Finance 510-B

In-class Exercise to Celebrate Finance Mastery

Your sister's husband, Charles Foster just inherited a 130 acre copper mine in Yavapai County. It is near the Bagdad mine that is owned and operated by Freeport-McMoRan.

He came to you for advice a few months back. You know that copper prices have been rising to historically high levels, so you sent CF away with a few key questions about the mine, and he just came back with the following additional information:

- This mine is part of CF's business empire that is currently very profitable so that it can take advantage of any tax shields from the project when realized. The marginal corporate tax rate for this business is 25%. This business has no debt, is family owned, and uses a cost of equity of 10%.
- Since the mine was just inherited, there are no capital gains tax considerations as concerns selling the mine.
- Geological surveys suggest that the mine can continue to produce at a rate of 750,000 pounds of copper per year for 25 years, before running out of reserves.
- Continuing the mine would require a capital outlay of $2.5 million for equipment that must be depreciated over a 5-year life (under MACRS).
- Although the $2.5 million worth of equipment is depreciated on a 5-year basis, it will have to be replaced after 12 years, at which time it would have 0 salvage value. We can assume that the cost of the equipment would be the same as today. At that point the new equipment should survive for the rest of the mine's productive life. (The new equipment will also be depreciated using 5-year MACRS.)
- Variable costs of running the mine at full capacity amount to $135,000 per month. This includes wages, etc. for extraction and operating the concentrator.
- The mine incurs $5,000 per acre in annual property tax. This is a tax-deductible expense for federal income tax purposes.
- Phoenix-based Minesweepers, Inc. has provided a competitive bid. They are willing to take the mine off our hands provided **we pay them** $1.5 million in a "turn-key" deal. Otherwise we have to continue to operate the mine. So Minesweepers provides our only viable exit strategy, and we can execute it at any time. This is the only regulatorily acceptable way to exit an operating mine, and it would receive a special tax treatment. The $1.5 million payment is not a tax deductible expense and we surrender control over the land and all assets on the land with no residual tax consequences (either positive or negative).
- Currently the spot price of copper is $4.40 per pound. Given uncertainties concerning global trade conditions analysts agree that in one year there is a 30% probability that this price of copper in the US (where all of this mine's output would be sold) will be $6.40 per pound, a 40% probability that the price will be $2.90 per pound, and a 30% chance that this price will be $1.80 per pound. After that the price is likely to fluctuate but these

subsequent fluctuations should be relatively small and copper prices should keep up with inflation over the ensuing 25 years.

1. What advice do you have for CF in this context?
2. Provide a "traditional NPV" analysis.
3. Freeport-McMoran has offered CF $1,000,000 for the mine. Freeport-McMoran has made it very clear that this is a take-it or leave-it offer. Should CF take it? He is inclined to take this offer, as he worries the mine is a boondoggle.
4. Following up on the Freeport-McMoran offer, what would be the maximum price that CF should be willing to pay for an option to have Freeport-McMoran's purchase offer still on the table in one year?