



Report

To: Mike Smith **Date:** March 17th, 2008
From: Jennifer Parry
Copies: L. Bond, M. Bryan, D. Unruh, S. Lawrence, B. Deschamps and Y. Yamagishi
Subject: Producing NAG Bulk Rougher Tailings

Summary

The purpose of these flotation tests was to determine how best to produce NAG tailings using only the bulk rougher circuit. This will require the concentrates from cells 5 and 6 to report to the scavenger tailings box while increasing pyrite recovery on cells 4, 5 and 6. The most effective means of increasing the NPR of the bulk rougher tails was a combination of high xanthate and a stronger frother. Lowering the pH also improved sulphide flotation kinetics. The most promising activators were copper sulphate, copper sulphate + ammonia, Danafloat 233, and Danafloat 571; however, their impact on sulphide flotation was relatively small. A second set of tests was done using the most promising conditions from the first set of tests. These tests were performed with shorter flotation times to reflect residence times in the plant. Based on the second set of tests, NPRs of 3-5 would be possible from the bulk rougher circuit by using high xanthate, a stronger frother and a lower pH on the last half of the rougher circuit.

See recommendations section for proposed plant trials.

Procedure

MZX SAG feed belt samples from January 17th, 2008 were used as charges. The samples were crushed to 95% -12 mesh and split into 1224g samples. The ball charge was 6 kg. 800 ml of reclaim water was added to achieve a 60 % pulp density. The grinding time was 32 minutes for all tests which produced a particle size distribution similar to that in the mill on January 17th. Twenty-nine flotation tests were performed. The tails pulp density averaged 35%, the air flow rate was 4 lpm and the agitator speed was 1200 rpm. The flotation tests are listed in Table 1.

Table 1. Flotation conditions

1) Standard (regular 5.5g/t KAX-51; only X7002 frother; pH 10; no reagents during condition 3)
2) Repeat standard on second day of tests
3) Repeat standard on third day of tests
Tests 5-22 used more xanthate. KAX-51 dosages were as follows:
Grind- 2.5g/t
Condition 2- 1.5g/t
Condition 3- 8g/t (10g/t for #22)
Condition 4- 8g/t (10g/t for #22)
Frother was added as follows:
Condition 1: 2g/t X7002
Condition 2: 2g/t X7002
Condition 3: 2g/t Tenefroth 250

Condition 4: 2g/t Tennefroth 250	
4)	pH 10 for all 6 floats
5)	pH 9 for all 6 floats
6)	pH 8.5 for all 6 floats
7)	pH 8 for all 6 floats
8)	pH 7.5 for all 6 floats
9)	pH 10 (3 floats); pH 9 (3 floats)
10)	pH 10 (3 floats); pH 8.5 (3 floats)
11)	pH 10 (3 floats); pH 8 (3 floats)
12)	pH 10 (3 floats); pH 9 (3 floats) + 3g/t CuSO4
13)	pH 10 (3 floats); pH 8 (3 floats) + 7g/t CuSO4
14)	pH 10 (3 floats); pH 8 (3 floats) + 3g/t CuSO4
15)	pH 10 (3 floats); pH 8 (3 floats) + 3g/t CuSO4 with ammonia
16)	pH 10 (3 floats); pH 9 (3 floats) + Danafloat571 (1g/t)
17)	pH 10 (3 floats); pH 9 (3 floats) + Danafloat245 (1g/t)
18)	pH 10 (3 floats); pH 9 (3 floats) + Danafloat233 (1g/t)
19)	pH 10 (3 floats); pH 9 (3 floats) + Danafloat571 (3g/t)
20)	pH 10 (3 floats); pH 9 (3 floats) + Danafloat245 (3g/t)
21)	pH 10 (3 floats); pH 9 (3 floats) + Danafloat233 (3g/t)
22)	pH 10 for all 6 floats with 10g/t PAX each cond 3 and 4 instead of 8g/t
Shorter Flotation Tests (NAG reagents added after 1 minute)	
23)	pH 10 (all 5 floats)
24)	pH 9 (all 5 floats)
25)	pH 10 (2 floats); pH 8.5 (3 floats)
26)	pH 10 (2 floats); pH 8.5 (3 floats) + CuSO4 (3g/t)
27)	pH 10 (2 floats); pH 8.5 (3 floats) + CuSO4+ammonia (3g/t)
28)	pH 10 (2 floats); pH 8.5 (3 floats) + Danafloat 233 (3g/t)
29)	pH 10 (2 floats); pH 8.5 (3 floats) + Danafloat 571 (3g/t)

Table 2 shows the flotation times for the long (#1-22) and short (#23-29) float tests.

Long Flotation Tests (#4-22)			Short Flotation Tests (#23-29)		
Stage	Time (min)	Reagents Added	Stage	Time (min)	Reagents Added
Grind	32	Lime, KAX-51	Grind	32	Lime, KAX-51
Condition 1	2	X7002	Condition 1	2	X7002
Float 1	1		Float 1	½	
Float 2	1		Condition 2	2	Lime, KAX-51, X7002
Condition 2	2	Lime, KAX-51, X7002	Float 2	½	
Float 3	1		Condition 3	2	As per table 1: Lime or acid, KAX-51, Tennefroth250, CuSO4 or Danafloat if used
Condition 3	2	As per table 1: Lime or acid, KAX-51, Tennefroth250, CuSO4 or Danafloat if used	Float 3	1	
Float 4	1		Condition 4	2	As per table 1: Lime or acid, KAX-51, Tennefroth250
Condition 4	2	As per table 1: Lime or acid, KAX-51, Tennefroth250	Float 4	1	
Float 5	1.5		Float 5	1	
Float 6	1.5				

Results and Discussion

A table of results is given in the appendix. A summary is shown in table 3.

Table 3. Results of the tests

Test	Concentrate			Tails				Recovery		
	% Cu	% Fe	% S	% Cu	% Fe	%S	NPR	% Cu	% Fe	%S
1-Standard	2.7	18.7	11.4	0.017	7.1	0.24	5.8	97.6	39.9	92.4
2-Standard	2.8	15.6	10.8	0.016	7.8	0.35	4.4	97.6	31.8	87.7
3-Standard	2.7	15.7	10.0	0.016	7.2	0.37	3.3	97.6	34.7	86.9
4-pH 10	2.2	17.9	10.8	0.014	6.6	0.05	41.7	98.1	46.6	98.5
5-pH 9	2.8	19.4	10.8	0.015	6.3	0.06	29.4	97.7	41.4	97.6
6-pH 8.5	2.6	18.3	8.7	0.016	6.9	0.07	27.9	97.5	40.5	97.1
7-pH 8	2.6	19.3	9.3	0.018	6.6	0.09	19.4	97.3	41.0	96.2
8-pH 7.5	2.8	20.0	14.1	0.017	6.8	0.09	18.0	97.4	40.3	97.2
9-pH 10;pH 9	2.4	17.9	10.8	0.013	6.5	0.06	33.0	97.9	41.5	98.0
10-pH 10;pH 8.5	2.5	17.7	10.2	0.013	6.7	0.06	26.6	98.0	40.7	97.8
11-pH 10;pH 8	2.5	18.4	9.5	0.012	6.6	0.07	23.2	98.2	42.7	97.2
12-pH 10;pH 9+3/gt CuSO4	2.8	20.0	12.0	0.014	6.5	0.06	35.8	98.1	44.0	98.0
13-pH 10;pH 8+7/gt CuSO4	2.7	19.7	12.3	0.014	6.7	0.07	33.2	98.1	43.3	97.8
14-pH 10;pH 8+3/gt CuSO4	2.9	19.7	12.5	0.013	6.5	0.07	30.3	98.0	40.4	97.7
15-pH 10;pH 8+3/gt CuSO4 w/ ammonia	3.0	19.5	12.4	0.014	7.5	0.07	31.6	97.8	35.8	97.4
16-pH 10;pH 9 + 1g/t Danafloat571	2.7	19.2	10.5	0.013	7.5	0.06	59.4	97.9	37.2	97.7
17-pH 10;pH 9 + 1g/t Danafloat245	2.6	21.2	11.3	0.013	7.4	0.06	60.9	97.9	40.7	97.9
18-pH 10;pH 8+1g/t Danafloat233	2.6	16.4	11.8	0.013	6.2	0.06	35.1	98.0	40.0	98.0
19-pH 10;pH 8+3/gt Danafloat571	2.7	19.3	11.1	0.013	7.4	0.10	44.0	98.1	39.8	96.6
20-pH 10;pH 8+3g/t Danafloat245	2.5	19.2	10.7	0.013	6.4	0.06	32.3	98.1	43.8	98.0
21-pH 10;pH 9 + 3g/t Danafloat233	2.6	19.7	11.9	0.013	6.7	0.06	30.5	98.0	42.0	98.1
22-pH 10 all concs; extra 4g/t PAX	2.6	19.4	10.8	0.013	7.4	0.05	92.3	98.0	38.5	98.0
23-pH 10 all concs (short)	2.9	16.5	12.2	0.017	7.0	0.09	13.1	97.5	35.5	96.8
24-pH 9 all concs (short)	3.0	16.9	14.6	0.020	7.2	0.11	10.8	97.1	34.5	96.6
25-pH 10(2) ;8.5(3) (short)	3.2	18.4	13.3	0.018	7.2	0.11	11.8	97.3	34.1	96.0
26-pH 10 ;8.5; 3g/t CuSO4 (short)	3.1	18.1	13.0	0.018	7.0	0.10	12.6	97.2	34.8	96.3
27-pH 10 ;8.5; 3g/t CuSO4 +ammonia (short)	3.2	18.3	13.5	0.019	7.0	0.11	11.5	97.2	34.9	96.3
28-pH 10 ;8.5; 3g/t D233 (short)	3.1	17.2	13.5	0.018	7.3	0.11	11.4	97.3	33.4	96.3
29-pH 10 ;8.5; 3g/t D571 (short)	3.0	17.7	12.9	0.018	6.2	0.10	14.2	97.3	38.3	96.7

Tests #23-29 had shorter flotation times and should be compared separately from the other tests. The average % iron in the standard tests was 16.7% compared to 19.1% in the NAG tests (#4-22), so the effect of extra pyrite from cell 4 on the cleaner circuit should be manageable. Ideally, cells 1-3 could be pulled harder to compensate for copper losses in cells 5 and 6.

Effect of Xanthate

Figure 1 plots cumulative sulphur recovery versus flotation time for different dosages of xanthate.

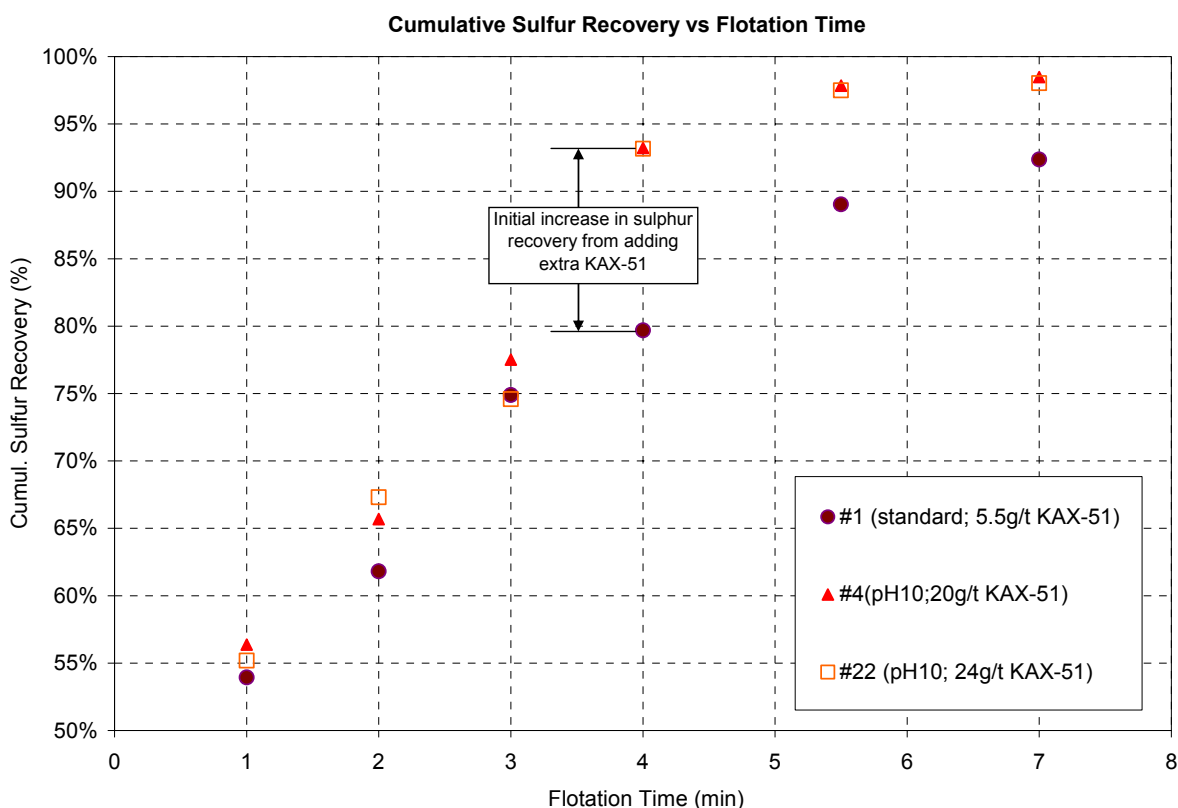


Figure 1. Sulphur Recovery vs. Lab Flotation Time by KAX-51 Dosage

Extra xanthate and a stronger frother were added after 3 minutes of flotation for tests #4 and 22. The pH was maintained at 10 and no activators were added. The standard test showed a much smaller increase in cumulative sulphur recovery after the next minute of flotation than the tests where extra xanthate was added. The difference was also reflected in higher NPRs for the final tails of tests #4 and #22. The extra xanthate is necessary in order to recover both chalcopyrite and pyrite. The use of xanthate is likely more important than the use of a stronger frother, as the froth did not appear significantly different when using Tennenfroth250 instead of X7002.

Figure 2 plots the estimated NPR of the tails after each flotation stage, i.e. NPR after 1 minute flotation, 2 minute flotation, etc. The actual NPR obtained in the plant is closer to that after two minutes rather than after seven minutes, as the laboratory flotation tests are done to completion (flotation with infinite capacity). In the case of these tests, NAG reagents were not added until after three minutes so the plant NPRs cannot be predicted for different conditions. Tests #23-29 were conducted using a shorter flotation time to get a better prediction for plant NPR.

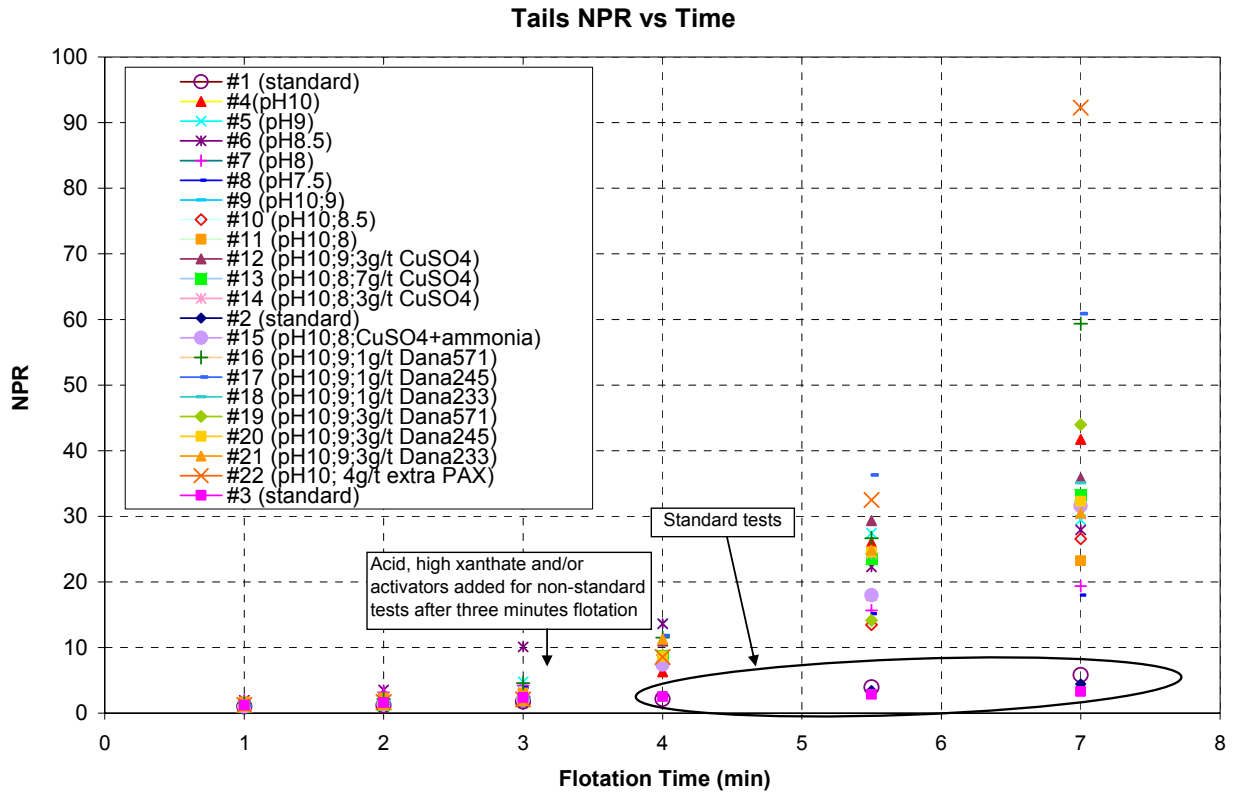


Figure 2. Tailings NPR vs. Lab Flotation Time

In Figure 2, the three standard tests all have NPRs less than 6 at the completion of the test; while the tests run with modifications to produce NAG all had NPRs greater than 18. Again, as these float tests are at ‘infinite’ recoveries, the final NPR should be used to compare the standard to the modified tests rather than to predict the actual NPRs in the plant.

Effect of pH and Activators

Lime is used to depress pyrite in the bulk circuit. In order to reverse the depressing effect of the lime, sulphuric acid can be added to reduce the pH. Tests #4-8 were run at different constant pHs while the remaining tests were conducted at pH 10 for 3 minutes of flotation followed by a lower pH for the remainder of the test. The tests with two different pHs simulate how the pH would be controlled in the mill; however, tests #4-8 provided information on the effect of low pH while there were still high levels of sulphides left in the ore. Copper sulphate and copper sulphate mixed with ammonia (more reactive) were tested as activators. The copper sulphate forms copper ions which activate the pyrite. Three dialkyl dithiophosphate reagents provided by Quadra were also tested: Danafloats 233, 245 and 571. These are actually collectors but are referred to as activators in this report to differentiate them from xanthate.

Figure 3 plots the sulphur grade of each concentrate (not the cumulative grade). This was done to see whether there were any spikes in sulphide flotation after the NAG reagents (acid, xanthate and/or an activator) were added.

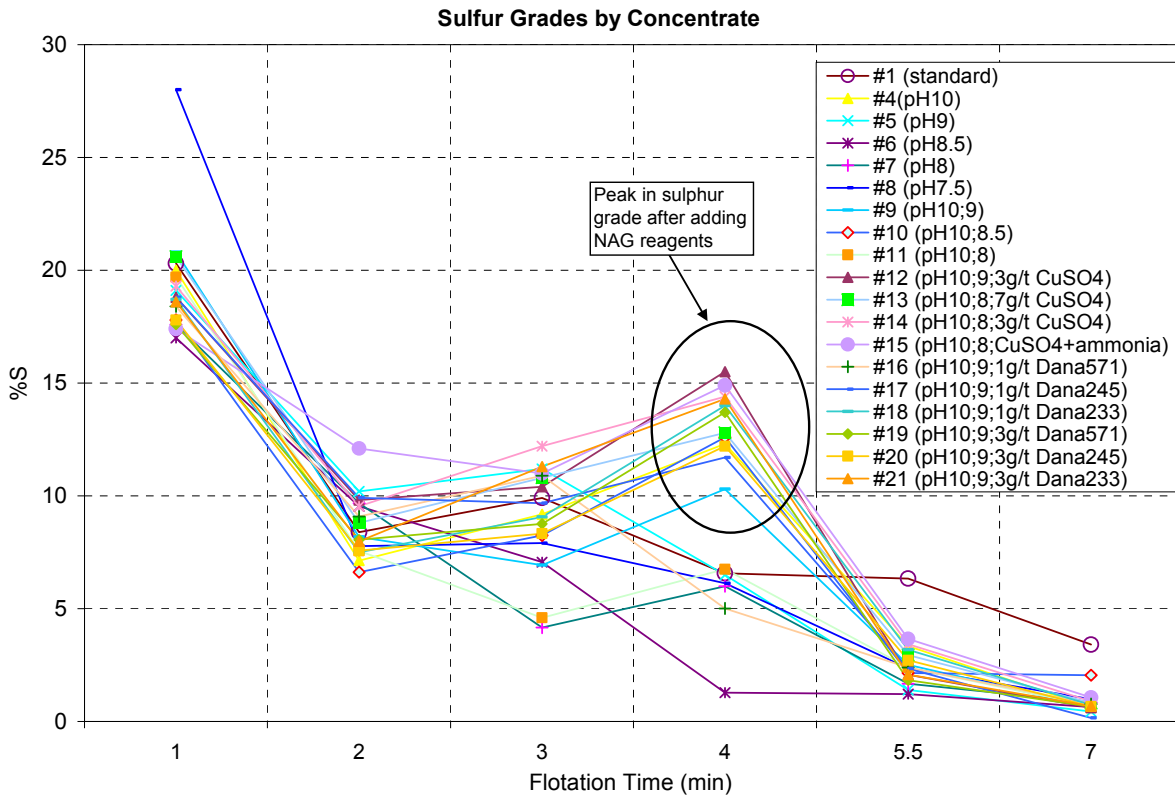


Figure 3. Sulfur Grades for Each Concentrate

Most tests had a peak in sulphur grade in the fourth concentrate. In general, the peaks occur for tests where the pH was changed after the third flotation stage. The peaks were not present for the standard test and were generally not present for the constant pH tests. The peaks were particularly high for tests using copper sulphate (3g/t), copper sulphate + ammonia (3g/t), Danafloat 233 (1-3g/t) and Danafloat 571 (3g/t). However, this increase in grade did not always correlate to differences in final sulphur recovery and NPR (see Figures 2 and 5).

Figure 4 shows that pH had an effect on sulphur recovery. Tests #1 and 4 are the same except that additional xanthate and a stronger frother were used for #4 after the third flotation stage. The other tests were conducted at lower pHs with additional xanthate and a stronger frother also being added after the third flotation stage. Tests #1 and 4 at pH 10 had lower sulphur recoveries than the tests at lower pHs during the first three stages of flotation, although test #4 caught up once extra xanthate was added.

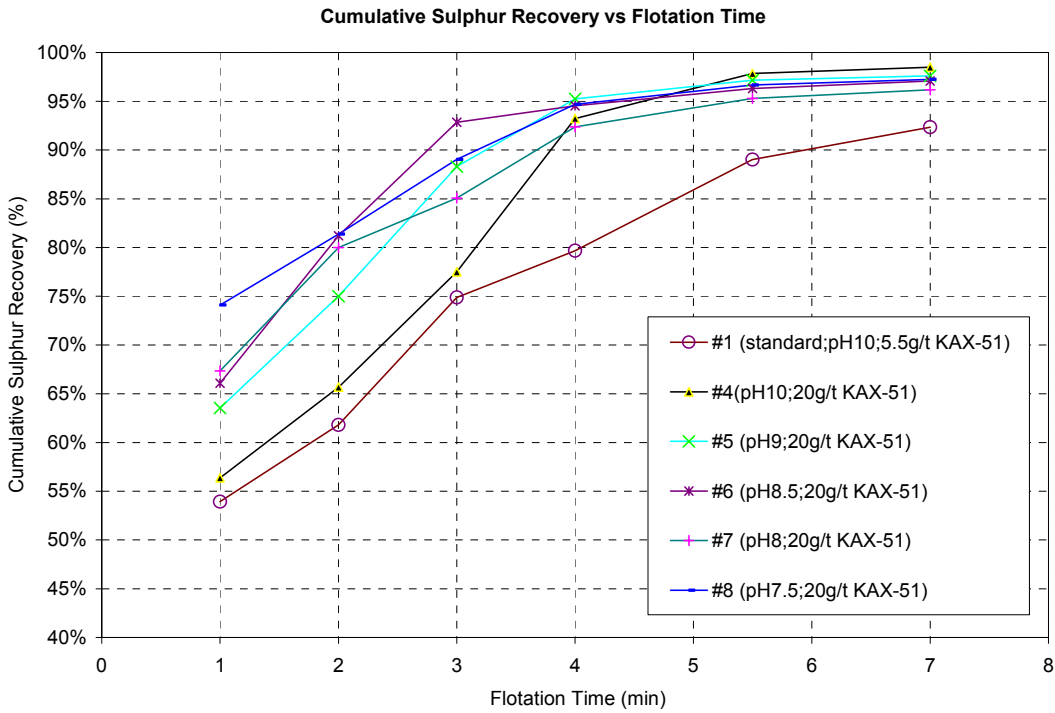


Figure 4. Cumulative Sulphur Recovery vs. Time by pH

Figure 5 plots cumulative sulphur recovery vs. flotation time for the #1 standard and for tests at pH 10 (3 floats) then 9 (3 floats) using different activators.

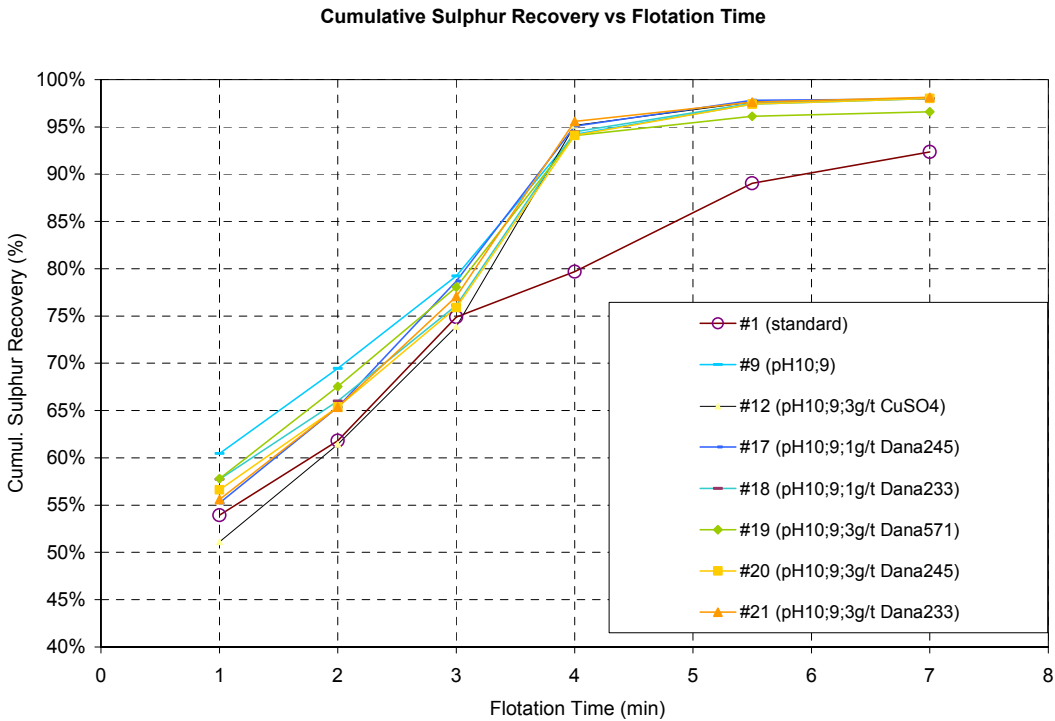


Figure 5. Cumulative Sulphur Recovery vs. Time by Activator

For tests #9,12,17-21, the pH was dropped to 9 from 10 after the third flotation stage. At this point, additional xanthate was added and a stronger frother was used for the remainder of the test. The biggest difference on this graph is between the #1 standard (all pH 10, no extra xanthate) and the other tests. The curve for test #9, in which no activator was added, overlaps with tests #12 and 17-21, suggesting that the most important factors are extra xanthate and pH modification rather than the use of an activator. However, the grade vs. time graphs for sulphur and iron showed higher grades for concentrate #4 when using an activator, so the more promising activators were used in tests #23-29 to determine whether small improvements in sulphur recovery and NPR might be possible.

Figure 6 plots cumulative sulphur recovery for the shorter float tests.

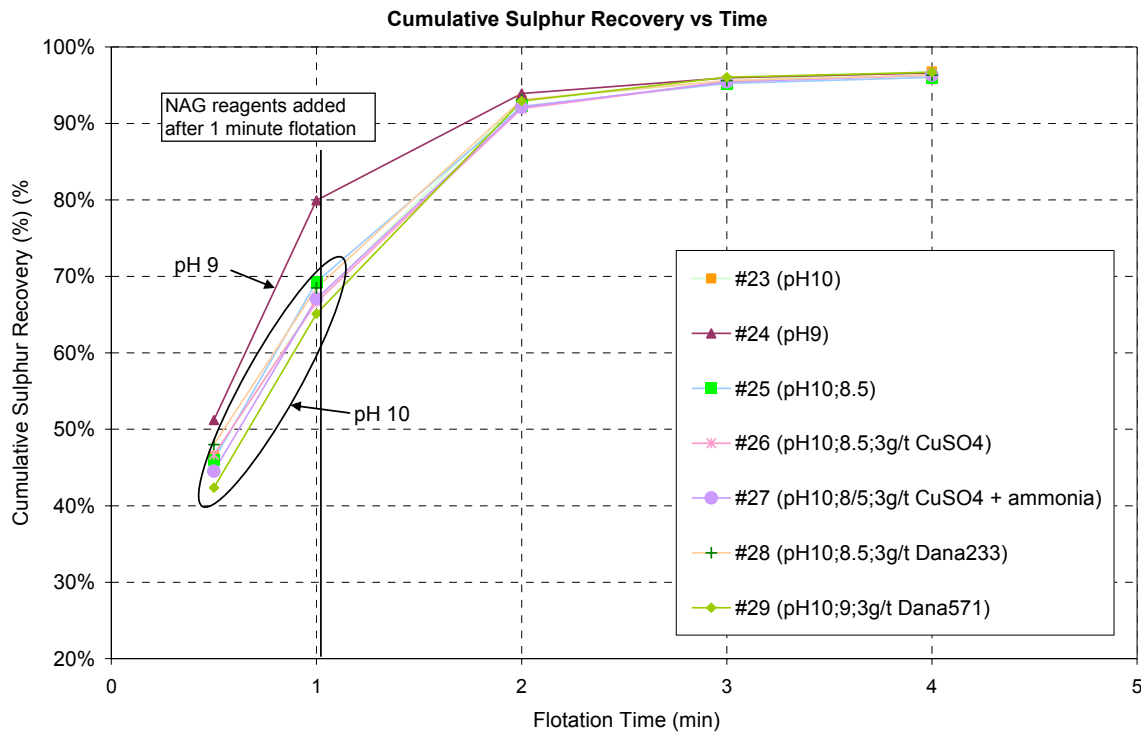


Figure 6. Cumulative Sulphur Recovery vs. Time (Short Float Tests)

Test #24 at pH 9 had faster sulphide flotation kinetics than the tests that started at pH 10, indicating there would be some benefit to lowering the pH to 9. There was no improvement from lowering the pH to 8.5 from 10 mid-ways through the test; however, most of the sulphur has floated by this point, so the differences would be harder to see. The activators did not appear to improve sulphur recovery.

NPR Estimation

The shorter flotation tests were designed to better simulate the plant by making changes (modifying pH, adding more KAX-51, using activators) after one minute of flotation rather than after three minutes. The lab flotation time required to reach plant recovery on January 17th for the long flotation tests ranged from 93 to 124 seconds. This is a wide range, so it was difficult to get

a good estimate for plant NPR. The range is shown by a red arrow on Figure 7. Figure 7 plots tailings NPR vs. lab flotation time.

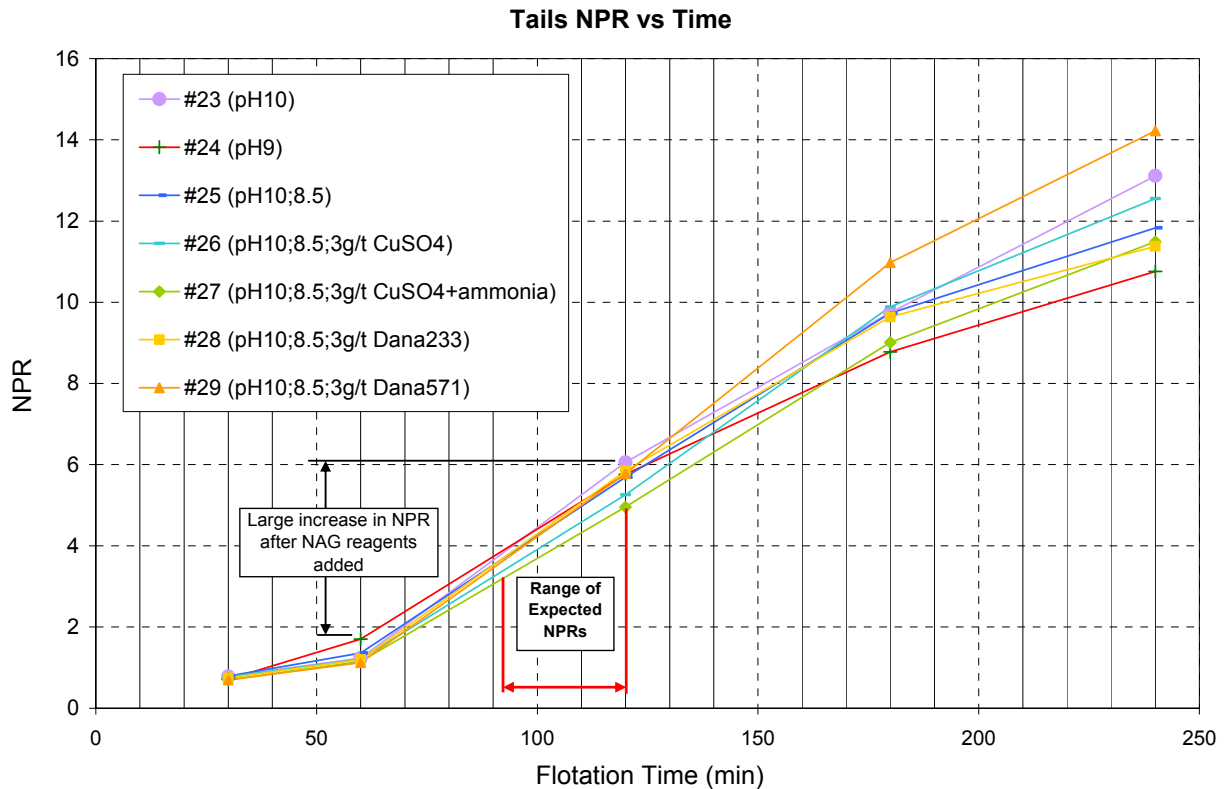


Figure 7. NPR of Tailings vs. Lab Flotation Time

There is a large increase in the tailings NPR after reagents for producing NAG are added. This is promising for results in the mill. Obviously, the best results will occur the earlier higher xanthate, a strong frother and a lower pH are used in the rougher circuit; however, this will depend on the ability of the cleaner circuit to reject the excess pyrite. The higher NPR value at 60 seconds for test #24 reflects the accelerated pyrite flotation from using a pH of 9 rather than 10 for the first two flotation stages. This shows that lowering the pH can improve sulphide flotation kinetics. There is a sharp jump in NPR between 1 and 2 minutes of lab flotation time, so the predicted NPR varies widely depending on the flotation time used. More work needs to be done to link laboratory test results to plant performance.

Recommendations

- Use 8g/t KAX-51 on each of rougher 4 centre well and rougher 5 tails. If the cleaner circuit cannot handle the extra xanthate and pyrite then the addition points will need to be moved to rougher 4 tails and rougher 5 tails.
- Perform plant trials at both a regular pH 10 and pH 9 to determine whether acid addition is necessary, as the effect of pH on NPR was less than that of xanthate and frother.
- Use a stronger frother on cells 5 and 6. While Tennifer 250 was used for the lab float tests, W31 (a frother from Huntsman) has a higher molecular weight, so it should be used

for the plant trials. Based on previous experience with the NAG plant, a higher frother dosage will be required than was used for the lab tests.

- Plant trials should focus on using only extra xanthate, a stronger frother and pH modification as the activators showed smaller benefits in the lab tests. If an activator is tested, the first one to try should be CuSO_4 mixed with ammonia as the materials are currently on-site, it has shown promise in previous plant trials and was one of the better activators for the lab flotation tests.

The following diagram shows the possible sample addition points on cells 3, 4, 5 and 6.

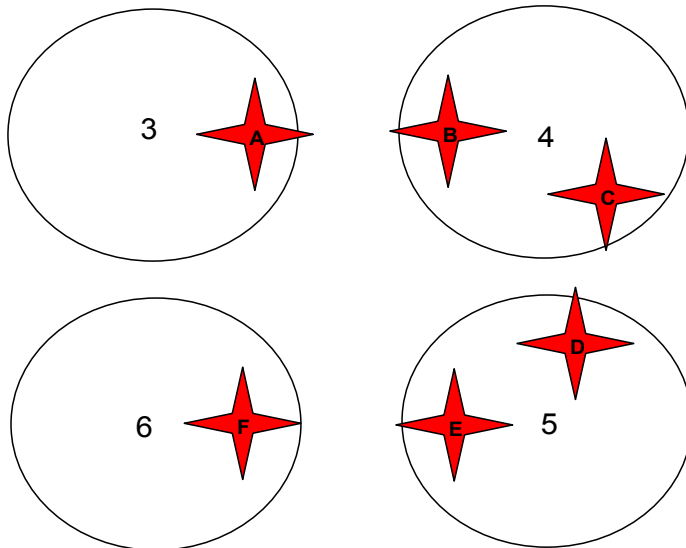


Figure 8. Reagent Addition Points

Xanthate and sulphuric acid must be added at different points to prevent carbon disulphide gas formation. The slurry pH will need to be checked frequently at the cell 6 tails box to keep it close to pH 9. The bulk operator would need to be notified of sudden changes in tonnage in order to keep a steady pH. A peristaltic pump will be used to meter the sulphuric acid in order to keep a steady, easily adjusted flow of sulphuric acid without fittings that could result in leaking/spraying away from the discharge point. Adding the sulphuric acid at point A would provide good conditioning time in cell 4 and keep the pure acid separate from the xanthate addition points. 8g/t xanthate would be added to the cell 4 centre well (by closing the left valve on the current KAX-51 distributor at point C). This would provide some conditioning time in cell 4. The additional pyrite floated in cell 4 from the lower pH and extra xanthate would need to be rejected in the cleaner circuit. If the cleaner circuit is unable to handle the extra pyrite, xanthate would need to be added to the rougher 4 tails instead. A stronger frother (either Tenniferth250 or W31) should be added to point D from a tote in the reagent bay using either the second peristaltic pump or the spare fuel oil pump. An additional 8g/t of xanthate should be added at point E using the existing xanthate pump for the NAG plant.

If the NAG plant becomes operational in spring 2008, cell 5 could be used as part of the bulk circuit again. Based on previous experience with the NAG plant, it would be useful to continue using cell 6 to supplement the NAG plant flotation capacity.

APPENDIX

Run No.	Sample	Date	Calculated Feed				Concentrate			Tails				Recovery		
			% Solids	% Cu	% Fe	% S	% Cu	% Fe	% S	% Cu	% Fe	%S	NPR	% Cu	% Fe	%S
1	1-Standard	Feb. 15th, 2008	35.6	0.549	9.45	2.49	2.65	18.68	11.41	0.017	7.11	0.239	5.83	97.6	39.9	92.4
2	2-Standard	Feb. 16th, 2008	34.5	0.544	9.29	2.33	2.81	15.63	10.81	0.016	7.82	0.353	4.44	97.6	31.8	87.7
3	3-Standard	Feb. 17th, 2009	34.9	0.541	8.87	2.27	2.69	15.66	10.03	0.016	7.21	0.370	3.28	97.6	34.7	86.9
4	4-pH 10	Feb. 15th, 2008		0.553	9.36	2.67	2.23	17.91	10.83	0.014	6.61	0.054	41.71	98.1	46.6	98.5
5	5-pH 9	Feb. 15th, 2008	35.9	0.529	8.71	2.05	2.78	19.37	10.77	0.015	6.27	0.061	29.41	97.7	41.4	97.6
6	6-pH 8.5	Feb. 15th, 2008	36.6	0.534	9.19	1.83	2.56	18.32	8.74	0.016	6.86	0.067	27.93	97.5	40.5	97.1
7	7-pH 8	Feb. 15th, 2008	36.6	0.524	9.09	1.86	2.64	19.34	9.28	0.018	6.64	0.088	19.36	97.3	41.0	96.2
8	8-pH 7.5	Feb. 15th, 2008	35.6	0.532	9.31	2.72	2.76	20.03	14.11	0.017	6.84	0.092	17.99	97.4	40.3	97.2
9	9-pH 10;pH 9	Feb. 15th, 2008	34.5	0.500	8.80	2.26	2.40	17.88	10.83	0.013	6.46	0.057	33.00	97.9	41.5	98.0
10	10-pH 10;pH 8.5	Feb. 15th, 2008	35.3	0.526	9.01	2.17	2.48	17.66	10.22	0.013	6.74	0.060	26.56	98.0	40.7	97.8
11	11-pH 10;pH 8	Feb. 15th, 2008	35.8	0.538	9.05	2.07	2.51	18.36	9.53	0.012	6.57	0.074	23.22	98.2	42.7	97.2
12	12-pH 10;pH 9+3/gt CuSO4	Feb. 16th, 2008	32.7	0.582	9.20	2.47	2.82	19.98	11.96	0.014	6.47	0.061	35.80	98.1	44.0	98.0
13	13-pH 10;pH 8+7/gt CuSO4	Feb. 16th, 2008	35.3	0.564	9.38	2.59	2.69	19.72	12.29	0.014	6.70	0.071	33.24	98.1	43.3	97.8
14	14-pH 10;pH 8+3/gt CuSO4	Feb. 16th, 2008	35.9	0.530	8.88	2.32	2.86	19.73	12.50	0.013	6.47	0.065	30.33	98.0	40.4	97.7
15	15-pH 10;pH 8+3/gt CuSO4 w/ ammonia	Feb. 16th, 2008	35.3	0.538	9.62	2.25	2.98	19.50	12.40	0.014	7.50	0.071	31.57	97.8	35.8	97.4
16	16-pH 10;pH 9 + 1g/t Danafloat571	Feb. 16th, 2008	35.3	0.527	9.73	2.02	2.74	19.22	10.50	0.013	7.53	0.058	59.37	97.9	37.2	97.7
17	17-pH 10;pH 9 + 1g/t Danafloat245	Feb. 16th, 2008		0.505	10.03	2.22	2.57	21.20	11.31	0.013	7.36	0.057	60.89	97.9	40.7	97.9
18	18-pH 10;pH 8+1g/t Danafloat233	Feb. 17th, 2008	35.2	0.530	8.26	2.43	2.57	16.35	11.78	0.013	6.21	0.060	35.10	98.0	40.0	98.0
19	19-pH 10;pH 8+3/gt Danafloat571	Feb. 17th, 2008	35.6	0.554	9.80	2.33	2.69	19.29	11.11	0.013	7.39	0.099	43.97	98.1	39.8	96.6
20	20-pH 10;pH 8+3g/t Danafloat245	Feb. 17th, 2008	34.7	0.534	9.08	2.26	2.52	19.17	10.65	0.013	6.44	0.057	32.28	98.1	43.8	98.0
21	21-pH 10;pH 9 + 3g/t Danafloat233	Feb. 17th, 2008	34.7	0.519	9.30	2.40	2.57	19.72	11.88	0.013	6.72	0.056	30.46	98.0	42.0	98.1
22	22-pH 10 all concs; extra 4g/t PAX	Feb. 17th, 2008	35.3	0.516	9.74	2.13	2.62	19.40	10.82	0.013	7.43	0.052	92.28	98.0	38.5	98.0
23	23-pH 10 all concs (short)	Feb. 24th, 2008	35.7	0.558	8.75	2.37	2.89	16.52	12.17	0.017	6.95	0.094	11.00	97.5	35.5	96.8
24	24-pH 9 all concs (short)	Feb. 24th, 2008	34.2	0.555	8.93	2.76	2.96	16.89	14.62	0.020	7.15	0.114	8.80	97.1	34.5	96.6
25	25-pH 10(2) ;8.5(3) (short)	Feb. 24th, 2008	36.1	0.558	9.10	2.34	3.22	18.41	13.31	0.018	7.21	0.112	9.29	97.3	34.1	96.0
26	26-pH 10 ;8.5; 3g/t CuSO4 (short)	Feb. 24th, 2008	36.0	0.548	8.94	2.31	3.11	18.14	13.00	0.018	7.03	0.103	9.60	97.2	34.8	96.3
27	27-pH 10 ;8.5; 3g/t CuSO4 +ammonia (short)	Feb. 24th, 2008	36.5	0.553	8.90	2.38	3.17	18.31	13.52	0.019	6.98	0.106	9.04	97.2	34.9	96.3
28	28-pH 10 ;8.5; 3g/t D233 (short)	Feb. 24th, 2008	36.3	0.552	9.01	2.46	3.07	17.20	13.53	0.018	7.27	0.110	8.96	97.3	33.4	96.3
29	29-pH 10 ;8.5; 3g/t D571 (short)	Feb. 25th, 2008	36.3	0.551	8.21	2.38	3.01	17.66	12.90	0.018	6.16	0.096	10.36	97.3	38.3	96.7