



2004
Economic
Model
Update

memorandum



Noranda Inc./Falconbridge

To: Tony Green, Jamie Robertson, Gilles Bouchard

From: Mike Savell

CC: Al Huard

Date: May 5th, 2004

Regarding: **KERR-SULPHURETS PROJECT, B.C. – ECONOMIC MODEL UPDATE, COMMENTS**

Amec has provided capital costs estimates for the tunnel, conveyor, and dams for the three most viable alternatives to handle waste rock and tailings. They consider the numbers used by Placer Dome to be understated by a large amount. The following table shows the comparison between the estimates.

CONCEPTUAL CAPITAL COST ESTIMATES, KERR-SULPHURETS

<i>description</i>	<i>Placer Dome</i>	<i>Noranda</i>	<i>Noranda revised with AMEC estimates</i>		
	<i>case 1</i> <i>60,000 tpd</i>	<i>case 1</i> <i>80,000 tpd</i>	<i>case 1</i> <i>80,000 tpd</i>	<i>case 2</i> <i>80,000 tpd</i>	<i>case 3</i> <i>80,000 tpd</i>
plantsite and roads	145.5	219.4	219.4	219.4	219.4
primary crusher	15.1	22.8	22.8	22.8	22.8
coarse ore stockpile	9.6	14.4	14.4	14.4	14.4
conveying	90.6	136.6	335.1	394.5	457.0
concentrator	157.0	236.7	236.7	236.7	236.7
flotation	79.8	120.4	120.4	120.4	120.4
water systems	13.8	20.7	20.7	20.7	20.7
shops and warehouse	27.7	41.7	41.7	41.7	41.7
general office	3.7	5.6	5.6	5.6	5.6
assay laboratory	2.2	3.4	3.4	3.4	3.4
open pit	95.4	143.8	223.5	223.5	
power supply	118.1	178.1	178.1	178.1	178.1
tailing disposal	1.5	2.3	18.0	91.3	236.3
concentrate handling	4.3	6.5	6.5	6.5	6.5
accommodations	15.0	22.5	22.5	22.5	22.5
conveying year 8	40.0	60			
ARD management at KS					18.0
tailings impoundment sustaining				41.8	466.8
tailings impoundment closure				2.5	4.5
total project cost	819.2	1235.0	1469.0	1646.0	2075.0

NOTES:

- Case 1: tailings to Bowser Lake, waste rock in Sulphurets Valley
- Case 2: tailings to Treaty Creek, waste rock in Sulphurets Valley
- Case 3: tailings and PAG waste rock to Treaty Creek
- It is not clear to me whether Placer Dome put the tunnel cost in "plantsite and roads", or "conveying". I assumed it was in "conveying" so I put the revised AMEC estimates there. If the original tunneling estimate was included in "plantsite and roads", this number could be reduced in the revised with AMEC estimates columns, with a favorable impact
- I assume the "open pit" category mainly covers waste rock dams
- The Noranda case 1 @ 80,000 tpd costs are Placer Dome's costs multiplied by 50% to allow for the 25% increase in production, and inflation since 1996.

ECONOMIC MODEL, KERR SULPHURETS

To gauge the impact of the increased capital cost estimates on the economic model, I used PCDEP to calculate the key financial indicators.

after tax key financial indicators estimated using PCDEP, \$CDN	Placer dome Case 1	noranda case 1	noranda revised with AMEC estimates		
	60,000 tpd	80,000 tpd	case 1 80,000 tpd	case 2 80,000 tpd	case 3 80,000 tpd
total revenue	2471	7556	7556	7556	7556
total cash flow	222	1860	1784	1714	1563
cash flow ratio	0.3	1.6	1.2	1.0	0.7
operating margin	2.1	2.9	2.9	2.9	2.9
payback period	6.5	3.9	4.7	5.2	6.4
NPV@7%	-120	563	433	339	109
PV ratio	-0.2	0.6	0.4	0.2	0.1
rate of return	3.8	14.8	12.1	10.6	8.0

NOTES:

Placer Dome model assumptions (1996):

Reserves: Kerr – 139.4 Mt at 0.68% Cu, 0.33 g/t Au (incl. 10% dilution at 0 grade)
 Sulphurets – 54.3 Mt at 0.29% Cu, 0.93 g/t Au (")
 Total - 193.7 Mt at 0.57% Cu, 0.49 g/t Au (")

Production: 60,000 tonnes/day

Metal Prices: \$0.95 US/lb Cu, \$375 US/oz Au

Exchange Rate: \$0.763 US = \$1.00 CDN

Capital Cost: \$819 M CDN

Operating Costs: \$6.14 CDN/tonne milled

Stripping Ratio: 2 : 1

Recovery: 86% Cu, 57% Au

Noranda model assumptions (2002):

Reserves: 400 M tonnes at 0.75% Cu, 0.4 g/t Au

Production: 80,000 tonnes/day

Metal Prices: \$0.95 US/lb Cu, \$325 US/oz Au

Exchange Rate: \$0.65 US = \$1.00 CDN

Capital Cost: \$1,235 M CDN

Operating Costs: \$6.50 CDN/tonne milled

Stripping Ratio: 2 : 1

Recovery: 90% Cu, 70% Au

Note the increase in the exchange rate is effectively balanced by the increase in metal prices.

COMMENTS

The following could help the project achieve a satisfactory rate of return:

- lower stripping ratio
- reduction in volume of PAG rock
- pit location which could facilitate storage of waste / tailings
- availability of higher grade ore early in minelife
- smaller deposit with better grade, stripping ratio
- deposit amenable to block caving
- higher overall grade
- lower capital costs
- higher metal price/exchange rate ratio

The first seven in this list could be provided by positive exploration results, which could also favorably impact the capital costs. However, a higher overall grade than envisioned in the exploration model or block caving target are considered remote at this point.