



LAKEFIELD RESEARCH
A DIVISION OF FALCONBRIDGE LIMITED

PHONE (705) 652-3341
TELEX NO. 06962842

August 14, 1986

Mr. K. Thomas, Mill Superintendent
Giant Yellowknife Mines Ltd.
Post Office Bag 3000
Yellowknife, NWT
X1A 2M2

Dear Ken:

Arsenic Trioxide Residue Testwork

We have completed the testwork on the arsenic trioxide digested in ammonia liquor requested in your letter of July 2, 1986. The results have been summarized in the attached enclosure.

If you have any questions, do not hesitate to contact us.

Yours sincerely,

LAKEFIELD RESEARCH

I. Jackman

Project Engineer

IJ:SLK

Enc.

An Investigation of the Recovery of Gold and Silver

From a Sample of Arsenic Trioxide Residue

Summary of Results

1. Head Analyses

A representative sample of the arsenic trioxide residue was removed for analysis.

Gold:	20.8 g/t Au
Silver:	23.7 g/t Ag
Iron:	13.7 % Fe
Arsenic:	15.6 % As

X-ray diffraction showed the majority of the arsenic to be present as As_2O_3 . Some arsenic was detected as FeAsO_4 and no As_2O_5 was found.

As₂O₅ is more soluble by factor > 5.

2. Carbon-In-Leach Test

A carbon-in-leach test was conducted on a 45 g sample of arsenic trioxide residue. The leach parameters are given below:

Conditioning:	1 hour
	0.5 g/L NaOH
	2.5 g/L Na_2CO_3
	0.4 g/L Amine Acetate
	30 % solids
Cyanidation:	48 hours
	6 g/L NaCN (not maintained) - ?
	pH 10 maintained with NaOH
	30 % solids - ?
	10 g/L GRC 22 carbon

Summary of Results - Continued

2. Carbon-In-Leach Test - Cont'd

The results have been summarized as follows:

	Au	Ag	
% Recovery on carbon	88.8	58.4	✓
% Extraction	96.0	77.5	✓
% Adsorption	92.5	75.4	✓
Residue, g/t	0.80	5.8	✓
Head(Calc.), g/t	20.6	25.8	✓

Reagent Consumption: 41.18 kg/t NaCN
33.3 kg/t NaOH

S. O. R.

Comparison of Consumption

Cal Cathode Unit/month. 100 t
 Tons/month 28000 t.

$$\frac{4.18 \times 300}{28000} = 0.045 \text{ kg/t}$$

$$= 0.089 \text{ lb/t}$$

CIP = 0.2 lb/t.

Na OH

$$\frac{17.3 \times 300}{28000} \times 2.205 = 0.79 \text{ lbs/t}$$

CIP = 0.02 lbs/t.