephone 254 7278
04-54210

NCA Minerals Corporation

1650 PANDORA STREET, VANCOUVER, B.C. V5L 1L6

P.O. Box 371

Vancouver, B.C.

V6C 2N2

Attention: Mr. D. McLeod

Certificate of Assay

File No. 4575C 1 of 3

Date Feb. 26/78

Percussion Drill Cores

We hereby Certify that the following are the results of assays made by us upon submitted samples.

Sample Identification	GOLD	SILVER	Tungsten					
	Ounces Per Ton	Ounces Per Ton	Percent WO ₃	Percent	Percent	Percent	Percent	Percent
Composite 1 PH 1 20'-30'			0.03					
2 30'-50'			1.58					
3 50'-60'			0.85					
4 PH 2 15'-20'			0.03					
5 20'-25'			0.03					
6 25'-75'			0.04					
7 PH 5 10'-30'			0.57					
8 30'-45'			0.14					
9 30'-45'			0.03					
10 PH 7 25'-35'			0.03					

Note: Pulps retained three months.

Rejects retained two weeks.

CAN TEST LTD.

ALL REPORTS ARE THE CONFIDENTIAL PROPERTY OF CLIENTS. PUBLICATION OF STATEMENTS, CONCLUSIONS OR EXTRACTS FROM OR REGARDING OUR REPORTS IS NOT PERMITTED WITHOUT OUR WRITTEN APPROVAL. ANY LIABILITY ATTACHED THERETO IS LIMITED TO THE FEE CHARGED.

NCA Minerals Corporation



can test ltd.



1650 PANDORA STREET, VANCOUVER, B.C. V5L 1L6

P.O. Box 371

Vancouver, B.C.

V6C 2N2

Certificate of Assay

File No. 4575C

2 of 3

Date Feb. 26/78

Attention: Attn: Mr. D. McLeod

Percussion Drill Cores

We hereby Certify that the following are the results of assays made by us upon submitted samples.

Sample Identification	GOLD	SILVER	Tungsten					
	Ounces Per Ton	Ounces Per Ton	Percent	WO ₃	Percent	Percent	Percent	Percent
Composite 11 PH 7 35'-50'				1.07				
12 PH 9 25'-50'				4.30				
13 50'-75'				5.07				
14 75'-95'				1.47				
15 PH 4 45'-60'				0.06				
16 PH 10 40'-50'				0.89				
19 PH 11 10'-30'				2.84				
18 35'-60'				0.12				
17 60'-75'				0.10				
20 PH 12 0'-10'				1.12				

Note: Pulps retained three months.

Rejects retained two weeks.

CAN TEST LTD.

ALL REPORTS ARE THE CONFIDENTIAL PROPERTY OF CLIENTS. PUBLICATION OF STATEMENTS, CONCLUSIONS OR EXTRACTS FROM OR REGARDING OUR REPORTS IS NOT PERMITTED WITHOUT OUR WRITTEN APPROVAL. ANY LIABILITY ATTACHED THERETO IS LIMITED TO THE FEE CHARGED.



can test ltd.
1650 PANDORA STREET, VANCOUVER, B.C. V5L 1L6



To: NCA Minerals Corporation
P.O. Box 371
Vancouver, B.C.
V6C 2N2

Certificate of Assay

File No. 4575C 3 of 3
Date Feb. 26/78

Attention: Attn: Mr. D. McLeod

Percussion Drill Cores

Mr hereby Certify that the following are the results of assays made by us upon submitted samples.

Sample Identification	GOLD	SILVER	Tungsten		Specific			
	Ounces Per Ton	Ounces Per Ton	Percent WO_3	Percent	Percent	Percent	Percent	Percent
Composite 21 PH 12 0'-20'			1.25		Gravity			
22 PH 13 0'-15'			3.23					
23 PH 14 0'-10'			3.05					
24 PH 17 0'-15"			0.06					
25 15'-30'			0.35					
26 PH 18 5'-20'			0.14					
27 PH 3 70'-75'			0.03					
28 General Sample			0.95		2.97			
29 Rock			2.40					

Note: Pulps retained three months.
Rejects retained two weeks.

CAN TEST LTD.

ALL REPORTS ARE THE CONFIDENTIAL PROPERTY OF CLIENTS PUBLICATION OF STATEMENTS, CONCLUSIONS OR EXTRACTS FROM OR REGARDING OUR REPORTS IS NOT PERMITTED WITHOUT OUR WRITTEN APPROVAL ANY LIABILITY ATTACHED THERETO IS LIMITED TO THE FEE CHARGED

S. G. ...

APPENDIX 'C'

PRELIMINARY COST STUDY
GOTCHA SCHEELITE PROPERTY

(1) Ore Reserves - drill indicated only = 16,000 stu¹
Current market value @ \$160.00 Can/S.T.U. = \$2,560,000

(2) Recoverable Value	<u>75% Rec.</u>	<u>85% Rec.</u>
	\$1,920,000	\$2,176,000
(3) Less 10% Royalty	<u>192,000</u>	<u>217,600</u>
(4) Net Value to company	\$1,728,000	\$1,958,000

(5) Capital Costs

Mill complete		\$ 45,000 ²
Power Plant		15,000 ³
Import duty, mill		6,750
Dismantling of mill		11,000
Transport of mill - & crane rentals		12,000
Mill building		25,000
Installation of equipment		15,000
Site Preparation		15,000
Service Vehicle		6,500
	TOTAL	<u>\$151,250</u>
Contingencies		23,750
	TOTAL	<u>\$175,000</u>

Capital Costs will be amortized in one year which is the expected life of the mine. On the bases, net value of ore to company after return of capital will be -

	<u>75% Rec.</u>	<u>85% Rec.</u>
Value before amortization	\$1,728,000	\$1,958,400
Less Capital recovery	<u>175,000</u>	<u>175,000</u>
Net after capital rec.	\$1,553,000	\$1,783,400

	<u>Per Ton</u>
Labour cost per ton milled at 100 tons/day	\$ 6.00
Power - 125 Kw at 75% load @ \$.063/kwh ⁵	
Cost/24 hrs. = $25 \times .063 \times \frac{75}{100} \times 125$	141.75
Cost/ton milled = $\frac{141.75}{100} = 1.4175$	(\$1.45)
Mill maintained and supplies - estimated	0.50
	<hr/>
Total direct mill costs	\$ 7.95
Say	(\$8.00)
(8) <u>Total Direct Costs</u>	
Mining & Milling = \$21.75 + \$8.00	\$ 29.75
	(\$30.00)
(9) <u>Mine Development</u>	
Allow 200' drift, x-cut @ \$100/ft.	\$20,000.00 ⁶
200 hrs stripping @ \$50/hr.	\$10,000.00
	<hr/>
TOTAL	\$30,000.00
Cost per ton of ore = $\frac{30,000}{15,000} = \2.00	
(10) <u>Overhead - Administration, Legal, etc.</u>	
Provisionally allow \$5.00/ton	\$ 5.00
Total operating costs/ton exclusive of taxes	
21.75 + 8.00 + 2.00 + 5.00 =	\$ 36.75
Indicated net profit before taxes	
75% rec. basis = 103.53 - 36.75 =	\$ 66.75
85% rec. basis = 118.89 - 36.75 =	\$ 82.14

Estimated ore to be mined to realize above net = 15,000 tons

Net value per ton = (75% rec.) \$103.53 (85% rec.) \$118.89

(6) Mining Costs (100 tons/day)

Assume 25% of tonnage as open pit and 75% underground

Contract mining costs⁴

Open pit @ \$12.00/ton

Underground @ \$25.00/ton

Total cost of mining 15,000 tons on above ratio

$$= 15,000 \times \frac{25}{100} \times 12 + 15,000 \times \frac{75}{100} \times 25$$

$$= 45,000 + 281,250 = \$326,250$$

Mining cost per ton (average) = \$21.75

(7) Milling Costs (100 tons/day)

1 labour, operators, 2 men/shift, 3 shifts

= 6 men-shifts/day @ \$60/man/shift with benefits \$360/day

1 Supervisor @ \$2,000/month 67

1 Mechanic @ \$65/day 65

1 Electrician @ \$65/day 65

\$557/day

Contingencies @ overtime 43/day

Total \$600/day