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This report presents a program summary of the results of a three phased research program entitled "Investment Justification of Robotic Technology in Aerospace Manufacturing." The objective was to develop a computerized economic analysis methodology appropriate for investment justification of robotics and flexible manufacturing systems (FMS) in aerospace manufacturing. A microcomputer-based economic justification methodology was developed, called the "Robotics Investment Decision Model" (RIDM). RIDM's operation is documented in this report and a copy of the software diskette is available from the AFBRMC upon written request. AN INTERMEDIATE KNOWLEDGE OF LOTUS 1-2-3 IS REQUIRED TO OPERATE RIDM ON YOUR MICROCOMPUTER.

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INVESTMENT JUSTIFICATION OF ROBOTIC TECHNOLOGY IN AEROSPACE MANUFACTURING

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October 1984

Final Report and Robotics Investment Decision Model (RIDM) User's Manual
Contract No. F33615-83-C-5080

Prepared for
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EXECUTIVE SUMMARY

This report is the product of a three phase research project entitled "Investment Justification of Robotic Technology in Aerospace Manufacturing". The objective of the project was to develop a microcomputer-based economic analysis methodology suitable for use by U.S. aerospace manufacturers to assess investments in robotics and flexible manufacturing systems.

In Phase I, a nation-wide survey was performed of robotics investment analysis methodologies used or proposed by government, industry, and academia. The survey included discussions with financial, engineering, and management personnel at eight major U.S. aerospace corporations, to determine their needs and constraints, and how a model might best be designed. The Phase I report is available through DTIC--(accession number) AD-A140782.

Phase II was the model development phase. The model was written as a Lotus 1-2-3 template, and is called the "Robotics Investment Decision Model" (RIDM). The Phase II report is also available through DTIC--(accession number) AD-A145467.

Phase III was a review and field test of the model. RIDM was demonstrated to several USAF organizations, and was assessed by a major

U.S. aerospace manufacturer. Internal testing continued, improving RIDM through several format changes, one minor technical change, and adding a few new features. The model is now ready for release to the aerospace industry.

TABLE OF CONTENTS

I. INTRODUCTION

1. The robotics investment decision model (RIDM) is a tool designed for assessing the economic attractiveness of investments in robotics and/or flexible manufacturing systems (FMS). It models the cash flows generated by such an investment, as compared to the existing method of manufacture or other alternative. Required inputs are the costs under both the robotic/FMS approach (new method) and the existing or old method. Additional inputs are required if the user exercises the option in the model to consider changes in work station throughput or differences in value added at the work station. Model outputs are nominal cash flow, discounted cash flow, internal rate of return, and net present value of the investment at the user-specified discount rate. Before tax and after tax analyses are provided by the model.

2. The model is written as a template for Lotus 1-2-3, one of the popular "electronic spreadsheet" programs. The model was developed on the Zenith Z-100 version of Lotus 1-2-3, Release 1A, running under Z-DOS/MS-DOS release 1.01, version 1.25. To use the model as written, you will need a personal computer which can run Lotus 1-2-3, a disk drive that can read the data diskette on which the model has been installed, and 256 kilobytes of random access memory (RAM). Users with less than 256K RAM can still run the model, but may find it necessary to break it into smaller files. The recommended place for the inital break is just before the after tax analysis section. The model enables the user to specify an analysis period of from 3 to 15 years.

3. Most IBM PC and IBM-compatible personal computers will be able to run Lotus 1-2-3 and read the RIDM data diskette on which the model is stored. The exact software and memory requirements for using the model will depend upon the versions of Lotus 1-2-3 and DOS that your system uses. Newer versions of DOS (Version 2.0) and Lotus (Release 1A) have more features and require more memory than earlier versions. The preferred RAM availability remains 256K.

4. Use of the model requires an intermediate knowledge of Lotus 1-2-3. The model's structure and commands have been kept as simple as possible, to ensure the broadest use throughout industry and to enable the user to modify the model as required to reflect special circumstances of a company or robotic/FMS application. The model contains no range names. All cell references are relative.

5. RIDM assesses the inherent economic attractiveness of robotic/FMS implementation. The model is based on real economic events and not on how those events are accounted for. For example, the cost of robot hardware is considered to be its purchase price (plus shipping, set up, etc.) plus the interest expense for any funds borrowed to make the purchase. An account-based approach would treat the depreciation expense as the cost. RIDM models the true economic return, both before and after taxes. It does not directly model the impact upon company financial statements, as would an account-based approach. However, RIDM is structured in a way which facilitates modifications to perform additional analyses. Altough few computer skills are required to effectively use the model, the user should have a good working knowledge of engineering economy concepts such as

discounting, internal rate of return, and net present value.

6. RIDM does not address the multitude of special considerations imposed when doing business with the Federal Government under cost-based contracts. Primary among these are the impacts of government cost accounting standards (CAS) upon cash flows and the impact of cost changes upon prices. The Tech Mod/IMIP Model, recently developed by Logistics Management Institute (and sometimes called the LMI Discounted Cash Flow Model), directly addresses these considerations.

II. PROGRAM DESCRIPTION

1. This section presents a short description of the Robotics Investment Decision Model. Step-by-step instructions on how to operate the model are presented in the next section.

2. The program software is written as a Lotus 1-2-3 spreadsheet, and a basic working knowledge of Lotus 1-2-3 is prerequisite for using the model. The length of the analysis period (from 3 to 15 years) is specified by the user through a keyboard macro. In response to the user input, the macro automatically constructs the spreadsheet to the desired size, makes required changes to all algorithms, and erases itself when finished to save working memory and disk space. The general structure of the model is in two parts and is summarized below:

a. Before Tax Analysis

   1) Old Method Cost Elements

   2) New Method Cost Elements

   3) Cash Flow from Investment

   4) Internal Rate of Return (IRR) and Net Present Value (NPV)

   5) Production Quantity Adjustment

   6) Adjustment for Changes in Quality or Value Added

   7) Summary of Results of Before Tax Analysis

b. After Tax Analysis

   1) Computation of Depreciation, Investment Tax Credits,

and Tax Savings for Old Method

2) Computation of Depreciation, Investment Tax Credits, and Tax Savings for New Method

3) Summary of Results of After Tax Analysis

3. Each section of the model is described below in more detail.

a. Before Tax Analysis

(1) Old Method Cost Elements

This section is for user inputs on the costs of the existing or baseline manufacturing method.

(2) New Method Cost Elements

This section is for user inputs on the costs of the new or alternative manufacturing method, that is, the robotic or FMS technology.

(3) Cash Flow from Investment

This section is computed by the model. The net cash flow from moving from the old method to the new method is presented for each cost element. The overall net cash flow for each year is also presented.

(4) Internal Rate of Return (IRR) and Net Present Value (NPV)

The model then computes the IRR and NPV of the investment.

(5) Production Quantity Adjustment

This section is optional. It adjusts the cash flow estimates to reflect the differences in throughput (output) between the old and new method. The throughput effect's impact on cash flow is computed by considering the cost per unit of production under each method, and determining how much more or less it would cost under the old method to produce the same amount as under the new method.

(6) Adjustment for Changes in Quality or Value Added

This section is optional. It adjusts the cash flows for the difference in value added at the work station per unit of output.

(7) Summary of Results of Before Tax Analysis

In this section, the model computes and displays the adjusted annual cash flow, cumulative cash flow, adjusted IRR, and NPV of the investment. Annual and cumulative discounted cash flows are also presented. All results reflect before tax conditions.

b. After Tax Analysis

(1) Computation of Depreciation, Investment Tax Credits, and Tax Savings for Old Method

This section of the model computes the depreciation, investment tax credits, and the tax savings from depreciation and non-depreciable business costs for the old method. The required input is the investment schedule for each class of depreciable property. A section is provided for an optional analysis of state and local tax impacts, to be custom designed by the user.

(2) Computation of Depreciation, Investment Tax Credits, and Tax Savings for New Method

This section performs the same function as the previous one, but for the new method. It computes the depreciation, investment tax credits, and the tax savings from depreciation and non-depreciable business costs for the new method. The required input is the investment schedule for each class of depreciable property. A section is provided for an optional analysis of state and local tax impacts, to be custom designed by the user.

(3) Summary of Results of After Tax Analysis

This section computes and displays the annual and cumulative after-tax

cash flow, IRR, NPV, discounted cash flow, and the IRR based on the disounted cash flow.

III. OPERATING INSTRUCTIONS

1. General Instructions

a. The user first specifies the length of the analysis period by accessing a keyboard macro. He then inputs the costs under the old method of production for each year to be considered, and then does the same for the robotic/FMS approach. A list of recommended cost elements is provided for guidance. The model then computes nominal cash flows, that is, the differences in costs, and the internal rate of return (IRR) and net present value (NPV) of the investment. The user is then provided the option of considering differences in throughput between the two alternative methods. After this, there is an option for considering differences in value added at the workstation per unit of production. The model then performs and displays a summary of the before tax analysis, providing undiscounted and discounted cash flows, IRR, and NPV of the investment at a user-specified discount rate.

b. An after tax analysis is performed next. The user inputs the investment schedule for depreciable property, by asset class, for both the old and new methods. The model computes the investment tax credit and accelerated cost recovery system (ACRS) depreciation for each year, and the federal tax impact upon cash flow, for both the old and new methods. Space is provided for custom-built analyses of state and local income taxes under both old and new methods. The last section is a summary report, providing before tax undiscounted cash flow, and the impact upon cash flow from investment tax credits, depreciation, non-depreciable business costs, and

state and local taxes. After tax cash flow is presented by year, as is cumulative cash flow. The after tax IRR is presented, as is the NPV of the investment at the user-specified discount rate. After tax discounted cash flow is presented by year, and then cumulatively by year, followed by the IRR based on the discounted cash flow.

2. Detailed Instructions

a. Getting Started

(1) After accessing the RIDM program file, the user types in "Alt-A", or its functional equivalent (e.g. "Control-Shift-A" on the Zenith Z-100). This will exercise the macro. A statement will appear on the screen instructing the user to enter the number of years to compute, that is, the desired length of the analysis period. The model can accomodate an analysis period of from 3 to 15 years. After the user enters the number, the model will construct the template to the desired size (desired number of analysis years), and then erase the macro. The new template should be saved as the working file, under a name other than "RIDM".

(2) Modifications should not be made to the RIDM program file. The user should wait until the macro has been exercised and erased before making any changes to the template. If for any reason the user decides to change the contents of the RIDM program file, he must also modify the macros to reflect those changes. Depending on the change, failure to do this can prevent the model from executing or cause egregious errors in the computations.

(3) After the working file has been created, the user is encouraged to make any modifications necessary to suit his preferences for format, to meet specific analysis needs, or to reflect the particular circumstances of the manufacturing application being analyzed. All cell references are relative, allowing the user to add, remove, and modify cells in the template knowing that Lotus 1-2-3 will automatically make the necessary reference changes in the rest of the model. After the user makes all desired modifications, the protection option should be exercised for all cells other than input cells.

(4) The remainder of this chapter addresses each of the major sections of the model.

b. "OLD METHOD COST ELEMENTS" and "NEW METHOD COST ELEMENTS"

(1) The first and most important step in using the model is to input the costs of the two alternative manufacturing approaches (the old method and the new method). A separate area of the spreadsheet is provided for each alternative. Cost elements important for robotics/FMS applications are provided for guidance. The user may wish to change some or all of these to reflect company cost tracking and reporting categories, or special aspects of the manufacturing application. The user should feel free to modify the categories as needed, but should be careful that doing so does not lead to double counting. The yearly cost totals should be checked to ensure this.

(2) For cases where a robotic/FMS technology replaces several work

stations, the appropriate costs from each of the old method work stations should be summed to yield a cell total for the old method. Lotus 1-2-3 allows the user to perform this on the worksheet, within each cell. Lotus 1-2-3 also facilitates extrapolation of costs into the future, since it allows extrapolation formulas to be copied across rows. Cost inputs may be in nominal or constant dollars, depending upon the user's analytic preference. An analysis based on nominal costs best exploits the model's capabilities.

(3) We recommend that the user input all costs for both alternatives. Where costs for the old method and new method are the same, the cells may be left empty without affecting the economic analysis results. However, it will result in a distortion of the per unit cost under each method (the per unit cost difference will not be distorted) and will complicate the running of sensitivity analyses later on.

c. "CASH FLOW FROM INVESTMENT"

(1) The third area on the spreadsheet presents the cash flows that would result from moving from the old method to the new method of manufacture. The cell formulas are "plus OLD METHOD minus NEW METHOD", except for salvage value which is a revenue generator. Therefore, its formula is "plus NEW METHOD minus OLD METHOD". If a cost is higher under the new method than the old, the cash flow is negative. If a cost is lower under the new method, the cash flow is positive. For salvage value, the relationship is reversed. The "CASH FLOW FROM INVESTMENT" table shows the cash flows for individual cost elements, and summarizes them for each year

in the analysis period.

d. "NOMINAL, UNADJUSTED IRR AND NPV"

(1) IRR and NPV are computed and displayed by the model. For the NPV computation, the user may use the default value of 20% for the discount rate or input a preferred rate. The IRR and NPV computed here are based on the nominal, undiscounted, before tax cash flow from the previous section.

e. "PRODUCTION QUANTITY ADJUSTMENT (BEFORE TAX)"

(1) This portion of the model provides the user with the option of considering differences in throughput between the old method and new method. The user exercises this option by entering the throughput for each year of the analysis period, for both the old and new method. The model computes and displays for each year: the change in throughput; the percentage change in throughput; the change in production cost per unit; the percentage change in production cost per unit; and the cash flow as modified by the throughput effect.

f. "ADJUSTMENT FOR CHANGES IN QUALITY OR VALUE ADDED"

(1) After the quantity adjustment option, the user is provided the option of adjusting the cash flows for differences in value added at the work station. Differences in value added might result from doing more or less work at the work station under the new method than under the old method, and/or doing the work in such a way as to yield a higher or lower quality finished or intermediate product. For the user to exercise this option, he must enter for each year the change in value added at the work

station, either positive or negative, which will result from the substitution of the new method for the old method of production. This amount can be determined external to the model, or internally by using a formula that references information already on the spreadsheet. For example, change in value added might be entered as a percentage of production cost per unit, referencing this cell in the previous section.

(2) After completion of the value added adjustment, the model computes and displays: the impact of the value added upon cash flow for each year; the new annual cash flow; and in order to indicate the breakeven period, cumulative cash flow for each year in the analysis period. The IRR is presented next, along with the NPV of the investment. The discount rate for the NPV computation may be entered by the user, or the default value of 20% used. Annual and cumulative discounted cash flows are also presented.

g. "AFTER TAX ANALYSIS"; "COMPUTATION OF DEPRECIATION AND INVESTMENT TAX CREDITS"

(1) In this section, the user first inputs the investment schedule for depreciable property, under both the old and new methods. The user inputs the company's investment in each ACRS class of property (3 year, 5 year, 10 year, and 15 year) for each year of the analysis period. The model computes and displays the investment tax credit, the allowable depreciation for each year, and the resulting tax savings. The only limitation in the depreciation section is that the model assumes all investment in 15 year property (real property) is made within the first three years of the project's life. Space has been left in the spreadsheet,

under both the old and new methods, for the user to perform, at his option, a custom analysis of state and local income tax impacts.

(2) Since the tax code frequently changes, the user is advised to periodically update the depreciation and tax computation formulas. For example, modifications to the tax code in 1984 changed the depreciation period for real property from 15 years to 18 years. As of the time of publication of this report, the Treasury Department had not issued regulations on the yearly percentage write-offs for the new 18 year schedule. When these are issued the model's real property depreciation algorithms should be changed accordingly.

1. "SUMMARY OF AFTER TAX ANALYSIS"

(1) This is the last section of the model, and presents the model's final outputs. It presents a summary of the analysis results and contains the information for comparing the economic attractiveness of the two alternatives, and for selecting the preferred option. It presents for each year of the analysis period the before tax undiscounted cash flow (adjusted for any throughput and quality differences), and the impact upon this cash flow of each of the tax impacts. The after tax IRR is presented, along with the NPV of the investment at the user-specified discount rate.

(2) The model then computes the annual and cumulative discounted after tax cash flows, and the after tax IRR based on the discounted cash flows.

IV. APPENDICES

Appendix A

Sample RIDM Application

ROBOTICS/FMS INVESTMENT
DECISION MODEL
(Lotus 1-2-3 FLN:RIDM)

OLD METHOD COST ELEMENTS	OLD METHOD YEAR 1	OLD METHOD YEAR 2	OLD METHOD YEAR 3	OLD METHOD YEAR 4	OLD METHOD YEAR 5
Equipment Purchase					
Equip. Ship. & Install.					
Special Tooling					
Fixtures					
Programming					
Supplies & Material					
Equipment Maintenance	1500	1650	1815	1997	2196
Equipment Repair	5000	5500	6050	6655	7321
Equipment Overhaul			10000		
Facilities Modifications					
Manufacturing Labor	75000	81000	87480	94478	102037
Engineering Labor	1000	1080	1166	1260	1360
Production Control	5000	5400	5832	6299	6802
Shop Supervision					
Material Handling					
Inspection					
Training					
Inventory Costs	10000	10000	10000	10000	10000
Scrap & Rework	15000	15000	15000	15000	15000
Floor Space Costs					
Other MFG. Overhead Costs					
Engineering Overhead					
Administrative Costs					
Property Taxes					
Utilities					
Interest (Cost of borrowed $)					
Other Expenses					
Equipment Salvage Value					
TOTAL COST, OLD METHOD	$112,500.00	$119,630.00	$137,343.40	$135,688.17	$144,716.26

NEW METHOD COST ELEMENTS	NEW METHOD YEAR 1	NEW METHOD YEAR 2	NEW METHOD YEAR 3	NEW METHOD YEAR 4	NEW METHOD YEAR 5
Equipment Purchase	350000				
Equip. Ship. & Install.	50000				
Special Tooling	70000				
Fixtures	10000				
Programming	30000				
Supplies & Material					
Equipment Maintenance	10000	3000	3300	3630	3993
Equipment Repair	5000	3000	3300	3630	3993
Equipment Overhaul					
Facilities Modifications	15000				
Manufacturing Labor	20000	21600	23328	25194	27210
Engineering Labor	2500	2700	2916	3149	3401
Production Control	1000	1080	1166	1260	1360
Shop Supervision					
Material Handling					
Inspection					
Training					
Inventory Costs	3000	3150	3308	3473	3647
Scrap & Rework	3000	3000	3000	3000	3000
Floor Space Costs					
Other MFG. Overhead Costs					
Engineering Overhead					
Administrative Costs					
Property Taxes					
Utilities					
Interest (Cost of borrowed $)					
Other Expenses					
Equipment Salvage Value	50000				
TOTAL COST, NEW METHOD	$519,500.00	$37,530.00	$40,317.90	$43,336.11	$46,604.01

CASH FLOW FROM INVESTMENT

	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5
Equipment Purchase	-350000	0	0	0	0
Equip. Ship. & Install.	-50000	0	0	0	0
Special Tooling	-70000	0	0	0	0
Fixtures	-10000	0	0	0	0
Programming	-30000	0	0	0	0
Supplies & Material	0	0	0	0	0
Equipment Maintenance	-8500	-1350	-1485	-1634	-1797
Equipment Repair	0	2500	2750	3025	3328
Equipment Overhaul	0	0	10000	0	0
Facilities Modifications	-15000	0	0	0	0
Manufacturing Labor	55000	59400	64152	69284	74827
Engineering Labor	-1500	-1620	-1750	-1890	-2041
Production Control	4000	4320	4666	5039	5442
Shop Supervision	0	0	0	0	0
Material Handling	0	0	0	0	0
Inspection	0	0	0	0	0
Training	0	0	0	0	0
Inventory Costs	7000	6850	6693	6527	6353
Scrap & Rework	12000	12000	12000	12000	12000
Floor Space Costs	0	0	0	0	0
Other MFG. Overhead Costs	0	0	0	0	0
Engineering Overhead	0	0	0	0	0
Administrative Costs	0	0	0	0	0
Property Taxes	0	0	0	0	0
Utilities	0	0	0	0	0
Interest (Cost of borrowed $)	0	0	0	0	0
Other Expenses	0	0	0	0	0
Equipment Salvage Value	50000	0	0	0	0
NOMINAL CASH FLOW (NCF)	($407,000.00)	$82,100.00	$97,025.50	$92,352.07	$98,112.25

INTERNAL RATE OF RETURN = -0.04

DISCOUNT RATE = 0.20

NPV OF INVESTMENT= ($142,037.58)

PRODUCTION QUANTITY ADJUSTMENT
(BEFORE TAX)

PRODUCTION QUANTITY, OLD METHOD	OLD METHOD YEAR 1	OLD METHOD YEAR 2	OLD METHOD YEAR 3	OLD METHOD YEAR 4	OLD METHOD YEAR 5
GROSS ANNUAL THROUGHPUT (GAT)	1000	1000	1000	1000	1000
AVERAGE COST PER UNIT(CPU)	$112.50	$119.63	$137.34	$135.69	$144.72

PRODUCTION QUANTITY, NEW METHOD	NEW METHOD YEAR 1	NEW METHOD YEAR 2	NEW METHOD YEAR 3	NEW METHOD YEAR 4	NEW METHOD YEAR 5
GROSS ANNUAL THROUGHPUT (GAT)	300	1250	1250	1250	1250
AVERAGE COST PER UNIT(CPU)	$1,731.67	$30.02	$32.25	$34.67	$37.28

PRODUCTION QUANTITY ADJUSTMENT RESULTS
NEW METHOD AS COMPARED TO OLD METHOD

	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5
CHANGE IN GROSS THROUGHPUT	-700	250	250	250	250
% CHANGE IN GROSS THROUGHPUT	-70.0%	25.0%	25.0%	25.0%	25.0%
CHANGE IN PRODUCTION COST/UNIT	$1,619.17	($89.61)	($105.09)	($101.02)	($107.43)
% CHANGE IN PROD COST/UNIT	1439.3%	-74.9%	-76.5%	-74.4%	-74.2%
CASH FLOW AFTER ADJUSTMENT FOR CHANGE IN PROD QUANTITY	($485,750.00)	$112,007.50	$131,361.35	$126,274.11	$134,291.31

ADJUSTMENT FOR CHANGES IN
QUALITY OR VALUE ADDED

	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5
CHANGE IN VALUE ADDED PER UNIT AT THE WORK STATION UNDER NEW METHOD	$0.00	$0.00	$0.00	$0.00	$0.00
CASH FLOW IMPACT OF VAL ADDED	$0.00	$0.00	$0.00	$0.00	$0.00
CASH FLOW, VAL ADDED ADJUSTED	($485,750.0)	$112,007.5	$131,361.4	$126,274.1	$134,291.3
CUM CASH FLOW, VAL ADD ADJSTED	($485,750.0)	($373,742.5)	($242,381.2)	($116,107.0)	$18,184.3

IRR (ADJUSTED)= 0.01

DISCOUNT RATE = 0.20

NPV OF INVESTMENT (ADJUSTED)= ($136,124.64)

	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5
DISCOUNTED CASH FLOW (CONTINUOUS DISCOUNTING)	($397,698.46)	$75,080.87	$72,092.64	$56,738.61	$49,403.01
DISCOUNTED CUM. CASH FLOW	($397,698.46)	($322,617.59)	($250,524.95)	($193,786.34)	($144,383.33)

AFTER TAX ANALYSIS

COMPUTATION OF DEPRECIATION, INVESTMENT TAX CREDITS, & TAX SAVINGS

INVESTMENT IN DEPRECIABLE ASSETS	OLD METHOD YEAR 1	OLD METHOD YEAR 2	OLD METHOD YEAR 3	OLD METHOD YEAR 4	OLD METHOD YEAR 5
3 Yr Property (Specl. Tooling)					
5 Yr. Property (Most Equipt.)					
10 Yr Property					
15 Yr. Property (facilities)					
TOT DEPRECIABLE INVESTMENT	$0.00	$0.00	$0.00	$0.00	$0.00
COMPUTE FED INVEST TAX CREDITS:					
3 Yr Property	0	0	0	0	0
5 Yr Property	0	0	0	0	0
10 Yr Property	0	0	0	0	0
TOT FED INVESTMENT TAX CREDIT	$0.00	$0.00	$0.00	$0.00	$0.00
DEPRECIATION 1ST YR BASIS					
3 Yr Property	0	0	0	0	0
5 Yr Property	0	0	0	0	0
10 Yr Property	0	0	0	0	0
15 Yr Property	0	0	0	0	0
COMPUTE ANNUAL DEPRECIATION:					
3 Yr Property	0	0	0	0	0
5 Yr Property	0	0	0	0	0
10 Yr Property	0	0	0	0	0
15 Yr Property	0	0	0	0	0
ANNUAL DEPRECIATION	$0.00	$0.00	$0.00	$0.00	$0.00
FED TAX SAVINGS FROM DEPREC.	$0.00	$0.00	$0.00	$0.00	$0.00
FED TAX SAVINGS FROM NON-DEPRECIABLE BUSINESS COSTS	$15,525.00	$68,787.25	$78,972.46	$78,020.70	$83,211.85

	OLD METHOD YEAR 1	OLD METHOD YEAR 2	OLD METHOD YEAR 3	OLD METHOD YEAR 4	OLD METHOD YEAR 5
STATE & LOCAL INCOME TAXES					

INVESTMENT IN DEPRECIABLE ASSETS	NEW METHOD YEAR 1	NEW METHOD YEAR 2	NEW METHOD YEAR 3	NEW METHOD YEAR 4	NEW METHOD YEAR 5
3 Yr Property (Specl. Tooling)	70000				
5 Yr. Property (Most Equipt.)	360000				
10 Yr Property					
15 Yr. Property (facilities)	15000				
TOT DEPRECIABLE INVESTMENT	$445,000.00	$0.00	$0.00	$0.00	$0.00
COMPUTE FED INVEST TAX CREDITS:					
3 Yr Property	4200	0	0	0	0
5 Yr Property	36000	0	0	0	0
10 Yr Property	0	0	0	0	0
TOT FED INVESTMENT TAX CREDIT	$40,200.00	$0.00	$0.00	$0.00	$0.00
DEPRECIATION 1ST YR BASIS					
3 Yr Property	67900	0	0	0	0
5 Yr Property	342000	0	0	0	0
10 Yr Property	0	0	0	0	0
15 Yr Property	15000	0	0	0	0
COMPUTE ANNUAL DEPRECIATION:					
3 Yr Property	16975	25802	25123	0	0
5 Yr Property	51300	75240	71820	71820	71820
10 Yr Property	0	0	0	0	0
15 Yr Property	1800	1500	1350	1200	1050
ANNUAL DEPRECIATION	$70,075.00	$102,542.00	$98,293.00	$73,020.00	$72,870.00
FED TAX SAVINGS FROM DEPREC.	$32,234.50	$47,169.32	$45,214.78	$33,589.20	$33,520.20
FED TAX SAVINGS FROM NON-DEPRECIABLE BUSINESS COSTS	$34,270.00	$17,263.80	$18,546.23	$19,934.61	$21,437.84

	NEW METHOD YEAR 1	NEW METHOD YEAR 2	NEW METHOD YEAR 3	NEW METHOD YEAR 4	NEW METHOD YEAR 5
STATE & LOCAL INCOME TAXES					

SUMMARY OF AFTER TAX ANALYSIS:

	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5
UNDISC. CASH FLOW (BEF TAX)	($485,750.00)	$112,007.50	$131,361.35	$126,274.11	$134,291.31
ADJUSTMENTS TO CASH FLOW FROM TAX IMPACTS:					
NON-DEPRECIABLE BUSINESS COSTS	$18,745.00	($51,523.45)	($60,426.22)	($58,086.09)	($61,774.00)
INVESTMENT TAX CREDIT	$40,200.00	$0.00	$0.00	$0.00	$0.00
DEPRECIATION DEDUCTIONS	$32,234.50	$47,169.32	$45,214.78	$33,589.20	$33,520.20
STATE & LOCAL TAXES	$0.00	$0.00	$0.00	$0.00	$0.00
AFTER TAX CASH FLOW (UNDISC)	($394,570.50)	$107,653.37	$116,149.91	$101,777.22	$106,037.51
AFTER TAX CASH FLOW CUMULATIVE (UNDISC)	($394,570.50)	($286,917.13)	($170,767.22)	($68,990.00)	$37,047.50
INTERNAL RATE OF RETURN (AFTER TAX, UNDISC)	0.037				

DISCOUNTED CASH FLOW ANALYSIS:

DISCOUNT RATE: 0.20

	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5
AFTER TAX DISCOUNTED CASH FLOW (CONTINUOUS DISCOUNTING)	($323,047.00)	$72,162.21	$63,744.42	$45,731.45	$39,009.02
CUMULATIVE DISCOUNTED CASH FLOW, AFTER TAX, CON'T DISC	($323,047.00)	($250,884.79)	($187,140.37)	($141,408.92)	($102,399.90)
INTERNAL RATE OF RETURN (AFTER TAX, DISCOUNTED)	-0.151				

Appendix B

Program Listing

```
A1: U 'ROBOTICS/FMS INVESTMENT
B1: '
A2: U 'DECISION MODEL
A3: U '(Lotus 1-2-3 FLN:RIDM)
A8: U 'OLD METHOD
B8: U "OLD METHOD
C8: U "OLD METHOD
D8: U "OLD METHOD
E8: U "OLD METHOD
F8: U "OLD METHOD
G8: U "OLD METHOD
H8: U "OLD METHOD
I8: U "OLD METHOD
J8: U "OLD METHOD
K8: U "OLD METHOD
L8: U "OLD METHOD
M8: U "OLD METHOD
N8: U "OLD METHOD
O8: U "OLD METHOD
P8: U "OLD METHOD
A9: U 'COST ELEMENTS
B9: U "YEAR 1
C9: U "YEAR 2
D9: U "YEAR 3
E9: U "YEAR 4
F9: U "YEAR 5
G9: U "YEAR 6
H9: U "YEAR 7
I9: U "YEAR 8
J9: U "YEAR 9
K9: U "YEAR 10
L9: U "YEAR 11
M9: U "YEAR 12
N9: U "YEAR 13
O9: U "YEAR 14
P9: U "YEAR 15
A11: U 'Equipment Purchase
A12: U 'Equip. Ship. & Install.
A13: U 'Special Tooling
A14: U 'Fixtures
A15: U 'Programming
A16: U 'Supplies & Material
A17: U 'Equipment Maintenance
A18: U 'Equipment Repair
A19: U 'Equipment Overhaul
A20: U 'Facilities Modifications
A21: U 'Manufacturing Labor
```

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A22: U 'Engineering Labor
A23: U 'Production Control
A24: U 'Shop Supervision
A25: U 'Material Handling
A26: U 'Inspection
A27: U 'Training
A28: U 'Inventory Costs
A29: U 'Scrap & Rework
A30: U 'Floor Space Costs
A31: U 'Other MFG. Overhead Costs
A32: U 'Engineering Overhead
A33: U 'Administrative Costs
A34: U 'Property Taxes
A35: U 'Utilities
A36: U 'Interest (Cost of borrowed $)
A37: U 'Other Expenses
A39: U 'Equipment Salvage Value
A41: U 'TOTAL COST, OLD METHOD
B41: (C2) U @SUM(B37..B11)-B39
C41: (C2) U @SUM(C37..C11)-C39
D41: (C2) U @SUM(D37..D11)-D39
E41: (C2) U @SUM(E37..E11)-E39
F41: (C2) U @SUM(F37..F11)-F39
G41: (C2) U @SUM(G37..G11)-G39
H41: (C2) U @SUM(H37..H11)-H39
I41: (C2) U @SUM(I37..I11)-I39
J41: (C2) U @SUM(J37..J11)-J39
K41: (C2) U @SUM(K37..K11)-K39
L41: (C2) U @SUM(L37..L11)-L39
M41: (C2) U @SUM(M37..M11)-M39
N41: (C2) U @SUM(N37..N11)-N39
O41: (C2) U @SUM(O37..O11)-O39
P41: (C2) U @SUM(P37..P11)-P39
A43: U ' - - - - - - - - - - - - - - - - - - -
B43: U ' - - - - - - - - - - - - - - - - - - -
C43: U ' - - - - - - - - - - - - - - - - - - -
D43: U ' - - - - - - - - - - - - - - - - - - -
E43: U ' - - - - - - - - - - - - - - - - - - -
F43: U ' - - - - - - - - - - - - - - - - - - -
G43: U ' - - - - - - - - - - - - - - - - - - -
H43: U ' - - - - - - - - - - - - - - - - - - -
I43: U ' - - - - - - - - - - - - - - - - - - -
J43: U ' - - - - - - - - - - - - - - - - - - -
K43: U ' - - - - - - - - - - - - - - - - - - -
L43: U ' - - - - - - - - - - - - - - - - - - -
M43: U ' - - - - - - - - - - - - - - - - - - -
N43: U ' - - - - - - - - - - - - - - - - - - -
```

```
O43: U ' - - - - - - - - - - - - - - - - - - -
P43: U ' - - -
A45: U 'NEW METHOD
B45: U "NEW METHOD
C45: U "NEW METHOD
D45: U "NEW METHOD
E45: U "NEW METHOD
F45: U "NEW METHOD
G45: U "NEW METHOD
H45: U "NEW METHOD
I45: U "NEW METHOD
J45: U "NEW METHOD
K45: U "NEW METHOD
L45: U "NEW METHOD
M45: U "NEW METHOD
N45: U "NEW METHOD
O45: U "NEW METHOD
P45: U "NEW METHOD
A46: U 'COST ELEMENTS
B46: U "YEAR 1
C46: U "YEAR 2
D46: U "YEAR 3
E46: U "YEAR 4
F46: U "YEAR 5
G46: U "YEAR 6
H46: U "YEAR 7
I46: U "YEAR 8
J46: U "YEAR 9
K46: U "YEAR 10
L46: U "YEAR 11
M46: U "YEAR 12
N46: U "YEAR 13
O46: U "YEAR 14
P46: U "YEAR 15
A48: U 'Equipment Purchase
A49: U 'Equip. Ship. & Install.
A50: U 'Special Tooling
A51: U 'Fixtures
A52: U 'Programming
A53: U 'Supplies & Material
A54: U 'Equipment Maintenance
A55: U 'Equipment Repair
A56: U 'Equipment Overhaul
A57: U 'Facilities Modifications
A58: U 'Manufacturing Labor
A59: U 'Engineering Labor
A60: U 'Production Control
```

```
A61: U '^Shop Supervision
A62: U '^Material Handling
A63: U '^Inspection
A64: U '^Training
A65: U '^Inventory Costs
A66: U '^Scrap & Rework
A67: U '^Floor Space Costs
A68: U '^Other MFG. Overhead Costs
A69: U '^Engineering Overhead
A70: U '^Administrative Costs
A71: U '^Property Taxes
A72: U '^Utilities
A73: U '^Interest (Cost of borrowed $)
A74: U '^Other Expenses
A76: U '^Equipment Salvage Value
A78: U '^TOTAL COST, NEW METHOD
B78: (C2) U @SUM(B74..B48)-B76
C78: (C2) U @SUM(C74..C48)-C76
D78: (C2) U @SUM(D74..D48)-D76
E78: (C2) U @SUM(E74..E48)-E76
F78: (C2) U @SUM(F74..F48)-F76
G78: (C2) U @SUM(G74..G48)-G76
H78: (C2) U @SUM(H74..H48)-H76
I78: (C2) U @SUM(I74..I48)-I76
J78: (C2) U @SUM(J74..J48)-J76
K78: (C2) U @SUM(K74..K48)-K76
L78: (C2) U @SUM(L74..L48)-L76
M78: (C2) U @SUM(M74..M48)-M76
N78: (C2) U @SUM(N74..N48)-N76
O78: (C2) U @SUM(O74..O48)-O76
P78: (C2) U @SUM(P74..P48)-P76
A80: U \-
B80: U \-
C80: U \-
D80: U \-
E80: U \-
F80: U \-
G80: U \-
H80: U \-
I80: U \-
J80: U \-
K80: U \-
L80: U \-
M80: U \-
N80: U \-
O80: U \-
P80: U \-
```

```
A81: U 'CASH FLOW FROM INVESTMENT
B83: U "YEAR 1
C83: U "YEAR 2
D83: U "YEAR 3
E83: U "YEAR 4
F83: U "YEAR 5
G83: U "YEAR 6
H83: U "YEAR 7
I83: U "YEAR 8
J83: U "YEAR 9
K83: U "YEAR 10
L83: U "YEAR 11
M83: U "YEAR 12
N83: U "YEAR 13
O83: U "YEAR 14
P83: U "YEAR 15
A85: U 'Equipment Purchase
B85: U +B11-B48
C85: U +C11-C48
D85: U +D11-D48
E85: U +E11-E48
F85: U +F11-F48
G85: U +G11-G48
H85: U +H11-H48
I85: U +I11-I48
J85: U +J11-J48
K85: U +K11-K48
L85: U +L11-L48
M85: U +M11-M48
N85: U +N11-N48
O85: U +O11-O48
P85: U +P11-P48
A86: U 'Equip. Ship. & Install.
B86: U +B12-B49
C86: U +C12-C49
D86: U +D12-D49
E86: U +E12-E49
F86: U +F12-F49
G86: U +G12-G49
H86: U +H12-H49
I86: U +I12-I49
J86: U +J12-J49
K86: U +K12-K49
L86: U +L12-L49
M86: U +M12-M49
N86: U +N12-N49
O86: U +O12-O49
```

```
P86: U +P12-P49
A87: U 'Special Tooling
B87: U +B13-B50
C87: U +C13-C50
D87: U +D13-D50
E87: U +E13-E50
F87: U +F13-F50
G87: U +G13-G50
H87: U +H13-H50
I87: U +I13-I50
J87: U +J13-J50
K87: U +K13-K50
L87: U +L13-L50
M87: U +M13-M50
N87: U +N13-N50
O87: U +O13-O50
P87: U +P13-P50
A88: U 'Fixtures
B88: U +B14-B51
C88: U +C14-C51
D88: U +D14-D51
E88: U +E14-E51
F88: U +F14-F51
G88: U +G14-G51
H88: U +H14-H51
I88: U +I14-I51
J88: U +J14-J51
K88: U +K14-K51
L88: U +L14-L51
M88: U +M14-M51
N88: U +N14-N51
O88: U +O14-O51
P88: U +P14-P51
A89: U 'Programming
B89: U +B15-B52
C89: U +C15-C52
D89: U +D15-D52
E89: U +E15-E52
F89: U +F15-F52
G89: U +G15-G52
H89: U +H15-H52
I89: U +I15-I52
J89: U +J15-J52
K89: U +K15-K52
L89: U +L15-L52
M89: U +M15-M52
N89: U +N15-N52
```

```
O89: U +O15-O52
P89: U +P15-P52
A90: U 'Supplies & Material
B90: U +B16-B53
C90: U +C16-C53
D90: U +D16-D53
E90: U +E16-E53
F90: U +F16-F53
G90: U +G16-G53
H90: U +H16-H53
I90: U +I16-I53
J90: U +J16-J53
K90: U +K16-K53
L90: U +L16-L53
M90: U +M16-M53
N90: U +N16-N53
O90: U +O16-O53
P90: U +P16-P53
A91: U 'Equipment Maintenance
B91: U +B17-B54
C91: U +C17-C54
D91: U +D17-D54
E91: U +E17-E54
F91: U +F17-F54
G91: U +G17-G54
H91: U +H17-H54
I91: U +I17-I54
J91: U +J17-J54
K91: U +K17-K54
L91: U +L17-L54
M91: U +M17-M54
N91: U +N17-N54
O91: U +O17-O54
P91: U +P17-P54
A92: U 'Equipment Repair
B92: U +B18-B55
C92: U +C18-C55
D92: U +D18-D55
E92: U +E18-E55
F92: U +F18-F55
G92: U +G18-G55
H92: U +H18-H55
I92: U +I18-I55
J92: U +J18-J55
K92: U +K18-K55
L92: U +L18-L55
M92: U +M18-M55
```

```
N92: U +N18-N55
O92: U +O18-O55
P92: U +P18-P55
A93: U 'Equipment Overhaul
B93: U +B19-B56
C93: U +C19-C56
D93: U +D19-D56
E93: U +E19-E56
F93: U +F19-F56
G93: U +G19-G56
H93: U +H19-H56
I93: U +I19-I56
J93: U +J19-J56
K93: U +K19-K56
L93: U +L19-L56
M93: U +M19-M56
N93: U +N19-N56
O93: U +O19-O56
P93: U +P19-P56
A94: U 'Facilities Modifications
B94: U +B20-B57
C94: U +C20-C57
D94: U +D20-D57
E94: U +E20-E57
F94: U +F20-F57
G94: U +G20-G57
H94: U +H20-H57
I94: U +I20-I57
J94: U +J20-J57
K94: U +K20-K57
L94: U +L20-L57
M94: U +M20-M57
N94: U +N20-N57
O94: U +O20-O57
P94: U +P20-P57
A95: U 'Manufacturing Labor
B95: U +B21-B58
C95: U +C21-C58
D95: U +D21-D58
E95: U +E21-E58
F95: U +F21-F58
G95: U +G21-G58
H95: U +H21-H58
I95: U +I21-I58
J95: U +J21-J58
K95: U +K21-K58
L95: U +L21-L58
```

```
M95: U +M21-M58
N95: U +N21-N58
O95: U +O21-O58
P95: U +P21-P58
A96: U 'Engineering Labor
B96: U +B22-B59
C96: U +C22-C59
D96: U +D22-D59
E96: U +E22-E59
F96: U +F22-F59
G96: U +G22-G59
H96: U +H22-H59
I96: U +I22-I59
J96: U +J22-J59
K96: U +K22-K59
L96: U +L22-L59
M96: U +M22-M59
N96: U +N22-N59
O96: U +O22-O59
P96: U +P22-P59
A97: U 'Production Control
B97: U +B23-B60
C97: U +C23-C60
D97: U +D23-D60
E97: U +E23-E60
F97: U +F23-F60
G97: U +G23-G60
H97: U +H23-H60
I97: U +I23-I60
J97: U +J23-J60
K97: U +K23-K60
L97: U +L23-L60
M97: U +M23-M60
N97: U +N23-N60
O97: U +O23-O60
P97: U +P23-P60
A98: U 'Shop Supervision
B98: U +B24-B61
C98: U +C24-C61
D98: U +D24-D61
E98: U +E24-E61
F98: U +F24-F61
G98: U +G24-G61
H98: U +H24-H61
I98: U +I24-I61
J98: U +J24-J61
K98: U +K24-K61
```

```
L98: U +L24-L61
M98: U +M24-M61
N98: U +N24-N61
O98: U +O24-O61
P98: U +P24-P61
A99: U 'Material Handling
B99: U +B25-B62
C99: U +C25-C62
D99: U +D25-D62
E99: U +E25-E62
F99: U +F25-F62
G99: U +G25-G62
H99: U +H25-H62
I99: U +I25-I62
J99: U +J25-J62
K99: U +K25-K62
L99: U +L25-L62
M99: U +M25-M62
N99: U +N25-N62
O99: U +O25-O62
P99: U +P25-P62
A100: U 'Inspection
B100: U +B26-B63
C100: U +C26-C63
D100: U +D26-D63
E100: U +E26-E63
F100: U +F26-F63
G100: U +G26-G63
H100: U +H26-H63
I100: U +I26-I63
J100: U +J26-J63
K100: U +K26-K63
L100: U +L26-L63
M100: U +M26-M63
N100: U +N26-N63
O100: U +O26-O63
P100: U +P26-P63
A101: U 'Training
B101: U +B27-B64
C101: U +C27-C64
D101: U +D27-D64
E101: U +E27-E64
F101: U +F27-F64
G101: U +G27-G64
H101: U +H27-H64
I101: U +I27-I64
J101: U +J27-J64
```

```
K101: U +K27-K64
L101: U +L27-L64
M101: U +M27-M64
N101: U +N27-N64
O101: U +O27-O64
P101: U +P27-P64
A102: U 'Inventory Costs
B102: U +B28-B65
C102: U +C28-C65
D102: U +D28-D65
E102: U +E28-E65
F102: U +F28-F65
G102: U +G28-G65
H102: U +H28-H65
I102: U +I28-I65
J102: U +J28-J65
K102: U +K28-K65
L102: U +L28-L65
M102: U +M28-M65
N102: U +N28-N65
O102: U +O28-O65
P102: U +P28-P65
A103: U 'Scrap & Rework
B103: U +B29-B66
C103: U +C29-C66
D103: U +D29-D66
E103: U +E29-E66
F103: U +F29-F66
G103: U +G29-G66
H103: U +H29-H66
I103: U +I29-I66
J103: U +J29-J66
K103: U +K29-K66
L103: U +L29-L66
M103: U +M29-M66
N103: U +N29-N66
O103: U +O29-O66
P103: U +P29-P66
A104: U 'Floor Space Costs
B104: U +B30-B67
C104: U +C30-C67
D104: U +D30-D67
E104: U +E30-E67
F104: U +F30-F67
G104: U +G30-G67
H104: U +H30-H67
I104: U +I30-I67
```

```
J104: U +J30-J67
K104: U +K30-K67
L104: U +L30-L67
M104: U +M30-M67
N104: U +N30-N67
O104: U +O30-O67
P104: U +P30-P67
A105: U 'Other MFG. Overhead Costs
B105: U +B31-B68
C105: U +C31-C68
D105: U +D31-D68
E105: U +E31-E68
F105: U +F31-F68
G105: U +G31-G68
H105: U +H31-H68
I105: U +I31-I68
J105: U +J31-J68
K105: U +K31-K68
L105: U +L31-L68
M105: U +M31-M68
N105: U +N31-N68
O105: U +O31-O68
P105: U +P31-P68
A106: U 'Engineering Overhead
B106: U +B32-B69
C106: U +C32-C69
D106: U +D32-D69
E106: U +E32-E69
F106: U +F32-F69
G106: U +G32-G69
H106: U +H32-H69
I106: U +I32-I69
J106: U +J32-J69
K106: U +K32-K69
L106: U +L32-L69
M106: U +M32-M69
N106: U +N32-N69
O106: U +O32-O69
P106: U +P32-P69
A107: U 'Administrative Costs
B107: U +B33-B70
C107: U +C33-C70
D107: U +D33-D70
E107: U +E33-E70
F107: U +F33-F70
G107: U +G33-G70
H107: U +H33-H70
```

```
I107: U +I33-I70
J107: U +J33-J70
K107: U +K33-K70
L107: U +L33-L70
M107: U +M33-M70
N107: U +N33-N70
O107: U +O33-O70
P107: U +P33-P70
A108: U 'Property Taxes
B108: U +B34-B71
C108: U +C34-C71
D108: U +D34-D71
E108: U +E34-E71
F108: U +F34-F71
G108: U +G34-G71
H108: U +H34-H71
I108: U +I34-I71
J108: U +J34-J71
K108: U +K34-K71
L108: U +L34-L71
M108: U +M34-M71
N108: U +N34-N71
O108: U +O34-O71
P108: U +P34-P71
A109: U 'Utilities
B109: U +B35-B72
C109: U +C35-C72
D109: U +D35-D72
E109: U +E35-E72
F109: U +F35-F72
G109: U +G35-G72
H109: U +H35-H72
I109: U +I35-I72
J109: U +J35-J72
K109: U +K35-K72
L109: U +L35-L72
M109: U +M35-M72
N109: U +N35-N72
O109: U +O35-O72
P109: U +P35-P72
A110: U 'Interest (Cost of borrowed $)
B110: U +B36-B73
C110: U +C36-C73
D110: U +D36-D73
E110: U +E36-E73
F110: U +F36-F73
G110: U +G36-G73
```

```
G115:  (C2) U +G41-G78
H115:  (C2) U +H41-H78
I115:  (C2) U +I41-I78
J115:  (C2) U +J41-J78
K115:  (C2) U +K41-K78
L115:  (C2) U +L41-L78
M115:  (C2) U +M41-M78
N115:  (C2) U +N41-N78
O115:  (C2) U +O41-O78
P115:  (C2) U +P41-P78
A117:  U \-
B117:  U \-
C117:  U \-
D117:  U \-
E117:  U \-
F117:  U \-
G117:  U \-
H117:  U \-
I117:  U \-
J117:  U \-
K117:  U \-
L117:  U \-
M117:  U \-
N117:  U \-
O117:  U \-
P117:  U \-
A119:  U 'INTERNAL RATE OF RETURN =
B119:  (F2) U @IRR(0.4,B115..P115)
A121:  U 'DISCOUNT RATE =
B121:  (F2) U 0.2
A123:  U 'NPV OF INVESTMENT=
B123:  (C2) U @NPV(B121,B115..P115)
A125:  U \-
B125:  U \-
C125:  U \-
D125:  U \-
E125:  U \-
F125:  U \-
G125:  U \-
H125:  U \-
I125:  U \-
J125:  U \-
K125:  U \-
L125:  U \-
M125:  U \-
N125:  U \-
O125:  U \-
```

```
P125: U \-
A126: U 'PRODUCTION QUANTITY ADJUSTMENT
A127: U '(BEFORE TAX)
A130: U 'PRODUCTION QUANTITY, OLD
B130: U "OLD METHOD
C130: U "OLD METHOD
D130: U "OLD METHOD
E130: U "OLD METHOD
F130: U "OLD METHOD
G130: U "OLD METHOD
H130: U "OLD METHOD
I130: U "OLD METHOD
J130: U "OLD METHOD
K130: U "OLD METHOD
L130: U "OLD METHOD
M130: U "OLD METHOD
N130: U "OLD METHOD
O130: U "OLD METHOD
P130: U "OLD METHOD
A131: U 'METHOD
B131: U "YEAR 1
C131: U "YEAR 2
D131: U "YEAR 3
E131: U "YEAR 4
F131: U "YEAR 5
G131: U "YEAR 6
H131: U "YEAR 7
I131: U "YEAR 8
J131: U "YEAR 9
K131: U "YEAR 10
L131: U "YEAR 11
M131: U "YEAR 12
N131: U "YEAR 13
O131: U "YEAR 14
P131: U "YEAR 15
A133: U 'GROSS ANNUAL THROUGHPUT (GAT)
A135: U 'AVERAGE COST PER UNIT(CPU)
B135: (C2) U +B41/+B133
C135: (C2) U +C41/+C133
D135: (C2) U +D41/+D133
E135: (C2) U +E41/+E133
F135: (C2) U +F41/+F133
G135: (C2) U +G41/+G133
H135: (C2) U +H41/+H133
I135: (C2) U +I41/+I133
J135: (C2) U +J41/+J133
K135: (C2) U +K41/+K133
```

```
L135: (C2) U +L41/+L133
M135: (C2) U +M41/+M133
N135: (C2) U +N41/+N133
O135: (C2) U +O41/+O133
P135: (C2) U +P41/+P133
A137: U \  -
B137: U \  -
C137: U \  -
D137: U \  -
E137: U \  -
F137: U \  -
G137: U \  -
H137: U \  -
I137: U \  -
J137: U \  -
K137: U \  -
L137: U \  -
M137: U \  -
N137: U \  -
O137: U \  -
P137: U \  -
A139: U 'PRODUCTION QUANTITY, NEW
B139: U "NEW METHOD
C139: U "NEW METHOD
D139: U "NEW METHOD
E139: U "NEW METHOD
F139: U "NEW METHOD
G139: U "NEW METHOD
H139: U "NEW METHOD
I139: U "NEW METHOD
J139: U "NEW METHOD
K139: U "NEW METHOD
L139: U "NEW METHOD
M139: U "NEW METHOD
N139: U "NEW METHOD
O139: U "NEW METHOD
P139: U "NEW METHOD
A140: U 'METHOD
B140: U "YEAR 1
C140: U "YEAR 2
D140: U "YEAR 3
E140: U "YEAR 4
F140: U "YEAR 5
G140: U "YEAR 6
H140: U "YEAR 7
I140: U "YEAR 8
J140: U "YEAR 9
```

```
K140: U "YEAR 10
L140: U "YEAR 11
M140: U "YEAR 12
N140: U "YEAR 13
O140: U "YEAR 14
P140: U "YEAR 15
A142: U 'GROSS ANNUAL THROUGHPUT (GAT)
A144: U 'AVERAGE COST PER UNIT(CPU)
B144: (C2) U +B78/+B142
C144: (C2) U +C78/+C142
D144: (C2) U +D78/+D142
E144: (C2) U +E78/+E142
F144: (C2) U +F78/+F142
G144: (C2) U +G78/+G142
H144: (C2) U +H78/+H142
I144: (C2) U +I78/+I142
J144: (C2) U +J78/+J142
K144: (C2) U +K78/+K142
L144: (C2) U +L78/+L142
M144: (C2) U +M78/+M142
N144: (C2) U +N78/+N142
O144: (C2) U +O78/+O142
P144: (C2) U +P78/+P142
A146: U \-
B146: U \-
C146: U \-
D146: U \-
E146: U \-
F146: U \-
G146: U \-
H146: U \-
I146: U \-
J146: U \-
K146: U \-
L146: U \-
M146: U \-
N146: U \-
O146: U \-
P146: U \-
A147: U 'PRODUCTION QUANTITY ADJUSTMENT RESULTS
A148: U 'NEW METHOD AS COMPARED TO OLD METHOD
B151: U "YEAR 1
C151: U "YEAR 2
D151: U "YEAR 3
E151: U "YEAR 4
F151: U "YEAR 5
G151: U "YEAR 6
```

```
H151: U "YEAR 7
I151: U "YEAR 8
J151: U "YEAR 9
K151: U "YEAR 10
L151: U "YEAR 11
M151: U "YEAR 12
N151: U "YEAR 13
O151: U "YEAR 14
P151: U "YEAR 15
A153: U 'CHANGE IN GROSS THROUGHPUT
B153: U +B142-B133
C153: U +C142-C133
D153: U +D142-D133
E153: U +E142-E133
F153: U +F142-F133
G153: U +G142-G133
H153: U +H142-H133
I153: U +I142-I133
J153: U +J142-J133
K153: U +K142-K133
L153: U +L142-L133
M153: U +M142-M133
N153: U +N142-N133
O153: U +O142-O133
P153: U +P142-P133
A155: U '% CHANGE IN GROSS THROUGHPUT
B155: (P1) U +B153/B133
C155: (P1) U +C153/C133
D155: (P1) U +D153/D133
E155: (P1) U +E153/E133
F155: (P1) U +F153/F133
G155: (P1) U +G153/G133
H155: (P1) U +H153/H133
I155: (P1) U +I153/I133
J155: (P1) U +J153/J133
K155: (P1) U +K153/K133
L155: (P1) U +L153/L133
M155: (P1) U +M153/M133
N155: (P1) U +N153/N133
O155: (P1) U +O153/O133
P155: (P1) U +P153/P133
A157: U 'CHANGE IN PRODUCTION COST/UNIT
B157: (C2) U +B144-B135
C157: (C2) U +C144-C135
D157: (C2) U +D144-D135
E157: (C2) U +E144-E135
F157: (C2) U +F144-F135
```

```
G157:  (C2)  U  +G144-G135
H157:  (C2)  U  +H144-H135
I157:  (C2)  U  +I144-I135
J157:  (C2)  U  +J144-J135
K157:  (C2)  U  +K144-K135
L157:  (C2)  U  +L144-L135
M157:  (C2)  U  +M144-M135
N157:  (C2)  U  +N144-N135
O157:  (C2)  U  +O144-O135
P157:  (C2)  U  +P144-P135
A159:  U  '% CHANGE IN PROD COST/UNIT
B159:  (P1)  U  (+B157/B135)
C159:  (P1)  U  (+C157/C135)
D159:  (P1)  U  (+D157/D135)
E159:  (P1)  U  (+E157/E135)
F159:  (P1)  U  (+F157/F135)
G159:  (P1)  U  (+G157/G135)
H159:  (P1)  U  (+H157/H135)
I159:  (P1)  U  (+I157/I135)
J159:  (P1)  U  (+J157/J135)
K159:  (P1)  U  (+K157/K135)
L159:  (P1)  U  (+L157/L135)
M159:  (P1)  U  (+M157/M135)
N159:  (P1)  U  (+N157/N135)
O159:  (P1)  U  (+O157/O135)
P159:  (P1)  U  (+P157/P135)
A161:  U  'CASH FLOW AFTER ADJUSTMENT
B161:  (C2)  U  -1*(+B142*B157)
C161:  (C2)  U  -1*(+C142*C157)
D161:  (C2)  U  -1*(+D142*D157)
E161:  (C2)  U  -1*(+E142*E157)
F161:  (C2)  U  -1*(+F142*F157)
G161:  (C2)  U  -1*(+G142*G157)
H161:  (C2)  U  -1*(+H142*H157)
I161:  (C2)  U  -1*(+I142*I157)
J161:  (C2)  U  -1*(+J142*J157)
K161:  (C2)  U  -1*(+K142*K157)
L161:  (C2)  U  -1*(+L142*L157)
M161:  (C2)  U  -1*(+M142*M157)
N161:  (C2)  U  -1*(+N142*N157)
O161:  (C2)  U  -1*(+O142*O157)
P161:  (C2)  U  -1*(+P142*P157)
A162:  U  'FOR CHANGE IN PROD QUANTITY
A164:  U  \-
B164:  U  \-
C164:  U  \-
D164:  U  \-
```

```
E164: U \-
F164: U \-
G164: U \-
H164: U \-
I164: U \-
J164: U \-
K164: U \-
L164: U \-
M164: U \-
N164: U \-
O164: U \-
P164: U \-
A165: U 'ADJUSTMENT FOR CHANGES IN
A166: U 'QUALITY OR VALUE ADDED
B168: U "YEAR 1
C168: U "YEAR 2
D168: U "YEAR 3
E168: U "YEAR 4
F168: U "YEAR 5
G168: U "YEAR 6
H168: U "YEAR 7
I168: U "YEAR 8
J168: U "YEAR 9
K168: U "YEAR 10
L168: U "YEAR 11
M168: U "YEAR 12
N168: U "YEAR 13
O168: U "YEAR 14
P168: U "YEAR 15
A170: U 'CHANGE IN VALUE ADDED PER
A171: U 'UNIT AT THE WORK STATION
A172: U 'UNDER NEW METHOD
A174: U 'CASH FLOW IMPACT OF VAL ADDED
B174: (C2) U +B170*B142
C174: (C2) U +C170*C142
D174: (C2) U +D170*D142
E174: (C2) U +E170*E142
F174: (C2) U +F170*F142
G174: (C2) U +G170*G142
H174: (C2) U +H170*H142
I174: (C2) U +I170*I142
J174: (C2) U +J170*J142
K174: (C2) U +K170*K142
L174: (C2) U +L170*L142
M174: (C2) U +M170*M142
N174: (C2) U +N170*N142
O174: (C2) U +O170*O142
```

```
F174: (C2) U +P170*P142
A176: U 'CASH FLOW, VAL ADDED ADJUSTED
B176: (C1) U +B174+B161
C176: (C1) U +C174+C161
D176: (C1) U +D174+D161
E176: (C1) U +E174+E161
F176: (C1) U +F174+F161
G176: (C1) U +G174+G161
H176: (C1) U +H174+H161
I176: (C1) U +I174+I161
J176: (C1) U +J174+J161
K176: (C1) U +K174+K161
L176: (C1) U +L174+L161
M176: (C1) U +M174+M161
N176: (C1) U +N174+N161
O176: (C1) U +O174+O161
P176: (C1) U +P174+P161
A178: U 'CUM CASH FLOW, VAL ADD ADJSTED
B178: (C1) U +B176
C178: (C1) U @SUM(B178,C176)
D178: (C1) U @SUM(C178,D176)
E178: (C1) U @SUM(D178,E176)
F178: (C1) U @SUM(E178,F176)
G178: (C1) U @SUM(F178,G176)
H178: (C1) U @SUM(G178,H176)
I178: (C1) U @SUM(H178,I176)
J178: (C1) U @SUM(I178,J176)
K178: (C1) U @SUM(J178,K176)
L178: (C1) U @SUM(K178,L176)
M178: (C1) U @SUM(L178,M176)
N178: (C1) U @SUM(M178,N176)
O178: (C1) U @SUM(N178,O176)
P178: (C1) U @SUM(O178,P176)
A179: U \-
B179: U \-
C179: U \-
D179: U \-
E179: U \-
F179: U \-
G179: U \-
H179: U \-
I179: U \-
J179: U \-
K179: U \-
L179: U \-
M179: U \-
N179: U \-
```

```
O179: U \-
P179: U \-
A181: U 'IRR (ADJUSTED)=
B181: (F2) U @IRR(0.4,B176..P176)
A183: U 'DISCOUNT RATE =
B183: (F2) U 0.2
A185: U 'NPV OF INVESTMENT (ADJUSTED)=
B185: (C2) U @NPV(B183,B176..P176)
A187: U \-
B187: U \-
C187: U \-
D187: U \-
E187: U \-
F187: U \-
G187: U \-
H187: U \-
I187: U \-
J187: U \-
K187: U \-
L187: U \-
M187: U \-
N187: U \-
O187: U \-
P187: U \-
B189: U "YEAR 1
C189: U "YEAR 2
D189: U "YEAR 3
E189: U "YEAR 4
F189: U "YEAR 5
G189: U "YEAR 6
H189: U "YEAR 7
I189: U "YEAR 8
J189: U "YEAR 9
K189: U "YEAR 10
L189: U "YEAR 11
M189: U "YEAR 12
N189: U "YEAR 13
O189: U "YEAR 14
P189: U "YEAR 15
A191: U 'DISCOUNTED CASH FLOW
B191: (C2) U @EXP(-B183*1)*B176
C191: (C2) U @EXP(-B183*2)*C176
D191: (C2) U @EXP(-B183*3)*D176
E191: (C2) U @EXP(-B183*4)*E176
F191: (C2) U @EXP(-B183*5)*F176
G191: (C2) U @EXP(-B183*6)*G176
H191: (C2) U @EXP(-B183*7)*H176
```

```
I191: (C2) U @EXP(-B183*8)*I176
J191: (C2) U @EXP(-B183*9)*J176
K191: (C2) U @EXP(-B183*10)*K176
L191: (C2) U @EXP(-B183*11)*L176
M191: (C2) U @EXP(-B183*12)*M176
N191: (C2) U @EXP(-B183*13)*N176
O191: (C2) U @EXP(-B183*14)*O176
P191: (C2) U @EXP(-B183*15)*P176
A192: U '(CONTINUOUS DISCOUNTING)
A194: U 'DISCOUNTED CUM. CASH FLOW
B194: (C2) U +B191
C194: (C2) U +B194+C191
D194: (C2) U +C194+D191
E194: (C2) U +D194+E191
F194: (C2) U +E194+F191
G194: (C2) U +F194+G191
H194: (C2) U +G194+H191
I194: (C2) U +H194+I191
J194: (C2) U +I194+J191
K194: (C2) U +J194+K191
L194: (C2) U +K194+L191
M194: (C2) U +L194+M191
N194: (C2) U +M194+N191
O194: (C2) U +N194+O191
P194: (C2) U +O194+P191
A196: U \-
B196: U \-
C196: U \-
D196: U \-
E196: U \-
F196: U \-
G196: U \-
H196: U \-
I196: U \-
J196: U \-
K196: U \-
L196: U \-
M196: U \-
N196: U \-
O196: U \-
P196: U \-
A197: U 'AFTER TAX ANALYSIS
A200: U 'COMPUTATION OF DEPRECIATION, INVESTMENT TAX CREDITS, & TAX SAVI
A202: U 'INVESTMENT IN DEPRECIABLE
B202: U "OLD METHOD
C202: U "OLD METHOD
D202: U "OLD METHOD
```

```
E202: U "OLD METHOD
F202: U "OLD METHOD
G202: U "OLD METHOD
H202: U "OLD METHOD
I202: U "OLD METHOD
J202: U "OLD METHOD
K202: U "OLD METHOD
L202: U "OLD METHOD
M202: U "OLD METHOD
N202: U "OLD METHOD
O202: U "OLD METHOD
P202: U "OLD METHOD
A203: U 'ASSETS
B203: U "YEAR 1
C203: U "YEAR 2
D203: U "YEAR 3
E203: U "YEAR 4
F203: U "YEAR 5
G203: U "YEAR 6
H203: U "YEAR 7
I203: U "YEAR 8
J203: U "YEAR 9
K203: U "YEAR 10
L203: U "YEAR 11
M203: U "YEAR 12
N203: U "YEAR 13
O203: U "YEAR 14
P203: U "YEAR 15
A205: U '3 Yr Property (Specl. Tooling)
A206: U '5 Yr. Property (Most Equipt.)
A207: U '10 Yr Property
A208: U '15 Yr. Property (facilities)
A210: U 'TOT DEPRECIABLE INVESTMENT
B210: (C2) U @SUM(B205..B208)
C210: (C2) U @SUM(C205..C208)
D210: (C2) U @SUM(D205..D208)
E210: (C2) U @SUM(E205..E208)
F210: (C2) U @SUM(F205..F208)
G210: (C2) U @SUM(G205..G208)
H210: (C2) U @SUM(H205..H208)
I210: (C2) U @SUM(I205..I208)
J210: (C2) U @SUM(J205..J208)
K210: (C2) U @SUM(K205..K208)
L210: (C2) U @SUM(L205..L208)
M210: (C2) U @SUM(M205..M208)
N210: (C2) U @SUM(N205..N208)
O210: (C2) U @SUM(O205..O208)
```

```
P210: (C2) U @SUM(P205..P208)
A212: U 'COMPUTE FED INVEST TAX CREDITS:
A214: U '3 Yr Property
B214: U 0.06*B205
C214: U 0.06*C205
D214: U 0.06*D205
E214: U 0.06*E205
F214: U 0.06*F205
G214: U 0.06*G205
H214: U 0.06*H205
I214: U 0.06*I205
J214: U 0.06*J205
K214: U 0.06*K205
L214: U 0.06*L205
M214: U 0.06*M205
N214: U 0.06*N205
O214: U 0.06*O205
P214: U 0.06*P205
A215: U '5 Yr Property
B215: U 0.1*B206
C215: U 0.1*C206
D215: U 0.1*D206
E215: U 0.1*E206
F215: U 0.1*F206
G215: U 0.1*G206
H215: U 0.1*H206
I215: U 0.1*I206
J215: U 0.1*J206
K215: U 0.1*K206
L215: U 0.1*L206
M215: U 0.1*M206
N215: U 0.1*N206
O215: U 0.1*O206
P215: U 0.1*P206
A216: U '10 Yr Property
B216: U 0.1*B207
C216: U 0.1*C207
D216: U 0.1*D207
E216: U 0.1*E207
F216: U 0.1*F207
G216: U 0.1*G207
H216: U 0.1*H207
I216: U 0.1*I207
J216: U 0.1*J207
K216: U 0.1*K207
L216: U 0.1*L207
M216: U 0.1*M207
```

```
N216: U 0.1*N207
O216: U 0.1*O207
P216: U 0.1*P207
A219: U 'TOT FED INVESTMENT TAX CREDIT
B219: (C2) U @SUM(B217..B214)
C219: (C2) U @SUM(C217..C214)
D219: (C2) U @SUM(D217..D214)
E219: (C2) U @SUM(E217..E214)
F219: (C2) U @SUM(F217..F214)
G219: (C2) U @SUM(G217..G214)
H219: (C2) U @SUM(H217..H214)
I219: (C2) U @SUM(I217..I214)
J219: (C2) U @SUM(J217..J214)
K219: (C2) U @SUM(K217..K214)
L219: (C2) U @SUM(L217..L214)
M219: (C2) U @SUM(M217..M214)
N219: (C2) U @SUM(N217..N214)
O219: (C2) U @SUM(O217..O214)
P219: (C2) U @SUM(P217..P214)
A221: U 'DEPRECIATION 1ST YR BASIS
A223: U '3 Yr Property
B223: U (+B205-(B214/2))
C223: U (+C205-(C214/2))
D223: U (+D205-(D214/2))
E223: U (+E205-(E214/2))
F223: U (+F205-(F214/2))
G223: U (+G205-(G214/2))
H223: U (+H205-(H214/2))
I223: U (+I205-(I214/2))
J223: U (+J205-(J214/2))
K223: U (+K205-(K214/2))
L223: U (+L205-(L214/2))
M223: U (+M205-(M214/2))
N223: U (+N205-(N214/2))
O223: U (+O205-(O214/2))
P223: U (+P205-(P214/2))
A224: U '5 Yr Property
B224: U (+B206-(B215/2))
C224: U (+C206-(C215/2))
D224: U (+D206-(D215/2))
E224: U (+E206-(E215/2))
F224: U (+F206-(F215/2))
G224: U (+G206-(G215/2))
H224: U (+H206-(H215/2))
I224: U (+I206-(I215/2))
J224: U (+J206-(J215/2))
K224: U (+K206-(K215/2))
```

```
L224: U (+L206-(L215/2))
M224: U (+M206-(M215/2))
N224: U (+N206-(N215/2))
O224: U (+O206-(O215/2))
P224: U (+P206-(P215/2))
A225: U '10 Yr Property
B225: U (+B207-(B216/2))
C225: U (+C207-(C216/2))
D225: U (+D207-(D216/2))
E225: U (+E207-(E216/2))
F225: U (+F207-(F216/2))
G225: U (+G207-(G216/2))
H225: U (+H207-(H216/2))
I225: U (+I207-(I216/2))
J225: U (+J207-(J216/2))
K225: U (+K207-(K216/2))
L225: U (+L207-(L216/2))
M225: U (+M207-(M216/2))
N225: U (+N207-(N216/2))
O225: U (+O207-(O216/2))
P225: U (+P207-(P216/2))
A226: U '15 Yr Property
B226: U (+B208)
C226: U (+C208)
D226: U (+D208)
E226: U (+E208)
F226: U (+F208)
G226: U (+G208)
H226: U (+H208)
I226: U (+I208)
J226: U (+J208)
K226: U (+K208)
L226: U (+L208)
M226: U (+M208)
N226: U (+N208)
O226: U (+O208)
P226: U (+P208)
A228: U 'COMPUTE ANNUAL DEPRECIATION:
A230: U '3 Yr Property
B230: U 0.25*B223
C230: U 0.25*C223+(B223*0.38)
D230: U 0.25*D223+(C223*0.38)+(0.37*B223)
E230: U 0.25*E223+(D223*0.38)+(0.37*C223)
F230: U 0.25*F223+(E223*0.38)+(0.37*D223)
G230: U 0.25*G223+(F223*0.38)+(0.37*E223)
H230: U 0.25*H223+(G223*0.38)+(0.37*F223)
I230: U 0.25*I223+(H223*0.38)+(0.37*G223)
```

```
C232: U 0.08*C225+(0.14*B225)
D232: U 0.08*D225+(0.14*C225)+(0.12*B225)
E232: U 0.08*E225+(0.14*D225)+(0.12*C225)+(0.1*B225)
F232: U 0.08*F225+(0.14*E225)+(0.12*D225)+(0.1*C225)+(0.1*B225)
G232: U 0.08*G225+(0.14*F225)+(0.12*E225)+(0.1*D225)+(0.1*D225)+(0.1*C225)+(0.09*B225)
H232: U 0.08*H225+(0.14*G225)+(0.12*F225)+(0.1*E225)+(0.1*D225)+(0.1*C225)+(0.09*(B225+C225))
I232: U 0.08*I225+(0.14*H225)+(0.12*G225)+((D225+E225+F225)*0.1)+(0.09*(B225+C225+D225))
J232: U 0.08*J225+(0.14*I225)+(0.12*H225)+(0.1*(E225+F225+G225))+(0.09*(B225+C225+D225+E225))
K232: U 0.08*K225+(0.14*J225)+(0.12*I225)+(0.1*(F225+G225+H225))+(0.09*(C225+D225+E225+F225))
L232: U 0.08*L225+(0.14*K225)+(0.12*J225)+(0.1*(G225+H225+I225))+(0.09*(D225+E225+F225+G225))
M232: U 0.08*M225+(0.14*L225)+(0.12*K225)+(0.1*(H225+I225+J225))+(0.09*(E225+F225+G225+H225))
N232: U 0.08*N225+(0.14*M225)+(0.12*L225)+(0.1*(I225+J225+K225))+(0.09*(F225+G225+H225+I225))
O232: U 0.08*O225+(0.14*N225)+(0.12*M225)+(0.1*(J225+K225+L225))+(0.09*(G225+H225+I225+J225))
P232: U 0.08*P225+(0.14*O225)+(0.12*N225)+(0.1*(K225+L225+M225))+(0.09*(H225+I225+J225+K225))
A233: U '15 Yr Property
B233: U 0.12*B226
C233: U 0.1*B226+(0.12*C226)
D233: U 0.09*B226+(0.1*C226)+(0.12*D226)
E233: U 0.08*B226+(0.09*C226)+(0.1*D226)
F233: U 0.07*B226+(0.08*C226)+(0.09*D226)
G233: U 0.06*B226+(0.07*C226)+(0.08*D226)
H233: U 0.06*B226+(0.06*C226)+(0.07*D226)
```

```
J230: U 0.25*J223+(I223*0.38)+(0.37*H223)
K230: U 0.25*K223+(J223*0.38)+(0.37*I223)
L230: U 0.25*L223+(K223*0.38)+(0.37*J223)
M230: U 0.25*M223+(L223*0.38)+(0.37*K223)
N230: U 0.25*N223+(M223*0.38)+(0.37*L223)
O230: U 0.25*O223+(N223*0.38)+(0.37*M223)
P230: U 0.25*P223+(O223*0.38)+(0.37*N223)
A231: U '5 Yr Property
B231: U 0.15*B224
C231: U 0.15*C224+(B224*0.22)
D231: U 0.15*D224+(C224*0.22)+(0.21*B224)
E231: U 0.15*E224+(D224*0.22)+(0.21*C224)+(0.21*B224)
F231: U 0.15*F224+(E224*0.22)+(0.21*D224)+(0.21*C224)+(0.21*B224)
G231: U 0.15*G224+(F224*0.22)+(0.21*E224)+(0.21*D224)+(0.21*C224)
H231: U 0.15*H224+(G224*0.22)+(0.21*F224)+(0.21*E224)+(0.21*D224)
I231: U 0.15*I224+(H224*0.22)+(0.21*G224)+(0.21*F224)+(0.21*E224)
J231: U 0.15*J224+(I224*0.22)+(0.21*H224)+(0.21*G224)+(0.21*F224)
K231: U 0.15*K224+(J224*0.22)+(0.21*I224)+(0.21*H224)+(0.21*G224)
L231: U 0.15*L224+(K224*0.22)+(0.21*J224)+(0.21*I224)+(0.21*H224)
M231: U 0.15*M224+(L224*0.22)+(0.21*K224)+(0.21*J224)+(0.21*I224)
N231: U 0.15*N224+(M224*0.22)+(0.21*L224)+(0.21*K224)+(0.21*J224)
O231: U 0.15*O224+(N224*0.22)+(0.21*M224)+(0.21*L224)+(0.21*K224)
P231: U 0.15*P224+(O224*0.22)+(0.21*N224)+(0.21*M224)+(0.21*L224)
A232: U '10 Yr Property
B232: U 0.08*B225
```

```
I233: U 0.06*(B226+C226+D226)
J233: U 0.06*(B226+C226+D226)
K233: U (0.05*B226)+(0.06*(C226+D226))
L233: U (0.05*(B226+C226))+(0.06*D226)
M233: U 0.05*(B226+C226+D226)
N233: U 0.05*(B226+C226+D226)
O233: U 0.05*(B226+C226+D226)
P233: U 0.05*(B226+C226+D226)
A235: U 'ANNUAL DEPRECIATION
B235: (C2) U @SUM(B233..B230)
C235: (C2) U @SUM(C233..C230)
D235: (C2) U @SUM(D233..D230)
E235: (C2) U @SUM(E233..E230)
F235: (C2) U @SUM(F233..F230)
G235: (C2) U @SUM(G233..G230)
H235: (C2) U @SUM(H233..H230)
I235: (C2) U @SUM(I233..I230)
J235: (C2) U @SUM(J233..J230)
K235: (C2) U @SUM(K233..K230)
L235: (C2) U @SUM(L233..L230)
M235: (C2) U @SUM(M233..M230)
N235: (C2) U @SUM(N233..N230)
O235: (C2) U @SUM(O233..O230)
P235: (C2) U @SUM(P233..P230)
A237: U 'FED TAX SAVINGS FROM DEPREC.
B237: (C2) U 0.46*(B235+(B155*B235))
C237: (C2) U 0.46*(C235+(C155*C235))
D237: (C2) U 0.46*(D235+(D155*D235))
E237: (C2) U 0.46*(E235+(E155*E235))
F237: (C2) U 0.46*(F235+(F155*F235))
G237: (C2) U 0.46*(G235+(G155*G235))
H237: (C2) U 0.46*(H235+(H155*H235))
I237: (C2) U 0.46*(I235+(I155*I235))
J237: (C2) U 0.46*(J235+(J155*J235))
K237: (C2) U 0.46*(K235+(K155*K235))
L237: (C2) U 0.46*(L235+(L155*L235))
M237: (C2) U 0.46*(M235+(M155*M235))
N237: (C2) U 0.46*(N235+(N155*N235))
O237: (C2) U 0.46*(O235+(O155*O235))
P237: (C2) U 0.46*(P235+(P155*P235))
A239: U 'FED TAX SAVINGS FROM NON-
B239: (C2) U 0.46*((B41-B210)+(B155*(B41-B210)))
C239: (C2) U 0.46*((C41-C210)+(C155*(C41-C210)))
D239: (C2) U 0.46*((D41-D210)+(D155*(D41-D210)))
E239: (C2) U 0.46*((E41-E210)+(E155*(E41-E210)))
F239: (C2) U 0.46*((F41-F210)+(F155*(F41-F210)))
G239: (C2) U 0.46*((G41-G210)+(G155*(G41-G210)))
```

```
H239: (C2) U 0.46*((H41-H210)+(H155*(H41-H210)))
I239: (C2) U 0.46*((I41-I210)+(I155*(I41-I210)))
J239: (C2) U 0.46*((J41-J210)+(J155*(J41-J210)))
K239: (C2) U 0.46*((K41-K210)+(K155*(K41-K210)))
L239: (C2) U 0.46*((L41-L210)+(L155*(L41-L210)))
M239: (C2) U 0.46*((M41-M210)+(M155*(M41-M210)))
N239: (C2) U 0.46*((N41-N210)+(N155*(N41-N210)))
O239: (C2) U 0.46*((O41-O210)+(O155*(O41-O210)))
P239: (C2) U 0.46*((P41-P210)+(P155*(P41-P210)))
A240: U "DEPRECIABLE BUSINESS COSTS
A241: U \-
B241: U \-
C241: U \-
D241: U \-
E241: U \-
F241: U \-
G241: U \-
H241: U \-
I241: U \-
J241: U \-
K241: U \-
L241: U \-
M241: U \-
N241: U \-
O241: U \-
P241: U \-
B242: U "OLD METHOD
C242: U "OLD METHOD
D242: U "OLD METHOD
E242: U "OLD METHOD
F242: U "OLD METHOD
G242: U "OLD METHOD
H242: U "OLD METHOD
I242: U "OLD METHOD
J242: U "OLD METHOD
K242: U "OLD METHOD
L242: U "OLD METHOD
M242: U "OLD METHOD
N242: U "OLD METHOD
O242: U "OLD METHOD
P242: U "OLD METHOD
B243: U "YEAR 1
C243: U "YEAR 2
D243: U "YEAR 3
E243: U "YEAR 4
F243: U "YEAR 5
G243: U "YEAR 6
```

```
H243: U "YEAR 7
I243: U "YEAR 8
J243: U "YEAR 9
K243: U "YEAR 10
L243: U "YEAR 11
M243: U "YEAR 12
N243: U "YEAR 13
O243: U "YEAR 14
P243: U "YEAR 15
A245: U 'STATE & LOCAL INCOME TAXES
A247: U \-
B247: U \-
C247: U \-
D247: U \-
E247: U \-
F247: U \-
G247: U \-
H247: U \-
I247: U \-
J247: U \-
K247: U \-
L247: U \-
M247: U \-
N247: U \-
O247: U \-
P247: U \-
A249: U 'INVESTMENT IN DEPRECIABLE
B249: U "NEW METHOD
C249: U "NEW METHOD
D249: U "NEW METHOD
E249: U."NEW METHOD
F249: U "NEW METHOD
G249: U "NEW METHOD
H249: U "NEW METHOD
I249: U "NEW METHOD
J249: U "NEW METHOD
K249: U "NEW METHOD
L249: U "NEW METHOD
M249: U "NEW METHOD
N249: U "NEW METHOD
O249: U "NEW METHOD
P249: U "NEW METHOD
A250: U 'ASSETS
B250: U "YEAR 1
C250: U "YEAR 2
D250: U "YEAR 3
E250: U "YEAR 4
```

```
F250: U "YEAR 5
G250: U "YEAR 6
H250: U "YEAR 7
I250: U "YEAR 8
J250: U "YEAR 9
K250: U "YEAR 10
L250: U "YEAR 11
M250: U "YEAR 12
N250: U "YEAR 13
O250: U "YEAR 14
P250: U "YEAR 15
A252: U '3 Yr Property (Specl. Tooling)
A253: U '5 Yr. Property (Most Equipt.)
A254: U '10 Yr Property
A255: U '15 Yr. Property (facilities)
A257: U 'TOT DEPRECIABLE INVESTMENT
B257: (C2) U @SUM(B252..B255)
C257: (C2) U @SUM(C252..C255)
D257: (C2) U @SUM(D252..D255)
E257: (C2) U @SUM(E252..E255)
F257: (C2) U @SUM(F252..F255)
G257: (C2) U @SUM(G252..G255)
H257: (C2) U @SUM(H252..H255)
I257: (C2) U @SUM(I252..I255)
J257: (C2) U @SUM(J252..J255)
K257: (C2) U @SUM(K252..K255)
L257: (C2) U @SUM(L252..L255)
M257: (C2) U @SUM(M252..M255)
N257: (C2) U @SUM(N252..N255)
O257: (C2) U @SUM(O252..O255)
P257: (C2) U @SUM(P252..P255)
A259: U 'COMPUTE FED INVEST TAX CREDITS:
A261: U '3 Yr Property
B261: U 0.06*B252
C261: U 0.06*C252
D261: U 0.06*D252
E261: U 0.06*E252
F261: U 0.06*F252
G261: U 0.06*G252
H261: U 0.06*H252
I261: U 0.06*I252
J261: U 0.06*J252
K261: U 0.06*K252
L261: U 0.06*L252
M261: U 0.06*M252
N261: U 0.06*N252
O261: U 0.06*O252
```

```
P261: U 0.06*P252
A262: U '5 Yr Property
B262: U 0.1*B253
C262: U 0.1*C253
D262: U 0.1*D253
E262: U 0.1*E253
F262: U 0.1*F253
G262: U 0.1*G253
H262: U 0.1*H253
I262: U 0.1*I253
J262: U 0.1*J253
K262: U 0.1*K253
L262: U 0.1*L253
M262: U 0.1*M253
N262: U 0.1*N253
O262: U 0.1*O253
P262: U 0.1*P253
A263: U '10 Yr Property
B263: U 0.1*B254
C263: U 0.1*C254
D263: U 0.1*D254
E263: U 0.1*E254
F263: U 0.1*F254
G263: U 0.1*G254
H263: U 0.1*H254
I263: U 0.1*I254
J263: U 0.1*J254
K263: U 0.1*K254
L263: U 0.1*L254
M263: U 0.1*M254
N263: U 0.1*N254
O263: U 0.1*O254
P263: U 0.1*P254
A266: U 'TOT FED INVESTMENT TAX CREDIT
B266: (C2) U @SUM(B264..B261)
C266: (C2) U @SUM(C264..C261)
D266: (C2) U @SUM(D264..D261)
E266: (C2) U @SUM(E264..E261)
F266: (C2) U @SUM(F264..F261)
G266: (C2) U @SUM(G264..G261)
H266: (C2) U @SUM(H264..H261)
I266: (C2) U @SUM(I264..I261)
J266: (C2) U @SUM(J264..J261)
K266: (C2) U @SUM(K264..K261)
L266: (C2) U @SUM(L264..L261)
M266: (C2) U @SUM(M264..M261)
N266: (C2) U @SUM(N264..N261)
```

```
O266: (C2) U @SUM(O264..O261)
P266: (C2) U @SUM(P264..P261)
A268: U 'DEPRECIATION 1ST YR BASIS
A270: U '3 Yr Property
B270: U (+B252-(B261/2))
C270: U (+C252-(C261/2))
D270: U (+D252-(D261/2))
E270: U (+E252-(E261/2))
F270: U (+F252-(F261/2))
G270: U (+G252-(G261/2))
H270: U (+H252-(H261/2))
I270: U (+I252-(I261/2))
J270: U (+J252-(J261/2))
K270: U (+K252-(K261/2))
L270: U (+L252-(L261/2))
M270: U (+M252-(M261/2))
N270: U (+N252-(N261/2))
O270: U (+O252-(O261/2))
P270: U (+P252-(P261/2))
A271: U '5 Yr Property
B271: U (+B253-(B262/2))
C271: U (+C253-(C262/2))
D271: U (+D253-(D262/2))
E271: U (+E253-(E262/2))
F271: U (+F253-(F262/2))
G271: U (+G253-(G262/2))
H271: U (+H253-(H262/2))
I271: U (+I253-(I262/2))
J271: U (+J253-(J262/2))
K271: U (+K253-(K262/2))
L271: U (+L253-(L262/2))
M271: U (+M253-(M262/2))
N271: U (+N253-(N262/2))
O271: U (+O253-(O262/2))
P271: U (+P253-(P262/2))
A272: U '10 Yr Property
B272: U (+B254-(B263/2))
C272: U (+C254-(C263/2))
D272: U (+D254-(D263/2))
E272: U (+E254-(E263/2))
F272: U (+F254-(F263/2))
G272: U (+G254-(G263/2))
H272: U (+H254-(H263/2))
I272: U (+I254-(I263/2))
J272: U (+J254-(J263/2))
K272: U (+K254-(K263/2))
L272: U (+L254-(L263/2))
```

```
M272: U (+M254-(M263/2))
N272: U (+N254-(N263/2))
O272: U (+O254-(O263/2))
P272: U (+P254-(P263/2))
A273: U '15 Yr Property
B273: U (+B255)
C273: U (+C255)
D273: U (+D255)
E273: U (+E255)
F273: U (+F255)
G273: U (+G255)
H273: U (+H255)
I273: U (+I255)
J273: U (+J255)
K273: U (+K255)
L273: U (+L255)
M273: U (+M255)
N273: U (+N255)
O273: U (+O255)
P273: U (+P255)
A275: U 'COMPUTE ANNUAL DEPRECIATION:
A277: U '3 Yr Property
B277: U 0.25*B270
C277: U 0.25*C270+(B270*0.38)
D277: U 0.25*D270+(C270*0.38)+(0.37*B270)
E277: U 0.25*E270+(D270*0.38)+(0.37*C270)
F277: U 0.25*F270+(E270*0.38)+(0.37*D270)
G277: U 0.25*G270+(F270*0.38)+(0.37*E270)
H277: U 0.25*H270+(G270*0.38)+(0.37*F270)
I277: U 0.25*I270+(H270*0.38)+(0.37*G270)
J277: U 0.25*J270+(I270*0.38)+(0.37*H270)
K277: U 0.25*K270+(J270*0.38)+(0.37*I270)
L277: U 0.25*L270+(K270*0.38)+(0.37*J270)
M277: U 0.25*M270+(L270*0.38)+(0.37*K270)
N277: U 0.25*N270+(M270*0.38)+(0.37*L270)
O277: U 0.25*O270+(N270*0.38)+(0.37*M270)
P277: U 0.25*P270+(O270*0.38)+(0.37*N270)
A278: U '5 Yr Property
B278: U 0.15*B271
C278: U 0.15*C271+(B271*0.22)
D278: U 0.15*D271+(C271*0.22)+(0.21*B271)
E278: U 0.15*E271+(D271*0.22)+(0.21*C271)+(0.21*B271)
F278: U 0.15*F271+(E271*0.22)+(0.21*D271)+(0.21*C271)+(0.21*B271)
G278: U 0.15*G271+(F271*0.22)+(0.21*E271)+(0.21*D271)+(0.21*C271)
H278: U 0.15*H271+(G271*0.22)+(0.21*F271)+(0.21*E271)+(0.21*D271)
I278: U 0.15*I271+(H271*0.22)+(0.21*G271)+(0.21*F271)+(0.21*E271)
J278: U 0.15*J271+(I271*0.22)+(0.21*H271)+(0.21*G271)+(0.21*F271)
```

```
K278: U 0.15*K271+(J271*0.22)+(0.21*I271)+(0.21*H271)+(0.21*G271)
L278: U 0.15*L271+(K271*0.22)+(0.21*J271)+(0.21*I271)+(0.21*H271)
M278: U 0.15*M271+(L271*0.22)+(0.21*K271)+(0.21*J271)+(0.21*I271)
N278: U 0.15*N271+(M271*0.22)+(0.21*L271)+(0.21*K271)+(0.21*J271)
O278: U 0.15*O271+(N271*0.22)+(0.21*M271)+(0.21*L271)+(0.21*K271)
P278: U 0.15*P271+(O271*0.22)+(0.21*N271)+(0.21*M271)+(0.21*L271)
A279: U '10 Yr Property
B279: U 0.08*B272
C279: U 0.08*C272+(0.14*B272)
D279: U 0.08*D272+(0.14*C272)+(0.12*B272)
E279: U 0.08*E272+(0.14*D272)+(0.12*C272)+(0.1*B272)
F279: U 0.08*F272+(0.14*E272)+(0.12*D272)+(0.1*C272)+(0.1*B272)
G279: U 0.08*G272+(0.14*F272)+(0.12*E272)+(0.1*D272)+(0.1*C272)+(0.1*B272)
H279: U 0.08*H272+(0.14*G272)+(0.12*F272)+(0.1*E272)+(0.1*D272)+(0.1*C272)+(0.09*B272)
I279: U 0.08*I272+(0.14*H272)+(0.12*G272)+((D272+E272+F272)*0.1)+(0.09*(B272+C272))
J279: U 0.08*J272+(0.14*I272)+(0.12*H272)+(0.1*(E272+F272+G272))+(0.09*(B272+C272+D272))
K279: U 0.08*K272+(0.14*J272)+(0.12*I272)+(0.1*(F272+G272+H272))+(0.09*(B272+C272+D272+E272))
L279: U 0.08*L272+(0.14*K272)+(0.12*J272)+(0.1*(G272+H272+I272))+(0.09*(C272+D272+E272+F272))
M279: U 0.08*M272+(0.14*L272)+(0.12*K272)+(0.1*(H272+I272+J272))+(0.09*(D272+E272+F272+G272))
N279: U 0.08*N272+(0.14*M272)+(0.12*L272)+(0.1*(I272+J272+K272))+(0.09*(E272+F272+G272+H272))
O279: U 0.08*O272+(0.14*N272)+(0.12*M272)+(0.1*(J272+K272+L272))+(0.09*(F272+G272+H272+I272))
P279: U 0.08*P272+(0.14*O272)+(0.12*N272)+(0.1*(K272+L272+M272))+(0.09*(G272+H272+I272+J272))
```

```
A280: U '15 Yr Property
B280: U 0.12*B273
C280: U 0.1*B273+(0.12*C273)
D280: U 0.09*B273+(0.1*C273)+(0.12*D273)
E280: U 0.08*B273+(0.09*C273)+(0.1*D273)
F280: U 0.07*B273+(0.08*C273)+(0.09*D273)
G280: U 0.06*B273+(0.07*C273)+(0.08*D273)
H280: U 0.06*B273+(0.06*C273)+(0.07*D273)
I280: U 0.06*(B273+C273+D273)
J280: U 0.06*(B273+C273+D273)
K280: U (0.05*B273)+(0.06*(C273+D273))
L280: U (0.05*(B273+C273))+(0.06*D273)
M280: U 0.05*(B273+C273+D273)
N280: U 0.05*(B273+C273+D273)
O280: U 0.05*(B273+C273+D273)
P280: U 0.05*(B273+C273+D273)
A282: U 'ANNUAL DEPRECIATION
B282: (C2) U @SUM(B280..B277)
C282: (C2) U @SUM(C280..C277)
D282: (C2) U @SUM(D280..D277)
E282: (C2) U @SUM(E280..E277)
F282: (C2) U @SUM(F280..F277)
G282: (C2) U @SUM(G280..G277)
H282: (C2) U @SUM(H280..H277)
I282: (C2) U @SUM(I280..I277)
```

```
J282:  (C2) U @SUM(J280..J277)
K282:  (C2) U @SUM(K280..K277)
L282:  (C2) U @SUM(L280..L277)
M282:  (C2) U @SUM(M280..M277)
N282:  (C2) U @SUM(N280..N277)
O282:  (C2) U @SUM(O280..O277)
P282:  (C2) U @SUM(P280..P277)
A284:  U 'FED TAX SAVINGS FROM DEPREC.
B284:  (C2) U 0.46*B282
C284:  (C2) U 0.46*C282
D284:  (C2) U 0.46*D282
E284:  (C2) U 0.46*E282
F284:  (C2) U 0.46*F282
G284:  (C2) U 0.46*G282
H284:  (C2) U 0.46*H282
I284:  (C2) U 0.46*I282
J284:  (C2) U 0.46*J282
K284:  (C2) U 0.46*K282
L284:  (C2) U 0.46*L282
M284:  (C2) U 0.46*M282
N284:  (C2) U 0.46*N282
O284:  (C2) U 0.46*O282
P284:  (C2) U 0.46*P282
A286:  U 'FED TAX SAVINGS FROM NON-
B286:  (C2) U 0.46*(B78-B257)
C286:  (C2) U 0.46*(C78-C257)
D286:  (C2) U 0.46*(D78-D257)
E286:  (C2) U 0.46*(E78-E257)
F286:  (C2) U 0.46*(F78-F257)
G286:  (C2) U 0.46*(G78-G257)
H286:  (C2) U 0.46*(H78-H257)
I286:  (C2) U 0.46*(I78-I257)
J286:  (C2) U 0.46*(J78-J257)
K286:  (C2) U 0.46*(K78-K257)
L286:  (C2) U 0.46*(L78-L257)
M286:  (C2) U 0.46*(M78-M257)
N286:  (C2) U 0.46*(N78-N257)
O286:  (C2) U 0.46*(O78-O257)
P286:  (C2) U 0.46*(P78-P257)
A287:  U 'DEPRECIABLE BUSINESS COSTS
A289:  U \-
B289:  U \-
C289:  U \-
D289:  U \-
E289:  U \-
F289:  U \-
G289:  U \-
```

```
H289: U \-
I289: U \-
J289: U \-
K289: U \-
L289: U \-
M289: U \-
N289: U \-
O289: U \-
P289: U \-
B290: U "NEW METHOD
C290: U "NEW METHOD
D290: U "NEW METHOD
E290: U "NEW METHOD
F290: U "NEW METHOD
G290: U "NEW METHOD
H290: U "NEW METHOD
I290: U "NEW METHOD
J290: U "NEW METHOD
K290: U "NEW METHOD
L290: U "NEW METHOD
M290: U "NEW METHOD
N290: U "NEW METHOD
O290: U "NEW METHOD
P290: U "NEW METHOD
B291: U "YEAR 1
C291: U "YEAR 2
D291: U "YEAR 3
E291: U "YEAR 4
F291: U "YEAR 5
G291: U "YEAR 6
H291: U "YEAR 7
I291: U "YEAR 8
J291: U "YEAR 9
K291: U "YEAR 10
L291: U "YEAR 11
M291: U "YEAR 12
N291: U "YEAR 13
O291: U "YEAR 14
P291: U "YEAR 15
A293: U 'STATE & LOCAL INCOME TAXES
A295: U \-
B295: U \-
C295: U \-
D295: U \-
E295: U \-
F295: U \-
G295: U \-
```

```
H295: U \-
I295: U \-
J295: U \-
K295: U \-
L295: U \-
M295: U \-
N295: U \-
O295: U \-
P295: U \-
A296: U 'SUMMARY OF AFTER TAX ANALYSIS:
B298: U "YEAR 1
C298: U "YEAR 2
D298: U "YEAR 3
E298: U "YEAR 4
F298: U "YEAR 5
G298: U "YEAR 6
H298: U "YEAR 7
I298: U "YEAR 8
J298: U "YEAR 9
K298: U "YEAR 10
L298: U "YEAR 11
M298: U "YEAR 12
N298: U "YEAR 13
O298: U "YEAR 14
P298: U "YEAR 15
A300: U 'UNDISC. CASH FLOW (BEF TAX)
B300: (C2) U +B176
C300: (C2) U +C176
D300: (C2) U +D176
E300: (C2) U +E176
F300: (C2) U +F176
G300: (C2) U +G176
H300: (C2) U +H176
I300: (C2) U +I176
J300: (C2) U +J176
K300: (C2) U +K176
L300: (C2) U +L176
M300: (C2) U +M176
N300: (C2) U +N176
O300: (C2) U +O176
P300: (C2) U +P176
A302: U 'ADJUSTMENTS TO CASH FLOW
A303: U 'FROM TAX IMPACTS:
A305: U 'NON-DEPRECIABLE BUSINESS COSTS
B305: (C2) U +B286-B239
C305: (C2) U +C286-C239
D305: (C2) U +D286-D239
```

```
E305: (C2) U +E286-E239
F305: (C2) U +F286-F239
G305: (C2) U +G286-G239
H305: (C2) U +H286-H239
I305: (C2) U +I286-I239
J305: (C2) U +J286-J239
K305: (C2) U +K286-K239
L305: (C2) U +L286-L239
M305: (C2) U +M286-M239
N305: (C2) U +N286-N239
O305: (C2) U +O286-O239
P305: (C2) U +P286-P239
A307: U 'INVESTMENT TAX CREDIT
B307: (C2) U (B266-B219)
C307: (C2) U (C266-C219)
D307: (C2) U (D266-D219)
E307: (C2) U (E266-E219)
F307: (C2) U (F266-F219)
G307: (C2) U (G266-G219)
H307: (C2) U (H266-H219)
I307: (C2) U (I266-I219)
J307: (C2) U (J266-J219)
K307: (C2) U (K266-K219)
L307: (C2) U (L266-L219)
M307: (C2) U (M266-M219)
N307: (C2) U (N266-N219)
O307: (C2) U (O266-O219)
P307: (C2) U (P266-P219)
A309: U 'DEPRECIATION DEDUCTIONS
B309: (C2) U (+B284-B237)
C309: (C2) U (+C284-C237)
D309: (C2) U (+D284-D237)
E309: (C2) U (+E284-E237)
F309: (C2) U (+F284-F237)
G309: (C2) U (+G284-G237)
H309: (C2) U (+H284-H237)
I309: (C2) U (+I284-I237)
J309: (C2) U (+J284-J237)
K309: (C2) U (+K284-K237)
L309: (C2) U (+L284-L237)
M309: (C2) U (+M284-M237)
N309: (C2) U (+N284-N237)
O309: (C2) U (+O284-O237)
P309: (C2) U (+P284-P237)
A311: U 'STATE & LOCAL TAXES
B311: (C2) U +B245-B293
C311: (C2) U +C245-C293
```

```
D311: (C2) U +D245-D293
E311: (C2) U +E245-E293
F311: (C2) U +F245-F293
G311: (C2) U +G245-G293
H311: (C2) U +H245-H293
I311: (C2) U +I245-I293
J311: (C2) U +J245-J293
K311: (C2) U +K245-K293
L311: (C2) U +L245-L293
M311: (C2) U +M245-M293
N311: (C2) U +N245-N293
O311: (C2) U +O245-O293
P311: (C2) U +P245-P293
A313: U 'AFTER TAX CASH FLOW (UNDISC)
B313: (C2) U +B300+B305+B307+B309+B311
C313: (C2) U +C300+C305+C307+C309+C311
D313: (C2) U +D300+D305+D307+D309+D311
E313: (C2) U +E300+E305+E307+E309+E311
F313: (C2) U +F300+F305+F307+F309+F311
G313: (C2) U +G300+G305+G307+G309+G311
H313: (C2) U +H300+H305+H307+H309+H311
I313: (C2) U +I300+I305+I307+I309+I311
J313: (C2) U +J300+J305+J307+J309+J311
K313: (C2) U +K300+K305+K307+K309+K311
L313: (C2) U +L300+L305+L307+L309+L311
M313: (C2) U +M300+M305+M307+M309+M311
N313: (C2) U +N300+N305+N307+N309+N311
O313: (C2) U +O300+O305+O307+O309+O311
P313: (C2) U +P300+P305+P307+P309+P311
A315: U 'AFTER TAX CASH FLOW
B315: (C2) U +B313
C315: (C2) U +B315+C313
D315: (C2) U +C315+D313
E315: (C2) U +D315+E313
F315: (C2) U +E315+F313
G315: (C2) U +F315+G313
H315: (C2) U +G315+H313
I315: (C2) U +H315+I313
J315: (C2) U +I315+J313
K315: (C2) U +J315+K313
L315: (C2) U +K315+L313
M315: (C2) U +L315+M313
N315: (C2) U +M315+N313
O315: (C2) U +N315+O313
P315: (C2) U +O315+P313
A316: U 'CUMULATIVE (UNDISC)
A318: U 'INTERNAL RATE OF RETURN
```

```
B318: (F3) U @IRR(0.5,B313..P313)
A319: U '(AFTER TAX, UNDISC)
B319: U '
A322: U 'DISCOUNTED CASH FLOW ANALYSIS:
A324: U 'DISCOUNT RATE:
B324: (F2) U 0.2
B326: U "YEAR 1
C326: U "YEAR 2
D326: U "YEAR 3
E326: U "YEAR 4
F326: U "YEAR 5
G326: U "YEAR 6
H326: U "YEAR 7
I326: U "YEAR 8
J326: U "YEAR 9
K326: U "YEAR 10
L326: U "YEAR 11
M326: U "YEAR 12
N326: U "YEAR 13
O326: U "YEAR 14
P326: U "YEAR 15
A328: U 'AFTER TAX DISCOUNTED CASH
B328: (C2) U @EXP(-B324*1)*B313
C328: (C2) U @EXP(-B324*2)*C313
D328: (C2) U @EXP(-B324*3)*D313
E328: (C2) U @EXP(-B324*4)*E313
F328: (C2) U @EXP(-B324*5)*F313
G328: (C2) U @EXP(-B324*6)*G313
H328: (C2) U @EXP(-B324*7)*H313
I328: (C2) U @EXP(-B324*8)*I313
J328: (C2) U @EXP(-B324*9)*J313
K328: (C2) U @EXP(-B324*10)*K313
L328: (C2) U @EXP(-B324*11)*L313
M328: (C2) U @EXP(-B324*12)*M313
N328: (C2) U @EXP(-B324*13)*N313
O328: (C2) U @EXP(-B324*14)*O313
P328: (C2) U @EXP(-B324*15)*P313
A329: U 'FLOW (CONTINUOUS DISCOUNTING)
A331: U 'CUMULATIVE DISCOUNTED CASH
B331: (C2) U +B328
C331: (C2) U +B331+C328
D331: (C2) U +C331+D328
E331: (C2) U +D331+E328
F331: (C2) U +E331+F328
G331: (C2) U +F331+G328
H331: (C2) U +G331+H328
I331: (C2) U +H331+I328
```

```
J331: (C2) U +I331+J328
K331: (C2) U +J331+K328
L331: (C2) U +K331+L328
M331: (C2) U +L331+M328
N331: (C2) U +M331+N328
O331: (C2) U +N331+O328
P331: (C2) U +O331+P328
A332: U 'FLOW, AFTER TAX, CON'T DISC
A334: U 'INTERNAL RATE OF RETURN
B334: (F3) U @IRR(0.4,B328..P328)
A335: U '(AFTER TAX, DISCOUNTED)
A340: U \END\END\END\END\END\END\END\END\END\END\END\END\END\END\END\END\END\END\END
A341: U 'MAXIMUM # OF YEARS
B341: U 15
A345: U 'KEYBOARD MACROS:
A346: U '{home}{goto}ADDMESSAGE~{goto}C365~/wgrm~/rncYEARS~~/rncCLOSEOUT~A491~
A347: U '{?}~{right}~/rncCOLUMNS~~/rncFORMCONVERT~A405~~+CURRENTYEARS-YEARS{edit}{calc}~
```

```
A348: U '/xiCOLUMNS=1~~/wdcP1..P1~/xgFORMCONVERT~
A349: U '/xiCOLUMNS=2~~/wdcO1..P1~/xgFORMCONVERT~
A350: U '/xiCOLUMNS=3~~/wdcN1..P1~/xgFORMCONVERT~
A351: U '/xiCOLUMNS=4~~/wdcM1..P1~/xgFORMCONVERT~
A352: U '/xiCOLUMNS=5~~/wdcL1..P1~/xgFORMCONVERT~
A353: U '/xiCOLUMNS=6~~/wdcK1..P1~/xgFORMCONVERT~
A354: U '/xiCOLUMNS=7~~/wdcJ1..P1~/xgFORMCONVERT~
A355: U '/xiCOLUMNS=8~~/wdcI1..P1~/xgFORMCONVERT~
A356: U '/xiCOLUMNS=9~~/wdcH1..P1~/xgFORMCONVERT~
A357: U '/xiCOLUMNS=10~~/wdcG1..P1~/xgFORMCONVERT~
A358: U '/xiCOLUMNS=11~~/wdcF1..P1~/xgFORMCONVERT~
A359: U '/xiCOLUMNS=12~~/wdcE1..P1~/xgFORMCONVERT~
A360: U '/xiCOLUMNS=13~~/wdcD1..P1~/xgFORMCONVERT~
A361: U '/xiCOLUMNS=14~~/wdcC1..P1~/xgFORMCONVERT~
A362: U '/xiCOLUMNS=0~~/xgCLOSEOUT~
A363: U '/rncERROR~A385~{goto}ERROR~/xgERROR~
A365: U 'Enter the number of years to compute:
C365: '
D365: '
A366: U '
A367: U '  and press the "Enter" key.
A385: U 'ERROR: Limit number of years to 15 or less.
A386: U 'Press escape and type "Alt-A" again.
A405: '/xiCOLUMNS=1~~{goto}B119~@IRR(0.4,B115..O115)~
A406: '/xiCOLUMNS=1~~{goto}B123~@NPV(B121,B115..O115)~
A407: U '/xiCOLUMNS=1~~{goto}B181~@IRR(0.4,B176..O176)~
A408: U '/xiCOLUMNS=1~~{goto}B185~@NPV(B183,B176..O176)~
A409: U '/xiCOLUMNS=1~~{goto}B318~@IRR(0.5,B313..O313)~
A410: U '/xiCOLUMNS=1~~{goto}B334~@IRR(0.4,B328..O328)~/xgCLOSEOUT~
A411: '/xiCOLUMNS=2~~{goto}B119~@IRR(0.4,B115..N115)~
```

```
A412:  '/xiCOLUMNS=2~~{goto}B123~@NPV(B121,B115..N115)~
A413:  U '/xiCOLUMNS=2~~{goto}B181~@IRR(0.4,B176..N176)~
A414:  U '/xiCOLUMNS=2~~{goto}B185~@NPV(B183,B176..N176)~
A415:  U '/xiCOLUMNS=2~~{goto}B318~@IRR(0.5,B313..M313)~
A416:  U '/xiCOLUMNS=2~~{goto}B334~@IRR(0.4,B328..N328)~/xgCLOSEOUT~
A417:  '/xiCOLUMNS=3~~{goto}B119~@IRR(0.4,B115..M115)~
A418:  '/xiCOLUMNS=3~~{goto}B123~@NPV(B121,B115..M115)~
A419:  U '/xiCOLUMNS=3~~{goto}B181~@IRR(0.4,B176..M176)~
A420:  U '/xiCOLUMNS=3~~{goto}B185~@NPV(B183,B176..M176)~
A421:  U '/xiCOLUMNS=3~~{goto}B318~@IRR(0.5,B313..M313)~
A422:  U '/xiCOLUMNS=3~~{goto}B334~@IRR(0.4,B328..M328)~/xgCLOSEOUT~
A423:  '/xiCOLUMNS=4~~{goto}B119~@IRR(0.4,B115..L115)~
A424:  '/xiCOLUMNS=4~~{goto}B123~@NPV(B121,B115..L115)~
A425:  U '/xiCOLUMNS=4~~{goto}B181~@IRR(0.4,B176..L176)~
A426:  U '/xiCOLUMNS=4~~{goto}B185~@NPV(B183,B176..L176)~
A427:  U '/xiCOLUMNS=4~~{goto}B318~@IRR(0.5,B313..L313)~
A428:  U '/xiCOLUMNS=4~~{goto}B334~@IRR(0.4,B328..L328)~/xgCLOSEOUT~
A429:  '/xiCOLUMNS=5~~{goto}B119~@IRR(0.4,B115..K115)~
A430:  '/xiCOLUMNS=5~~{goto}B123~@NPV(B121,B115..K115)~
A431:  U '/xiCOLUMNS=5~~{goto}B181~@IRR(0.4,B176..K176)~
A432:  U '/xiCOLUMNS=5~~{goto}B185~@NPV(B183,B176..K176)~
A433:  U '/xiCOLUMNS=5~~{goto}B318~@IRR(0.5,B313..K313)~
A434:  U '/xiCOLUMNS=5~~{goto}B334~@IRR(0.4,B328..K328)~/xgCLOSEOUT~
A435:  '/xiCOLUMNS=6~~{goto}B119~@IRR(0.4,B115..J115)~
A436:  '/xiCOLUMNS=6~~{goto}B123~@NPV(B121,B115..J115)~
A437:  U '/xiCOLUMNS=6~~{goto}B181~@IRR(0.4,B176..J176)~
A438:  U '/xiCOLUMNS=6~~{goto}B185~@NPV(B183,B176..J176)~
A439:  U '/xiCOLUMNS=6~~{goto}B318~@IRR(0.5,B313..J313)~
A440:  U '/xiCOLUMNS=6~~{goto}B334~@IRR(0.4,B328..J328)~/xgCLOSEOUT~
A441:  '/xiCOLUMNS=7~~{goto}B119~@IRR(0.4,B115..I115)~
A442:  '/xiCOLUMNS=7~~{goto}B123~@NPV(B121,B115..I115)~
A443:  U '/xiCOLUMNS=7~~{goto}B181~@IRR(0.4,B176..I176)~
A444:  U '/xiCOLUMNS=7~~{goto}B185~@NPV(B183,B176..I176)~
A445:  U '/xiCOLUMNS=7~~{goto}B318~@IRR(0.5,B313..I313)~
A446:  U '/xiCOLUMNS=7~~{goto}B334~@IRR(0.4,B328..I328)~/xgCLOSEOUT~
A447:  '/xiCOLUMNS=8~~{goto}B119~@IRR(0.4,B115..H115)~
A448:  '/xiCOLUMNS=8~~{goto}B123~@NPV(B121,B115..H115)~
A449:  U '/xiCOLUMNS=8~~{goto}B181~@IRR(0.4,B176..H176)~
A450:  U '/xiCOLUMNS=8~~{goto}B185~@NPV(B183,B176..H176)~
A451:  U '/xiCOLUMNS=8~~{goto}B318~@IRR(0.5,B313..H313)~
A452:  U '/xiCOLUMNS=8~~{goto}B334~@IRR(0.4,B328..H328)~/xgCLOSEOUT~
A453:  '/xiCOLUMNS=9~~{goto}B119~@IRR(0.4,B115..G115)~
A454:  '/xiCOLUMNS=9~~{goto}B123~@NPV(B121,B115..G115)~
A455:  U '/xiCOLUMNS=9~~{goto}B181~@IRR(0.4,B176..G176)~
A456:  U '/xiCOLUMNS=9~~{goto}B185~@NPV(B183,B176..G176)~
A457:  U '/xiCOLUMNS=9~~{goto}B318~@IRR(0.5,B313..G313)~
A458:  U '/xiCOLUMNS=9~~{goto}B334~@IRR(0.4,B328..G328)~/xgCLOSEOUT~
```

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A459:  '/xiCOLUMNS=10"~{goto}B119~@IRR(0.4,B115..F115)~
A460:  '/xiCOLUMNS=10"~{goto}B123~@NPV(B121,B115..F115)~
A461:  U '/xiCOLUMNS=10"~{goto}B181~@IRR(0.4,B176..F176)~
A462:  U '/xiCOLUMNS=10"~{goto}B185~@NPV(B183,B176..F176)~
A463:  U '/xiCOLUMNS=10"~{goto}B318~@IRR(0.5,B313..F313)~
A464:  U '/xiCOLUMNS=10"~{goto}B334~@IRR(0.4,B328..F328)~/xgCLOSEOUT~
A465:  '/xiCOLUMNS=11"~{goto}B119~@IRR(0.4,B115..E115)~
A466:  '/xiCOLUMNS=11"~{goto}B123~@NPV(B121,B115..E115)~
A467:  U '/xiCOLUMNS=11"~{goto}B181~@IRR(0.4,B176..E176)~
A468:  U '/xiCOLUMNS=11"~{goto}B185~@NPV(B183,B176..E176)~
A469:  U '/xiCOLUMNS=11"~{goto}B318~@IRR(0.5,B313..E313)~
A470:  U '/xiCOLUMNS=11"~{goto}B334~@IRR(0.4,B328..E328)~/xgCLOSEOUT~
A471:  '/xiCOLUMNS=12"~{goto}B119~@IRR(0.4,B115..D115)~
A472:  '/xiCOLUMNS=12"~{goto}B123~@NPV(B121,B115..D115)~
A473:  U '/xiCOLUMNS=12"~{goto}B181~@IRR(0.4,B176..D176)~
A474:  U '/xiCOLUMNS=12"~{goto}B185~@NPV(B183,B176..D176)~
A475:  U '/xiCOLUMNS=12"~{goto}B318~@IRR(0.5,B313..D313)~
A476:  U '/xiCOLUMNS=12"~{goto}B334~@IRR(0.4,B328..D328)~/xgCLOSEOUT~
A477:  '/xiCOLUMNS=13"~{goto}B119~@IRR(0.4,B115..C115)~
A478:  '/xiCOLUMNS=13"~{goto}B123~@NPV(B121,B115..C115)~
A479:  U '/xiCOLUMNS=13"~{goto}B181~@IRR(0.4,B176..C176)~
A480:  U '/xiCOLUMNS=13"~{goto}B185~@NPV(B183,B176..C176)~
A481:  U '/xiCOLUMNS=13"~{goto}B318~@IRR(0.5,B313..C313)~
A482:  U '/xiCOLUMNS=13"~{goto}B334~@IRR(0.4,B328..C328)~/xgCLOSEOUT~
A483:  '/xiCOLUMNS=14"~{goto}B119~@IRR(0.4,B115..B115)~
A484:  '/xiCOLUMNS=14"~{goto}B123~@NPV(B121,B115..B115)~
A485:  U '/xiCOLUMNS=14"~{goto}B181~@IRR(0.4,B176..B176)~
A486:  U '/xiCOLUMNS=14"~{goto}B185~@NPV(B183,B176..B176)~
A487:  U '/xiCOLUMNS=14"~{goto}B318~@IRR(0.5,B313..B313)~
A488:  U '/xiCOLUMNS=14"~{goto}B334~@IRR(0.4,B328..B328)~/xgCLOSEOUT~
A491:  U '/wgra~/rnr"~{home}~/reA337..d500"~
```