

Giant
YELLOWKNIFE MINES LIMITED

MEMO TO: T.R. Raponi
CC: G.B. Halverson, S. El-Alfy
FROM: M.E. Goodfellow
DATE: May 5, 1988
SUBJECT: Cyanidation Testwork on Polishing Pond
Composite Samples - #3

Summary:

Further testwork was conducted on the polishing pond composite samples to investigate improving gold recovery after 24 hours leaching. Two tests were conducted on Test Hole #10. In Test 10C, 15 g/L of HAYCARBTNS carbon was added. In Test 10D, the Lakefield method of washing and repulping after 24 hours was utilized. Test 10C achieved 30.66% Au recovery with a calculated headgrade of 0.106 oz/ton Au. Test 10D achieved 30.84% Au recovery with a calculated headgrade of 0.101 oz/ton Au. These recoveries average 6.24% higher than the results achieved by standard cyanidation. Both tests consumed 1.68 lb/ton less lime than the standard cyanidation test. Test 10D consumed 0.7 lb/ton more cyanide.

Results of this testwork are still lower than previous tailings testwork results. Further testwork is being conducted to investigate the variation in gold recovery at varying depths. Test Hole #1 is being used for the testwork. Duplicate cyanidation tests using the Lakefield method are underway.

Purpose:

To determine the cyanidation recovery of drill core samples from the polishing pond using the Lakefield method and the addition of carbon.

Procedure:

Test Hole #10 was used for this testwork. Two - 200 g samples were taken for this cyanidation testwork. The 200 g samples were placed in a Winchester acid bottle and pulped with tap water to 33.0% solids. Lime (CaO) and cyanide (NaCN) were added to raise the pH to 10.0 and give an initial free cyanide strength of 20 lb/ton. For Test 10C, 15 g/L HAYCARBTNS carbon was added.

The sample was then placed on the rolls for one hour. A sample was then withdrawn to check pH and NaCN levels. CaO and NaCN were added to restore pH to 10.0 and to give a free cyanide strength of 1.0 lb/ton. The sample was rolled for a further 23 hours. For Test 10C, a sample was withdrawn to check pH, NaCN levels and for Au assays. Reagents were added as after the first hour. For Test 10D, the sample was filtered to separate the pregnant solution. The filter cake was then washed three times with 250 mL of tap water and a separate wash sample was obtained. Both solution samples were submitted for assay. A sample was withdrawn to check pH and NaCN levels. The cake was repulped to 33.0% solids with tap water. Lime (CaO) and cyanide (NaCN) were added to raise pH to 10.0 and give an initial free cyanide strength of 2.0 lb/ton. Both samples were rolled for a final 24 hours for a total of 48 hours leaching. For Test 10C, the sample was screened to remove the carbon. The samples were then filtered to separate the pregnant solutions. The filter cakes were washed with 500 mL tap water and a separate wash sample was obtained. Both solution samples and the solid residue were assayed for Au. The NaCN and pH were also determined for each pregnant solution. The Winchester acid bottles were rolled uncapped for the entire 48 hour test.

Results:

Test and assay results are attached. A summary of the tests can be found in Figure 1.

Conclusions:

1. Test 10C using carbon obtained 30.66% Au with a calculated headgrade of 0.106 oz/ton Au. Reagent consumptions were calculated at 2.60 lb/ton NaCN and 1.5 lb/ton CaO.
2. Test 10D using the Lakefield method obtained 30.84% Au with a calculated headgrade of 0.101 oz/ton Au. Reagent consumptions were calculated at 3.55 lb/ton NaCN and 1.5 lb/ton CaO.
3. Results of this testwork average 6.24% higher than standard cyanidation test results.
4. Further testwork will be conducted on Test Hole #1. The hole will be divided into 3 sections; top, middle and bottom. The effect of depth on gold cyanidation recovery will be investigated.

FIGURE 1: SUMMARY OF TEST RESULTS

SAMPLE	CALC HEAD	AWE HEAD	RESIDUE	CARBON	CALC Au	NaCN (lb/ton)	CaO (lb/ton)	TEST PROCEDURE
\$	(oz/ton)	(oz/ton)	(oz/ton)	(oz/ton)	RECOVERY(%)	CONSUMED	CONSUMED	
10	0.104	0.102	0.079		24.51	2.85	3.18	Standard cyanidation
10C	0.106	0.095	0.066	0.90	30.66	2.60	1.50	15 g/L carbon added.
10D	0.101	0.095	0.070		30.84	3.55	1.50	Washed and reppulped after 24 hours leaching.

Discussion:

The test results indicate that gold recovery can be improved after 24 hours leaching. The addition of 15 g/L carbon increased gold cyanidation recovery from standard cyanidation test results by 6.15%. Washing and repulping the sample with a fresh cyanide solution after 24 hours leaching improved gold recovery by 6.33%. The results of this testwork indicates that the average recovery of all the test holes could be increased by 6.24% to 35.15%. The calculated headgrade of Test 10C was 10% higher than the assayed headgrade. The calculated headgrade of Test 10D was 6% higher than the assayed headgrade.

Further testwork is being conducted to investigate the effect of depth on gold cyanidation recovery. Test Hole #1 has been chosen for this testwork due to its average gold cyanidation recovery of 30.05%. Duplicate tests from each composite sample will be run to verify the test results.

M.E. Goodfellow
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Jr. Metallurgist

MEG/mk

GIANT YELLOWKNIFE MINES LIMITED

CYANIDATION TESTS

Date of Test: April 25, 1988

Sample: Test Hole #10

Sample Code #: 10C

REF: CYANID.FRM

Initial					
Size = 200 g	Reagents	1 hr Roll	After 24 Hrs.	After 48 Hrs.	After Hrs.
pH = 8.0	CaO = 0.10 g	pH = 10.1	pH = 9.9	pH = 9.9	pH =
%-200=	NaCN = 2.0 lb/t	CN ⁻ = 0.45 lb/t	CN ⁻ = 0.4 lb/t	CN ⁻ = 0.55 lb/t	CN ⁻ = lb/t
H2O = 400 mL	Other =	Tit = 10 mL	Tit = 60 mL	Tit = ---- mL	Tit = ---- mL
Other=	pH to 10.1	Other =	Other =	Other =	Other =
	Added 15 g/L HAYCARBONS carbon.	Added 0.55 lb/t NaCN.	Added 0.6 lb/t NaCN. Added 0.05 g CaO. pH to 10.4		

Sample Calculations:

	Units	Gold			Arsenic		
		Assay	Distribution	Recovery	Assay	Distribution	Recovery
Preg	500 mL	0.045 mg/L	0.022 mg	3.04 %	mg/L	mg	%
Wash	750 mL	0.038 mg/L	0.028 mg	3.87 %	mg/L	mg	%
Total	1,360 mL	0.037 mg/L	0.050 mg	6.91 %	mg/L	mg	%
Residue	200 g	2.261 mg/L	0.452 mg	62.43 %	%	mg	%
Carbon	7.2 g	30.830 mg/L	0.222 mg	30.66 %	%	mg	%
Calc Head	200 g	3.620 g/t	0.724 mg	100.00 %	%	mg	%
Assay Head	200 g	3.254 g/t	0.651 mg		%	mg	

Note: Preg (mL) = Preg + Tit

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CYANIDATION TESTS

Date of Test: April 25, 1988

Sample: Test Hole # 10

Sample Code #: 10D

REF: CYANID.FRM

Initial					
Size = 200 g	Reagents	1 hr Roll	After 24 Hrs.	After 48 Hrs.	After Hrs.
pH = 8.0	CaO = 0.10 g	pH = 10.1	pH = 9.5	pH = 9.9	pH =
%-200=	NaCN = 2.0 lb/t	CN ⁻ = 0.45 lb/t	CN ⁻ = 0.45 lb/t	CN ⁻ = 0.55 lb/t	CN ⁻ = lb/t
H2O = 400 mL	Other =	Tit = 10 mL	Tit = 350 mL	Tit = 440 mL	Tit = ---- mL
Other=	pH to 10.5	Other =	Other =	Other =	Other =
		Added 0.55 lb/t NaCN.	Added 0.05 g CaO. pH to 11.0 Added 2.0 lb/t NaCN.		

Sample Calculations:

	Units	Gold			Arsenic		
		Assay	Distribution	Recovery	Assay	Distribution	Recovery
24 Preg	360 mL	0.353 mg/L	0.127 mg	18.30 %	mg/L	mg	%
24 Wash	750 mL	0.065 mg/L	0.049 mg	7.06 %	mg/L	mg	%
48 Preg	440 mL	0.048 mg/L	0.021 mg	3.03 %	mg/L	mg	%
48 Wash	500 mL	0.034 mg/L	0.017 mg	2.45 %	mg/L	mg	%
Total	2,050 mL	0.104 mg/L	0.214 mg	30.84 %	mg/L	mg	%
Residue	200 g	2.398 g/t	0.480 mg	69.16 %	%	mg	%
Calc Head	200 g	3.468 g/t	0.694 mg	100.00 %	%	mg	%
Assay Head	200 g	3.254 g/t	0.651 mg		%	mg	

Note: Preg (mL) = Preg + Tit

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MILL TESTING ASSAY REPORT

REF: MILLASSY

SAMPLES FROM Tailing Pond Composite DATE ASSAYED April 26, 1988

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