

The Roasting Plant, Kwekwe

Telephone No. 2868

Telegraphic Address
"ROASTER, KWEKWE"

REF. G/R/3

P.O. BOX 118.

KWEKWE

13th February, 1984

ESTABLISHED IN 1937 IN TERMS OF THE ROASTING PLANT ACT
(CHAPTER 204) TO CARRY ON THE BUSINESS OF DEALING IN AND
TREATING ORES, CONCENTRATES AND THE PRODUCTS AND BY-
PRODUCTS THEREOF

Metallurgical Superintendent,
Giant Yellowknife Mines, Ltd.,
Yellowknife,
N.W.T.

Dear Sir,

re: TREATMENT OF ARSENICAL GOLD CONCENTRATES.

I write to inquire if you could be in a position to supply us with a "design package" of the fluosolids technology used at your Mines, and an estimate of the cost for a 60 T.P.D. roaster.

We are a parastatal body, custom-treating concentrates from refractory (arsenical) ores from our Zimbabwean Mines. The roasting stage is performed in two Edwards Roasters which were commissioned in 1940 and have been operated ever since. The calcine goes through the conventional cyanide, C.C.D. and merrill-crowe zinc precipitation process. At present we just can manage about 30 T.P.D. of concentrates into the roasters, with not very satisfactory results on recovery, presently at 75% on average i.e. a residue of about 11 - 13 g/t to the dam.


We are now therefore trying to replace the old Edwards Roasters, and my Board of Directors has decided on acquiring a fluosolids roaster (double-bed).

Since we custom-treat, our source of feed concentrates is very varied as shown by the enclosed schedule of analysis and gold distribution (on size fractions) of some of our suppliers and our composite feed. The bulk of the concentrates are from as mined-ores and a few are from dump-retreatment. It may be of interest that it has been our experience that those concentrates of dump retreatment origin and with an Antimony content in excess of 1.5%, do have some detrimental effect on the process. So, any information you could supply from your experience, of antimony behaviour in the fluosolids, and effects of fluctuating composite feeds will be very much appreciated.

Finally, I am also asking if it would be possible to visit your group of Mines sometime between May and July, 1984 if arrangements were made.

Your assistance and any other advice you could give, would be greatly valued.

Yours faithfully,
The Roasting Plant.


MR. IM KADENHE.
MANAGER.

1) RIVERLEA MINE (AS ? MINED ORE CONCENTRATE)

CONCENTRATE ANALYSIS

Au (g/t)	% Fe	% S	% As	% Sb	% Cu	% N	% Pb
60,80	14,90	18,02	8,30	0,20	0,10	0,04	Tr.

GRADING ASSAY ANALYSIS

Screen Size X10 - 6 M	Wt. g	% Wt Distrbn.	Cu mm	Au g/t	%Au Distrbn.	Cu mm
+ 300 mm	1,6	0,19	0,19	24,0	0,09	0,09
- 300 + 212	4,0	0,48	0,67	40,0	0,32	0,41
- 212 + 150	22,8	2,74	3,41	42,0	1,94	2,35
- 150 + 106	45,3	5,44	8,85	82,8	7,61	9,96
- 106 + 75	45,4	5,45	14,30	90,4	8,32	18,28
- 75	714,2	85,70	100,00	56,4	81,72	100,00
TOTAL	833,3	100,00			100,00	

Calculated Head Grade (Au) : 59,15 g/t

2) CAM & MOTOR (DUMP-RETREATMENT CONCENTRATE)

CONCENTRATE ANALYSIS

Au g/t	% Fe	% S	% As	% Sb	% Cu	% Ni	% Pb
39,80	5,95	5,06	1,71	1,55	0,14	0,08	Tr.

GRADING & ASSAY ANALYSIS

Screen Size 10 ⁻⁶ M	Wt. g	% Wt Distrbn.	CUMM	Au g/t	% Au Distrbn.	CUMM
+ 300	-	-	-	-	-	-
- 300 + 212	-	-	-	-	-	-
- 212 + 150	-	-	-	-	-	-
- 150 + 106	-	-	-	-	-	-
- 106 + 75	4,4	0,76	0,76	0,24	0,61	0,61
- 75	576,5	99,24	100,00	38,90	99,39	100,00
TOTAL	580,9	100,0			100,0	

CALCULATED HEAD GRADE (Au) : 38,61 g/t

CALCULATED HEAD GRADE - Au : 45,19 g/t

N.B. The Calculated Head Grade is consistent with current grade for the concentrates supplied by this mine, circa 48 g/t.

5) APPROXIMATE CURRENT FEED TO EDWARDS ROASTERS :

CONCENTRATE ANALYSIS

Au (g/t)	% Fe	% S	% As	% Sb	% Cu	% Ni	% Pb
49,10	21,30	15,70	5,30	0,80	N O T	D O N E	

3) INDARAMA MINE (AS - MINED ORE CONCENTRATE)

CONCENTRATE ANALYSIS

Au g/t	% Fe	% S	% As	% Sb	% Cu	% Ni	% Pb
46.10	21,85	24,83	8,30	1,40	0,12	0,06	0,10

GRADING AND ASSAY ANALYSIS

Screen Size 10 ⁻⁶ M	Wt. g	% Wt Distrbn.	CUMM	Au g/t	% Au Distrbn.	CUMM
+ 300	54,1	2,04	2,04	39,6	1,60	1,60
- 300 + 212	80,3	3,03	5,07	38,0	2,30	3,90
- 212 + 150	310,6	11,73	16,80	26,0	6,10	10,00
- 150 + 106	345,6	13,05	29,85	28,0	7,30	17,30
- 106 + 75	256,0	9,67	39,52	39,2	7,60	24,90
- 75	1601,5	60,48	100,00	62,0	75,10	100,00
TOTAL	2648,1	100,0			100,0	

CALCULATED HEAD GRADE (Au) : 49,95 g/t

4) BAR 20 MINE (AS-MINED ORE CONCENTRATE)

CONCENTRATE ANALYSIS

Au (g/t)	% Fe	% S	% As	% Sb	% Cu	% Ni	% Pb
54,40	30,40	22,16	18,50	0,10	0,10	Tr.	Tr.

GRADING & ASSAY ANALYSIS

Screen Size 10 ⁻⁶ M	Wt. g	% Wt Distrbn.	CUMM	Au g/t	% Au Distrbn.	CUMM
+ 300	178,4	14,57	14,57	32,8	10,6	10,60
- 300 + 212	6,0	0,49	15,06	34,0	0,4	11,00
- 212 + 150	23,9	2,95	17,01	33,5	1,4	12,40
- 150 + 106	50,7	4,14	21,15	40,0	3,7	16,10
- 106 + 75	56,4	4,62	25,77	50,0	5,1	21,20
- 75	908,7	74,23	100,00	48,0	78,8	100,00
TOTAL	1224,1	100,00			100,0	

CALCULATED HEAD GRADE - Au : 45,19 g/t

N.B. The Calculated Head Grade is consistent with current grade for the concentrates supplied by this mine, circa 48 g/t.

5) APPROXIMATE CURRENT FEED TO EDWARDS ROASTERS :

CONCENTRATE ANALYSIS

Au (g/t)	% Fe	% S	% As	% Sb	% Cu	% Ni	% Pb
49,10	21,30	15,70	5,30	0,80	NOT DONE		

GRADING - ASSAY ANALYSIS

Screen Size 10 ⁻⁶ M	Wt g	% Wt Distrbn.	CUMM	Au G/t	% Au Distrbn.	CUMM
+ 300	167,6	3,60	3,60	40,0	2,7	2,7
- 300 + 212	53,1	1,14	4,74	64,4	1,4	4,1
- 212 + 150	209,9	4,50	9,24	57,2	4,7	8,8
- 150 + 106	292,8	6,29	15,53	61,6	7,1	15,9
- 106 + 75	276,7	5,94	21,47	61,4	6,6	22,5
- 75	3657,9	78,53	100,00	53,6	77,5	100,0
TOTAL	4658,0	100,00			100,00	

CALCULATED HEAD GRADE - Au : 54,30 g/t