MinE 306 Mining Exploration and Evaluation

Assignment: Homework 8 – Case Study: the Grace Magnetite Mine
Due: Wednesday, November 30, 2005
Read: Discovery of the Grace Mine Iron Deposit, Pennsylvania Geology, Vol. 33, No. 1. (see course web site)
Mining Engineering Handbook, Howard Hartman, ed. c19xx, chapter 5.2.7, read pages 305-309

REMEMBER TO SHOW FORMULAS AND YOUR WORK, WRITE ANSWERS CLEARLY. Do not answer the crossed out questions.

A. How was the Grace Mine magnetite deposit discovered, why was this unusual and how was the discovery confirmed? (1 point)

B. What controlled ore deposition (the location of mineralization in concentrated form)? (1 point)

C. When was the deposit discovered, drilled, first ore produced, what was the maximum capacity of the mine, total tons produced and when did the mine close?

D. What are the major and minor ore minerals and the predominant gangue minerals? (1 point)

E. What are the ore’s physical characteristics? (1 point)

F. Describe the contact zones between ore and rock. Is the cut off grade boundary sharp or gradual? (1 point)

G. Why is the Elbrook Limestone assumed to be the host rock for the ore deposition?

H. List the geologic events in the formation of the magnetite ore deposit?

I. How many tons of reserves were reported for the Grace Mine deposit? Is the deposit mined out? Why did the mine close? (1 point)

J. What other products were sold from the Grace Mine?

K. At the West Elk coalmine in Colorado, an igneous intrusion to the south of the mine affects the coal rank (the heat from the intrusion coked the coal). Using what you have learned about exploration in the above se articles and other reading, how would you determine where the coal to coke contact zone is? (4 points)

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