TA3060 Mining Engineering
Final Exam, November 3th, 2010
Open Pit Section – Time 1.5 hours
This is an open book exam

Students are required to answer any three of the following five questions. All questions are of equal value.

1. A. Demonstrate your understanding of stripping ratios at the various stages of an open pit mining operation by defining and discussing the following:
   - The ultimate or Cut-off stripping ratio in the context of both a low and a high value orebody.
   - The overall stripping ratio
   - The operating stripping ratio.

   B. Describe three cut-off grade decisions which have to be made from the design to the operational phases of an open pit.

2. A. One of the most important aspects of maintaining efficiency in a large tonnage open pit mine is the design of the shovel-truck interface. Discuss briefly 4 important factors you would consider in ensuring the operation has the most efficient loading system possible.

   B. Describe three additional aspects of a mine operation you would consider in attempting to "optimize" the operation.

3. A. Attracting high risk capital to the exploration stage of the mining industry is an important requirement of future success. To ensure success in attracting such investment it is important to secure the confidence of the individual investor by protection of investor rights. In Canada that protection is provided by the Securities Commissions through 43-101. Discuss briefly three items you consider an important part of the 43-101 regulations.

   B. Discuss briefly the relation between compliance monitoring, effects monitoring and mitigation in ensuring the predicted environmental effects of a mining operation are met

4. A. Describe the concept of "Net Smelter Return" and discuss at what stages of the mining operation it is considered important in decision making.
   B. Discuss the problems which may result in using "equivalent grade" as the basis of assigning economic value to a block model to be used as the basis of an ultimate pit design.

5. Answer the following short questions on drilling and blasting operations at an open pit mine.

   A. Define blast delay scatter, how it might affect your blasting efficiency, and what is being done to improve it?
   B. How would you define an adequate bailing velocity and why is it important?

C. How would you modify the burden and spacing by the choice of hook-up used in a blast layout?
D. What are a couple of advantages and disadvantages of larger blasthole sizes?
E. What three factors define drill productivity?