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Progress Report on Grieves Siding Testwork for October – November 2007

1. Laboratory Processing.

Testwork during the processing period was frustrating due to the variances in recovered zinc. A range of acid levels were tried together with various quantities of sodium hydroxide in order to see if consistent results could be obtained. Also the trials were conducted over a range of time periods to see if there was some benefit from allowing long reaction times. The ore was checked in both static and agitated environments again to check for variations. The temperature of the process solution was altered using the exothermic reaction of the higher strength acid together with varying pulp densities.

In summary it appeared that the zinc was dissolved and reformed into other complexes during this process. It is pretty well confirmed from the testwork that the offending complexes are silica based and that the zinc form bonds to or with this silica during the various reagent level tests. Also it became evident that the consequential pH changes had some bearing on this erratic behaviour.

In researching "The Extractive Metallurgy of Zinc", R. J. Sinclair describes the problem. Although he is looking at a concentrate the same problems appear in the testwork on the ore. The pH of the ore in the ground ranges from 2.4 to 5.5 depending upon its location. This covers the range that extends from the high stability point of orthosilicic acid to its point of least stability. That is, it covers the range where orthosilicic acid is breaking down and precipitating silica from solution. It is reasonable therefore to run tests to see if by controlling the pH to promote the movement of silica into solution it could be removed from complicating the zinc recovery process and reduce acid consumption.

2. Acid costs.

Based on the results to date the acid cost appears to be the greatest impediment to a viable operation. Considerable effort has been undertaken to source other suppliers in Korea and India. We are currently awaiting a response.

Also to give some incentive to acid suppliers we have added the planned requirements of Proto Resources and Alichem Limited which takes the annual requirement to a level approaching 250,000 tonnes, a sizeable contract for any supplier.

The target price for the acid is in the \$50.00 per tonne range for 98% sulphuric acid. Apparently the demand from South America for a fertiliser base is causing the price increase. This however seems in conflict with information received stating that Korean suppliers were looking to subsidise the freight cost in order to get rid of the excess.

3. Summary and Recommendations.

The work during the reporting period was slowed down due to the sudden illness of Dr Neil Allen's wife who was diagnosed with an aggressive cancer. Neil was obviously traumatised by this discovery and so I thought it only reasonable to allow him some time to deal with the situation.

Neil has stoically soldiered on with work when he was not at the hospital and it appears that the comprehensive work done over the past two months has shown some light on the reasons for the high acid consumption.

The costs of the works for the period are well below the budgeted \$24,000 for October to \$16,000 and it is recommended that testwork be extended to the end of the current year in order to reach some finality to the process options.

This extension would result in an estimated additional cost of around \$32,000.

We believe that there is a reasonable prospect of success in achieving economic recovery of the zinc. The pH control tests will be critical in this process together with achieving an acid price in the \$50 – 70 per tonne range.

Frank Rogers
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