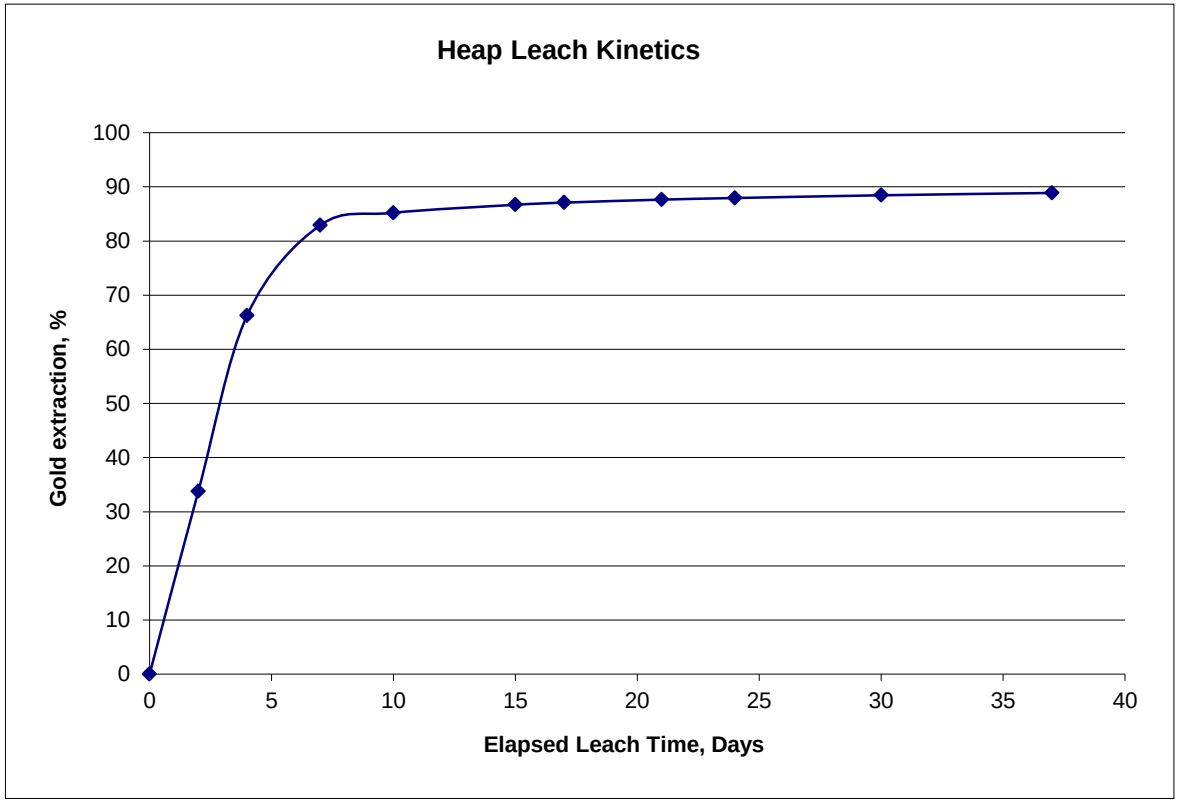
Heap Leach Amenability Summary

Sample	Test No.	Nominal Particle Size	Consumption kg/t of CN Feed NaCN	Consumption kg/t of CN Feed CaO	Gold Extraction %	Residue g/t	Calc. Head g/t	Direct Assay * g/t
Master Comp	CL-1	-3/4 inch	0.15	2.62	88.9	0.49	4.44	4.33

The average gold grade from the feed assays of four coarse ore bottle rolls was used as the direct assay.

Exrtraction Rates	Extraction (days) 2	4	7	10	15	17	21	24	30	37
Gold - %	33.8	66.2	82.9	85.2	86.7	87.1	87.6	87.9	88.4	88.9



SGS Vancouver Metallurgy

Heap Leach (Column) Test Procedure

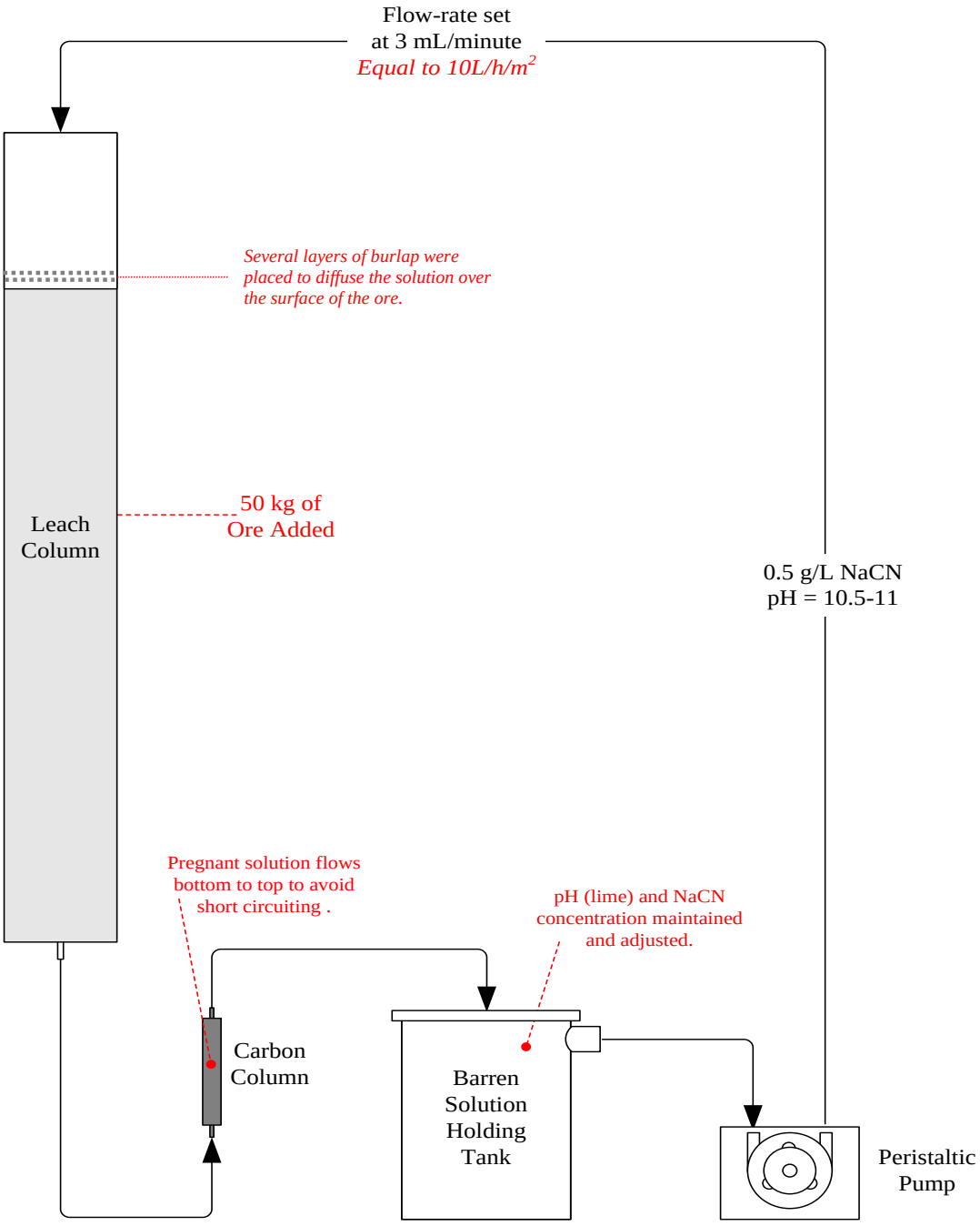
50 kg -1" master composite (MC) was stage-crushed to -3/4" and then split into 10kg charges. The -3/4" MC was agglomerated with 3.2 kg/t lime and 10 kg/t Portland cement. The agglomerated MC was split into 5kg charges and then loaded into the 6" (ID) x 6.5' column. Due to the capacity of the column, 48.5 kg agglomerated MC was loaded in the column for leaching. The initial ore height was recorded. Solution (water adjuested to pH = 11.5) was applied via a peristaltic pump at a rate of approximately 3 times the rate which would be applied after cyanide had been added into the system. The rate was accelerated initially in order to stabilize the outflow rate in the required 10.5-11.0 range. The solution flow rates (in and out) were monitored periodically and adjusted as required. In gerneral, the rates had to be reduced to more or less to match the out-flow rate for a particular column.

The out-flow (pregnant) solution flowed through a vertically oriented carbon filled column. Flow was from bottom to top, in order to flood the carbon and avoid short circuiting of the pregnant solution through the recovery medium. Barren solution exited the carbon column and flowed into a 20L pail. Solution from the pail continuously recirculated through the heap and carbon column. The solution pH and cyanide concentration were measured and maintained at the prescribed levels.

Once the out-flow solution stabilized at an appropriate pH value, cyanide was added to the system. After the addition of cyanide, loaded carbon was removed from the sytem and replaced with fresh carbon according to the intervals indicated in the "Cyanidation results" Carbon was weighed and assayed for Au in order to monitor the rate and degree of gold dissolution and recovery from the master composite. At the termination of the test period, the cyanide solution was stopped pumping through the column. 30L pH 9.5-10 water was used to wash the residue. The cyanide concentration of the out-flow wash water was monitored. The washing of the residue was stopped till the cyanide concentration of the out-flow was at a considerable low level after 7 days. The barren solution and wash solution were submitted for Au analysis.

The column was allowed to drain completely after completing the washing period. The leached MC residue was dumped and the wet weight recorded. The entire mass was dried and a 20 kg portion was carefully riffled out and crushed to -10 mesh. The assay sample were riffled out from the -10 mesh material and assayed for gold in triplicate. The average gold grade of the three gold assays was used for the metallurgical balance.

Heap Leach (Column) Test Configuration



CL-1 **CAVM-50269-001** **Operator** Bruce **Date** 1-Oct-12

Purpose: To examine the recovery of gold by Heap Leaching the Master Composite

Procedure: The procedure is detailed on the "Test Procedure" worksheet in this workbook.

Feed: 50,000 g of -3/4" Master Composite (agglomerated) **Carbon:** 25 g, replaced as indicated in the metallurgical balance.

Leach Solution: **Agglomeration:** 3.2 kg/t lime
Total Volume: 20 L on Day = 0 10 kg/t Portland Cement

Composition: 0.5 g/L NaCN (maintained throughout) **Final Moisture:** 13.9 %

On-Flow Rate: 3 mL/minute. Equivalent to10 L/h/m^2 **Ore Height:** 2.09 m
2.07 m

pH Range: 10.5 - 11.0 (maintained with Lime). **Change:** -0.96 %

Reagent Addition (kg/t of cyanide feed) NaCN: 0.35 CaO: 2.65
Reagent Consumption (kg/t of cyanide feed) **NaCN: 0.15** **CaO: 2.62**

Time, Days	Added, Grams				Residual		Consumed		Solution Flow		pH		
0 = Mon. Oct 01,2012	Actual		Equivalent		Grams		Grams		mL/min		On-flow		Out-
10:00 AM	NaCN	$Ca(OH)_2$	NaCN	CaO	NaCN	CaO	NaCN	CaO	On-flow	Out-flow	Start	End	flow
pH Stabilization													
0 - 1		168.90	0.00	128.36			0.00		9.0*	3.2	11.5	11.4	11.4
* - The flow rate was set at 3x the flow rate (3ml/min) for the leaching test													
* - The flow rate was reduced to 3 ml/min when out-flow was noticed													
* - The pH and flow rate were stablized on Oct 2 and then 10.1 gram NaCN was added into the barren solution													

Cyanidation:

Time, Days	Added, Grams				Residual		Consumed		Solution Flow		pH		
0 = Tue. Oct 2, 2012	Actual		Equivalent		Grams		Grams		mL/min		On-flow		Out-
10:30 AM	NaCN	$Ca(OH)_2$	NaCN	CaO	NaCN	CaO	NaCN	CaO	On-flow	Out-flow	Start	End	flow
0 - 1	10.11	0.00	10.00	0.00	5.15		4.85		3.0	3.0	11.4	11.3	11.3
1 - **2**	4.90	0.00	4.85	0.00	7.64		2.36		3.0	3.2	11.5	11.4	11.4
2 - **3**	2.39	0.00	2.36	0.00	10.86		-0.86		3.0	2.8	11.5	11.3	11.2
3 - **4**	0.00	0.00	0.00	0.00	11.68		-0.83		3.0	3.0	11.3	11.3	11.2
4 - **7**	0.00	0.00	0.00	0.00	12.88		-1.20		2.9	2.8	11.3	11.3	11.3
7 - 10	0.00	0.00	0.00	0.00	12.42		0.46		2.9	2.8	11.3	11.2	11.2
10-13	0.00	0.00	0.00	0.00	11.96		0.46		1.4	1.4	11.1	11.1	11.1
13 - 14	0.00	0.00	0.00	0.00	11.78		0.18		3.0	3.0	11.1	11.1	11.2
14 - **15**	0.00	0.00	0.00	0.00	11.78		0.00		3.1	3.0	11.1	11.1	11.1
15 - 17	0.00	0.00	0.00	0.00	11.32		0.46		3.0	3.0	11.1	11.1	11.2
17 - 21	0.00	0.00	0.00	0.00	11.22		0.09		2.8	2.6	11.1	11.1	11.2
21 - 24	0.00	0.00	0.00	0.00	10.49		0.74		3.0	3.0	11.0	11.0	11.1
24 - **30**	0.00	0.00	0.00	0.00	9.84		0.64		2.9	2.9	11.1	11.1	11.1
		0.00	0.00	0.00	9.84	1.20	5.16						
Total	17.40	168.90	17.2	128.36	9.84	1.20	7.4	127	2.85	2.81			

Start - End refer to the times indicated in the first column on the left (i.e., Time, Days).

Cyanidation Results:

Product		**Amount (g)**	**Assays, g/t, mg/L**		**% Extraction**		Adjusted to include Barren and Wash Solutions	
			Au	**Ag**	**Au**	**Ag**	Au	Ag
Loaded Carbon	Day 2	25.88	2810.0		33.8		34.0	
Loaded Carbon	Day 4	25.79	2710.0		66.2		66.4	
Loaded Carbon	Day 7	25.99	1380.0		82.8		83.1	
Loaded Carbon	Day 10	25.67	193.0		85.1		85.4	
Loaded Carbon	Day 15	25.60	124.0		86.6		86.8	
Loaded Carbon	Day 17	25.49	34.4		87.0		87.2	
Loaded Carbon	Day 21	25.66	46.0		87.6		87.8	
Loaded Carbon	Day 24	25.24	25.4		87.9		88.1	
Loaded Carbon	Day 30	25.65	42.6		88.4		88.6	
Loaded Carbon	Day 37	25.55	36.6		88.8		89.0	
Final Barren Solution	Day 30	19.5 L	0.01		0.1			
Wash Solution		30.0 L	< 0.01		0.1			
Final Residue**		48.5 kg	0.49		11.0			
Head (calc.)		48.5 kg	4.44	0.0	11.2			

* The test was terminated after 30 days.
The fresh (Final) Cabron replaced the Day 30 Carbon and stayed in place while the column residue was washed and drained.
** Final Residue was assayed in triplicate. Average value was used in the calculation.

Additional Analyses

Element	Unit	Solutions Assays		Carbon	
		Day 10	Final	Unit	Assays Day 10
Ag	mg/L	<0.08	<0.08	ppm	289
Al	mg/L	<0.9	<0.9	%	<0.01
As	mg/L	<2	<2	ppm	32
Ba	mg/L	1.18	1	ppm	82
Be	mg/L	<0.002	<0.002	ppm	<0.5
Bi	mg/L	<1	<1	ppm	<5
Ca	mg/L	286	259	%	1
Cd	mg/L	<0.3	<0.3	ppm	6
Co	mg/L	<0.3	<0.3	ppm	<1
Cr	mg/L	0.3	0.2	ppm	<1
Cu	mg/L	1.71	2.44	ppm	47.3
Fe	mg/L	<0.2	<0.2	%	<0.01
Hg		N/A	N/A	ppm	6
K	mg/L	25	35	%	0.01
La		N/A	N/A	ppm	0.8
Li	mg/L	<2	<2	ppm	<1
Mg	mg/L	<0.07	0.2	%	0.03
Mn	mg/L	<0.04	<0.04	ppm	3
Mo		N/A	N/A	ppm	<1
Na	mg/L	93	97	%	0.03
Ni	mg/L	<1	<1	ppm	74
P	mg/L	<5	<5	%	<0.01
Pb	mg/L	<2	<2	ppm	2
S		N/A	N/A	%	0.01
Sb	mg/L	<3	<3	ppm	<5
Sc		N/A	N/A	ppm	<0.5
Sn	mg/L	<2	<2	ppm	<10
Sr	mg/L	1.38	1.05	ppm	25.1
Ti	mg/L	<0.02	<0.02	%	<0.01
V	mg/L	<0.2	<0.2	ppm	<1
W	mg/L	<3	<3	ppm	<10
Y	mg/L	<0.02	<0.02	ppm	<0.5
Zn	mg/L	18	15	ppm	447
Zr		N/A	N/A	ppm	<0.5