

TA3060 Mining Engineering
Final Exam, October 28th, 2008
Open Pit Section – Time 1.5 hours
This is an open book exam

People following TA3060 may answer any three of the following five questions. All questions are of equal value. People who are rewriting TA3110 may answer any three questions from questions 1, 4, 5 or 6

1. The secret to successful and low cost open pit mining is to carry out efficient and low cost unit operations in drilling, blasting, loading and haulage and to maximize the efficiency of the interfaces between those operations. Describe 5 recent or ongoing factors or trends in open pit mining which are intended to achieve these goals.
2.
 - A. Describe the process of establishing a final pit limit using a computer assisted method and discuss the implications of this design to the project economics.
 - B. Describe how intermediate pit expansion phases are established and discuss briefly the stripping strategies which might be used to optimize a mining plan within these pit phases.
3.
 - A. Discuss how you would develop a block model in term of establishing the overall grid, the block size and the data needed to be assigned to the individual blocks.
 - B. Discuss briefly the problems associated with developing a revenue projection for a polymetallic orebody and how these problems might be solved.
4.
 - A. Discuss how the required pit geometry and safety regulations place a limitation on increasing the wall angle of an open mine.
 - B. Describe why one would wish to increase the bench height of an open pit mine but give two limitations on doing so.
5. Answer the following short questions on drilling and blasting operations at an open pit mine.
 - A. Define blast delay scatter and how it might affect your blasting efficiency.
 - B. How would you define an adequate bailing velocity?
 - C. How would you modify the burden and spacing by choosing a blast layout?
 - D. What are a couple of advantages and disadvantages of larger blasthole sizes?
 - E. What three factors define drill productivity?

The following question is intended only for persons rewriting TA3110

6. 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.