

Summary

- 1) reliability of model agreed and hole spacing being decreased but there still are basic limits to what is possible. Either the sampling procedure (clustering salt benches pts) has limitations or possible grade control this
- 2) a) grade control is agreed but there is little that can be done here. 20' high benches are too wide spaced to mine at a 6% cutoff but not at a 4% cutoff. The cost to go to say 10' benches would probably outweigh the gain in selectivity - we now essentially mine to somewhere to a 4 to 6 % cutoff, why not go to 4%. Another possible help would be  $\geq 10'$  samples but assay costs & data handling problem not to mention winning allow.
- b) Bench optimization is now possible in AV/BY - previous modeling methods precluded this

3) Blashtile sampling - Again that the current technique is inadequate, furthermore in winter it will be very difficult. Should implement automatic samplers on drills and train drillers to use them / force them to use them, will increase work demand on drillers but reduce demand for technicians. Must design a system that is easy to use and doesn't slow drills down. Bolander has a method, old CANAC method not good as drillers faked samples. Never CANAC plan calling for rods to drill deck worth trying. No. 5 logs could get top 1/2 bottom 1/2 with proper design

4) Blashtile chips relate well to lithology observable in pit where only a few major types can be mapped. Very useful adjunct to face mapping if and only if the face mapping is done. Geophysical logging would be possible as there are major differences between ore and waste in density, sometimes conductivity and probably in some cases radioactivity. Conventional geophysical logging could help with structure but not grade as <sup>then</sup> grade varies independently of other parameters. Bolander's X-Ray fluorescence method may be adaptable to Blashtiles but they don't use it for that. Geoph. logging obviously expensive not certain its worth it since would have to add not reduce technician support to process data being major technology input to data gathering / processing

5) Agreed data gathering without use is worthless. Geology Dept is proceeding along a good path but slowly - suggest consulting with Ed to speed up process. More time being spent programming than required to do job manually for now but long term savings likely

Recommendations

- 1) agreed.
- 2) a) agreed should be tried
- b) ok can use new holes
- c) variations have not been too helpful yet but working on this
- 3) lithologic distinction hasn't been an insurmountable problem - wining method seems to handle it especially close low grade distinction is the problem and sampling method can't handle this (at a low wining method)
- 4) agreed - must be
- 5) agreed - especially as to methods - need to develop a tradition of periodic in the interpretation and the timely reporting

Herewith are some comments on the major points of Teal Jardines report and what is underway to deal with the issues.

Point 1: Reliability of the mine model It is agreed that the current model is not able to provide accurate detailed predictions. The following procedures have been implemented to deal with this issue.

- a) drill hole spacing has been decreased especially in the area of AV phase where ore will be produced soon.
- b) a new modeling technique will be used that will model the deposit as small blocks with corresponding small composite intervals. The small blocks will be averaged together into larger mining unit blocks. The larger blocks ~~would~~ will thus incorporate waste or low grade sulphide dilution.
- c) The compositing method of one contact to one contact within a drillhole will be discontinued in favor of a compositing of all material between given elevation limits. This should reduce the problem of overestimation grade at deposit margins.

There are basic limits to the accuracy obtainable in mine modeling. To evaluate these limits for Faro and other deposits it is proposed to hire a geostatistical consultant to review our modeling procedures and make suggestions for improvements. A geostatistical study of Faro and Gran will be undertaken and the applicability of Kriging as an interpolation method established. Quantification of estimation variance and the link between drill hole spacing and the reliability of estimates will be established if data is sufficient. This will provide some quantified guidance for the decision whether to decrease drill spacing further in the remaining AV / BX phase area.

## Point 2: Grade control

The limits of the truck-shovel method are certainly fundamental. Experience has shown however with some situations, partial benches of identifiable waste can be selectively mined in local situations using chutes and front-end loaders, if they are available. Control of such identifiable waste has not been a major problem in the JB phase. The biggest problem is control of low grade sulphide or waste sulphide dilution. These materials are not obvious in the

Pit and can only be evaluated through blasthole assays. A blasthole averages grade through a bench and in cases such as JB where very high grade zones <sup>are sharply bounded and</sup> are not thick enough to constitute an entire bench. Low grade material is inherently averaged into the sample and stacked out for mining. This results in significantly more tonnes of "high grade" ore that averages lower grade than anticipated.