

*This Noranda Engr's Estimate, useful for cap. costs,
R.O.B + P.V. Based on mining narrow magnetite
zone only! Not present proposals - Jan'83.*

January 30, 1981

830429

MEMO TO: G.E. Cooper
FROM : J.A. Gibson
SUBJECT: C.J. SULLIVAN Cu-Au-Ag-WO₃,
VITAL MINES LTD.
CASSIAR, B.C.

REFERENCE

The attached study complies with C.J. Sullivan's request to you for a target evaluation of a property in the Cassiar area of British Columbia.

Material provided consisted of:

- Ontario Research Foundation report on metallurgical testwork on two samples submitted in July/80.
- Sketch of property by C.J. Sullivan.
- Topographic map @ 1" = 4 miles.

C.J. Sullivan believes he has 2.5 million tons to a depth of 200' grading 0.45 - 0.50% Cu and 0.06 to 0.10 opt Au with potential for 25 million tons of similar grade. His question is ----would 20-25 million tons @ 0.46% Cu, 0.08 opt Au (both at 90% recovery), 0.07% WO₃ and 0.2 opt Ag at 70 feet wide in an open pit be viable?

SUMMARY

At the parameters provided and assumed, the project shows a rate of return of 29% and a PV at 15% \$83 million.

DETAILS

Assumptions -

25 million tons ore
70' wide x 300' vertical x 12,000' long
stripping ratio 2.8:1 (W:O)
Overburden depth - 20 feet
preproduction - 3 years
Production life - 10 years
Production rate - 2,500,000 stpy

Grade, Recovery, Price:

	<u>Au</u>	<u>Ag</u>	<u>Cu</u>	<u>WO₃</u>
Grade	0.08	0.20	0.46%	0.07%
Recovery (%)	90	50	90	50
Market (\$)	600/oz	15/oz	0.90/lb	130/stu
Net (\$)	550/oz	13.50/oz	0.50/lb	110/stu

Operating Costs (\$/ton milled)

Mining	3.80 (@ 1.00/ton rock)
Milling	2.50
Plant Services	1.00
G & A	<u>1.00</u>
Total	8.30/ton milled

Capital Costs

Exploration 80,000' @ \$25/ft.	2,000,000
Road 45 mi @ \$300,000/mi	13,500,000

Preproduction Stripping -

Overburden 6 million yds @ 1.50	9,000,000
Waste Rock 20 " tons @ 1.00	<u>20,000,000</u>
Total Preproduction	44,500,000

Mine Equipment	18,000,000
Mill & Equipment (Incl. Tailings)	50,000,000
Powerline (45 mi @ \$250,000/mi)	11,000,000
Power Plant	8,000,000
Housing 200 Units @ \$100,000	20,000,000
Amenities	<u>5,000,000</u>
	112,000,000

Contingency	23,500,000
Working Capital	<u>5,000,000</u>
	185,000,000

Schedule of Capital:

(000's)	<u>1981</u>	<u>1982</u>	<u>1983</u>	<u>TOTAL</u>
Major Mine	4,000	5,000	9,000	18,000
Major Mill	24,000	31,000	56,000	111,000
PP & DEVEL.	16,000	16,000	19,000	50,000
Working	-	-	5,000	<u>5,000</u>
				185,000

J.A. Gibson.

JAG:rd

Att.