FIN 581 Review Problem

This is a comprehensive project evaluation problem bringing together much of what you have learned in FIN 531 or its equivalent. Suppose you have been hired as a financial consultant to Defense Electronics, Inc. (DEI), a large, publicly traded firm that is the market share leader in radar detection systems (RDSs). The company is looking at setting up a manufacturing plant overseas to produce a new line of RDSs. This will be a five-year project. The company bought some land four years ago for $7.5 million in anticipation of using it as a toxic dump site for waste chemicals, but it built a piping system to safely discard the chemicals instead. The land was appraised last week for $7.7 million. In five years, the after-tax value of the land will be $7.4 million, but the company expects to keep the land for a future project. The company wants to build its new manufacturing plant on this land; the plant and equipment will cost $42 million to build. The following market data on DEI's securities is current:

Debt:	260,000 6.8 percent coupon bonds outstanding, 25 years to maturity, selling for 103 percent of par; the bonds have a $1,000 par value each and make semiannual payments.
Common stock:	9,500,000 shares outstanding, selling for $67 per share; the beta is 1.25.
Preferred stock:	450,000 shares of 5.25 percent preferred stock outstanding, selling for $84 per share and having a par value of $100.
Market:	7 percent expected market risk premium; 3.6 percent risk-free rate.

DEI uses G.M. Wharton as its lead underwriter. Wharton charges DEI spreads of 6.5 percent on new common stock issues, 4.5 percent on new preferred stock issues, and 3 percent on new debt issues. Wharton has included all direct and indirect issuance costs (along with its profit) in setting these spreads. Wharton has recommended to DEI that it raise the funds needed to build the plant by issuing new shares of common stock. DEI's tax rate is 21 percent. The project requires $1,400,000 in initial net working capital investment to get operational.

1. Calculate the project's initial Time 0 cash flow, taking into account all side effects.

2. The new RDS project is somewhat riskier than a typical project for DEI, primarily because the plant is being located overseas. Management has told you to use an adjustment factor of +2 percent to account for this increased riskiness. Calculate the appropriate discount rate to use when evaluating DEI's project.

3. The manufacturing plant has an eight-year tax life, and DEI uses straight-line depreciation. At the end of the project (that is, the end of Year 5), the plant and equipment can be scrapped for $8.5 million. What is the after-tax salvage value of this plant and equipment?

4. The company will incur $7,900,000 in annual fixed costs. The plan is to manufacture 18,000 RDSs per year and sell them at $10,900 per machine; the variable production costs are $9,450 per RDS. What is the annual operating cash flow (OCF) from this project?

5. Finally, DEI's president wants you to throw all your calculations, assumptions, and everything else into the report for the chief financial officer; all he wants to know is what the RDS project's internal rate of return (IRR) and net present value (NPV) are. What will you report?