XPS Consulting & Testwork Services

Plant Scale Trials

The Ability to Measure

As Mineral Processors and Process Engineers we are always looking for opportunities to improve the performance of our operations. Prior to any changes in the mill circuit that could potentially increase grade and/or recovery of the pay metal a plant trial is undertaken. This may take the form of an “on - off” trial where the condition being tested, for example a new flotation collector, is turned on and the plant is run for a set period of time. It is then turned off and the plant is run under standard conditions for a set period of time. We can then evaluate whether the circuit change had a positive effect on the response variables (grade and recovery). The challenge with this approach is in the validation of the results. We are looking for relatively small improvements or changes in recovery from a dataset of extremely noisy data. Returning to our flotation collector example, how can we tell if the change in recovery is due to the effect of the new collector or just due to the natural variability of the plant recovery? The potential gains (or losses) in revenue from making the wrong call off of the back of a plant trial could be huge so it’s important to statistically validate any plant trial results before making any circuit changes permanent.

Features…

- Design of on-off testing with reference distributions
- Independent data sets
- Statistical testing
- Clear proofs

This method was successfully used by XPS at the Raglan mine, Quebec, to determine whether the replacement of Potassium Amyl Xanthate by Sodium Isobutyl Xanthate would improve metallurgical performance (Lotter et al., 2010). This work proved a 1% recovery gain in nickel and copper, and 2.7 and 1.8% gains for Pt and Pd respectively. The test statistics from Analysis of Variance proved these gains to be very significant.

Lotter, N.O., Di Feo, A., Kormos, L.J., Fragomeni, D., and Comeau, G., Design and Measurement of Small Recovery Gains: a Case Study at Raglan Concentrator, *Minerals Engineering,* 23, (2010), pp. 567-577.

A GLENCORE COMPANY

XPS Consulting & Testwork Services
6 Edison Road, Falconbridge, Ontario, Canada P0M 1S0

+1 705 699 3400 Fax: +1 705 699 3431
info@xps.ca
www.xps.ca