An Investigation into

SCOPING LEVEL TESTWORK ON PRIMAVERA PROJECT SAMPLES

prepared for

B2 GOLD CORPORATION

Project 50283-001 – Final Report
February 8, 2012

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Executive Summary

Scoping level testwork was conducted on four samples from the Primavera project. The head assays of the 4 samples are summarised in Table 1.

Table 1: Summary of Head Assays

Element	Sample ID			
	6261	6262	6263	6264
Au, g/t	0.98	1.26	0.52	0.86
Cu, %	0.52	0.70	0.26	0.27

Two flotation campaigns, a rougher kinetic at two different grinds and flotation cleaner tests were conducted. In bulk rougher tests, the highest copper and gold recoveries were in the finer ground samples. Flotation recoveries of copper and gold are related to the recovery of sulphur and are driven by grind size. The results of the optimum bulk rougher tests are summarized in Table 2.

Table 2: Summary of Rougher Flotation Test Results

Sample ID	Test ID	Primay Grind K_{80} - µm	Product	Mass %	Assay - g/t[1] ,%			Recovery - %		
					Au[1]	Cu	S	Au	Cu	S
6261	F5	82	Rougher Concentrate	18.0	4.06	2.35	3.04	90.8	97.7	97.1
6262	F6	83	Rougher Concentrate	20.4	6.23	3.42	5.25	88.7	95.7	96.4
6263	F7	96	Rougher Concentrate	16.0	2.41	1.48	1.94	86.2	96.6	94.9
6264	F8	75	Rougher Concentrate	19.5	3.01	1.32	2.03	87.9	94.1	96.1

Open circuit cleaner tests were conducted on sample 6261 and a composite made from all 4 samples in equal proportions. The rougher concentrates of these were reground to 80% passing ~30 µm and cleaned in two stages. The results are summarised in Table 3.

Table 3: Summary of Cleaner Flotation Tests Results

Sample ID	Test ID	Primay Grind K_{80} - µm	Product	Mass %	Assay - g/t[1] ,%			Recovery - %		
					Au[1]	Cu	S	Au	Cu	S
6261	F11	69	Cleaner 2 concentrate	1.72	37.2	24.8	30.9	83.9	87.5	86.0
P. Comp.	F12	77	Cleaner 2 concentrate	1.79	36.5	20.5	29.9	80.0	84.4	81.8

Whole ore leach tests at two different grinds were conducted on each of the samples and the gold extractions from finer ground samples were higher. The summarised results are presented in Table 4.

Table 4: Summary of Leach Test Results

Sample ID	Test ID	Primay Grind K_{80} - µm	Product	Gold Extraction %
6261	L2	55	Preg. Solution - 96 hrs	95.2
6262	L4	72	Preg. Solution - 96 hrs	90.0
6263	L6	59	Preg. Solution - 96 hrs	96.6
6264	L8	65	Preg. Solution - 96 hrs	93.0

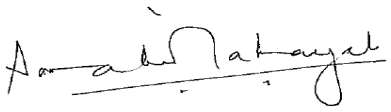
Based on the results, it is recommended that future testwork be directed towards optimising flotation and leaching parameters to increase the recovery of gold and copper from variability samples, as well as a master composite representing the Primavera project. Equally important, are the study of mineralogy, hardness and grindability of the resource material and the impact of the metallurgical processes on environmental characteristics.

Introduction

This report presents the results of testwork on Primavera project samples submitted by B2 Gold Corporation. The primary purpose of the program was to perform scoping level testwork to evaluate the recovery of gold and copper.

All testwork in this program were conducted at the SGS Vancouver facility. Unless otherwise stated, all work referenced in this report were completed under the internal SGS project number CAVM-50283-001.

All test results and conditions are appended. The testing program was completed over the months of September to November 2012. Mr. John Rajala of B2 Gold Corporation was regularly updated with new results as testing progressed.



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Testwork Summary

1. Sample Receipt and Preparation

Four samples representing the Primavera project of B2 Gold Corporation were received at the SGS sample preparation facility in Byrne Road, Burnaby, BC. The samples were assigned the receipt number VAN-443 and inventoried. The details of the inventory are placed in Appendix A and the summary is presented in Table 5.

Table 5: Inventory of Samples

Sample ID	Weight – kg
6261	18.6
6262	20.4
6263	23.2
6264	30.3

The sample preparation consisted of stage crushing each sample to -10 mesh, blending and splitting into 2 kg test charges.

2. Sample Characterisation

Sample characterisation included determining the head assay of the samples.

2.1. Head Assay

The head assays of the samples were determined for Au (total and cyanide soluble), Cu (total, acid soluble and cyanide soluble), sulphur speciation, carbon speciation and ICP Scan. Results are presented in Table 6.

Table 6: Head Assay and ICP Results

Element	*Unit*	*Sample ID*			
		6261	*6262*	*6263*	*6264*
Au, Total	g/t	0.98	1.26	0.52	0.86
Au, Cyanide Soluble	ppm	0.38	0.61	0.17	0.36
C, Total	%	0.25	0.27	0.26	0.30
C, Carbonate	%	1.17	1.29	1.21	1.40
C, Graphitic	%	<0.01	<0.01	<0.01	<0.01
S, Total	%	0.72	1.11	0.37	0.44
S, Sulphide	%	0.39	0.61	0.21	0.25
S, Sulphate	%	0.02	0.02	0.01	<0.01
Cu, Total	%	0.52	0.70	0.26	0.27
Cu, Cyanide Soluble	%	0.04	0.04	0.04	0.03
Cu, Acid Soluble	%	0.02	0.02	0.01	0.01
Aluminum	%	7.66	7.72	6.88	8.02
Arsenic	ppm	<30	<30	<30	<30
Barium	ppm	280	480	360	390
Beryllium	ppm	<5	<5	<5	<5
Calcium	%	4.70	2.70	4.10	3.70
Cadmium	ppm	<10	<10	10	<10
Chromium	ppm	120	110	140	140
Cobalt	ppm	30.0	20.0	30.0	20.0
Iron	%	5.87	3.97	6.03	4.33
Potassium	%	1.20	2.10	1.30	1.30
Lanthanum	ppm	<10	<10	<10	<10
Lithium	ppm	20	<10	30	<10
Magnesium	%	1.89	1.67	1.98	1.57
Manganese	ppm	1510	890	2800	1270
Molybdenum	ppm	<10	<10	<10	<10
Nickel	ppm	20	10	20	10
Phosphorous	%	0.13	0.07	0.11	0.07
Lead	ppm	80	<20	60	<20
Antimony	ppm	<50	<50	<50	<50
Scandium	ppm	17	13	16	12
Silica	%	24.4	26.9	25.9	26.0
Tin	ppm	<50	<50	<50	<50
Strontium	ppm	530	330	460	460
Titanium	%	0.37	0.26	0.34	0.27
Vanadium	ppm	220	130	200	130
Wolfram	ppm	60	<50	50	<50
Yttrium	ppm	13.0	11.0	12.0	12.0
Zinc	ppm	210	90.0	470	40.0

3. Metallurgical Testing

The metallurgical tests conducted on the Primavera project samples included rougher flotation kinetic and cleaner flotation tests and whole ore cyanide leach tests.

3.1. Rougher Kinetic Flotation

The first series of the flotation tests consisted of rougher kinetic tests to determine the effect of grind on each of the four samples.

These tests were designed to collect the copper minerals first and then the gold bearing pyrite minerals. Concentrates from the ground samples were collected using Aero 7249 added over 5 stages and Potassium Amyl Xanthate (PAX) added over 4 stages. After the second stages, 60 g/t of copper sulphate was added to the pulp to activate all sulphide minerals followed by sulphide flotation. The copper

sulphate dosage was split and the frequency varied for some samples to explore the benefits of mid test activation. The summary of the applied test conditions are presented in Table 7.

Table 7: Summary of Test Conditions - Rougher Flotation Kinetic Tests

Sample ID	Test ID	Grind K_{80} - µm	Reagents - g/t			Flotation Time - min
			A 7279	PAX	$CuSO_4$	
6261	P-P-F1	210	90	100	60	20
6262	P-F2	186	90	100	60	21
6263	P-F3	305	90	100	60*	21
6264	P-F4	207	90	100	60**	21
6261	P-F5	82	90	100	60	20
6262	P-F6	83	90	100	60	21
6263	P-F7	96	90	100	60*	21
6264	P-F8	75	90	100	60**	21
6263	P-F9	193	90	100	60*	21
6262	P-F10	188	90	100	60	21

Notes: * - Added in two doses of 30 g/t in two stages.
** - Added in three doses of 20 g/t in three stages.

Two additional tests, tests P-F9 and P-F10, were conducted to strengthen the grind vs. gold and copper recovery relationships on selected samples. The details of the tests and results are placed in Appendix B and the summaries of results are presented in Table 8. The flotation kinetics of copper, gold and sulphur for samples 6261 and 6262 are presented Figure 1 and for samples 6263 and 6264 are presented in Figure 2.

Table 8: Rougher Flotation Results

Test #		Mass	Assay - g/t[1] ,%			Recovery - %		
	Stream	%	Au[1]	Cu	S	Au	Cu	S
	Bulk Roug. 1 conc	3.76	19.1	10.5	12.9	79.2	84.8	81.3
	Bulk Roug. 1 - 2 conc	5.90	12.8	7.16	8.84	83.4	90.6	87.3
	Bulk Roug. 1 - 3 conc	8.48	9.03	5.06	6.26	84.4	92.1	89.0
P-F1	Bulk Roug. 1 - 4 conc	10.3	7.54	4.23	5.25	85.7	93.7	90.7
6261	Bulk Roug. 1 - 5 conc	12.7	6.21	3.49	4.34	87.2	95.5	92.7
	Flotation Tail	87.3	0.13	0.02	0.05	12.8	4.5	7.3
	Calc. Head		0.91	0.47	0.60			
	Assay Head		0.98	0.52	0.72			
	Bulk Roug. 1 conc	5.55	17.6	10.4	17.1	70.7	77.2	81.8
	Bulk Roug. 1 - 2 conc	8.97	11.9	7.10	11.4	77.0	85.0	88.5
	Bulk Roug. 1 - 3 conc	11.6	9.38	5.67	9.09	78.5	87.6	90.7
P-F2	Bulk Roug. 1 - 4 conc	15.7	7.25	4.41	6.99	82.0	92.1	94.2
6262	Bulk Roug. 1 - 5 conc	19.2	6.11	3.72	5.85	84.6	95.1	96.5
	Flotation Tail	80.8	0.26	0.05	0.05	15.4	4.9	3.5
	Calc. Head		1.38	0.75	1.16			
	Assay Head		1.26	0.70	1.11			
	Bulk Roug. 1 conc	2.73	10.8	7.17	9.73	60.2	80.9	76.8
	Bulk Roug. 1 - 2 conc	4.52	7.05	4.69	6.38	65.1	87.7	83.4
	Bulk Roug. 1 - 3 conc	7.14	4.56	3.04	4.16	66.6	89.7	86.0
P-F3	Bulk Roug. 1 - 4 conc	10.3	3.39	2.17	2.98	71.1	92.3	88.6
6263	Bulk Roug. 1 - 5 conc	13.7	2.59	1.66	2.28	72.4	93.6	90.0
	Flotation Tail	86.3	0.16	0.02	0.04	27.6	6.4	10.0
	Calc. Head		0.49	0.24	0.35			
	Assay Head		0.52	0.26	0.37			
	Bulk Roug. 1 conc	2.85	14.1	7.41	11.20	66.1	79.2	78.4
	Bulk Roug. 1 - 2 conc	5.56	8.10	4.16	6.27	74.0	86.5	85.5
	Bulk Roug. 1 - 3 conc	9.84	4.77	2.43	3.67	77.1	89.6	88.6
P-F4	Bulk Roug. 1 - 4 conc	15.0	3.21	1.64	2.46	79.0	91.7	90.5
6264	Bulk Roug. 1 - 5 conc	19.3	2.55	1.29	1.95	81.0	93.5	92.1
	Flotation Tail	80.7	0.14	0.02	0.04	19.0	6.5	7.9
	Calc. Head		0.61	0.27	0.41			
	Assay Head		0.86	0.27	0.44			
	Bulk Roug. 1 conc	3.39	19.4	10.3	13.5	81.8	80.7	81.5
	Bulk Roug. 1 - 2 conc	6.92	10.2	5.78	7.48	87.5	92.4	91.9
	Bulk Roug. 1 - 3 conc	11.2	6.37	3.66	4.74	88.8	95.1	94.5
P-F5	Bulk Roug. 1 - 4 conc	14.9	4.87	2.81	3.63	90.1	96.8	96.2
6261	Bulk Roug. 1 - 5 conc	18.0	4.06	2.35	3.04	90.8	97.7	97.1
	Flotation Tail	82.0	0.09	0.01	0.02	9.2	2.3	2.9
	Calc. Head		0.81	0.43	0.56			
	Assay Head		0.98	0.52	0.72			
	Bulk Roug. 1 conc	4.40	21.7	10.3	16.2	66.7	62.3	64.2
	Bulk Roug. 1 - 2 conc	9.89	12.0	6.35	9.9	82.7	86.1	88.4
	Bulk Roug. 1 - 3 conc	12.3	9.87	5.31	8.25	84.5	89.3	91.2
P-F6	Bulk Roug. 1 - 4 conc	16.8	7.45	4.07	6.27	87.2	93.6	94.7
6262	Bulk Roug. 1 - 5 conc	20.4	6.23	3.42	5.25	88.7	95.7	96.4
	Flotation Tail	79.6	0.20	0.04	0.05	11.3	4.3	3.6
	Calc. Head		1.43	0.73	1.11			
	Assay Head		1.26	0.70	1.11			
	Bulk Roug. 1 conc	3.09	11.2	6.95	8.97	77.6	87.8	85.0
	Bulk Roug. 1 - 2 conc	6.59	5.58	3.46	4.50	82.3	93.1	90.8
	Bulk Roug. 1 - 3 conc	9.54	3.92	2.43	3.18	83.8	94.7	93.0
P-F7	Bulk Roug. 1 - 4 conc	12.8	2.97	1.83	2.39	85.4	95.9	94.2
6263	Bulk Roug. 1 - 5 conc	16.0	2.41	1.48	1.94	86.2	96.6	94.9
	Flotation Tail	84.0	0.07	< 0.01	0.02	13.8	3.4	5.1
	Calc. Head		0.45	0.24	0.33			
	Assay Head		0.52	0.26	0.37			
	Bulk Roug. 1 conc	2.97	17.3	7.54	11.70	76.9	81.7	84.4
	Bulk Roug. 1 - 2 conc	5.91	9.42	4.12	6.36	83.3	88.9	91.2
	Bulk Roug. 1 - 3 conc	10.3	5.60	2.46	3.78	86.2	92.2	94.4
P-F8	Bulk Roug. 1 - 4 conc	14.8	3.96	1.74	2.67	87.9	94.1	96.1
6264	Bulk Roug. 1 - 5 conc	19.5	3.01	1.32	2.03	87.9	94.1	96.1
	Flotation Tail	80.5	0.10	0.02	0.02	12.1	5.9	3.9
	Calc. Head		0.67	0.27	0.41			
	Assay Head		0.86	0.27	0.44			
	Bulk Roug. 1 conc	3.96	8.9	5.93	7.68	67.7	85.5	84.1
	Bulk Roug. 1 - 2 conc	7.45	5.01	3.35	4.36	72.1	90.8	89.8
	Bulk Roug. 1 - 3 conc	11.3	3.39	2.27	2.97	73.9	93.0	92.4
P-F9	Bulk Roug. 1 - 4 conc	16.2	2.42	1.61	2.11	75.6	94.7	94.5
6263	Bulk Roug. 1 - 5 conc	19.8	2.01	1.33	1.75	76.8	95.6	95.6
	Flotation Tail	80.2	0.15	0.02	0.02	23.2	4.4	4.4
	Calc. Head		0.52	0.27	0.36			
	Assay Head		0.52	0.26	0.37			
	Bulk Roug. 1 conc	6.11	14.6	9.76	15.9	68.8	75.3	79.5
	Bulk Roug. 1 - 2 conc	10.1	9.73	6.58	10.5	76.0	84.2	87.0
	Bulk Roug. 1 - 3 conc	12.8	7.91	5.37	8.52	78.1	86.9	89.3
P-F10	Bulk Roug. 1 - 4 conc	16.9	6.26	4.26	6.70	81.9	91.3	92.9
6262	Bulk Roug. 1 - 5 conc	21.5	5.14	3.48	5.43	85.3	94.6	95.5
	Flotation Tail	78.5	0.24	0.05	0.07	14.7	5.4	4.5
	Calc. Head		1.30	0.79	1.22			
	Assay Head		1.26	0.70	1.11			

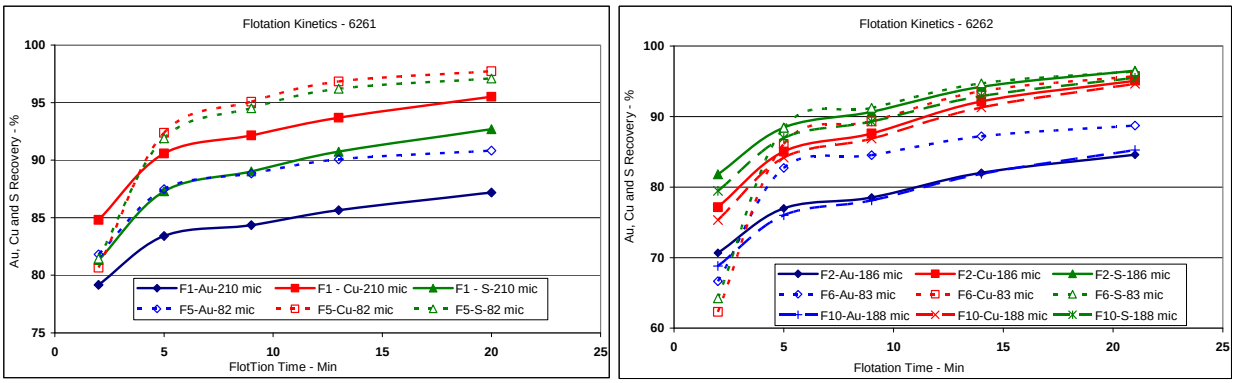


Figure 1: Flotation Kinetics of 6261 and 6262 Samples

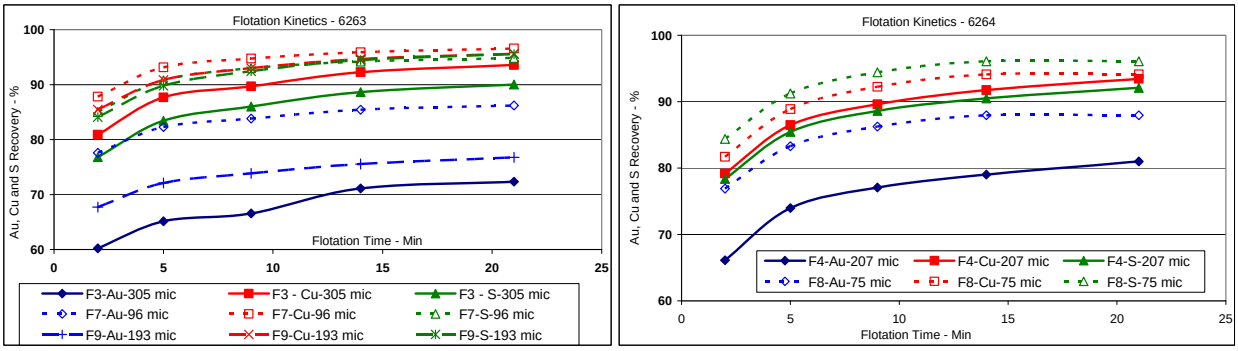


Figure 2: Flotation Kinetics of 6263 and 6264 Samples

The test results show the following:

- The profiles of sample 6261 show the recoveries of copper, gold and sulphur increased as the K_{80} increased from 210 µm to 82 µm. When the grind is coarse, the minerals in the increasing order of recovery are gold, sulphur and copper, with noticeable increments. At finer grinds, the gap between copper and sulphur narrowed to almost an unnoticeable level.

- In the optimised test P-F5, the bulk rougher concentrate recovered 91% gold and 98% copper at 18% mass recovery for sample 6261. The grades of the concentrate were 4.06 g/t Au and 2.35% Cu.

- The test results for sample 6262 show the final gold recovery increased from 85% to 89% as the K_{80} decreased from ~187 µm to 83 µm. In case of copper and sulphur at finer grinds, the final recoveries were between 95% and 96%; differences were within experimental error. The recovery of gold was driven by the grind whereas those of copper and sulphur were independent of the grinds tested.

- As the K_{80} for sample 6263 decreased from 305 to 193 and then to 96 µm, the final gold recovery increased from 72% to 77% and 86%, respectively. Gold recovery was dependent on the particle sizes tested. Over the same size reduction range, the copper recovery increased from 93% to 96% and 96% and the sulphur recovery from 90% to 96% to 95%. Copper and sulphur

recoveries were dependent on the particle sizes between K_{80} of 305 and 193 µm and were independent when the K_{80} were between 193 and 96 µm.

- As the K_{80} for sample 6264 decreased from 207 to 75 µm, the final gold recovery increased from 81% to 88%. Gold recovery was dependent on the particle sizes tested. Over the same size reduction range, the copper recovery remained the same at 94% and the sulphur recovery increased from 92% to 96%. Copper recovery was independent on the particle sizes between K_{80} of 207 and 75 µm and the sulphur recovery was dependent on the grinds tested.

- The flotation kinetics of all samples were slow with sample 6262 being the slowest.

The results concluded the following:

- In the optimised test P-F5, the bulk rougher concentrate recovered 91% gold and 98% copper at 18% mass recovery for sample 6261. The grades of the concentrate achieved were 4.06 g/t Au and 2.35% Cu.

- In the optimised test P-F6, the bulk rougher concentrate recovered 89% gold and 96% copper to a mass of 20% for sample 6262. The grades of the concentrate were 6.23 g/t Au and 3.42% Cu.

- In the optimised test P-F7, the bulk rougher concentrate recovered 86% gold and 97% copper to a mass of 16% for sample 6263. The grades of the concentrate were 2.41 g/t Au and 1.48% Cu.

- In the optimised test P-F8, the bulk rougher concentrate recovered 88% gold and 94% copper to a mass of 20% for sample 6264. The grades of the concentrate were 3.01 g/t Au and 1.32% Cu.

- The recovery of gold, copper and sulphur are strongly related to each other and recovering sulphur by flotation will recover most of the copper and gold.

3.2. Cleaner Flotation

In this series of tests two cleaner flotation tests, P-F11 on sample 6261 and P-F12 on a composite made from combining all 4 samples in equal proportions (Primavera composite), were conducted. The target primary grind in both cases was 80% passing 75 µm. The applied test conditions are presented in Table 9.

Table 9: Cleaner Flotation Test Conditions

Test ID	Circuit	Grind K_{80} - µm		Reagents - g/t						pH
		Primary	Re-Grind	$CuSO_4$	PAX	7249	407	3418A	Lime	
P-F 11	Rougher	69		30	110	50	40	-	-	8.7
	Cleaner		30					7	10	9.5
P-F 12	Rougher	77		30	110	50	40	-	-	8.7
	Cleaner		31					9	15	9.5

The rougher concentrates were reground and cleaned in two stages. The pH of the second stage was increased to 9.5 using lime.

The details of the tests and the results are placed in Appendix B and the summaries of results are presented in Table 10.

Table 10: Cleaner Flotation Tests Results

Test #	Stream	Mass %	Assay - g/t[1] ,%			Recovery - %		
			Au[1]	Cu	S	Au	Cu	S
P-F11 6261	Cu Cleaner 2 conc	1.72	37.2	24.8	30.9	83.9	87.5	86.0
	Cu Cleaner 1 conc	3.96	16.9	11.5	14.5	88.2	93.8	92.9
	Rougher conc	18.7	3.71	2.52	3.18	91.1	97.0	96.4
	Flotation Tail	81.3	0.08	0.02	0.03	8.9	3.0	3.6
	Calc. Head		0.76	0.49	0.62			
	Assay Head		0.98	0.52	0.72			
P-F12 Comp	Cu Cleaner 2 conc	1.79	36.5	20.5	29.9	80.0	84.4	81.8
	Cu Cleaner 1 conc	5.23	13.2	7.70	11.2	84.6	92.8	90.0
	Rougher conc	20.5	3.55	2.06	3.04	89.3	97.1	95.1
	Flotation Tail	79.5	0.11	0.02	0.04	10.7	2.9	4.9
	Calc. Head		0.82	0.43	0.65			
	Calc. Average Assay Head		0.90	0.44	0.66			

The grade and recovery of copper and gold are presented in Figure 3.

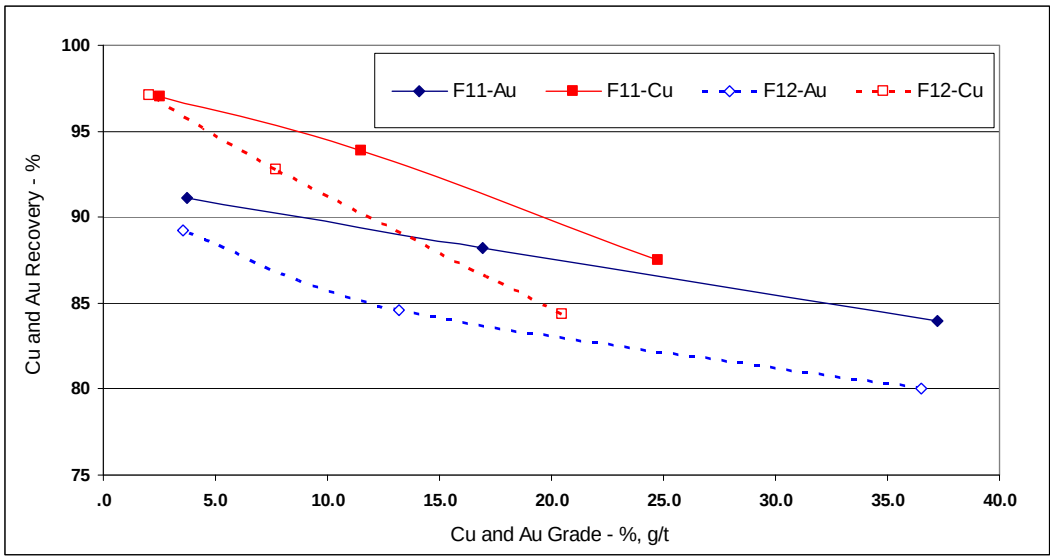


Figure 3: Grade and Recovery of Copper and Gold – Cleaner Flotation

The results of the cleaner tests showed the following:

- The rougher concentrate of the cleaner test for P-F11 (sample 6261) recovered 97% copper and 91.1% gold with a concentrate at 2.52% Cu, 3.71 g/t Au and a mass recovery of 18.7%. By regrinding the rougher concentrate to 80% passing 30 µm and cleaning in 2 stages, 87.5% Cu and 83.9% gold recovered to a concentrate with 24.8% Cu, 37.2 g/t Au and 1.72% mass recovery.

- The rougher concentrate of the cleaner test for P-F12 (Primavera composite) recovered 97.1% copper and 89.3% gold to a concentrate at 2.06% Cu, 3.55 g/t Au and to a mass of 20.5%. When the rougher concentrate was re-ground to 80% passing 31 µm and cleaned in 2 stages, the test recovered 84.4% Cu and 80.0% gold to a concentrate of grades 20.5% Cu, 36.5 g/t Au and to a mass of 1.79%.

- The bulk rougher concentrate of P-F5 on which P-F11 was built, recovered 97.7% copper and 90.8% gold to a concentrate at 2.35% Cu, 4.06 g/t Au and mass recovery of 18%. The grades and recoveries of P-F11 and P-F5 are similar; this confirms the repeatability of the process.

- The average bulk rougher concentrate of P-F5, P-F6, P-F7 and P-F8 recovered 96.0% copper and 88.5% gold to a concentrate at 2.14% Cu, 3.93 g/t Au and a mass of 18.5%. The grades and recoveries of P-F12 and the average of its constituents are similar or on the same grade recovery curve; this confirms the repeatability of the process.

The results of both tests are considered excellent. The need for activating sulphide to recover pyrite associated gold appear to be unnecessary. The slightly lower grade and recovery of P-F12 compared to P-F11, is because of the lower head grade. The test conditions were not optimised to suite the composite. It is recommended that further flotation tests be conducted on the variability samples as well as the master composite to optimise the grind, reagents, regrind time and cleaner configuration.

3.3. Leaching Tests

In this series of tests, 8 cyanide kinetic leach tests were conducted on whole ore of the 4 samples. Each sample was tested at coarse and fine grinds. The leach test conditions applied are shown in Table 11.

Table 11: Whole Ore Leach Test Conditions

Sample ID	Test ID	Grind K_{80} - µm	Density %	NaCN g/L	Dis. O_2 ppm	Leach Time Hrs
6261	L1	147	40	1.0	> 5	96
6261	L2	55	40	1.0	> 5	96
6262	L3	233	40	1.0	> 5	96
6262	L4	72	40	1.0	> 5	96
6263	L5	160	40	1.0	> 5	96
6263	L6	59	40	1.0	> 5	96
6264	L7	203	40	1.0	> 5	96
6264	L8	55	40	1.0	> 5	96

The details of the tests and the results are located in Appendix B and the summary of results is presented in Table 12.

Table 12: Whole Ore Leach Tests Results

Test ID	Grind K_{80} µm	NaCN Added kg/t	NaCN Cons. kg/t	CaO Added kg/t	CaO Cons. kg/t	Assay, g/t Residue Au	Residue Cu	Calcu. Head Au	Calcu. Head Cu	Direct Head Au	Direct Head Cu	Extraction - % Au	Extraction - % Cu
L1	147	3.51	2.37	0.45	0.34	0.08	4300	1.01	4905	0.98	5200	92.1	12.3
L2	55	3.32	2.14	0.47	0.39	0.05	4240	1.05	4761	0.98	5200	95.2	10.9
L3	233	3.24	2.03	0.55	0.50	0.25	7020	1.54	7533	1.26	7000	83.8	6.8
L4	72	3.57	2.43	0.59	0.55	0.15	7030	1.49	7607	1.26	7000	90.0	7.6
L5	160	3.01	1.82	0.36	0.29	0.05	2470	0.60	2877	0.52	2600	91.6	14.1
L6	59	3.16	1.99	0.31	0.28	0.02	2210	0.59	2615	0.52	2600	96.6	15.5
L7	203	2.51	1.29	0.66	0.59	0.09	2500	0.78	2695	0.86	2700	88.4	7.2
L8	55	2.62	1.23	0.63	0.59	0.05	2520	0.72	2768	0.86	2700	93.0	9.0

The gold extractions of all samples at finer grinds were higher than those ground coarser for the grind sizes tested. Higher feed grades did not always resulted in higher gold extractions and perhaps gold extractions may be driven by its associated minerals. There is also a moderate trend showing samples with higher copper extractions achieved more gold extractions. It is possible to make the argument that gold is captured within the copper minerals and that more gold is exposed when more copper is leached.

The gold leach kinetic results are presented in Figure 4.

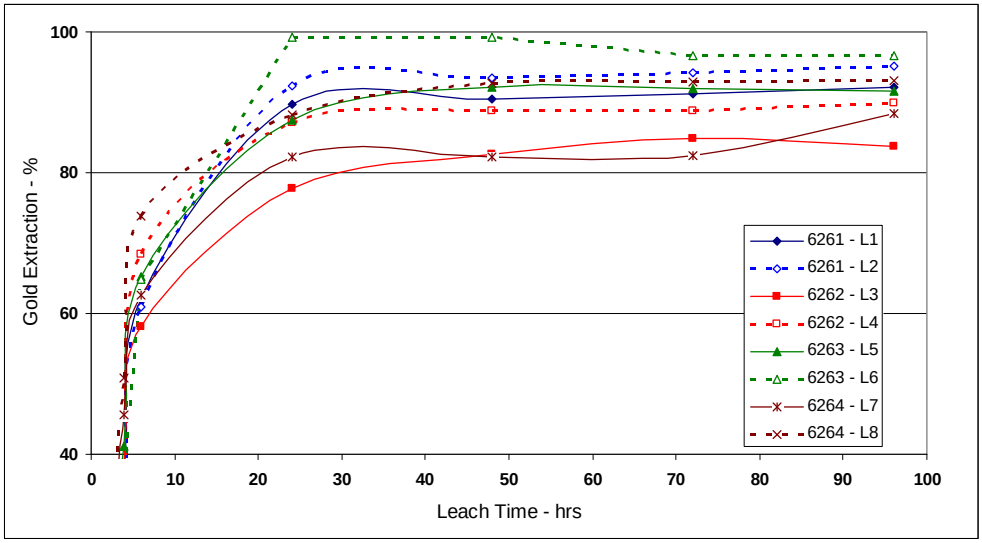


Figure 4: Gold Leach Kinetics

The following are the conclusions of the whole ore cyanide leach tests.

- Gold leach recoveries of all samples were greater than 80% indicating that the gold in the samples are free milling. Lower recoveries are due to liberation problems.
- Gold kinetics are moderately fast reaching the rest plateau within 30 hours. Presence of sulphides may have slowed the kinetics to its present level.
- Preg-robbing is not a concern.
- When sample 6261 was ground to 80% passing 55 µm and leached in test L2, 95.2% of the gold was extracted consuming 2.1 kg/t of NaCN for the leach. The process also extracted 10.9% of the copper in the sample into the leachate.
- When sample 6262 was ground to 80% passing 72 µm and leached in test L4, 90% of the gold was extracted consuming 2.4 kg/t of NaCN for the leach. The process also extracted 7.6% of the copper in the sample into the leachate.
- When sample 6263 was ground to 80% passing 59 µm and leached in test L6, 96.6% of the gold was extracted consuming 2.0 kg/t of NaCN for the leach. The process also extracted 15.5% of the copper in the sample into the leachate.

- When sample 6264 was ground to 80% passing 55 µm and leached in test L8, 94.0% of the gold was extracted consuming 1.2 kg/t of NaCN for the leach. The process also extracted 9.0% of the copper in the sample into the leachate.

Conclusions and Recommendations

Conclusions

A test program completed on four samples originating from the Primavera resource material concluded the following:

- The gold and copper head assays of sample 6261 are 0.98 g/t and 0.52%, respectively.
- The gold and copper head assays of sample 6262 are 1.26 g/t and 0.70%, respectively.
- The gold and copper head assays of sample 6263 are 0.52 g/t and 0.26%, respectively.
- The gold and copper head assays of sample 6261 are 0.86 g/t and 0.27%, respectively.
- In the optimised rougher flotation test P-F5, the bulk rougher concentrate recovered 91% gold and 98% copper to a mass recovery of 18% for sample 6261. The grades of the concentrate were 4.06 g/t Au and 2.35% Cu.
- In the optimised rougher flotation test P-F6, the bulk rougher concentrate recovered 89% gold and 96% copper to a mass of 20% for sample 6262. The grades of the concentrate were 6.23 g/t Au and 3.42% Cu.
- In the optimised rougher flotation test P-F7, the bulk rougher concentrate recovered 86% gold and 97% copper to a mass of 16% for sample 6263. The grades of the concentrate were 2.41 g/t Au and 1.48% Cu.
- In the optimised test rougher flotation P-F8, the bulk rougher concentrate recovered 88% gold and 94% copper to a mass of 20% for sample 6264. The grades of the concentrate were 3.01 g/t Au and 1.32% Cu.
- The recovery of gold, copper and sulphur by flotation are strongly related to each other and recovering sulphur by flotation will recover most of the copper and gold.
- The rougher concentrate of the cleaner test for sample 6261 recovered 97% copper and 91.1% gold to a concentrate at 2.52% Cu, 3.71 g/t Au and 18.7% mass recovery. When the rougher concentrate was re-ground to 80% passing 30 µm and cleaned in 2 stages, the test recovered 87.5% Cu and 83.9% gold to a concentrate of grades 24.8% Cu, 37.2 g/t Au and to a mass of 1.72%.
- The rougher concentrate of the cleaner test for the Primavera composite recovered 97.1% copper and 89.3% gold to a concentrate of grade 2.06% Cu, 3.55 g/t Au and to a mass of 20.5%. When the rougher concentrate was re-ground to 80% passing 31 µm and cleaned in 2 stages, the test recovered 84.4% Cu and 80.0% gold to a concentrate of grades 20.5% Cu, 36.5 g/t Au and to a mass of 1.79%.
- The whole ore leach test for sample 6261 extracted 95.2% gold by grinding the samples to 80% passing 55 µm and leaching for 96 hours using 2.1 kg/t of NaCN.
- The whole ore leach test for sample 6262 extracted 90.0% gold when the sample was ground to 80% passing 72 µm and leached for 96 hours using 2.43 kg/t of NaCN.

- The whole ore leach test for sample 6263 extracted 96.6% gold at 80% passing 59 µm and 96 hours leaching using 2.0 kg/t of NaCN.
- The whole ore leach test for sample 6264 extracted 93.0% gold when the sample was ground to 80% passing 55 µm and leached for 96 hours using 1.2 kg/t of NaCN.
- Gold kinetics are moderately fast reaching the rest plateau within 30 hours.
- Gold in all leach tests exhibited free milling qualities.

Recommendations

The recommendations derived from a program completed on 4 samples originating from the Primavera resource material are as follows:

- The future testwork be directed towards optimising flotation parameters such as grind, pH, reagent type and dosage for copper and gold on a master composite prepared to represent the mining plan.
- Leaching parameters such as grind, cyanide concentration, lead nitrate concentration and pre-aeration time be optimised on a master composite prepared to represent the mining plan
- The mineralogy of the sample should be studied to understand the associations of gold and copper, liberation size and the speciation on all variability samples
- The grindability, breakage functions and abrasiveness of the variability samples as well as a master composite using Bond ball and rod mill work indices, SAG Power Index tests and Abrasion index tests are recommended
- The environmental impact of metallurgical processes of Primavera resource material is recommended to be investigated.

Appendix A – Sample Receipt

Sample ID	Weight (kg)
6261	18.6
6262	20.4
6263	23.2
6264	30.3

September 7, 2012

To: Tom Garagan, Mark Ward, Brian Scott, John Rajala, Francisco Cepeda
Subject: Metallurgical Samples Primavera

Four metallurgical samples have been shipped to SGS Mineral Services in Burnaby Canada. Each sample represents composites derived from four individual core samples crushed in the Inspectorate prep lab in Managua, Nicaragua to -10 mesh. Each sample weighs roughly 20 kg (four samples of 5 kg each). The samples were shipped in 5 gallon plastic buckets.

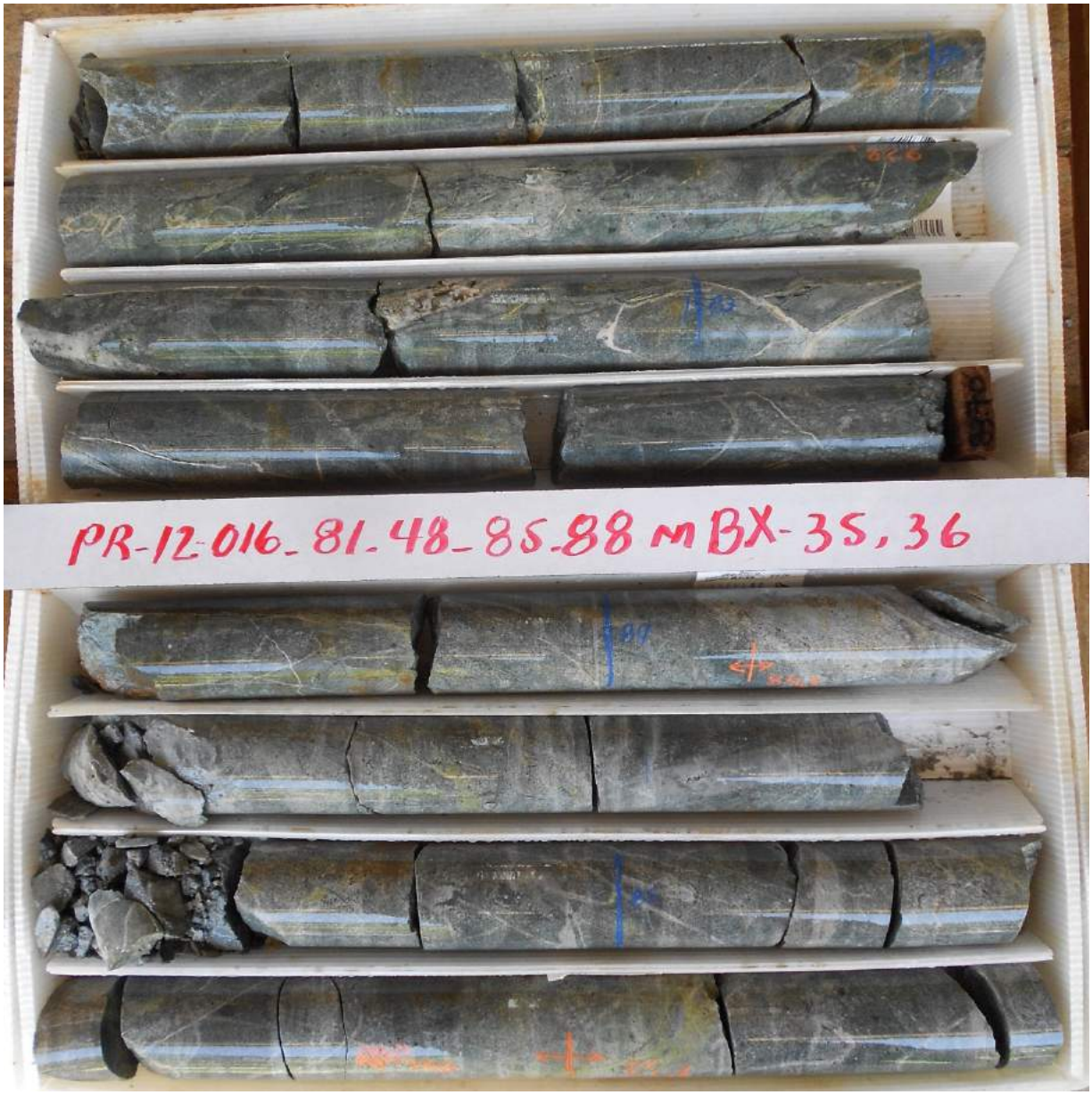
The samples were all taken from core from drill hole PR-12-016; which is the most recent drill hole which contains "ore grade" sulfide material from the main Primavera Zone. Other material available from the earlier drilling is more than 7 months old and likely not suitable for testing.

There are two principal rock types known; andesite porphyry and an equigranular diorite. Both rock types are cut by sheeted quartz-pyrite-chalcopyrite±bornite veinlets with local magnetite. Alteration includes an early potassic stage of biotite and K-spar overprinted by a later propyllitic stage including epidote, chlorite, and some calcite. For both rock types a low-medium grade sample is included as well as a higher grade sample.

Attached is a list of the samples and their descriptions. Also the core photos for these intervals.

Drill Hole	Sample #	Comp #		from	to	interval		Au ppm	Cu ppm	Rock Type	Comments
PR-12-016	B12C3004	6262		80	81	1.5		1.23	7574	EGDI	Diorite analogouse prev. Int. With 2.5 - 3% Su 90% Cpy, 10% Py, low epidot low chlorite
PR-12-016	B12C3005	6262		81	83	1.5		1.281	8176	EGDI	2-3% Su. Cpy / Py 98% / trace
PR-12-016	B12C3006	6262		83	84	1.5		1.657	8843	EGDI	Qz - Ca - Cpy veinlet sub - parallel to c/a, < 3cm drusy, total - 2.5% Cpy, trace Py rare kspar
PR-12-016	B12C3007	6262		84	86	1.5		1.246	5940	EGDI	high propylitic Alt, ~ 3% Su -Py -trace, Cpy ~ 100% high Epidote & chlorite (veinlets) 10-30° to c/a
PR-12-016	B12C3062	6261		163	164	1.4		0.686	3717	AN	Qz - Ca - Epidot - Cpy - kspar veinlets (<3cm) & frag < 2cm < 3% Cpy - diss & stringers
PR-12-016	B12C3063	6261		164	166	1.45		0.808	3762	AN	High alterd propylitic + potassic + Qz -Silicification ~ 25-30% Qz - Ca - Cpy veinlets < 4Cm, 1.5 Cpy
PR-12-016	B12C3064	6261		166	167	1.4		0.973	5777	AN	< 5% Qz - Epidot Cpy veinlets, low MT trace Py
PR-12-016	B12C3065	6261		167	168	0.75		1.217	8063		Sub parallel to c/a Qz -Epidot - kspar - Cpy (Cpy - spotted ~ 4mm, disseminated)
PR-12-016	B12C3054	6263		152	154	1.1		0.463	1705	BHBH	Propylitic alteration with diss Py rare Qz - Ca & Ca - Qz veinlets rare Py stringers
PR-12-016	B12C3057	6263		157	158	1.45		0.358	2080	AN	Analogouse, but veinlets only 8 to % , with rare Qz - Ca - MT stringers (< 2%) with rare Qz - kspar veinlets
PR-12-016	B12C3058	6263		158	159	1.35		0.638	2932	AN	Porouse Andesite fractured, with 2-3% gouge, 5% Qz - kspar - Epidot veinlets, with 1% Cpy trace Py 159.45 5 10
PR-12-016	B12C3059	6263		159	161	1.8		0.616	4628	AN	~ 10% Qz - Epidot - kspar - Cpy veinlets, massive, breciated, < 2.5% Cpy, traces Py
PR-12-016	B12C3011	6264		90	92	1.7		0.709	3111	EGDI	Qz - Ca - MT - Cpy, Cpy Qz, Qz - kspar - Cpy veinlets < 10% < 2 cm
PR-12-016	B12C3012	6264		92	94	2.4		0.751	2983	EGDI	Tow to strongly altered diorite, Mt - moderate, kspar mod to low. Cpy /Py 10/1
PR-12-016	B12C3013	6264		94	96	1.85		0.43	1920	EGDI	~ 10% Qz - Ca (Ca-Qz) - Epidot - Cpy veinlets 1.0% Cpy trace (rare) Py
PR-12-016	B12C3014	6264		96	98	1.35		0.586	2734	EGDI	Altered EGDI with pieces of diorite porphiritic 1 % Cpy - stringers / diss 96.7 5 30°


PR-12-016_77.05_81.48 M BX- 33,34


PR-12-016_81.48_85.88 m BX-35,36


PR-12-016_90-18 - 94.70MBX 39 - 40


PR-12-016_94.70-98.99MBX 41-42


PR12-016. 159.20 - 163.10 MBX 71-72.


PR12-016.163-10 - 167.65 M BX 73-74.

Appendix B – Metallurgical Tests

Test No.: P-F1 Operator: Wei Date: 25-Sep-12

Sample ID: P- 6261

Project No: 50283-001

Purpose: Bulk Rougher - Kinetic Test

Procedure: As outlined below.

Feed: 2 kg of P-6261

Grind: Grind 2 kg in a rod mill # 3 for 26 minutes at 65% solids

Regrind: Target K_{80} 212 µm

tested K80 210 µm

Conditions:

Stage	Reagents added, grams per tonne					Time, minutes			pH	Eh
	CuSO4	PAX	7249	MIBC		Grind	Cond.	Froth		
Grind						26			8.8	250
Condition		10	20				2		8.9	150
Bulk Rougher 1				10				2		
Condition			10						8.9	190
Bulk Rougher 2				5				3		
Condition	60	20	20				4		8.6	225
Bulk Rougher 3								4		
Condition		30	20				1		8.6	170
Bulk Rougher 4								4		
Condition		40	20				1		8.7	125
Bulk Rougher 5								7		
Total	60	100	90	15	0					

Stage	Rougher	1st Cleaners	2nd Cleaners
Flotation Cell	1000-D12	500 -D12	250 -D12
Speed: rpm	1800	1600	1100

PSA of Rougher Tail Required

Metallurgical Balance

Product	Weight		Assays, g/t, %			Distribution - %		
	g	%	Au	Cu	S	Au	Cu	S
Rougher Conc. 1	75.2	3.76	19.1	10.5	12.9	79.2	84.8	81.3
Rougher Conc. 2	42.6	2.13	1.81	1.26	1.67	4.2	5.8	6.0
Rougher Conc. 3	51.7	2.59	0.33	0.28	0.40	0.9	1.6	1.7
Rougher Conc. 4	36.5	1.83	0.65	0.39	0.56	1.3	1.5	1.7
Rougher Conc. 5	48.7	2.44	0.57	0.35	0.48	1.5	1.8	2.0
Rougher tail	1744	87.3	0.13	0.02	0.05	12.8	4.5	7.3
Head (calc.)	1998	100	0.91	0.47	0.60	100	100	100
(direct)			0.98	0.52	0.72			
Combined Products								
Rougher 1 conc	75	3.76	19.1	10.5	12.9	79.2	84.8	81.3
Roug. 1- 2 Conc	118	5.90	12.8	7.16	8.84	83.4	90.6	87.3
Roug. 1- 3 Conc	170	8.48	9.03	5.06	6.26	84.4	92.1	89.0
Roug. 1- 4 Conc	206	10.3	7.54	4.23	5.25	85.7	93.7	90.7
Roug. 1- 5 Conc	255	12.7	6.21	3.49	4.34	87.2	95.5	92.7

Test No.: P-F2 Operator: Wei Date: 25-Sep-12
Sample ID: P- 6262
Project No: 50283-001
Purpose: Bulk Rougher - Kinetic Test
Procedure: As outlined below.
Feed: 2 kg of P-6262
Grind: Grind 2 kg in a rod mill #3 for 18 minutes at 65% solids
Regrind: Target K_{80} 212 µm
tested K80 186 µm

Conditions:

Stage	Reagents added, grams per tonne					Time, minutes			pH	Eh
	CuSO4	PAX	7249	MIBC		Grind	Cond.	Froth		
Grind						18			8.5	250
Condition		10	20				2		8.5	125
Bulk Rougher 1				10				2		
Condition			10						8.6	200
Bulk Rougher 2				5				3		
Condition	60	20	20				4		8.5	225
Bulk Rougher 3								4		
Condition		30	20				1		8.5	175
Bulk Rougher 4								5		
Condition		40	20				1		8.5	125
Bulk Rougher 5								7		
Total	60	100	90	15	0					

Stage	Rougher	1st Cleaners	2nd Cleaners
Flotation Cell	1000-D12	500 -D12	250 -D12
Speed: rpm	1800	1600	1100

PSA of Rougher Tail Required

Metallurgical Balance

Product	Weight		Assays, g/t, %			Distribution - %		
	g	%	Au	Cu	S	Au	Cu	S
Rougher Conc. 1	111	5.55	17.6	10.4	17.1	70.7	77.2	81.8
Rougher Conc. 2	68.3	3.42	2.55	1.72	2.25	6.3	7.9	6.6
Rougher Conc. 3	51.9	2.60	0.82	0.74	0.99	1.5	2.6	2.2
Rougher Conc. 4	81.5	4.08	1.19	0.83	1.01	3.5	4.5	3.6
Rougher Conc. 5	69.8	3.50	1.02	0.63	0.76	2.6	2.9	2.3
Rougher tail	1614	80.8	0.26	0.05	0.05	15.4	4.9	3.5
Head (calc.)	1997	100	1.38	0.75	1.16	100	100	100
(direct)			1.26	0.70	1.11			
Combined Products								
Rougher 1 conc	111	5.55	17.6	10.4	17.1	70.7	77.2	81.8
Roug. 1- 2 Conc	179	8.97	11.9	7.10	11.4	77.0	85.0	88.5
Roug. 1- 3 Conc	231	11.6	9.38	5.67	9.09	78.5	87.6	90.7
Roug. 1- 4 Conc	313	15.7	7.25	4.41	6.99	82.0	92.1	94.2
Roug. 1- 5 Conc	382	19.2	6.11	3.72	5.85	84.6	95.1	96.5

Test No.: P-F3 Operator: Wei Date: 09/25/2012
Sample ID: P- 6263
Project No: 50283-001
Purpose: Bulk Rougher - Kinetic Test
Procedure: As outlined below.
Feed: 2 kg of P-6263
Grind: Grind 2 kg in a rod mill # 3 for 18 minutes at 65% solids
Regrind: Target K_{80} 212 µm
tested K80 305 µm

Conditions:

Stage	Reagents added, grams per tonne					Time, minutes			pH	Eh
	CuSO4	PAX	7249	MIBC		Grind	Cond.	Froth		
Grind						18			8.8	275
Condition		10	20				2		8.9	175
Bulk Rougher 1				10				2		
Condition			10						8.8	200
Bulk Rougher 2				5				3		
Condition	30	20	20				4		8.7	210
Bulk Rougher 3								4		
Condition		30	20				1		8.7	150
Bulk Rougher 4								5		
Condition	30	40	20				4		8.6	150
Bulk Rougher 5								7		
Total	60	100	90	15	0					

Stage	Rougher	1st Cleaners	2nd Cleaners
Flotation Cell	1000-D12	500 -D12	250 -D12
Speed: rpm	1800	1600	1100

PSA of Rougher Tail Required

Metallurgical Balance

Product	Weight		Assays, g/t, %			Distribution - %		
	g	%	Au	Cu	S	Au	Cu	S
Rougher Conc. 1	54.5	2.73	10.8	7.17	9.73	60.2	80.9	76.8
Rougher Conc. 2	35.8	1.79	1.34	0.92	1.28	4.9	6.8	6.6
Rougher Conc. 3	52.4	2.62	0.27	0.19	0.34	1.4	2.0	2.6
Rougher Conc. 4	62.4	3.12	0.71	0.20	0.29	4.5	2.6	2.6
Rougher Conc. 5	68.0	3.40	0.18	0.09	0.14	1.3	1.3	1.4
Rougher tail	1725	86.3	0.16	0.02	0.04	27.6	6.4	10.0
Head (calc.)	1998	100	0.49	0.24	0.35	100	100	100
(direct)			0.52	0.26	0.37			
Combined Products								
Rougher 1 conc	54.5	2.73	10.8	7.17	9.73	60.2	80.9	76.8
Roug. 1- 2 Conc	90.3	4.52	7.05	4.69	6.38	65.1	87.7	83.4
Roug. 1- 3 Conc	143	7.14	4.56	3.04	4.16	66.6	89.7	86.0
Roug. 1- 4 Conc	205	10.3	3.39	2.17	2.98	71.1	92.3	88.6
Roug. 1- 5 Conc	273	13.7	2.59	1.66	2.28	72.4	93.6	90.0

Test No.: P-F4 Operator: Wei Date: 26-Sep-12
Sample ID: P- 6264
Project No: 50283-001
Purpose: Bulk Rougher - Kinetic Test
Procedure: As outlined below.
Feed: 2 kg of P-6264
Grind: Grind 2 kg in a rod mill # 3 for 17 minutes at 65% solids
Regrind: Target K_{80} 212 µm
tested K80 207 µm

Conditions:

Stage	Reagents added, grams per tonne					Time, minutes			pH	Eh
	CuSO4	PAX	7249	MIBC		Grind	Cond.	Froth		
Grind						17			8.7	250
Condition		10	20				2		8.8	175
Bulk Rougher 1				10				2		
Condition			10						8.7	200
Bulk Rougher 2				5				3		
Condition	20	20	20				3		8.6	200
Bulk Rougher 3								4		
Condition	20	30	20				3		8.6	180
Bulk Rougher 4								5		
Condition	20	40	20				3		8.6	160
Bulk Rougher 5								7		
Total	60	100	90	15	0					

Stage	Rougher	1st Cleaners	2nd Cleaners
Flotation Cell	1000-D12	500 -D12	250 -D12
Speed: rpm	1800	1600	1100

PSA of Rougher Tail Required

Metallurgical Balance

Product	Weight		Assays, g/t, %			Distribution - %		
	g	%	Au	Cu	S	Au	Cu	S
Rougher Conc. 1	56.3	2.85	14.1	7.41	11.2	66.1	79.2	78.4
Rougher Conc. 2	53.3	2.70	1.77	0.72	1.07	7.9	7.3	7.1
Rougher Conc. 3	84.6	4.29	0.44	0.20	0.30	3.1	3.1	3.2
Rougher Conc. 4	102	5.15	0.23	0.11	0.15	1.9	2.1	1.9
Rougher Conc. 5	85.0	4.31	0.28	0.11	0.15	2.0	1.7	1.6
Rougher tail	1592	80.7	0.14	0.02	0.04	19.0	6.5	7.9
Head (calc.)	1973	100	0.61	0.27	0.41	100	100	100
(direct)			0.86	0.27	0.44			
Combined Products								
Rougher 1 conc	56.3	2.85	14.1	7.41	11.2	66.1	79.2	78.4
Roug. 1- 2 Conc	110	5.56	8.10	4.16	6.27	74.0	86.5	85.5
Roug. 1- 3 Conc	194	9.84	4.77	2.43	3.67	77.1	89.6	88.6
Roug. 1- 4 Conc	296	15.0	3.21	1.64	2.46	79.0	91.7	90.5
Roug. 1- 5 Conc	381	19.3	2.55	1.29	1.95	81.0	93.5	92.1

Test No.: P-F5 Operator: Wei Date: 03-Oct-12[28]
Sample ID: P- 6261
Project No: 50283-001
Purpose: Bulk Rougher - Kinetic Test
Procedure: As outlined below.
Feed: 2 kg of P-6261
Grind: Grind 2 kg in a rod mill # 3 for 54 minutes at 65% solids
Regrind: Target K_{80} 75 µm
tested K80 82 µm

Conditions:

Stage	Reagents added, grams per tonne					Time, minutes			pH	Eh
	CuSO4	PAX	7249	MIBC		Grind	Cond.	Froth		
Grind						54			8.5	200
Condition		10	20				2			
Bulk Rougher 1				10				2	8.6	75
Condition			10							
Bulk Rougher 2				5				3	8.6	80
Condition	60	20	20				4			
Bulk Rougher 3								4	8.4	200
Condition		30	20				1			
Bulk Rougher 4								4	8.4	175
Condition		40	20				1			
Bulk Rougher 5								7	8.4	150
Total	60	100	90	15	0					

Stage	Rougher	1st Cleaners	2nd Cleaners
Flotation Cell	1000-D12	500 -D12	250 -D12
Speed: rpm	1800	1600	1100

PSA of Rougher Tail Required

Metallurgical Balance

Product	Weight		Assays, g/t, %			Distribution - %		
	g	%	Au	Cu	S	Au	Cu	S
Rougher Conc. 1	67.7	3.39	19.4	10.3	13.5	81.8	80.7	81.5
Rougher Conc. 2	70.2	3.52	1.30	1.44	1.67	5.7	11.7	10.4
Rougher Conc. 3	86.0	4.31	0.25	0.27	0.34	1.3	2.7	2.6
Rougher Conc. 4	73.3	3.68	0.27	0.21	0.26	1.2	1.8	1.7
Rougher Conc. 5	61.7	3.09	0.20	0.13	0.16	0.8	0.9	0.9
Rougher tail	1635	82.0	0.09	0.01	0.02	9.2	2.3	2.9
Head (calc.)	1994	100	0.81	0.43	0.56	100	100	100
(direct)			0.98	0.52	0.72			
Combined Products								
Rougher 1 conc	67.7	3.39	19.4	10.3	13.5	81.8	80.7	81.5
Roug. 1- 2 Conc	138	6.92	10.2	5.78	7.48	87.5	92.4	91.9
Roug. 1- 3 Conc	224	11.2	6.37	3.66	4.74	88.8	95.1	94.5
Roug. 1- 4 Conc	297	14.9	4.87	2.81	3.63	90.1	96.8	96.2
Roug. 1- 5 Conc	359	18.0	4.06	2.35	3.04	90.8	97.7	97.1

Test No.: P-F6 Operator: Wei Date: 03-Oct-12
Sample ID: P- 6262
Project No: 50283-001
Purpose: Bulk Rougher - Kinetic Test
Procedure: As outlined below.
Feed: 2 kg of P-6262
Grind: Grind 2 kg in a rod mill #3 for 38 minutes at 65% solids
Regrind: Target K_{80} 75 µm
tested K80 83 µm

Conditions:

Stage	Reagents added, grams per tonne					Time, minutes			pH	Eh
	CuSO4	PAX	7249	MIBC		Grind	Cond.	Froth		
Grind						38			8.4	200
Condition		10	20				2			
Bulk Rougher 1				20				2	8.5	10
Condition			10							
Bulk Rougher 2								3	8.5	150
Condition	60	20	20				4			
Bulk Rougher 3								4	8.3	200
Condition		30	20				1			
Bulk Rougher 4								5	8.4	155
Condition		40	20				1			
Bulk Rougher 5								7	8.4	125
Total	60	100	90	20	0					

Stage	Rougher	1st Cleaners	2nd Cleaners
Flotation Cell	1000-D12	500 -D12	250 -D12
Speed: rpm	1800	1600	1100

PSA of Rougher Tail Required

Metallurgical Balance

Product	Weight		Assays, g/t, %			Distribution - %		
	g	%	Au	Cu	S	Au	Cu	S
Rougher Conc. 1	87.2	4.40	21.7	10.3	16.2	66.7	62.3	64.2
Rougher Conc. 2	109	5.49	4.19	3.16	4.89	16.1	23.8	24.2
Rougher Conc. 3	47.2	2.38	1.09	0.98	1.31	1.8	3.2	2.8
Rougher Conc. 4	89.1	4.50	0.85	0.70	0.86	2.7	4.3	3.5
Rougher Conc. 5	71.9	3.63	0.60	0.43	0.52	1.5	2.1	1.7
Rougher tail	1577	79.6	0.20	0.04	0.05	11.3	4.3	3.6
Head (calc.)	1982	100	1.43	0.73	1.11	100	100	100
(direct)			1.26	0.70	1.11			
Combined Products								
Rougher 1 conc	87.2	4.40	21.7	10.3	16.2	66.7	62.3	64.2
Roug. 1- 2 Conc	196	9.89	12.0	6.35	9.92	82.7	86.1	88.4
Roug. 1- 3 Conc	243	12.3	9.87	5.31	8.25	84.5	89.3	91.2
Roug. 1- 4 Conc	332	16.8	7.45	4.07	6.27	87.2	93.6	94.7
Roug. 1- 5 Conc	404	20.4	6.23	3.42	5.25	88.7	95.7	96.4

Test No.: P-F7 Operator: Wei Date: 10/04/2012
Sample ID: P- 6263
Project No: 50283-001
Purpose: Bulk Rougher - Kinetic Test
Procedure: As outlined below.
Feed: 2 kg of P-6263
Grind: Grind 2 kg in a rod mill # 3 for 41 minutes at 65% solids
Regrind: Target K_{80} 75 µm
tested K80 96 µm

Conditions:

Stage	Reagents added, grams per tonne					Time, minutes			pH	Eh
	CuSO4	PAX	7249	MIBC		Grind	Cond.	Froth		
Grind						42			8.6	250
Condition		10	20				2			
Bulk Rougher 1				10				2	8.7	175
Condition			10							
Bulk Rougher 2				5				3	8.6	200
Condition	30	20	20				4			
Bulk Rougher 3								4	8.5	210
Condition		30	20				1			
Bulk Rougher 4								5	8.4	150.0
Condition	30	40	20				4			
Bulk Rougher 5								7	8.4	150
Total	60	100	90	15	0					

Stage	Rougher	1st Cleaners	2nd Cleaners
Flotation Cell	1000-D12	500 -D12	250 -D12
Speed: rpm	1800	1600	1100

PSA of Rougher Tail Required

Metallurgical Balance

Product	Weight		Assays, g/t, %			Distribution - %		
	g	%	Au	Cu	S	Au	Cu	S
Rougher Conc. 1	61.0	3.09	11.2	6.95	8.97	77.6	87.8	85.0
Rougher Conc. 2	68.9	3.49	0.60	0.37	0.54	4.7	5.3	5.8
Rougher Conc. 3	58.3	2.96	0.23	0.13	0.24	1.5	1.6	2.2
Rougher Conc. 4	65.0	3.30	0.22	0.09	0.12	1.6	1.1	1.2
Rougher Conc. 5	61.8	3.13	0.11	0.05	0.07	0.8	0.7	0.7
Rougher tail	1657	84.0	0.07	< 0.01	0.02	13.8	3.4	5.1
Head (calc.)	1972	100	0.45	0.24	0.33	100	100	100
(direct)			0.52	0.26	0.37			
Combined Products								
Rougher 1 conc	61.0	3.09	11.2	6.95	8.97	77.6	87.8	85.0
Roug. 1- 2 Conc	130	6.59	5.58	3.46	4.50	82.3	93.1	90.8
Roug. 1- 3 Conc	188	9.54	3.92	2.43	3.18	83.8	94.7	93.0
Roug. 1- 4 Conc	253	12.8	2.97	1.83	2.39	85.4	95.9	94.2
Roug. 1- 5 Conc	315	16.0	2.41	1.48	1.94	86.2	96.6	94.9

Test No.: P-F8 Operator: Wei Date: 03-Oct-12
Sample ID: P- 6264
Project No: 50283-001
Purpose: Bulk Rougher - Kinetic Test
Procedure: As outlined below.
Feed: 2 kg of P-6264
Grind: Grind 2 kg in a rod mill # 3 for 37 minutes at 65% solids
Regrind: Target K_{80} 75 µm
tested K80 75 µm

Conditions:

Stage	Reagents added, grams per tonne					Time, minutes			pH	Eh
	CuSO4	PAX	7249	MIBC		Grind	Cond.	Froth		
Grind						37			8.7	275
Condition		10	20				2			
Bulk Rougher 1				15				2	8.5	175
Condition			10							
Bulk Rougher 2				5				3	8.7	210
Condition	20	20	20				1			
Bulk Rougher 3								4	8.6	185
Condition	20	30	20				1			
Bulk Rougher 4								5	8.5	200.0
Condition	20	40	20				1			
Bulk Rougher 5								7	8.5	175
Total	60	100	90	20	0					

Stage	Rougher	1st Cleaners	2nd Cleaners
Flotation Cell	1000-D12	500 -D12	250 -D12
Speed: rpm	1800	1600	1100

PSA of Rougher Tail Required

Metallurgical Balance

Product	Weight		Assays, g/t, %			Distribution - %		
	g	%	Au	Cu	S	Au	Cu	S
Rougher Conc. 1	58.8	2.97	17.3	7.54	11.7	76.9	81.7	84.4
Rougher Conc. 2	58.2	2.94	1.45	0.67	0.96	6.4	7.2	6.9
Rougher Conc. 3	86.6	4.37	0.45	0.21	0.30	2.9	3.4	3.2
Rougher Conc. 4	90.1	4.55	0.25	0.11	0.15	1.7	1.9	1.7
Rougher Conc. 5	93.0	4.70	0.19	0.09	0.10	0.0	0.0	0.0
Rougher tail	1594	80.5	0.10	0.02	0.02	12.1	5.9	3.9
Head (calc.)	1981	100	0.67	0.27	0.41	100	100	100
(direct)			0.86	0.27	0.44			
Combined Products								
Rougher 1 conc	58.8	2.97	17.3	7.54	11.7	76.9	81.7	84.4
Roug. 1- 2 Conc	117	5.91	9.42	4.12	6.36	83.3	88.9	91.2
Roug. 1- 3 Conc	204	10.3	5.60	2.46	3.78	86.2	92.2	94.4
Roug. 1- 4 Conc	294	14.8	3.96	1.74	2.67	87.9	94.1	96.1
Roug. 1- 5 Conc	387	19.5	3.01	1.32	2.03	87.9	94.1	96.1

Test No.: P-F9 Operator: Wei Date: 10/02/2012
Sample ID: P- 6263
Project No: 50283-001
Purpose: Repeat P-F3Bulk Rougher - Kinetic Test
Procedure: As outlined below.
Feed: 2 kg of P-6263
Grind: Grind 2 kg in a rod mill # 3 for 19 minutes at 65% solids
Regrind: Target K_{80} 212 µm
tested K80 193 µm

Conditions:

Stage	Reagents added, grams per tonne					Time, minutes			pH	Eh
	CuSO4	PAX	7249	MIBC		Grind	Cond.	Froth		
Grind						19			8.3	150
Condition		10	20				2		8.4	175
Bulk Rougher 1				10				2		
Condition			10						8.4	200
Bulk Rougher 2				5				3		
Condition	30	20	20				4		8.5	210
Bulk Rougher 3								4		
Condition		30	20				1		8.5	160
Bulk Rougher 4								5		
Condition	30	40	20				4		8.5	160
Bulk Rougher 5								7		
Total	60	100	90	15	0					

Stage	Rougher	1st Cleaners	2nd Cleaners
Flotation Cell	1000-D12	500 -D12	250 -D12
Speed: rpm	1800	1600	1100

PSA of Rougher Tail Required

Metallurgical Balance

Product	Weight		Assays, g/t, %			Distribution - %		
	g	%	Au	Cu	S	Au	Cu	S
Rougher Conc. 1	78.9	3.96	8.85	5.93	7.68	67.7	85.5	84.1
Rougher Conc. 2	69.5	3.49	0.65	0.42	0.59	4.4	5.4	5.7
Rougher Conc. 3	76.1	3.82	0.24	0.16	0.25	1.8	2.2	2.6
Rougher Conc. 4	97.6	4.90	0.18	0.09	0.15	1.7	1.7	2.0
Rougher Conc. 5	72.2	3.62	0.17	0.07	0.11	1.2	1.0	1.1
Rougher tail	1598	80.2	0.15	0.02	0.02	23.2	4.4	4.4
Head (calc.)	1992	100	0.52	0.27	0.36	100	100	100
(direct)			0.52	0.26	0.37			
Combined Products								
Rougher 1 conc	78.9	3.96	8.85	5.93	7.68	67.7	85.5	84.1
Roug. 1- 2 Conc	148	7.45	5.01	3.35	4.36	72.1	90.8	89.8
Roug. 1- 3 Conc	225	11.3	3.39	2.27	2.97	73.9	93.0	92.4
Roug. 1- 4 Conc	322	16.2	2.42	1.61	2.11	75.6	94.7	94.5
Roug. 1- 5 Conc	394	19.8	2.01	1.33	1.75	76.8	95.6	95.6

Test No.: P-F10 Operator: Wei Date: 02-Oct-12

Sample ID: P- 6262

Project No: 50283-001

Purpose: Repeat P-F2 - Bulk Rougher - Kinetic Test

Procedure: As outlined below.

Feed: 2 kg of P-6262

Grind: Grind 2 kg in a rod mill #3 for 16 minutes at 65% solids

Regrind: Target K_{80} 212 µm

tested K80 188 µm

Conditions:

Stage	Reagents added, grams per tonne					Time, minutes			pH	Eh
	CuSO4	PAX	7249	MIBC		Grind	Cond.	Froth		
Grind						16			8.4	250
Condition		10	20				2		8.5	150
Bulk Rougher 1				10				2		
Condition			10						8.5	220
Bulk Rougher 2				5				3		
Condition	60	20	20				4		8.4	250
Bulk Rougher 3								4		
Condition		30	20				1		8.4	200
Bulk Rougher 4								5		
Condition		40	20				1		8.4	150
Bulk Rougher 5								7		
Total	60	100	90	15	0					

Stage	Rougher	1st Cleaners	2nd Cleaners
Flotation Cell	1000-D12	500 -D12	250 -D12
Speed: rpm	1800	1600	1100

PSA of Rougher Tail Required

Metallurgical Balance

Product	Weight		Assays, g/t, %			Distribution - %		
	g	%	Au	Cu	S	Au	Cu	S
Rougher Conc. 1	121	6.11	14.6	9.76	15.9	68.8	75.3	79.5
Rougher Conc. 2	79.2	4.01	2.32	1.74	2.29	7.2	8.8	7.5
Rougher Conc. 3	53.1	2.69	1.02	0.80	1.06	2.1	2.7	2.3
Rougher Conc. 4	81.9	4.14	1.18	0.84	1.06	3.8	4.4	3.6
Rougher Conc. 5	90.0	4.55	0.96	0.58	0.70	3.4	3.4	2.6
Rougher tail	1551	78.5	0.24	0.05	0.07	14.7	5.4	4.5
Head (calc.)	1976	100	1.30	0.79	1.22	100	100	100
(direct)			1.26	0.70	1.11			
Combined Products								
Rougher 1 conc	121	6.11	14.6	9.8	15.9	68.8	75.3	79.5
Roug. 1- 2 Conc	200	10.1	9.73	6.58	10.5	76.0	84.2	87.0
Roug. 1- 3 Conc	253	12.8	7.91	5.37	8.52	78.1	86.9	89.3
Roug. 1- 4 Conc	335	16.9	6.26	4.26	6.70	81.9	91.3	92.9
Roug. 1- 5 Conc	425	21.5	5.14	3.48	5.43	85.3	94.6	95.5

Test No.: P-F11 Operator: Wei Date: 12-Oct-12

Sample ID: P- 6261

Project No: 50283-001

Purpose: Cleaner Test

Procedure: As outlined below.

Feed: 2 kg of P-6261

Grind: Grind 2 kg in a rod mill # 3 for 55 minutes at 65% solids

Regrind: Target K_{80} 75 µm

tested K80 69 µm

Conditions: Regrind K80 30 µm

Stage	Reagents added, grams per tonne							Time, minutes			pH	Eh
	CuSO4	PAX	7249	3418 A	MIBC	Lime	407	Grind	Cond.	Froth		
Grind								55			8.6	25
Condition		30	50						2		8.7	-50
Bulk Rougher 1					15					5		
Condition		30					20				8.7	110
Bulk Rougher 2										5		
Condition	30	50					20		2		8.6	125
Bulk Rougher 3										10		
Condition Bulk Rougher Conc								5			8.8	170
Cu Cleaner 1				5	5				2	5		
Cu Cleaner 2				2	2	10				4	9.5	175
Total	30	110	50		22	10	40					

Stage	Rougher	1st Cleaners	2nd Cleaners
Flotation Cell	1000-D12	500 -D12	250 -D12
Speed: rpm	1800	1600	1100

PSA of Rougher Tail Required

Metallurgical Balance

Product	Weight		Assays, g/t, %			Distribution - %		
	g	%	Au	Cu	S	Au	Cu	S
Cu Cleaner 2 conc	34.4	1.72	37.2	24.8	30.9	83.9	87.5	86.0
Cu Cleaner 2 tail	45.0	2.25	1.45	1.36	1.89	4.3	6.3	6.9
Cu Cleaner 1 tail	296	14.8	0.15	0.10	0.15	2.9	3.2	3.6
Rougher tail	1628	81.3	0.08	0.02	0.03	8.9	3.0	3.6
Head (calc.)	2003	100	0.76	0.49	0.62	100	100	100
(direct)			0.98	0.52	0.72			
Combined Products								
Cu Cleaner 2 conc	34.4	1.72	37.2	24.8	30.9	83.9	87.5	86.0
Cu Cleaner 1 conc	79.4	3.96	16.9	11.5	14.5	88.2	93.8	92.9
Rougher Conc	375	18.7	3.71	2.52	3.18	91.1	97.0	96.4

Test No.: P-F12 Operator: Wei Date: 12-Oct-12

Sample ID: P- Master Composite

Project No: 50283-001

Purpose: Cleaner Test

Procedure: As outlined below.

Feed: 2 kg of P-Master

Grind: Grind 2 kg in a rod mill # 3 for 49 minutes at 65% solids

Regrind: Target K_{80} 75 µm

tested K80 77 µm

Conditions: Regrind K80 31 µm

Stage	Reagents added, grams per tonne							Time, minutes			pH	Eh
	CuSO4	PAX	7249	3418 A	MIBC	Lime	407	Grind	Cond.	Froth		
Grind								49			8.6	100
Condition		30	15						2		8.7	-75
Bulk Rougher 1					15					5		
Condition		30	35				20				8.6	100
Bulk Rougher 2										5		
Condition	30	50					20		2		8.6	100
Bulk Rougher 3										10		
Condition Bulk Rougher Conc								5			8.6	150
Cu Cleaner 1				5+2	5				2	5+1	8.7	140
Cu Cleaner 2				2	2	15				4	9.5	175
Total	30	110	50		22	15	40					

Stage	Rougher	1st Cleaners	2nd Cleaners
Flotation Cell	1000-D12	500 -D12	250 -D12
Speed: rpm	1800	1600	1100

PSA of Rougher Tail Required

Metallurgical Balance

Product	Weight		Assays, g/t, %			Distribution - %		
	g	%	Au	Cu	S	Au	Cu	S
Cu Cleaner 2 conc	35.7	1.79	36.5	20.5	29.9	80.0	84.4	81.8
Cu Cleaner 2 tail	68.8	3.44	1.08	1.06	1.56	4.6	8.4	8.2
Cu Cleaner 1 tail	305	15.2	0.25	0.12	0.22	4.7	4.3	5.1
Rougher tail	1589	79.5	0.11	0.02	0.04	10.7	2.9	4.9
Head (calc.)	1998	100	0.82	0.43	0.65	100	100	100
(direct)			0.90	0.44	0.66			
Combined Products								
Cu Cleaner 2 conc	35.7	1.79	36.5	20.5	29.9	80.0	84.4	81.8
Cu Cleaner 1 conc	105	5.23	13.2	7.70	11.2	84.6	92.8	90.0
Rougher Conc	409	20.5	3.55	2.06	3.04	89.3	97.1	95.1

Test: L1 Project: **50283-001** **AH/CJ** **October 9, 2012**

Purpose: To evaluate the leach kinetics of Au using cyanide, standard test to optimize grind

Procedure: The feed was pulped to 40% solids. The pulp was brought to pH 10.5 with lime and agitated for 1/2 hour and pH checked again. Then DO level brought up to > 5 ppm with Oxygen and pre-aerated for 15 minutes. After which 1.0 g/L of cyanide was added and the pulp agitated to commence the test. During the test the DO was maintained above 5 ppm with air or oxygen. NaCN, pH and DO were monitored and maintained over the duration of the test. Intermittent solution samples were removed for Au and Cu assay to monitor the rate of extraction. At the termination of the test, a solution sample taken, pulp filtered and the residue washed with fresh water. The final solution and the residue were submitted for Au and Cu analysis.

Feed: 1000 g of Composite 6261

Solution Volume: 1,500 mL

Pulp Density: 40 % solids
$Pb(NO_3)_2$ addition: 0 g/t
Sol'n Composition: 1.00 g/L of NaCN maintained

pH Range: 10.5 - 11 maintained with lime as required. Target K_{80} = 212 µm
Test K_{80} = 147 µm

Grind: 1 kg of 6261 at 50% solids in Rod Mill # 2 for 13 minutes

Reagent Addition (kg/t of cyanide feed) NaCN: 3.51 CaO: 0.45
Reagent Consumption (kg/t of cyanide feed) **NaCN: 2.37** **CaO: 0.34**

Time	Added, Grams				Residual		Consumed		pH	$D.O_2$
	Actual		Equivalent		Grams		Grams			
hours	NaCN	$Ca(OH)_2$	NaCN	CaO	NaCN	CaO	NaCN	CaO		
To add 1.0 g/L	1.52								8.8	
0 - 2	1.52	0.60	1.50	0.44	1.07		0.43		11.6	>18
2 - 6	0.44	0.00	0.44	0.00	1.30		0.21		11.3	7.3
6 - 24	0.20	0.00	0.20	0.00	1.08		0.42		11.25	6.7
24 - 48	0.43	0.00	0.43	0.00	1.01		0.50		11.2	8.4
48 - 72	0.50	0.00	0.49	0.00	1.12		0.38		11.2	7.7
72 - 96	0.39	0.00	0.39	0.00	1.10		0.41		11.2	9.2
			0.00	0.00			1.10			
			0.00	0.00	1.11	0.11	-1.11	0.34		
Total	3.48	0.60	3.44	0.44	1.11	0.11	2.33	0.34		

PSA on Leach Residue required

Cyanidation Results:

Product	Amount	Assays, mg/L		% Distribution	
	g, mL	Au	Cu	Au	Cu
2 h Pregnant Solution	1,520	0.24	84.0	36.7	2.7
6 h Pregnant Solution	1,519	0.40	110	62.1	3.5
24 h Pregnant Solution	1,519	0.57	178	89.7	5.8
48 h Pregnant Solution	1,518	0.56	246	90.4	8.1
72 h Pregnant Solution	1,519	0.55	303	91.2	10.1
96 h Pregnant Solution	1,523	0.54	366	92.1	12.3
Final Residue	981	0.08	4300	7.9	87.7
Head (calc.)	981	1.01	4905	100.0	100.0

Test: L2 Project: **50283-001** **October 1, 2012**

Purpose: To evaluate the leach kinetics of Au using cyanide, standard test to optimize grind

Procedure: The feed was pulped to 40% solids. The pulp was brought to pH 10.5 with lime and agitated for 1/2 hour and pH checked again. Then DO level brought up to > 5 ppm with Oxygen and pre-aerated for 15 minutes. After which 1.0 g/L of cyanide was added and the pulp agitated to commence the test. During the test the DO was maintained above 5 ppm with air or oxygen. NaCN, pH and DO were monitored and maintained over the duration of the test. Intermittent solution samples were removed for Au and Cu assay to monitor the rate of extraction. At the termination of the test, a solution sample taken, pulp filtered and the residue washed with fresh water. The final solution and the residue were submitted for Au and Cu analysis.

Feed: 1000 g of Composite 6261

Solution Volume: 1,500 mL

Pulp Density: 40 % solids
$Pb(NO_3)_2$ addition: 0 g/t
Sol'n Composition: 1.00 g/L of NaCN maintained

pH Range: 10.5 - 11 maintained with lime as required. Target K_{80} = 75 µm
Test K_{80} = 55 µm

Grind: 1 kg of 6261 at 50% solids in Rod Mill # 2 for 27 minutes

Reagent Addition (kg/t of cyanide feed) NaCN: 3.32 CaO: 0.47
Reagent Consumption (kg/t of cyanide feed) **NaCN: 2.14** **CaO: 0.39**

Time	Added, Grams				Residual		Consumed		pH	$D.O_2$
	Actual		Equivalent		Grams		Grams			
hours	NaCN	$Ca(OH)_2$	NaCN	CaO	NaCN	CaO	NaCN	CaO		
To add 1.0 g/L	1.58								9.5	
0 - 2	1.52	0.64	1.50	0.47	1.04		0.46		11.1	16.0
2 - 6	0.47	0.00	0.46	0.00	1.29		0.21		11.1	7.5
6 - 24	0.21	0.00	0.21	0.00	1.03		0.47		11.1	6.1
24 - 48	0.44	0.00	0.44	0.00	1.15		0.32		11.0	7.3
48 - 72	0.35	0.00	0.35	0.00	1.12		0.38		11.0	7.2
72 - 96	0.38	0.00	0.38	0.00	1.19	0.08	0.31		11.0	7.6
			0.00	0.00			1.19			
			0.00	0.00	1.18	0.07	-1.18	0.40		
Total	3.37	0.64	3.33	0.47	1.18	0.07	2.15	0.40		

PSA on Leach Residue required

Cyanidation Results:

Product	Amount	Assays, mg/L		% Distribution	
	g, mL	Au	Cu	Au	Cu
2 h Pregnant Solution	1,496	0.23	87.0	32.8	2.7
6 h Pregnant Solution	1,500	0.42	116	60.9	3.7
24 h Pregnant Solution	1,497	0.63	187	92.4	6.0
48 h Pregnant Solution	1,498	0.62	240	93.4	7.9
72 h Pregnant Solution	1,497	0.61	290	94.3	9.6
96 h Pregnant Solution	1,498	0.60	324	95.2	10.9
Final Residue	1,002	0.05	4240	4.8	89.1
Head (calc.)	1,002	1.05	4761	100.0	100.0

Test: L3 Project: **50283-001** **AH/CJ** **October 9, 2012**

Purpose: To evaluate the leach kinetics of Au using cyanide, standard test to optimize grind

Procedure: The feed was pulped to 40% solids. The pulp was brought to pH 10.5 with lime and agitated for 1/2 hour and pH checked again. Then DO level brought up to > 5 ppm with Oxygen and pre-aerated for 15 minutes. After which 1.0 g/L of cyanide was added and the pulp agitated to commence the test. During the test the DO was maintained above 5 ppm with air or oxygen. NaCN, pH and DO were monitored and maintained over the duration of the test. Intermittent solution samples were removed for Au and Cu assay to monitor the rate of extraction. At the termination of the test, a solution sample taken, pulp filtered and the residue washed with fresh water. The final solution and the residue were submitted for Au and Cu analysis.

Feed: 1000 g of Composite 6262

Solution Volume: 1,500 mL

Pulp Density: 40 % solids
$Pb(NO_3)_2$ addition: 0 g/t
Sol'n Composition: 1.00 g/L of NaCN maintained

pH Range: 10.5 - 11 maintained with lime as required. Target K_{80} = 212 µm
Test K_{80} = 233 µm

Grind: 1 kg of 6262 at 50% solids in Rod Mill # 3 for 7.5 minutes

Reagent Addition (kg/t of cyanide feed) NaCN: 3.24 CaO: 0.55
Reagent Consumption (kg/t of cyanide feed) **NaCN: 2.03** **CaO: 0.50**

Time	Added, Grams				Residual		Consumed		pH	$D.O_2$
	Actual		Equivalent		Grams		Grams			
hours	NaCN	$Ca(OH)_2$	NaCN	CaO	NaCN	CaO	NaCN	CaO		
To add 1.0 g/L	1.52								8.4	
0 - 2	1.52	0.47	1.50	0.35	0.88		0.62		11.0	>18
2 - 6	0.63	0.26	0.62	0.19	1.30		0.20		11.4	8.4
6 - 24	0.20	0.00	0.20	0.00	1.26		0.24		11.2	7.6
24 - 48	0.24	0.00	0.24	0.00	1.17		0.33		11.0	7.8
48 - 72	0.33	0.00	0.33	0.00	1.21		0.29		10.9	8.0
72 - 96	0.30	0.00	0.30	0.00	1.18	0.05	0.33		10.9	9.4
			0.00	0.00			1.18			
			0.00	0.00	1.19	0.05	-1.19	0.49		
Total	3.22	0.73	3.18	0.54	1.19	0.05	1.99	0.49		

PSA on Leach Residue required

Cyanidation Results:

Product	Amount	Assays, mg/L		% Distribution	
	g, mL	Au	Cu	Au	Cu
2 h Pregnant Solution	1,519	0.39	138	39.1	2.8
6 h Pregnant Solution	1,516	0.57	151	58.1	3.2
24 h Pregnant Solution	1,518	0.75	192	77.7	4.1
48 h Pregnant Solution	1,517	0.78	236	82.6	5.1
72 h Pregnant Solution	1,519	0.78	262	84.8	5.8
96 h Pregnant Solution	1,518	0.75	306	83.8	6.8
Final Residue	982	0.25	7020	16.2	93.2
Head (calc.)	982	1.54	7533	100.0	100.0

Test: L4 Project: **50283-001** **October 1, 2012**

Purpose: To evaluate the leach kinetics of Au using cyanide, standard test to optimize grind

Procedure: The feed was pulped to 40% solids. The pulp was brought to pH 10.5 with lime and agitated for 1/2 hour and pH checked again. Then DO level brought up to > 5 ppm with Oxygen and pre-aerated for 15 minutes. After which 1.0 g/L of cyanide was added and the pulp agitated to commence the test. During the test the DO was maintained above 5 ppm with air or oxygen. NaCN, pH and DO were monitored and maintained over the duration of the test. Intermittent solution samples were removed for Au and Cu assay to monitor the rate of extraction. At the termination of the test, a solution sample taken, pulp filtered and the residue washed with fresh water. The final solution and the residue were submitted for Au and Cu analysis.

Feed: 1000 g of Composite 6262

Solution Volume: 1,500 mL

Pulp Density: 40 % solids
$Pb(NO_3)_2$ addition: 0 g/t
Sol'n Composition: 1.00 g/L of NaCN maintained

pH Range: 10.5 - 11 maintained with lime as required. Target K_{80} = 75 µm
Test K_{80} = 72 µm

Grind: 1 kg of 6262 at 50% solids in Rod Mill # 3 for 19 minutes

Reagent Addition (kg/t of cyanide feed) NaCN: 3.57 CaO: 0.59
Reagent Consumption (kg/t of cyanide feed) **NaCN: 2.43** **CaO: 0.55**

Time	Added, Grams				Residual		Consumed		pH	$D.O_2$
	Actual		Equivalent		Grams		Grams			
hours	NaCN	$Ca(OH)_2$	NaCN	CaO	NaCN	CaO	NaCN	CaO		
To add 1.0 g/L	1.58								8.7	
0 - 2	1.52	0.80	1.50	0.59	0.85		0.65		10.9	9.0
2 - 6	0.66	0.00	0.65	0.00	1.30		0.20		11.1	6.8
6 - 24	0.20	0.00	0.20	0.00	1.05		0.45		11.1	6.5
24 - 48	0.46	0.00	0.45	0.00	1.11		0.39		10.9	7.4
48 - 72	0.40	0.00	0.40	0.00	1.16		0.35		10.9	7.4
72 - 96	0.34	0.00	0.34	0.00	1.13	0.04	0.37		10.9	7.7
			0.00	0.00			1.13			
			0.00	0.00	1.14	0.05	-1.14	0.54		
Total	3.58	0.80	3.54	0.59	1.14	0.05	2.40	0.54		

PSA on Leach Residue required

Cyanidation Results:

Product	Amount	Assays, mg/L		% Distribution	
	g, mL	Au	Cu	Au	Cu
2 h Pregnant Solution	1,507	0.37	144	37.7	2.9
6 h Pregnant Solution	1,510	0.66	167	68.3	3.4
24 h Pregnant Solution	1,505	0.83	226	87.2	4.7
48 h Pregnant Solution	1,513	0.82	274	88.9	5.8
72 h Pregnant Solution	1,471	0.82	319	88.8	6.7
96 h Pregnant Solution	1,508	0.79	349	90.0	7.6
Final Residue	991	0.15	7030	10.0	92.4
Head (calc.)	991	1.49	7607	100.0	100.0

Test: L5 Project: **50283-001** **AH/CJ** **October 9, 2012**

Purpose: To evaluate the leach kinetics of Au using cyanide, standard test to optimize grind

Procedure: The feed was pulped to 40% solids. The pulp was brought to pH 10.5 with lime and agitated for 1/2 hour and pH checked again. Then DO level brought up to > 5 ppm with Oxygen and pre-aerated for 15 minutes. After which 1.0 g/L of cyanide was added and the pulp agitated to commence the test. During the test the DO was maintained above 5 ppm with air or oxygen. NaCN, pH and DO were monitored and maintained over the duration of the test. Intermittent solution samples were removed for Au and Cu assay to monitor the rate of extraction. At the termination of the test, a solution sample taken, pulp filtered and the residue washed with fresh water. The final solution and the residue were submitted for Au and Cu analysis.

Feed: 1000 g of Composite 6263

Solution Volume: 1,500 mL

Pulp Density: 40 % solids
$Pb(NO_3)_2$ addition: 0 g/t
Sol'n Composition: 1.00 g/L of NaCN maintained

pH Range: 10.5 - 11 maintained with lime as required. Target K_{80} = 212 µm
Test K_{80} = 160 µm

Grind: 1 kg of 6263 at 50% solids in Rod Mill # 2 for 8.5 minutes

Reagent Addition (kg/t of cyanide feed) NaCN: 3.01 CaO: 0.36
Reagent Consumption (kg/t of cyanide feed) **NaCN: 1.82** **CaO: 0.29**

Time	Added, Grams				Residual		Consumed		pH	$D.O_2$
	Actual		Equivalent		Grams		Grams			
hours	NaCN	$Ca(OH)_2$	NaCN	CaO	NaCN	CaO	NaCN	CaO		
To add 1.0 g/L	1.52								8.5	
0 - 2	1.52	0.48	1.50	0.36	1.14		0.36		11.4	>18
2 - 6	0.37	0.00	0.37	0.00	1.30		0.21		11.2	9.2
6 - 24	0.20	0.00	0.20	0.00	1.19		0.31		11.1	7.0
24 - 48	0.32	0.00	0.32	0.00	1.17		0.34		11.0	8.2
48 - 72	0.34	0.00	0.34	0.00	1.24		0.27		11.0	8.0
72 - 96	0.26	0.00	0.26	0.00	1.17	0.08	0.33		11.0	8.3
			0.00	0.00			1.17			
			0.00	0.00	1.17	0.08	-1.17	0.28		
Total	3.01	0.48	2.98	0.36	1.17	0.08	1.80	0.28		

PSA on Leach Residue required

Cyanidation Results:

Product	Amount	Assays, mg/L		% Distribution	
	g, mL	Au	Cu	Au	Cu
2 h Pregnant Solution	1,513	0.16	63.0	41.1	3.3
6 h Pregnant Solution	1,512	0.25	85.0	65.3	4.6
24 h Pregnant Solution	1,512	0.33	134	87.5	7.3
48 h Pregnant Solution	1,510	0.34	183	92.2	10.1
72 h Pregnant Solution	1,511	0.33	207	92.0	11.6
96 h Pregnant Solution	1,510	0.32	249	91.6	14.1
Final Residue	990	0.05	2470	8.4	85.9
Head (calc.)	990	0.60	2877	100.0	100.0

Test: L6 Project: **50283-001** **October 1, 2012**

Purpose: To evaluate the leach kinetics of Au using cyanide, standard test to optimize grind

Procedure: The feed was pulped to 40% solids. The pulp was brought to pH 10.5 with lime and agitated for 1/2 hour and pH checked again. Then DO level brought up to > 5 ppm with Oxygen and pre-aerated for 15 minutes. After which 1.0 g/L of cyanide was added and the pulp agitated to commence the test. During the test the DO was maintained above 5 ppm with air or oxygen. NaCN, pH and DO were monitored and maintained over the duration of the test. Intermittent solution samples were removed for Au and Cu assay to monitor the rate of extraction. At the termination of the test, a solution sample taken, pulp filtered and the residue washed with fresh water. The final solution and the residue were submitted for Au and Cu analysis.

Feed: 1000 g of Composite 6263

Solution Volume: 1,500 mL

Pulp Density: 40 % solids
$Pb(NO_3)_2$ addition: 0 g/t
Sol'n Composition: 1.00 g/L of NaCN maintained

pH Range: 10.5 - 11 maintained with lime as required. Target K_{80} = 75 µm
Test K_{80} = 59 µm

Grind: 1 kg of 6263 at 50% solids in Rod Mill # 2 for 20 minutes

Reagent Addition (kg/t of cyanide feed) NaCN: 3.16 CaO: 0.31
Reagent Consumption (kg/t of cyanide feed) **NaCN: 1.99** **CaO: 0.28**

Time	Added, Grams				Residual		Consumed		pH	$D.O_2$
	Actual		Equivalent		Grams		Grams			
hours	NaCN	$Ca(OH)_2$	NaCN	CaO	NaCN	CaO	NaCN	CaO		
To add 1.0 g/L	1.58								9.2	
0 - 2	1.52	0.43	1.50	0.31	1.08		0.42		11.0	6.9
2 - 6	0.43	0.00	0.43	0.00	1.30		0.21		10.9	7.3
6 - 24	0.20	0.00	0.20	0.00	1.13		0.37		10.9	7.3
24 - 48	0.38	0.00	0.38	0.00	1.15		0.36		10.8	7.4
48 - 72	0.36	0.00	0.36	0.00	1.20		0.31		10.8	7.5
72 - 96	0.30	0.00	0.30	0.00	1.16	0.03	0.34		10.8	7.5
			0.00	0.00			1.16			
			0.00	0.00	1.17	0.03	-1.17	0.28		
Total	3.19	0.43	3.15	0.31	1.17	0.03	1.99	0.28		

PSA on Leach Residue required

Cyanidation Results:

Product	Amount	Assays, mg/L		% Distribution	
	g, mL	Au	Cu	Au	Cu
2 h Pregnant Solution	1,499	0.14	63.0	35.6	3.6
6 h Pregnant Solution	1,507	0.25	90.0	64.8	5.3
24 h Pregnant Solution	1,499	0.38	138	99.2	8.2
48 h Pregnant Solution	1,501	0.37	177	99.3	10.6
72 h Pregnant Solution	1,501	0.37	215	96.6	13.1
96 h Pregnant Solution	1,499	0.34	252	96.6	15.5
Final Residue	999	0.02	2210	3.4	84.5
Head (calc.)	999	0.59	2615	100.0	100.0

Test: L7 Project: **50283-001** **AH/CJ** **October 9, 2012**

Purpose: To evaluate the leach kinetics of Au using cyanide, standard test to optimize grind

Procedure: The feed was pulped to 40% solids. The pulp was brought to pH 10.5 with lime and agitated for 1/2 hour and pH checked again. Then DO level brought up to > 5 ppm with Oxygen and pre-aerated for 15 minutes. After which 1.0 g/L of cyanide was added and the pulp agitated to commence the test. During the test the DO was maintained above 5 ppm with air or oxygen. NaCN, pH and DO were monitored and maintained over the duration of the test. Intermittent solution samples were removed for Au and Cu assay to monitor the rate of extraction. At the termination of the test, a solution sample taken, pulp filtered and the residue washed with fresh water. The final solution and the residue were submitted for Au and Cu analysis.

Feed: 1000 g of Composite 6264

Solution Volume: 1,500 mL

Pulp Density: 40 % solids
$Pb(NO_3)_2$ addition: 0 g/t
Sol'n Composition: 1.00 g/L of NaCN maintained

pH Range: 10.5 - 11 maintained with lime as required. Target K_{80} = 212 µm
Test K_{80} = 203 µm

Grind: 1 kg of 6264 at 50% solids in Rod Mill # 3 for 7 minutes

Reagent Addition (kg/t of cyanide feed) NaCN: 2.51 CaO: 0.66
Reagent Consumption (kg/t of cyanide feed) **NaCN: 1.29** **CaO: 0.59**

Time	Added, Grams				Residual		Consumed		pH	$D.O_2$
	Actual		Equivalent		Grams		Grams			
hours	NaCN	$Ca(OH)_2$	NaCN	CaO	NaCN	CaO	NaCN	CaO		
To add 1.0 g/L	1.52								8.7	
0 - 2	1.52	0.51	1.50	0.38	1.05		0.45		11.0	>18
2 - 6	0.30	0.37	0.30	0.27	1.20		0.15		11.4	9.9
6 - 24	0.12	0.00	0.12	0.00	1.38		-0.06		11.2	7.6
24 - 48	0.13	0.00	0.13	0.00	1.37		0.14		11.0	8.7
48 - 72	0.12	0.00	0.12	0.00	1.38		0.11		11.0	8.4
72 - 96	0.31	0.00	0.31	0.00	1.19		0.50		10.9	8.5
			0.00	0.00			1.19			
			0.00	0.00	1.21	0.08	-1.21	0.58		
Total	2.50	0.88	2.47	0.65	1.21	0.08	1.27	0.58		

PSA on Leach Residue required

Cyanidation Results:

Product	Amount	Assays, mg/L		% Distribution	
	g, mL	Au	Cu	Au	Cu
2 h Pregnant Solution	1,519	0.23	44.0	45.7	2.5
6 h Pregnant Solution	1,516	0.31	52.0	62.7	3.0
24 h Pregnant Solution	1,515	0.40	69.0	82.2	4.1
48 h Pregnant Solution	1,516	0.39	88.0	82.3	5.3
72 h Pregnant Solution	1,516	0.38	103	82.4	6.3
96 h Pregnant Solution	1,517	0.40	117	88.4	7.2
Final Residue	984	0.09	2500	11.6	92.8
Head (calc.)	984	0.78	2695	100.0	100.0

Test: L8 Project: **50283-001** **October 1, 2012**

Purpose: To evaluate the leach kinetics of Au using cyanide, standard test to optimize grind

Procedure: The feed was pulped to 40% solids. The pulp was brought to pH 10.5 with lime and agitated for 1/2 hour and pH checked again. Then DO level brought up to > 5 ppm with Oxygen and pre-aerated for 15 minutes. After which 1.0 g/L of cyanide was added and the pulp agitated to commence the test. During the test the DO was maintained above 5 ppm with air or oxygen. NaCN, pH and DO were monitored and maintained over the duration of the test. Intermittent solution samples were removed for Au and Cu assay to monitor the rate of extraction. At the termination of the test, a solution sample taken, pulp filtered and the residue washed with fresh water. The final solution and the residue were submitted for Au and Cu analysis.

Feed: 1000 g of Composite 6264

Solution Volume: 1,500 mL

Pulp Density: 40 % solids
$Pb(NO_3)_2$ addition: 0 g/t
Sol'n Composition: 1.00 g/L of NaCN maintained

pH Range: 10.5 - 11 maintained with lime as required. Target K_{80} = 75 µm
Test K_{80} = 65 µm

Grind: 1 kg of 6264 at 50% solids in Rod Mill # 3 for 18 minutes

Reagent Addition (kg/t of cyanide feed) NaCN: 2.62 CaO: 0.63
Reagent Consumption (kg/t of cyanide feed) **NaCN: 1.23** **CaO: 0.59**

Time	Added, Grams				Residual		Consumed		pH	$D.O_2$
	Actual		Equivalent		Grams		Grams			
hours	NaCN	$Ca(OH)_2$	NaCN	CaO	NaCN	CaO	NaCN	CaO		
To add 1.0 g/L	1.58								9.0	
0 - 2	1.52	0.62	1.50	0.46	1.18		0.32		11.4	>18
2 - 6	0.33	0.00	0.33	0.00	1.37		0.14		10.8	8.9
6 - 24	0.14	0.23	0.14	0.17	1.29		0.22		11.2	7.0
24 - 48	0.22	0.00	0.22	0.00	1.29		0.22		11.0	7.3
48 - 72	0.22	0.00	0.22	0.00	1.32		0.19		10.9	7.7
72 - 96	0.19	0.00	0.19	0.00	1.37	0.05	0.14		10.9	8.1
			0.00	0.00			1.37			
			0.00	0.00	1.37	0.05	-1.37	0.58		
Total	2.62	0.85	2.59	0.63	1.37	0.05	1.22	0.58		

PSA on Leach Residue required

Cyanidation Results:

Product	Amount	Assays, mg/L		% Distribution	
	g, mL	Au	Cu	Au	Cu
2 h Pregnant Solution	1,503	0.24	47.0	50.8	2.6
6 h Pregnant Solution	1,513	0.34	60.0	73.8	3.4
24 h Pregnant Solution	1,509	0.40	91.0	88.3	5.2
48 h Pregnant Solution	1,510	0.41	116	92.7	6.7
72 h Pregnant Solution	1,509	0.40	134	92.8	7.8
96 h Pregnant Solution	1,510	0.39	151	93.0	9.0
Final Residue	990	0.05	2520	7.0	91.0
Head (calc.)	990	0.72	2768	100.0	100.0