

**Giant**  
**YELLOWKNIFE MINES LIMITED**

MEMO TO: T.R. Raponi

CC: G.B. Halverson, S. El-Alfy, L. Dufour

FROM: M.E. Goodfellow

DATE: May 26, 1988

SUBJECT: Cyanidation Testwork on Top 20' of a Composite Sample  
from the Polishing Pond

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Summary:

Testwork was conducted to verify results of previous testwork investigating the effect of depth on gold recovery. Testwork using the Lakefield cyanidation method was conducted by L. Dufour. A composite sample of the top twenty feet of Test Hole #12 was used in this testwork. The sample recovered 32.69% Au with a calculated headgrade of 0.105 oz/ton Au. This result is slightly lower than the 36.87% Au recovery calculated for the previous test hole top twenty feet. The cyanide reagent consumption for this sample was slightly higher at 3.83 lb/ton NaCN. The lime addition rate remained the same at 1.5 lb/ton. Further testwork will be conducted on another test hole. The effect of roasting prior to cyanidation on gold recovery will be investigated.

Purpose:

To verify results of previous testwork investigating the effect of depth on gold cyanidation recovery.

Procedure:

Test Hole #12 was used for this testwork. The top twenty feet was composited and 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 2.0 lb/ton. The sample was then placed on the rolls for one hour. A sample was withdrawn to check pH and NaCN levels.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.

The sample was then filtered to separate the pregnant solution. The filter cake was washed three times with 250 mL tap water and a separate wash sample was obtained. Both solution samples were submitted for assay. pH and NaCN levels were checked. 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. Samples were rolled for a final 24 hours for a total of 48 hours leaching. The samples were then filtered to separate the pregnant solutions. The filter cakes were washed three times with 250 mL tap water and a separate wash sample was obtained. Both solution samples and the solid residue were assayed for Au. The NaCN level 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 Table 1.

#### Conclusions:

1. The top composite sample of depth 0-20 ft. recovered 32.69% Au with a calculated headgrade of 0.105 oz/ton Au. Reagent consumptions were calculated at 3.83 lb/ton NaCN and 1.5 lb/ton CaO.
2. Results of this testwork are slightly lower than previous testwork conducted. A calculated recovery of 36.87% Au was obtained in the previous testwork at a depth of 0-20 feet.
3. Cyanide consumption was 0.78 lb/ton higher in this testwork than previous testwork.
4. Further testwork will be conducted on another Test Hole to investigate the effect of roasting prior to cyanidation on gold recovery.

Discussion:

These test results confirm that the tailings located in the upper depths are more amenable to cyanidation than the lower levels. The composite sample of 0-20 feet recovered 32.69% Au while the calculated recovery of previous testwork obtained 36.87% Au. The recovery of the top 0-20 feet composite is approximately 7% higher than the results of the middle and bottom hole composite samples of previous testwork. The calculated headgrades of the composite sample were again higher than the assayed headgrade. The calculated headgrade was 9.4% higher than the actual assayed headgrade.

Further testwork will be conducted to investigate the effect of roasting prior to cyanidation on gold cyanidation recovery. Test Hole #7 will be used in the next testwork.

*M.E. Goodfellow*  
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Jr. Metallurgist

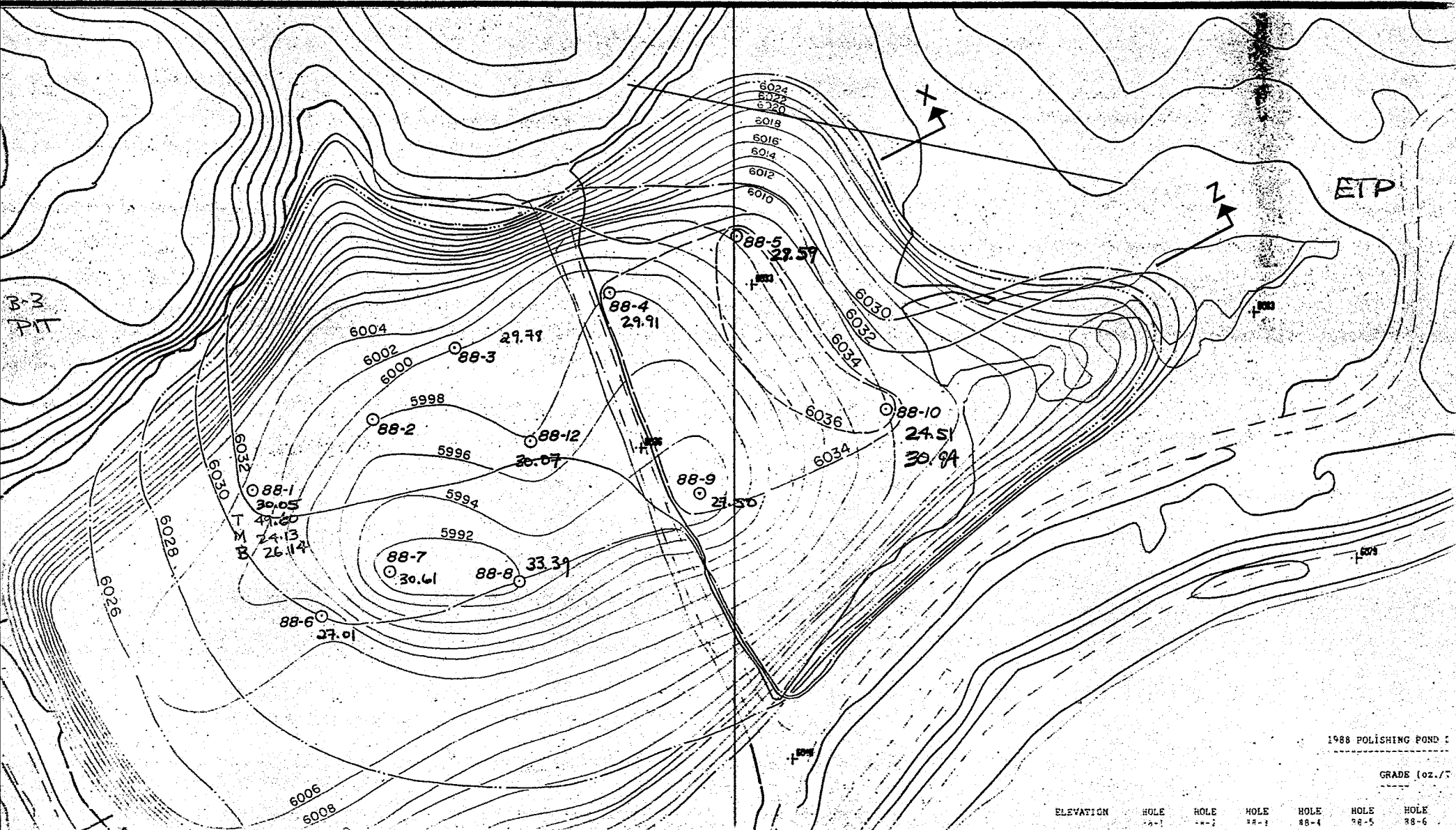


TABLE 1 : SUMMARY OF TEST RESULTS

SAMPLE #	CALC HEAD (oz/ton)	AVE HEAD (oz/ton)	RESIDUE (oz/ton)	CALC Au RECOVERY(%)	REAGENT CONSUMPTION		DEPTH (feet)
					NaCN (lb/ton)	CaO (lb/ton)	
T1	0.124	0.101	0.062	50.12	3.10	1.50	(0-10)
T2	0.126	0.101	0.064	49.07	3.33	1.50	(0-10)
M1	0.150	0.138	0.114	24.17	3.05	1.50	(10-20)
M2	0.152	0.138	0.115	24.09	2.95	1.50	(10-20)
AVE	0.138	0.12	0.089	36.87	3.12	1.50	(0-20)
12C	0.105	0.096	0.071	32.69	3.80	1.50	(0-20)
12D	0.105	0.096	0.071	32.69	3.85	1.50	(0-20)

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## CYANIDATION TESTS

Date of Test: May 16, 1988

Sample: TEST HOLE #12 (0'-20')

Sample Code #: 12C

REF: CYANID1.FRM

Initial					
Size = 200 g	Reagents	1 hr Roll	After 24 Hrs.	After 48 Hrs.	After Hrs.
pH = 8.3	CaO = 0.10 g	pH = 10.35	pH = 9.6	pH = 10.2	pH =
%-200=	NaCN = 2.0 lb/t	CN <sup>-</sup> = 0.65 lb/t	CN <sup>-</sup> = 0.65 lb/t	CN <sup>-</sup> = 0.55 lb/t	CN <sup>-</sup> = lb/t
H2O = 400 mL	Other =	Tit = 10 mL	Tit = ---- mL	Tit = ---- mL	Tit = ---- mL
Other=	pH to 10.75	Other =	Other =	Other =	Other =
		Added 0.35 lb/t NaCN.	Added 2 lb/t NaCN. Added 0.05 g CaO. pH to 10.6		

## Sample Calculations:

	Units	Gold			Arsenic		
		Assay	Distribution	Recovery	Assay	Distribution	Recovery
24 Preg	365 mL	0.349 mg/L	0.127 mg	17.59 %	mg/L	mg	%
24 Wash	750 mL	0.069 mg/L	0.051 mg	7.20 %	mg/L	mg	%
48 Preg	455 mL	0.620 mg/L	0.028 mg	3.98 %	mg/L	mg	%
48 Wash	750 mL	0.038 mg/L	0.029 mg	4.02 %	mg/L	mg	%
Total	2,310 mL	0.102 mg/L	0.236 mg	32.69 %	mg/L	mg	%
Residue	200 g	2.432 g/t	0.486 mg	67.31 %	%	mg	%
Calc Head	200 g	3.610 g/t	0.722 mg	100.00 %	%	mg	%
Assay Head	200 g	3.288 g/t	0.658 mg		%	mg	

Note: Preg (mL) = Preg + Tit

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## CYANIDATION TESTS

Date of Test: May 16, 1988

Sample: TEST HOLE #12 (0'-20')

Sample Code #: 12D

REF: CYANID1.FRM

Initial					
Size = 200 g	Reagents	1 hr Roll	After 24 Hrs.	After 48 Hrs.	After Hrs.
pH = 8.3	CaO = 0.10 g	pH = 10.3	pH = 9.6	pH = 10.2	pH =
%-200=	NaCN = 2.0 lb/t	CN <sup>-</sup> = 0.6 lb/t	CN <sup>-</sup> = 0.6 lb/t	CN <sup>-</sup> = 0.55 lb/t	CN <sup>-</sup> = lb/t
H2O = 400 mL	Other =	Tit = 10 mL	Tit = ---- mL	Tit = ---- mL	Tit = ---- mL
Other=	pH to 10.8	Other =	Other =	Other =	Other =
		Added 0.4 lb/t NaCN.	Added 2 lb/t NaCN. Added 0.05 g CaO. pH to 10.85		

## Sample Calculations:

	Units	Gold			Arsenic		
		Assay	Distribution	Recovery	Assay	Distribution	Recovery
24 Preg	395 mL	0.336 mg/L	0.133 mg	18.42 %	mg/L	mg	%
24 Wash	750 mL	0.065 mg/L	0.049 mg	6.79 %	mg/L	mg	%
48 Preg	455 mL	0.055 mg/L	0.025 mg	3.46 %	mg/L	mg	%
48 Wash	750 mL	0.038 mg/L	0.029 mg	4.02 %	mg/L	mg	%
Total	2,350 mL	0.100 mg/L	0.236 mg	32.69 %	mg/L	mg	%
Residue	200 g	2.432 g/t	0.486 mg	67.31 %	%	mg	%
Calc Head	200 g	3.610 g/t	0.722 mg	100.00 %	%	mg	%
Assay Head	200 g	3.288 g/t	0.658 mg		%	mg	

Note: Preg (mL) = Preg + Tit

REF: MILLASSY

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