

Giant Yellowknife Mines Limited
Yellowknife Division

TAILINGS RETREATMENT PLANT

COMPILATION AND UPDATE OF
1988 OPERATING PERFORMANCE REPORTS

November 7, 1988

D.R. Bartlett
Sr. Project Metallurgist

B. Cross
Plant Metallurgist

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INTRODUCTION

To allow maximum time to plan for the 1989 season, all TRP technical and performance reports have been compiled and updated. This information is presented herein as an interim report on the status of TRP improvement activities. Data analysis and conclusions on key performance trends have only been completed in limited cases. In the spirit of this information sharing - the reader is encouraged to:

- o Participate in the data analysis.
- o Contribute to a sound operating strategy for 1989.

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GIANT YELLOWKNIFE MINES LIMITED
TIMMINS DIVISION

November 11, 1988

MEMO TO: S. McAlpine

FROM: J. Bartrum

SUBJECT: Report by Bartlett & Cross

- 1.0 I think we should get one very important point clear Re - "The Introduction" of this report. This particular "reader" will not only "participate" and "contribute" to a "sound" operating strategy for 1989 but he will also be directing that activity in his many diverse roles of General Manager - Metallurgical Development - Giant Resources.
- 2.0 Your "Metallurgists" may "participate" and "contribute" by setting themselves a somewhat higher standard than that expected in the average kindergarten so that this reader can in reality "participate", "contribute" and direct.
- 3.0 Specifically
- 3.1 Section No.10 This section can only be described as distressingly pathetic!
 - a) I would have expected at the very least all the information that was requested via Ken Blower. That memo is attached.
 - b) Once again and I'm taking every risk in assuming someone had the professional competence to measure them during the trial, one week before, during and after what were the feed grades, tailings losses, pH levels by tank, oxygen levels in each tank, carbon distributions and profiles, feed densities, actual solids retention time, cyanide residuals by stage, tonnage rates, pulp temperatures, total cation concentration, CIL feed sizings, soluble sulphide levels, etc. etc. etc.?
 - c) I would then expect at the very least that a metallurgist would have collated this data put it through a factor analysis, R. correlation analysis or some multivariate statistical technique.
 - d) I would suggest extremely strongly that someone reads Fiedler's Report which I find reasonably simple and straight forward to understand and answer a fundamentally simple and basic question.
 - The average dissolution from the pilot plant test programme was 38.9%.

- It was achieved at a pH of greater than 10.0.
 - It was achieved at 1.23 lb/t of lime.
 - It was achieved at 2.01 lb/t of cyanide.
 - It was achieved at free cyanide values of "generally greater than 0.7 lbs/t".
 - It was achieved with sufficient dissolved oxygen.
 - It simply was achieved.
- e) The person who wrote section 10 summary states there was at least 0.6 lbs NaCN/t solution but he's not sure. For heaven's sake so what!! The test was a farce in that Pilot Plant free cyanide levels were generally greater than 0.7 lbs/t. In other words you didn't even do the test on the basis of the feasibility study which justified the capital for the project in the first place. What else didn't you do???
- t) So the fundamental basic question is what are the difference between the pilot plant and the TRP operations?
- g) I will now "contribute" & "participate" one difference is you didn't have the pilot plant cyanide dosage level set in the TRP plant properly since day one(!)
- h) This question(f) was asked before and detailed on a bar chart August 22, 1988 - 81 days ago - 0.22 years ago - just how long do Cooper, Bartlett & Cross need?? This sort of simple exercise would normally take me a part of an hour assuming all the information was in front of me.
- i) Cross's attempt point 5 - section 2 - is interesting with respect to depth but why can't some metallurgist sit down and do the following??

VARIABLE	PILOT PLANT	TRP PLANT	DIFFERENCES
NaCN addition	>0.7 lbs/t	<<<0.7 lbs/t	More cyanide used in the Pilot Plant
Depth of reclaimed Material			
Feed Sizing			
Feed Assay			
Soluble Gold in Feed			
Preaeration			
Feed Density			
Soluble Sulphides			
Soluble Cations			
Dissolved Oxygen each tank	Refer Cross excellent	Very badly saturated most of the operating time.	
Carbon Loading each tank			

	PILOT PLANT	TRP PLANT	DIFFERENCES
Carbon Concentration each tank		For a long time extreme- ly badly dis- tributed.	
Gold Dissolution each tank			
Gold Solution Strength each tank			
Cyanide Residual each tank			
Density each tank			
Pulp pH each tank			
Retention Time each tank		Varied all over the shop	
Retention Time Total			
Pulp Temperature			
Organics - wood			
Humic acids			
Tannic acids			
Fe ₂ O ₃ ·xH ₂ O levels			
Cyanide stage Additions	Tanks 1,2,3		
Anything you can think of.	Very Little	Nothing	

- j) Basically, due to a lack of problem analysis, serious metallurgical thinking the TRP project lost the opportunity of making an additional \$1.0 M Cdn per operating month. I sincerely hope its not due to not running the plant at "generally greater than 0.7 lb/t free cyanide and some other simple variable missed!!
- k) Re-emphasizing that the test is a farce it was supposed to be a 7 day trial.
- (1) Was the data listed in the Pilot Plant vs TRP schedule monitored during the "trial".
 - (2) If anyone can interpret a simple graph in your metallurgical department look at the one you supplied this "reader", "cyanide versus time".
 - What pathetic control - why does it take 3 days

to get to over 2.0 lbs/t??

- Then on the 4th day it is lost to less than 1.5 lbs/t. The residence time the circuit is 28 hours at 8,000 tonnes - so this day is useless.
- Days 5, 6, 7, congratulations you got over 2.0 lbs/ton but look at the control over it! Day 5, 2.5 lbs/t; day 6, 3.2 lbs/t; day 7, 2.2 lbs/t.
- There are 24 hours between 5 & 6, and 24 hours between 6 & 7 this as a matter of interest totals 48 hours.
- If you ran at 6,000 TPD residence time is 37.3 hours if 8,000 then 28 hours.
- The total "trial" lasted 48 hours!

3.2 Section 2

Activity 2(a) - Control the density - why has it taken 6 months not to achieve this? Cooper's pathetic management ability?

Activity 2(b) - Some 84 days ago I recommended replacing the carbon loaded screen for a larger unit.

Activity 2(d) - Recommended 81 days ago so that you could operate with the then new carbon inventory. So instead operating costs were increased by adding more & more carbon.

Activity 3 - Calculate differential head required to achieve flow under all conditions - also control feed density. Why is there still uncertainty with respect to aeration? Why don't you know what causes the problem precisely by now?

Activity 5 - Why hasn't the report been completed? 81 days not long enough???

Activity 7 - Once again 81 days not long enough?

Activity 9(a) - Once again 81 days not long enough?

Activity 9(b) - Suggests even with extra aeration agitation is very poor - will have to be addressed and fixed during winter.

Activity 9(e) - What have you been doing since Sept. 7th besides losing gold?? Why weren't they repeated long ago?? It may have improved the recovery.

Activity 11 - The lab results indicated that "recovery improved slightly for longer dissolution times".

- Why can't you see this in the Plant?? In

at about 38 hours and was still climbing.
What's wrong with the TRP Plant - cyanide??
Feed density control at 8,000 TPD adding an
additional 18% increase in volume due to
poor control, agitation???

- Activity 14 - What was the dissolved oxygen?? Was it
anywhere near enough??
- Activity 15 - "Is arranging" after 81 days - for heaven's
sake!!!!!!!
- Activity 17 - Running compressors is expensive what are
the cost/benefits of gearing up the agitators?
- Activity 18 - Seems to be a waste of time! (81 days)
- Activity 19 - I am dealing with turkeys. Pilot Plant states
2.01 lbs/t, residual greater than 0.7 lbs free
cyanide. Do you think if I repeat this enough
time the message will finally sink in?
- Activity 20 - Oh really? Once again 81 days not enough?
- Activity 22 - What other priorities? - read this report
at least 5 times, the overall message may
sink in.
- Activity 23 - Amazing - truly amazing.⁽ⁿ⁾ The recommendation
from Cooper to McAlpine was (in writing) the
last action to be taken on the solution loss
was to add carbon!!!!

3.3 Section 3

Totally ignored by TRP personnel.

3.4 Section 4

You don't solve multivariate problems with extremely simple
single line regressions.

- Graphs are pretty though!
- "Graph 7 shows that decreasing tonnage is associated with
increasing gold extraction to solution". Amazing! But
does anyone at Yellowknife know what this means?
- Graph 8, I don't care whether the linear regression line
is horizontal, consider the dilution effect on cyanide if
you had the right amount to start with.
- 9-12 if you had the right amount of cyanide on, would they
be statistically weak??

3.5 Section 5

Anaemic

3.6 Section 7

3.7 Section 7

So what's the conclusion?

3.8 Section 8

"TRP tailings recyanidation showed further leaching". Would this perhaps suggest more cyanide or you have mechanical problems? "The unwillingness of the CIL operators to take samples" - "limits the amount of data available". Just pathetic management".

3.9 Section 9

Possible.

3.10 Section 10

Comments as above.

3.11 Section 11

What a waste of paper!

4.0 Conclusions

- 4.1 The report is in the waste paper basket where it is accompanied by garbage of significantly higher quality!
- 4.2 TRP personnel have set themselves a ridiculously low metallurgical standard, more disappointingly, they can't even achieve that.
- 4.3 Within 2 days, I identified the problem areas, set a list of simple metallurgical activities and after 81 days - very little achieved.
- 4.4 Worse than that, while working for Placer Dome Inc., I sent a fax to you requesting certain work to be done. That fax was received and on Cooper's desk when I arrived there; that was 20 days earlier. So now we are up to 101 days on some items.
- 4.5 The net result of the incredible inaction since start up has been a loss of \$6.0 M at least on not achieving solids dissolution efficiency and \$2.78 M on solution losses because some simpleton didn't add or move carbon.
- 4.6 What is totally incredible and totally unacceptable is that 2 consultants, myself & then Fiedler gave you the recipes or the actions required for success and they have either been ignored, or they have been attempted but unprofessionally or they are still being done.