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## A Student guide to Autotab

Thomas L. Reardon

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APPROVAL

This independent study submitted by Thomas L. Reardon in partial fulfillment of the requirements for the Degree of Master of Business Administration from the University of North Dakota is hereby approved by the Faculty of the Graduate School.

A STUDENT GUIDE TO AUTOTAB

by  
Thomas Leslie Reardon

Bachelor of Science in Education  
University of North Dakota, 1979

An  
Independent Study  
Submitted to the Graduate School  
of the  
University of North Dakota

in partial fulfillment of the requirements  
for the degree of  
Master of Business Administration

Grand Forks, North Dakota

August, 1984



APPROVAL

This independent study submitted by Thomas L. Reardon in partial fulfillment of the requirements for the Degree of Master of Business Administration from the University of North Dakota is hereby approved by the Faculty Advisor under whom the work has been done.

Paul Telford

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Date: April 22, 1967

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Thomas H. Geard

Date

August 30, 1984

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## CHAPTER I

### INTRODUCTION

The University of North Dakota has received a financial computer program named AUTOTAB, which is installed on the IBM mainframe computer in Fargo. It was donated by the CAPEX Corporation to the University of North Dakota.

AUTOTAB makes possible financial modeling, planning, forecasting, reporting and consolidation, sensitivity analysis, and financial computations. It is a comprehensive financial modeling system, which will be used by students to develop computer assisted reports, financial statements, and selected analyses of financial data.

This financial program will be used as a supplemental teaching tool primarily in finance classes. It may also be used in other classes requiring students to analyze financial data.

### Problem Description

The main problem of implementing AUTOTAB in teaching is the lack of a student guide. A manual is available from the vendor, but it is a workshop guide written for staff specialists who are already familiar with computers and



financial reports. It is used in conjunction with a three day workshop offered by the vendor. It was written for use with a variety of computer systems, which makes it unsuitable for use as a student guide.

Many students taking classes in Finance have had limited exposure to mainframe computers, and they have virtually no financial modeling knowledge, making it extremely difficult to understand and effectively use AUTOTAB.

#### Statement of the Problem

Develop and field test A Student Guide to AUTOTAB for use by students in Finance and related classes.

#### Purpose

The purpose of the project is to reduce the instructors support services required by students while using AUTOTAB. It will incorporate both an introduction to Virtual Storage Personal Computing (VSPC) and AUTOTAB, in a format that will assist students without prior financial modeling experience. It will describe how to formulate and analyze financial reports.

## Limitations

The majority of students using this program will be undergraduates whose computer knowledge is limited to Accounting 217. This is a required course in which students use VSPC to process programs written in BASIC.

The AUTOTAB program is only partially installed. Some of the features such as CALL, SAVE, and USE have not been implemented.

## Delimitations

The manual was designed with the functions and options that will be needed primarily in Finance classes. The Student Guide to AUTOTAB will be used in conjunction with one to two hours of classroom instruction.

## Methodology

The Student Guide to AUTOTAB was produced by a three member team under the direction of Professor Rolf Tedefalk. Each member of the team had certain responsibilities according to their specialties. Erwin Martens, a graduate student in Economics with a Computer Science major, was responsible for setting up the JCL, editing, and finalizing the output report. Jim Britton, a graduate student in

Accounting, designed the AUTOTAB sample problems and reports. Tom Reardon, a graduate student in Business Administration, designed and wrote the text material that will be used in this guide.

Characteristics of the students using this program required selective coverage of the AUTOTAB system for inclusion in the Student Guide to AUTOTAB. This coverage will include the basic VSPC commands necessary to use the IBM computer, and AUTOTAB commands and options that will enable the user to write selected reports and analyze the same.

The SCRIPT Text Editor was used to produce the guide electronically. This facilitated revision, printing, and any future updating.

An exploratory test was performed on the first draft. Students in Dr. Roger Bloomquist's class, BVED 350 Microcomputer Application for Business, were used as test subjects. The characteristics of the class ranged from those who had used AUTOTAB previously, to those who had not used a computer before. After reviewing the exploratory test results, changes were made to improve and clarify the guide.

Once all the changes were made, a second test was given to see if the second draft covered all areas judged essential with clarity and conciseness. The second test was given to Dr. Rolf Tedefalk's two finance classes: MGMT 303



Corporation Finance, and MGMT 402 Financial Administration. MGMT 303 is an introductory course, and a one hour lecture was given before distributing the manual. MGMT 402 is an intermediate course in Finance, and students were given the manual without any lecture. Both groups of students were required to evaluate the Student Guide to AUTOTAB.

### Chapter Review

Chapter II contains the basic VSPC commands and some of the procedures needed to run a program. The main emphasis of this chapter is on the basics of using AUTOTAB.

Chapter III describes the basic AUTOTAB format, which is broken down into seven segments. It provides the user with enough knowledge to run very basic problems.

Chapter IV is an extension of Chapter III, with each of the seven segments dealt with in much more detail. This will enable the user to write more complex reports.

Chapter V focuses on analysis of financial reports. It contains sections on sensitivity analysis, valuation, ratio analysis, and capital budgeting.

Chapter VI describes the process used to produce the Student Guide to AUTOTAB. It also includes summaries of the two field tests.

The APPENDICES contains the pre-test given during the exploratory field test, a comprehensive review problem which incorporates many AUTOTAB functions and options, common error statements that may be encountered by the user, and a complete processing of an AUTOTAB report from start to finish.

#### Introduction

AUTOTAB is a special purpose financial computer software package. This package is capable of solving problems involving financial modeling, planning, forecasting, reporting and consolidation, sensitivity analysis and statistical analysis. AUTOTAB employs a menu-driven single self-descriptive system. It is designed for use in corporate planning departments.

This Student Guide to AUTOTAB is divided into chapters. The initial chapters will focus on basic commands and organization. The development of a consistent logical approach to problem solving is reviewed, while discussing the basic, as well as more complex commands. This "structural" approach will serve the framework for all the chapters in the Student Guide to AUTOTAB. Progression from chapter to chapter involves a more detailed discussion of the topics covered in the previous chapters, as well as introduction of new commands.

## CHAPTER II

### AUTOTAB BASICS

#### Introduction

AUTOTAB is a special purpose financial computer software package. This package is capable of solving problems involving financial modeling, planning, forecasting, reporting and consolidation, sensitivity analysis and statistical analysis. AUTOTAB employs commands written in simple self-descriptive english. It is designed for use in corporate planning departments.

This Student Guide to AUTOTAB is divided into chapters. The initial chapters will focus on basic commands and organization. The development of a consistent logical approach to problem solving is reviewed, while discussing the basic, as well as more complex commands. This "structural" approach will form the framework for all the chapters in the Student Guide to AUTOTAB. Progression from chapter to chapter involves a more detailed discussion of the topics covered in the previous chapters, as well as introduction of new commands.



Fluency in AUTOTAB is dependent on cumulative knowledge. Study the basic commands thoroughly, before moving on to the next chapter. We strongly suggest that you experiment with variations of the given examples in order to better understand the capabilities of AUTOTAB. Remember you cannot hurt the computer. The worst thing that can happen is that you generate errors. Correct your errors and try again. As in most finance courses, practice makes "perfect".

## Virtual Storage Personal Computing (VSPC)

### Introduction

This section of the guide provides a selective review of VSPC commands. It is strongly recommended that you familiarize yourself with these essential VSPC commands before moving to AUTOTAB. In addition, two introductory manuals explaining VSPC timesharing are available in the UND bookstore and referenced in the bibliography. VSPC is just another name for a bridge between you and the computer. You will need this bridge to work on programming assignments for AUTOTAB reports. You will receive a VSPC ID number and password from either the Computer Center or your instructor.



## VSPC Commands

The following is a list of the most commonly used VSPC commands in alphabetical order. Any command may be shortened to the first 1,2, or 3 letter(s), provided it is distinguishable from other commands. For example, INPUT may be shortened to I, but PRINT and PROTECT must use PRI, and PRO respectively.

Upper and lower case letters may be used interchangeably. File names must be eight or less letters/digits, beginning with a letter.

To use a VSPC command, type it in the format illustrated, then press RETURN. For help with any command, type ? followed by the command name. For example, for help with the VSPC command CHANGE, type ?CHANGE.

CHANGE allows correction in a line without retyping the entire line.

```
CHANGE 50 'THIS' 'THAT'
```

50 represents the number of the line to be corrected.

THIS represents the incorrect part. THAT represents the correction to replace THIS.

```
CHANGE ALL 'OLD' 'NEW'
```

Be careful with this one. Every line that has the string OLD will be changed to have the string NEW instead.

CLEAR erases your entire workspace.

```
CLEAR
```

Be sure to use this command before you type in a new program, if you have been using your workspace for anything else.

COPY copies line(s) to a given position.

COPY 100 50

100 represents the number of the line to be copied, and 50 represents the line number where it will be inserted, starting with line 60.

COPY 40:150 300

40:150 represents a range of lines to be copied to the number 300 position, starting with 310.

DELETE erases the indicated line(s) in your workspace.

DELETE 150

150 represents the number of the line to be deleted. Simply typing the line number, then pressing RETURN will also delete a single line.

DELETE 40:190

40:190 represents a range of lines to be deleted.

FIND tells which lines contain specific text.

FIND 100:500 'STRING'

String represents the text to be found, and 100:500 represents the range of lines to be check.

INPUT causes automatic line numbering. To discontinue, press RETURN twice.

INPUT

Line numbers will start with 00010 and increment by 10. If line numbers are already present, the numbering will continue from the largest number.

INPUT 210 5

210 represents the line number where the numbering should begin, and 5 represents the increment value..

LINESIZE sets the length of the printed line on the terminal

LINESIZE 80

Use on video terminals.

LINESIZE 132

Use on DECwriters to prevent wrap around of text.

LIST lists the content of your workspace.

LIST

The entire workspace contents will be listed. If you wish to stop the listing, press BREAK.

LIST NOLINE

The listing will not have VSPC line numbers. This is used when getting a hardcopy on a DECwriter.

LIST 10:210

10:210 represents the range of lines you wish to list.



LOAD copies program results, or a saved program or file into your workspace.

LOAD prog5

"prog5" represents the file name of a program to be copied from your library into your workspace.

LOAD 4166 prog5

"4166 prog5" represents the VSPC number and file to which you have access. It may be an instructor's file or a SHARED file.

LOAD OUTPUT 35 DS 102

This copies the results of a program submitted into your workspace. The 35 represents the number in the nn position that was given when the computer responded: JOB SUBMITTED AS @#####nn \*\*\*\*.

MERGE combines a file from a library with the file presently in your workspace.

MERGE prog 200

A file named "prog" from your library will be copied into line position 200 of a program already in your workspace.

MERGE data6

A file named "data6" will be merged at the end of the program in your workspace, because the line number was omitted.

MOVE moves the specified line(s) to a given position.

MOVE 30:80 500

30:80 represents a range of lines to be moved to the line number after line 500 position. Existing lines will automatically be renumbered to accommodate the new lines.

OFF is used to sign off after using VSPC.

OFF

This is the last command you will type when you use VSPC.

PRINT allows you to use a student printer to get a hardcopy of a file in your library. To remove your hardcopy from the printer, press HOLD PRINT, then you press FORM FEED, wait for the paper to advance, tear off your copy, then press ENABLE PRINT.

PRINT prog3 NODE U23CC018

Here "prog3" represents the file to be printed, and NODE U23CC018 refers to the printer in room 385 at Gamble Hall.

PURGE allows you to remove old programs from your library.

PURGE prog8

"prog8" represents the library file to be deleted.

QUERY gives information requested.

QUERY LIBRARY

Shortened to Q L. This gives you a list of the names of the files stored in your library.

RENUMBER changes the line numbers in your workspace.

RENUMBER

This will change the line numbers so that the first is 00010, the second is 00020, and so on. This is commonly used after inserting or deleting lines of a program.

SAVE stores a copy of your workspace content as a file in your library. This is permanent, until you use PURGE. If the computer response is: NAME ALREADY EXISTS IN LIBRARY, it did not SAVE your present workspace content.

SAVE prog8

"prog8" is the file saved in your library.

SHARE makes a file available to anyone who knows your VSPC number and file name.

SHARE prog2

"prog2" represents the name of the file you wish to share.

STATUS tells whether a submitted program is AWAITING EXECUTION, EXECUTING, or COMPLETED. Retype until the job is COMPLETED. If there are many users, it may take several hours to complete a job.

STATUS 75

75 represents the job number from the position nn in computer response: JOB SUBMITTED AS @#####nn  
\*\*\*\*.

SUBMIT sends your batch program and data to the computer for processing.

SUBMIT jcl prog3 data3

Submits the named files from your library in the order given. Here "prog3" represents the program, and "data3" the input data file.

TEXT tells whether or not to have the computer print lines that are affected by the editing commands CHANGE, FIND, and LOCATE.

TEXT ON

If you use this command, you should do so at the very beginning, after LOGGING on.



## File Naming System

Materials you wish to retain in your library must be given a unique name, which is called the "filename". You may use any file naming system you desire.

The following three restrictions apply to filenames:

The filename cannot be more than eight characters long

The first character of the filename must be a letter

Certain reserved words cannot be used; see list at the end of this chapter.

## Logging on the Computer

You may log-on to the computer from a VDT or teletype terminal or some other input device. The logging on process connects your input device to VSPC. You must obtain a user number from your instructor or the computer center. This number identifies you to VSPC. For example, if your user number is 238590, you would log-on by entering V 238590. Note, one space must separate the "V" and your user number. The PASSWORD is a unique name you give to your VSPC account that protects it from indiscriminate access. The system response of READY indicates that VSPC has accepted your user number and PASSWORD and will now accept input. The following sequence of steps must be performed each time you log-on. Press the RETURN key after you complete each entry.

```
Computer: enter class
You enter: VSPC
Computer: class VSPC start
Computer: = HECN NTO - Ready for Sign On =
You enter: V ##### , ##### is your VSPC number
Computer: . . .
Computer: ENTER PASSWORD
Computer: ZZZZZZZZ
You enter: Your Password
Computer: READY
You enter: TEXT ON
```

## Interactive vs. Batch

INTERACTIVE processing allows the user to communicate directly with the system while running a computer program. This is analogous to a telephone conversation; one person transmits to the other person, and when the transmission is complete the person receives an immediate reply. In terms of computer usage, the user types in a command and receives an immediate response from the computer.

BATCH processing requires that the user wait for a response from the computer. This situation is analogous to letter writing. The first person writes the letter and then mails it. The letter is received by the second person, a reply is generated and it is sent back to the original sender. BATCH operates in a similar fashion, the user writes a program, submits the program. The computer receives the program and processes it and sends the reply back to the originator. The originator then loads the reply into his or her workspace and reads the reply. At no time during this process is the user directly processing his or her program, as opposed to INTERACTIVE processing. AUTOTAB is processed in BATCH mode. If you wish to read more on BATCH and INTERACTIVE processing modes, consult your VSPC manuals.



## Job Control Language (JCL)

AUTOTAB programs must be submitted with the appropriate Job Control Language (JCL). The JCLs are short programs that introduce your job to the operating system and provide some accounting information.

### Creating AUTOTAB JCL

You must key in the following lines exactly as described. Make certain that CLEAR and TEXT ON have been entered as discussed under VSPC commands. Enter INPUT and press the RETURN key to get into the automatic numbering system.

```
00010 //AUTOTB JOB (9700072,UND), 'XXXXXXXX', CLASS=A, TIME=1
00020 //      EXEC AUTOTAB, SYSA=Q, SYSO=Q
00030 //SYSIN  DD *
```

Replace XXXX with your "name". If your name is too long, abbreviate your name or use your initials. Remember that CLASS and TIME should also fit on the first line.

The first two positions must contain two slashes. The JOB name "AUTOTB" must begin in the third position in the first input line. One blank space must be left before and after JOB in line 00010, EXEC in line 00020, and DD in line 00030. The rest of the material for the three lines of JCL must be entered exactly as shown, without blank spaces, punctuation, and the order in which the items appear cannot be changed.

Exit the automatic numbering system by pressing the RETURN key twice and SAVE autojcl as follows:

```
Press RETURN key twice
Computer: READY
You Enter: SAVE autojcl
```

You now have the JCL stored in your library under the filename "autojcl".

### Getting Ready to use AUTOTAB

In developing your AUTOTAB statements, you should break the problem down into separate components. The reason for this approach is that certain portions of your AUTOTAB problem will be identical no matter how simple or complex the problem is. These portions can be saved in your library under a filename and recalled when they are needed.

A suggested structural approach in dealing with an AUTOTAB problem is to break the problem down into seven segments:

1. JCL : the Job Control Language for the AUTOTAB problems will be the same for every program that you run. Once you have the JCL saved in your library, you can use it over and over again.
2. FORMAT : this section deals mainly with report titles, column headings and row headings. By using descriptive names, anybody reading your report should understand what is intended.
3. DATA : probably the most beneficial use of the structural approach will be for the DATA section. You will be able to bring in DATA from a VSPC file and incorporate it into your model without having to key it in yourself.

4. RULES : you specify the calculations to be performed by AUTOTAB in the rules section, after the rows and columns are defined.
5. OUTPUT ORG. : how to improve the overall appearance of the printed report: spacings, editing, footnotes, remarks, ect., is dealt with in this section.
6. AUX. FUNCTIONS : the most useful function in this section is graphing. You will be able to graph your data and the results of any calculations. This is an optional section.
7. END : the final section simply tells the computer you are finished with the AUTOTAB problem.

Upon completion of a section, save it in your library under a filename which is easy to remember and descriptive, e.g., format1, data1, rules1 ect.. If changes are required in any of the sections, you must follow this procedure:



1. type: CLEAR , this will clear your workspace of any previous information.
2. type: LOAD filename, the filename is the name given to that particular file in your library.
3. type: LIST , this will list your file on the screen and you can now edit the file.
4. type: SAVE , this will save the new version with the changes made under the same filename.

Once all sections are completed you may MERGE them in the correct order, and SAVE the completed AUTOTAB program, using a descriptive filename:

1. type: CLEAR
2. you must first LOAD the JCL file, type: LOAD autojcl, this is the first of seven sections which makes up your AUTOTAB problem.
3. once the JCL is loaded into your workspace, you can MERGE the remaining six sections in sequence onto your JCL file. Type: MERGE format1, and then MERGE data1, ect., making sure there is one blank space between your command and the filename.
4. finally type SAVE filename and your seven sections will be brought together to form a model description.

This approach is not necessary for simple problems. In such cases, it is suggested that you use a complete solution, such as the illustrated problems in Chapters III and IV. You can use the same sequence of steps as given above, however, the MERGE command is not necessary since only one "complete" file exists. If you wish to submit this problem, or any other program in your library, you can do so in two ways:

1. type: LOAD filename, filename would be a file in your library that had all seven sections merged together and saved.

type: SUBMIT filename

terminal: @#####nn \*\*\*\* , your job number is given in the "nn" position. Remember it for the commands that follow.

type: STATUS nn

terminal: @#####nn \*\*\*\* 'AWAITING EXECUTION'  
'EXECUTING'  
'COMPLETED'

if not 'COMPLETED' type: STATUS nn again.  
When many students are using the computer you may have to wait several hours.

type: LOAD OUTPUT nn DS 102, this brings the result of your job--- a listing of your program and its output--- into your workspace. DS means data set.

terminal: READY

type: SAVE filename, your completed problem will be saved in your library under this new name.

terminal: READY

type: PRINT filename NODE U23CC018, use this if you wish to get a hard copy of your output. The printer number U23CC018 will be different for every printer, make sure you use the correct number for the printer you are working on.

NOTE: If you had been working on a DECwriter, after saving your submitted program you would type: LIST NOLINE , for a copy of the output.

2. if you did not MERGE all seven sections into one, you can still submit the problem using these commands:

type: SUBMIT autojcl format data rules ect.,  
remember files must be in the correct order.  
These files are automatically merged when this sequence is used.

the rest of the procedure is the same as in the first method after you have submitted the problem.



## Reporting Errors

AUTOTAB will print an error message if your model description is written improperly. In most cases, AUTOTAB ignores the improper information and attempts to complete and print the model, so that you can see whether the rest of the Model Description produces the results you intended. You must correct your errors before running AUTOTAB again.

Error messages have three parts:

The model description line in which AUTOTAB discovered the error.

-1- pointing to the position in the line where AUTOTAB recognized the error.

The explanation of AUTOTAB's diagnosis, beginning with two asterisks (\*\*).

For example:

```
R1 = R2 * / R3
      -1-
**INCORRECT FORMAT OR OPTION--STATEMENT IGNORED.
```

AUTOTAB can never guess how to correct an error, even those obvious to a human being. For example:

```
ROWS
  R1
DATS          . . . error: should be DATA
  R1 = 10 20 30
```

DATS is a valid name, AUTOTAB assumes it is a misspelled row name and detects the error on the next line, printing:

```
R1 = 10 20 30
-1-
**NAME ALREADY USED-- STATEMENT IGNORED.
```

Look out for typing errors; if AUTOTAB's diagnosis seems

invalid to you, look at prior lines in your model description to find the real error. AUTOTAB can detect violations of the rules but cannot guess your intentions.

For a complete listing of error messages, see the complete AUTOTAB II User Guide on reserve in the library.



## Reserved Words

The following words have special meaning to AUTOTAB. They must not be used as row, column, or variable names. All AUTOTAB commands and reserved words must be in capital letters when you write the model description.

A	DISPLAY	LEASTSQ	PLACE	SPLDEPR
ABS	DOUBLEX	LEFT	PLOT	SQR
ACC	DOWN	LIBRARY	PLUS	SUBTITLES
ADFILT	DYNAMIC	LIFE	POST	SUM
AFTER		LINE	PRINT	SUPPRESS
ALL	EDITING	LINEAR	PROMPT	
ANALYZE	END	LN	PV	T1
AND	ENDLOOP	LOG		T2
ASSETS	EQ	LS	Q	TAPE
AUTOCORR	EX		QUARTERS	THEN
AVERAGE	EXCEPT	MAX	QUIT	THRU
	EXIT	METHOD		TIME
B		MIN	RANKIT	TITLE
BACK	FACTOR	MONTHS	RE	TO
BACKUP	FITTED		REFRESH	TRAIN
BACKWARD	FOOTNOTES	N	REGRESS	
BEST	FOR	NC	REMBAL	U
BETWEEN	FORCAST	ND	REPEAT	UP
BL	FORTRAN	NEQ	RESET	URANK
BY	FRAC	NEXT	RESIDUAL	USE
	FROM	NGR	RESTART	USING
CALL	FUTURE	NLS	RETURN	
CASE		NO	RIGHT	VALUES
CLXn	G	NOHELP	ROI	VARIABLES
COLUMNS	GOAL	NP	ROLL	VARYING
COMPOUND	GR	NPF	ROWS	VERTICAL
CONRET	GRAPH		RULES	
CONVERGE	GROUP	O	RWXn	WEIGHTS
COPY	GROUPS	OF		WHAT
CUM	GROW	OMIT	SALVAGE	
			SAVE	Y
DATA	HEADINGS	PAGE	SCALE	YEARS
DATE	HELP	PARA	SENSITIVITY	YES
DECIMALS	HISTORY	PARABOLA	SIMUL	YIELD
DEPR		PASSING	SIMULTANEOUS	
DEPRAMTS	IF	PAYBAK	SMOOTH	ZERO
DESCENDING	INITIAL	PERCENT	SMOOTHED	
DETAIL	INT	PERIOD	SORT	
DISCOUNT	ITERATION		SOURCE	
	ITERATIONS		SPACING	

In headings and title lines you may use any words inside the apostrophes. For example, 'NEQ' or 'average' or 'Data'.

## Summary

Chapter II presented a basic introduction to VSPC, its commands and options. It also contained a brief introduction to AUTOTAB, and a list of the reserved words. The next chapter will give you a more detailed description of AUTOTAB.

## CHAPTER III

### STRUCTURAL APPROACH TO AUTOTAB

#### Problem Structure

With AUTOTAB, the originator of a model, usually a manager, analyst, or accountant, does not have to prepare a detailed Model Description. The originator can rough out the input and required output on a worksheet and give it to an assistant who writes the AUTOTAB model description. The information should be expressed informally but clearly. The following sample word problem is used as an example.

Company X Inc. produces three products and forecasts quarterly sales. Management feels that for analytical purposes, each product should be broken down into four divisional sales categories.

Each division has three products. Eastern division is the largest with sales in millions of \$250, \$475, \$200. Western division ranks second with sales of \$300, \$300, \$300. Northern Division's sales are \$225, \$250, \$400. Southern Division, which just started operation last year, has not yet established a firm marketing base and has sales of \$150, \$275, \$150.



you can sum ROWS and COLUMNS to get TOTALS. AUTOTAB would calculate the PRODUCT TOTAL and TOTAL.

COMPANY X INC.  
SALES BY REGION AND PRODUCT

	PROD A	PROD B	PROD C	TOTAL
EASTERN	250	475	200	925
WESTERN	300	300	300	900
NORTHERN	225	250	400	875
SOUTHERN	150	275	150	575
PRODUCT TOTAL	925	1,300	1,050	3,275

The AUTOTAB Format

When using AUTOTAB, the logical sequence is the same.

1. You TITLE the worksheet.
2. You define COLUMNS and ROWS needed.
3. You enter the DATA provided in the problem.
4. You define RULES on how to calculate totals.

A Sales Projection

This simple sales projection was produced by AUTOTAB:

## SALES BY REGION AND PRODUCT

	PROD A	PROD B	PROD C	TOTAL
EASTERN	250	475	200	925
WESTERN	300	300	300	900
NORTHERN	225	250	400	875
SOUTHERN	150	275	150	575
PRODUCT TOTAL	925	1,300	1,050	3,275

### Model Description

This sample problem is very simple and may be entered using only one file, as shown here. The report was produced from the following model description:

```

TITLE
    'SALES BY REGION AND PRODUCT'
COLUMNS
    PRODA  'PROD A'
    PRODB  'PROD B'
    PRODC  'PROD C'
    RTOTAL 'TOTAL'
ROWS
    EAST  'EASTERN'
    WEST  'WESTERN'
    NORTH 'NORTHERN'
    SOUTH 'SOUTHERN'
    PTOTAL 'PRODUCT TOTAL'
DATA
    EAST = 250 475 200
    WEST = 300 300 300
    NORTH = 225 250 400
    SOUTH = 150 275 150
RULES
    RTOTAL = PRODA + PRODB + PRODC
    PTOTAL = EAST + WEST + NORTH + SOUTH
END
    
```

The model description is composed of lines organized into six sections. Each section begins with a descriptive word: TITLE, COLUMNS, ROWS, DATA, RULES, and END. The following paragraphs describe briefly each section. The order used in

this program must be used to allow the compiler to logically prepare the output.

## Format

The Format section is broken down into two main areas; the Title and the Columns and Rows sections. These two sections are mainly descriptive naming conventions.

### Title

Write TITLE followed by the exact information you want printed, enclosed in apostrophes.

### Column and Rows

Write COLUMNS and a unique name to identify each column in the order in which you want them to appear. Any reference later in the model to these columns will use these names. Column headings, to appear on a report, can be added by enclosing a character string in apostrophes, e.g. 'PROD A' , 'PROD B' , etc.

Write ROWS in the same way. If row headings are used they will normally appear on the left of the report.



## Data

Numbers are entered by row or by column. In the example, numbers are entered by rows only. To enter the initial values, write DATA, row or column name, an equal sign and the numbers for that row or column. Each succeeding row is written in the same way.

In the example, the line:

```
WEST = 300 300 300
```

could be written:

```
WEST = 300 FROM PRODA
```

This shows a shorthand method to put the same number in every position of a row or column.

## Calculation Rules

Write RULES followed by the calculation rules. Each rule must be written on a line by itself. The rule:

```
RTOTAL = PRODA + PRODB + PRODC
```

will sum the values in the named columns and put the results in the column RTOTAL, names TOTAL in the model description.

The rule:

```
PTOTAL = SUM EAST THRU SOUTH
```

shows the use of a shorthand method. The first rule could have been written in the same way:

```
RTOTAL = SUM PRODA THRU PRODC
```

#### Output Organization: Editing and Spacing

Reports can be made clearer by adding spaces, underlines, dollar signs, ect. Write EDITING immediately after the RULES section, followed by one or more lines, each giving row or column names and the characters specifying the kind of editing required.

Write SPACING right after EDITING, followed by lines giving row names and the characters specifying the kind of spacing required.

Adding these statements:

```
EDITING
  EAST $
  PTOTAL $
SPACING
  PTOTAL B
```

to the model description will change the report as follows:

SALES BY REGION AND PRODUCT

	PROD A	PROD B	PROD C	TOTAL
EASTERN	\$ 250	\$ 475	\$ 200	\$ 925
WESTERN	300	300	300	900
NORTHERN	225	250	400	875
SOUTHERN	150	275	150	575
PRODUCT TOTAL	\$ 925	\$1,300	\$1,050	\$3,275

Auxiliary Function: Graphing

To specify one or more graphs in addition to the report, insert GRAPH statements immediately before the END statement. In the example, the following lines:

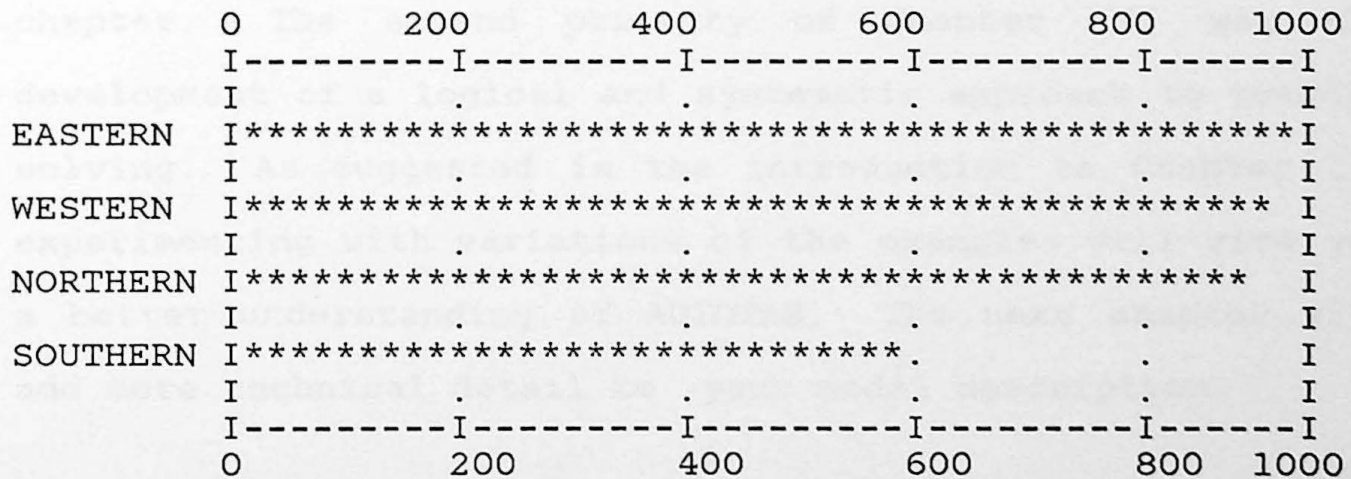
```
GRAPH RTOTAL
  EXCEPT PTOTAL
  'REGIONAL SALES IN DOLLARS'
```

will produce:

```
LEGEND: 1 TIC = 20
* - TOTAL
```

```
DATE 06/23/84
TIME 14:08:31
```

REGIONAL SALES IN DOLLARS





AUTOTAB automatically scales the graph based on the values of the numbers being graphed (1 TIC = 20 was produced by the computer ). The headings for graph lines are the ROW or COLUMN headings in your model description. More than one graph statement can be included in a model.

End

To tell AUTOTAB that you are at the end of the model description, write END on the last line.

#### Summary

Chapter III has discussed the basic organizational structure and command set for AUTOTAB. In review, our first priority was the understanding of the fundamental AUTOTAB commands. If you feel uncertain about any of the commands, review this chapter. The second priority of Chapter III was the development of a logical and systematic approach to problem solving. As suggested in the introduction to Chapter II, experimenting with variations of the examples will give you a better understanding of AUTOTAB. The next chapter will add more technical detail to your model description.

Sample Problem

To help you know whether you understand how to compose a Model Description, write an AUTOTAB model description from the given worksheet, including a graph of gross profit by quarters.

```

=====
                        ANY COMPANY
                   OPERATING STATEMENT-1984
=====
                1QRT      2QRT      3QRT      4QRT      YEAR
=====
SALES REVENUE  578,000  625,100  489,500  733,400  (sum)

COSTS
  MARKETING    158,500  182,700  149,900  207,570  (sum)
  ENGINEERING   48,000   51,100   39,500   57,550  (sum)
  MANUFACT.    285,700  321,400  226,500  396,250  (sum)

TOTAL COST = SUM COLUMN COSTS                                (sum)

GROSS PROFIT = REVENUE MINUS TOTAL COSTS                    (sum)

% OF SALES = GROSS PROFITS * 100 / REVENUE
=====

```





model description:

```
TITLE
'ANY COMPANY'
'OPERATING STATEMENT'
'1981'
COLUMNS
C1 '1QTR'
C2 '2QTR'
C3 '3QTR'
C4 '4QTR'
C5 'YEAR'
ROWS
R1 'SALES REVENUE'
R2 'COSTS'
   '  MARKETING'
R3 '  ENGINEERING'
R4 '  MANUFACTURING'
R5 'TOTAL COSTS'
R6 'GROSS PROFIT'
R7 '% OF SALES'
DATA
R1 = 578,000 625,100 489,500 733,400
R2 = 158,000 182,700 149,000 207,570
R3 = 48,000  51,100  39,500  57,550
R4 = 285,700 321,400 226,500 396,250
RULES
R5 = R2 + R3 + R4
R6 = R1 - R5
C5 = SUM C1 THRU C4
R7 = (R6*100)/R1
SPACING
R1 A
R5 B A
R6 A
EDITING
R1 $
R6 $
GRAPH R6
EXCEPT C5
'GROSS PROFIT DOLLARS BY QUARTER'
END
```

## CHAPTER IV

### REFINING AUTOTAB REPORTS

#### Introduction

Chapter IV takes a more detailed look at the basic AUTOTAB structure and format, with a more descriptive approach to problem solving.

Each of the seven main areas are dealt with in greater detail and examples showing how to write the model description and what the output should look like are presented as examples.

The tables of EDITING and SPACING options are included, along with a more detailed explanation of the GRAPHING option.

#### Cash Projection Example

A cash projection report is used throughout as a practical example. It shows a company's planned monthly cash balance. The model description for the cash projection report is gradually completed as each AUTOTAB function and its features are explained. Here is the completed report.

ANY COMPANY  
SUMMARY OF CASH PROJECTIONS  
1981

	JANUARY	FEBUARY	MARCH	APRIL
RECEIPTS	\$165,382	\$172,297	\$168,250	\$151,212
COSTS	99,229	103,378	100,950	90,727
	-----	-----	-----	-----
GROSS PROFITS	66,153	68,919	67,300	60,485
OVERHEAD	14,000	14,000	14,000	14,000
	-----	-----	-----	-----
NET PROFIT	52,153	54,919	53,300	46,485
BEG CASH BALANCE	(57,460)	(12,307)	42,612	83,912
EXTRA. ITEMS	7,000	-	12,000	-
	-----	-----	-----	-----
END CASH BALANCE	\$(12,307)	\$ 42,612	\$ 83,912	\$130,397
	=====	=====	=====	=====

Format

Title

Begin with the title specifications. Write TITLE followed by up to ten lines of title information. More than one title section is allowed, but the number of title lines must not exceed ten. Title information must not exceed sixty characters and must be enclosed in apostrophes. Each title line will be printed on a line by itself, automatically centered. For example, the statement:

```
TITLE
  'ANY COMPANY'
  'SUMMARY OF CASH PROJECTIONS'
  'YEAR'
```

will result in:

```
ANY COMPANY
SUMMARY OF CASH PROJECTIONS
YEAR
```



## Date

AUTOTAB prints automatically the date on which the report is produced in the format MM/DD/YY. Write DATE without apostrophes whenever you want the current date printed in the title line. The simplest way to include the date in your report is:

```
'DATE ' DATE
```

will result in:

```
DATE 06/25/84
```

If you would like to place your own date in the title section, just place the date in apostrophes; for example:

```
Title  
'ANY COMPANY'  
'SUMMARY OF CASH PROJECTIONS'  
'DATE 06/30/84'
```

## Left or Right Margin

A title line can be forced to the left or right margin, by writing LEFT or RIGHT at the beginning of the line. For example, the statements:

```
TITLE  
'ANY COMPANY'  
'SUMMARY OF CASH PROJECTIONS'  
'YEAR'  
LEFT 'DATE ' DATE
```

will result in

ANY COMPANY  
SUMMARY OF CASH PROJECTIONS  
YEAR

DATE 06/25/84

Names and Heading for Columns, Rows

Columns and rows must be defined before giving data, calculation rules, etc. Place column and row specifications immediately after the title information.

Names

Each row and column must have a unique name, for use later in the model description to refer to rows or columns. Names are limited to eight characters, which can be letters (A through Z) or numerals (0 through 9), but each name must begin with a letter. Do not use AUTOTAB reserved words.

Use short but meaningful names. For example, if the columns represent months, use JAN, FEB, MAR, ect. These names will not be printed, they just refer to the columns in which the data will be entered. While AUTOTAB statements must be in upper case, names and headings within apostrophes may be in either upper or lower case.

## Headings

Rows and columns may have headings in addition to names. Row headings will be left justified, and column headings will be right justified over the columns. A maximum of three heading lines is allowed, with a combined total of sixty characters.

## Columns

To define and describe columns, write COLUMNS, and the name and heading for each column in the order in which columns are printed. Only one column section is allowed in a model. For example:

```
COLUMNS
  JAN  'JANUARY'
  FEB  'FEBRUARY'
  MAR  'MARCH'
```

What will be printed on your completed AUTOTAB report will be those labels that are in apostrophes: JANUARY, FEBRUARY, and MARCH.

NOTE: Headings are optional, but when used, must be enclosed by apostrophes. Headings need not be in upper case.



## Rows

To define and describe rows, write ROWS, and the name and heading for each row in the order in which the rows are printed. Only one row section is allowed in a model. For example:

```
ROWS
  REC      'RECEIPTS'
  COSTS    'COSTS'
  GROSS    'GROSS PROFIT'
```

## A Heading for Row Headings

To specify a heading above the row headings, follow the word ROWS with the heading information enclosed in apostrophes:

```
ROWS      'SALESMEN'
  R1      ' SMITH'
  R2      ' JONES'
  R3      ' BROWN'
```

The first heading will print on the same level as the column headings.

```
SALESMEN      COL1      COL2      COL3
  SMITH
  JONES
  BROWN
```

## Multiple-Line Heading

AUTOTAB will print up to three heading lines for any row or column. Enclose the information for each heading line in a separate pair of apostrophes.

In a row with multiple-line headings, the numbers are printed on the same line as the last line of the heading.

For example, the statement:

```
ROWS
  DEV . . . name of first row
  'DEVELOPMENT COSTS' . . . first heading line
  ' AT $1,200 PER ITEM' . . . second heading line
```

will result in:

```
DEVELOPMENT COSTS
  AT $1,200 PER ITEM    1,200    3,600    1,200    2,400
```

NOTE: You can indent a row heading by beginning with one or more spaces inside the apostrophes.

#### Automatically Generated Names

If you do not need headings for adjacent rows or columns, specify the number of rows or columns you want in parentheses. AUTOTAB will automatically name these rows or columns for you. Rows will be named RWX1 through RWXn, and columns CLX1 through CLXn. For example, the statement:

```
ROWS (3)
  SUB 'SUBTOTAL'
```

will give four rows. These rows can be referenced as if you had entered:

```
ROWS
  RWX1
  RWX2
  RWX3
  SUB 'SUBTOTAL'
```

Here are the row and column specifications for the cash projection problem:

```

TITLE
  'ANY COMPANY'
  'SUMMARY OF CASH PROJECTIONS'
  '1981'
COLUMNS
  JAN 'JANUARY'
  FEB 'FEBUARY'
  MAR 'MARCH'
  APR 'APRIL'
ROWS
  REC 'RECEIPTS'
  COSTS 'COSTS'
  GROSS 'GROSS PROFITS'
  OVER 'OVERHEAD'
  NET 'NET PROFIT'
  BEGBAL 'BEG CASH BALANCE'
  EXTRA 'EXTRAORDINARY ITEMS'
  ENDBAL 'END CASH BALANCE'
END

```

To verify the overall format, the model description may be processed by AUTOTAB. The result is:

```

                ANY COMPANY
                SUMMARY OF CASH PROJECTIONS
                1981

```

	JANUARY	FEBUARY	MARCH	APRIL
RECEIPTS	-	-	-	-
COSTS	-	-	-	-
GROSS PROFITS	-	-	-	-
OVERHEAD	-	-	-	-
NET PROFIT	-	-	-	-
BEG CASH BALANCE	-	-	-	-
EXTRAORDINARY ITEMS	-	-	-	-
END CASH BALANCE	-	-	-	-

Each dash denotes a value of zero. A model is always initialized to zeros and, in this case, remains zeros since no data has been entered. You should run your AUTOTAB model description without data. This will allow you to



verify the output format and make any necessary changes in your model description.

## Variables

Most models are written as rows or columns of data but you will often need a single number, called a variable, either as an input or as the result of a calculation. To define variables, write VARIABLES in your model description after the ROW and COLUMN definitions, followed by the names of the variables you will be using, each on a separate line. For example:

```
VARIABLES
  DISC    .****    ... four decimal places
  YIELD   ... no decimal places
  RATE    .***     ... three decimal places
```

You can then refer these variables in TITLES, SUBTITLES, FOOTNOTES, DATA, and RULES. For example:

```
RULES
  RATE = .075
  DISC = .0967
  YIELD = R1,C1/R1,TOTAL
  R2 = R3 * RATE
```

When you assign a value to a variable in the RULES section it will keep this value throughout the model description. RATE will always have the value of .075, and you can do any type of mathematical calculation with the variable RATE as indicated by  $R2 = R3 * RATE$ .

## Data Statements

You supply the basic data, and AUTOTAB calculates the rest. Following row and column definitions, write DATA, and the data you wish to enter for rows and columns. For example:

```
DATA
  REC = 165,382    172,297    168,250
        151,212    149,317    146,025
```

Leave at least one space after each number. You can use more than one line to specify the data for each row or column. Each line has a maximum of 72 positions.

### Numbers

A number in a data statement may have a decimal point, such as .5 or 96.114. Fractions, e.g. 1/2, are not permitted. Begin with a minus sign for negative numbers, -37504 or -6. In the printed report, negative numbers appear automatically in parentheses, without a minus sign. Separate numbers from each other by spaces or blanks.

You can insert commas within large numbers for clarity. AUTOTAB always prints commas in numbers over 999 to make them more readable.

Indicate a percentage by writing a percent sign immediately after a number, or write .10 for the same result.

NOTE: Only four decimal places are allowed, beyond this, numbers are truncated to four places.

### Ordering Data

All numbers go into the table in the order in which you enter them. For example:

```
DATA
  R1 = 10   24   39
  C1 = 77   88   99
```

The number "77" and "10" are entered into the same position. AUTOTAB stores the data numbers in a matrix form, the upper left hand position is referred to as R1C1. Since the statement containing "77" appears later in the model description, the result will be:

```
77   24   39
88   --   --
99   --   --
```

### Shorthand Notation

To repeat a number, write one slash (/) for each repetition. For example:

```
R1 = 10   20   //   50
```

results in:

```
R1 = 10   20   20   20   50
```



## FROM...THRU

To repeat the same number several times across a row or column, use FROM...THRU. For example:

```
R1 = 10 FROM C1 THRU C5
```

or

```
C1 = 20 FROM R1 THRU R5
```

To repeat a number to the end of the row or column, omit THRU.

You can enter several numbers and use FROM..THRU for the rest of the row or column, but the FROM..THRU must be in a separate statement. For example:

```
R1 = 17 21
```

```
R1 = 39 FROM C3 THRU C9
```

will place 17 and 21 in columns one and two and 39 in columns three thru nine.

```
17 21 39 39 39 39 39 39 39
```

## Skipping Positions

An asterisk (\*) in a data statement tells AUTOTAB to skip one position without affecting the number that occupies the position. An asterisk is used in the basic data specification for the cash projection model:

```

DATA
  REC    = 165,382    172,297
           168,250    151,212
  OVER   = 14,000 FROM JAN
  BEGBAL= -57,460
  EXTRA  = 7,000    *    12,000

```

If the original model description, with these lines added, is submitted to AUTOTAB, the following summary will be printed:

```

TITLE
  'ANY COMPANY'
  'SUMMARY OF CASH PROJECTIONS'
  '1981'
COLUMNS
  JAN 'JANUARY'
  FEB 'FEBUARY'
  MAR 'MARCH'
  APR 'APRIL'
ROWS
  REC 'RECEIPTS'
  COSTS 'COSTS'
  GROSS 'GROSS PROFITS'
  OVER 'OVERHEAD'
  NET 'NET PROFIT'
  BEGBAL 'BEG CASH BALANCE'
  EXTRA 'EXTRAORDINARY ITEMS'
  ENDBAL 'END CASH BALANCE'
DATA
  REC = 165,382 172,297 168,250 151,212
  OVER = 14,000 FROM JAN
  BEGBAL = -57,460
  EXTRA = 7,000 * 12,000
END

```

ANY COMPANY  
SUMMARY OF CASH PROJECTIONS  
1981

	JANUARY	FEBUARY	MARCH	APRIL
RECEIPTS	165,382	172,297	168,250	151,212
COSTS	-	-	-	-
GROSS PROFITS	-	-	-	-
OVERHEAD	14,000	14,000	14,000	14,000
NET PROFIT	-	-	-	-
BEG CASH BALANCE	(57,460)	-	-	-
EXTRAORDINARY ITEMS	7,000	-	12,000	-
END CASH BALANCE	-	-	-	-

NOTE: Only one number was given for the row named BEGBAL. If fewer numbers than positions in the row or column are specified, the numbers go into the first position and the remaining positions are unchanged. If more numbers than positions are given, the extra numbers are ignored and an error message is printed.



## Calculation Rules

You specify the calculations to be performed by AUTOTAB in a RULES section, after rows and columns are defined in your model description.

### Basic Rules

To illustrate the basic rules, let R1, R2, R3, R4, R5, R6, and R7 represent row names. Examples of simple calculation rules for these rows are:

R3 = R1 + R2	
R4 = R1 - R2	
R5 = R1 * R2	. . . R1 multiplied by R2
R6 = R1/R2	. . . R1 divided by R2
R7 = R1 ** R2	. . . R1 raised to the R2 power

Calculations are normally specified for entire rows or columns, but a single rule cannot specify both rows and columns. Each rule must be written on a separate line. Row and column names must be defined previously in the Column and Row section.

## Series of Calculations

A series of calculations can be expressed in a single rule, and calculations are done in order, from left to right. For example:

$$R1 = R2 + R3 + R4 + R5$$

You can override the simple left-to-right calculation order by using parentheses. For example:

$$R1 = R2 + (R3 * 100)$$

Each number in R3 is multiplied by 100 and added to the corresponding value of R2; the answers are put in R1.

NOTE: If the rule were written:  $R1 = R2 + R3 * 100$ , the result of  $R2 + R3$  would be multiplied by 100, giving a different answer.

## Rounding

AUTOTAB automatically rounds each calculated number to the nearest whole number at the completion of each rule operation. A column of calculated values of 2.4, 2.5, and 2.1 will be rounded to 2, 3, and 2, and if summed, will equal 7.

When the decimal point option is used, AUTOTAB rounds the number to the specified number of decimal places at the completion of each rule operation.

Numbers given in a DATA statement are not rounded until just before the report is printed.

### Replace a Value

You can specify the same name on both sides of the equal sign. For example:

$$R1 = R1 + R2$$

When the same name appears on both sides of the equal sign, the 'old' value is used in the calculations, and is replaced with the 'new' value in the row or column as the calculations are completed.

NOTE: Use this method to continue a rule which will not fit on one line.

### The Order for Rules

To use the answers from one rule in a later rule, write your rules in the proper order because AUTOTAB does the calculations in the order in which you write them.

For example, rules for the cash projection model are:

```
RULES
  COSTS      = REC * 60%
  GROSS      = REC - COSTS
  NET        = GROSS - OVER
  ENDBAL     = NET + BEGBAL - EXTRA
  BEGBAL RIGHT 1 = ENDBAL
```



The rule ENDBAL = NET + BEGBAL - EXTRA calculates values for the row ENDBAL. The rule BEGBAL RIGHT 1 = ENDBAL puts each cash amount for ENDBAL into the row BEGBAL but shifted one column to the right.

When these rules are carried out by AUTOTAB, the following model description and report are printed:

```
TITLE
  'ANY COMPANY'
  'SUMMARY OF CASH PROJECTIONS'
  '1981'
COLUMNS
  JAN 'JANUARY'
  FEB 'FEBUARY'
  MAR 'MARCH'
  APR 'APRIL'
ROWS
  REC 'RECEIPTS'
  COSTS 'COSTS'
  GROSS 'GROSS PROFITS'
  OVER 'OVERHEAD'
  NET 'NET PROFIT'
  BEGBAL 'BEG CASH BALANCE'
  EXTRA 'EXTRAORDINARY ITEMS'
  ENDBAL 'END CASH BALANCE'
DATA
  REC = 165,382 172,297 168,250 151,212
  OVER = 14,000 FROM JAN
  BEGBAL = -57,460
  EXTRA = 7,000 * 12,000
RULES
  COSTS = REC * 60%
  GROSS = REC - COSTS
  NET = GROSS - OVER
  ENDBAL = NET + BEGBAL - EXTRA
  BEGBAL RIGHT 1 = ENDBAL
END
```

ANY COMPANY  
SUMMARY OF CASH PROJECTIONS  
1981

	JANUARY	FEBUARY	MARCH	APRIL
RECEIPTS	165,382	172,297	168,250	151,212
COSTS	99,229	103,378	100,950	90,727
GROSS PROFITS	66,153	68,919	67,300	60,485
OVERHEAD	14,000	14,000	14,000	14,000
NET PROFIT	52,153	54,919	53,300	46,485
BEG CASH BALANCE	(57,460)	(12,307)	42,612	83,912
EXTRAORDINARY ITEMS	7,000	-	12,000	-
END CASH BALANCE	(12,307)	42,612	83,912	130,397

## Output Organization

This section is broken down into those parts which make the report easier to read and understand. The first section is Spacing which deals with blanks, new page options, underlines and overlines. The second section, Editing, deals basically with the actual numerical values; such as inserting dollar signs, decimal places and the placement of the values in specified rows or columns.

### Spacing

To improve the overall appearance of the printed report, insert blank lines, underlines and overlines. Write SPACING, the predefined row name, and the spacing options you want. Each option must be separated by a space.



TABLE 1: SPACING OPTIONS

OPTION SYMBOL	DESCRIPTION OF OPTION FUNCTION	MAXIMUM NUMBER OF USES PER ROW
NP	starts this row on a new page	1
B	prints a blank line BEFORE the row	3
O (letter O, not zero)	print an OVERLINE (i.e line of dashes above row)	3
=	prints a double underline	1
U	prints an UNDERLINE	3
A	prints a blank line AFTER the row	3

Spacing options may be specified in any combination separated by spaces. If more than one option is specified for a row, AUTOTAB will execute the options in the sequence in which they are shown in TABLE 1.

The spacing specifications for the cash projection are:

```

SPACING
COSTS U
OVER U B
NET A
ENDBAL O =
    
```

### Editing

To control the format of the printed numbers, write EDITING and indicate, on separate lines, the editing options you want for each row or column.

TABLE 2: EDITING OPTIONS

OPTION SYMBOL	DESCRIPTION OF OPTION FUNCTION
\$	PRECEDES EACH NUMBER IN THE ROW OR COLUMN WITH A DOLLAR SIGN.
	PRINTS EACH NUMBER IN THE ROW OR COLUMN WITH A DECIMAL POINT AND:
.*	ONE DECIMAL PLACE
.**	TWO DECIMAL PLACES
.***	THREE DECIMAL PLACES
.****	FOUR DECIMAL PLACES
O (ZERO)	PRINTS A ZERO INSTEAD OF A DASH IN ROW OR COLUMN WITH THE VALUE OF ZERO
BL	REPLACES ANY NUMBER WITH A VALUE OF ZERO IN ROW OR COLUMN, WITH A BLANK.
NC	PRINTS NUMBERS IN THE ROW OR COLUMN WITHOUT COMMAS.
NP	ROW OR COLUMN WILL START A NEW PAGE.
'XXXXX'	PRINTS A POSTFIX (WORD OR SYMBOL IN APOSTROPHES, E.G. %) AFTER EACH NUMBER IN THE ROW OR COLUMN.
ND	OVERRIDES A \$ OPTION PREVIOUSLY SPECIFIED.
NPF	OVERRIDES A POSTFIX OPTION PREVIOUSLY SPECIFIED.
	NOTE: THE ND AND NPF EDITING OPTIONS WILL ONLY AFFECT EDITING SPECIFIED FOR THE OPPOSITE DIMENSION (I.E. COLUMN OVERRIDES ROW SPECIFICATIONS AND VICE VERSA).
-	PRINTS NEGATIVE NUMBERS WITH MINUS SIGN RATHER THAN PARENTHESES FOR THE MODEL. WRITE EDITING- (DASH WRITTEN IMMEDIATELY AFTER THE WORD EDITING).

To edit a number of consecutive rows or columns, use THRU followed by the option. For example:

```
REC THRU ENDBAL .**
```

### Combined Editing

More than one editing statement can apply to a particular element in the model. You can specify the \$ option for a row and the decimal point option for a column; the number in the position where the row and column intersect is printed with both a dollar sign and a decimal point. For example:

```
EDITING
REC $
JAN THRU APR .**
```

will give you this result:

```
REC      JAN      FEB      MAR      APR
      $ .00    $ .00    $ .00    $ .00
```

If editing statements conflict, the editing specified for the column is applied. If you have specified the number of decimal places, the largest number of places specified for either row or column will apply.

Here are the editing options for the cash projection:

```
EDITING
REC $
ENDBAL $
```



With both the SPACING and EDITING options inserted,  
the final cash projection model description and report are:

```
TITLE
  'ANY COMPANY'
  'SUMMARY OF CASH PROJECTIONS'
  '1981'
COLUMNS
  JAN 'JANUARY'
  FEB 'FEBUARY'
  MAR 'MARCH'
  APR 'APRIL'
ROWS
  REC 'RECEIPTS'
  COSTS 'COSTS'
  GROSS 'GROSS PROFITS'
  OVER 'OVERHEAD'
  NET 'NET PROFIT'
  BEGBAL 'BEG CASH BALANCE'
  EXTRA 'EXTRAORDINARY ITEMS'
  ENDBAL 'END CASH BALANCE'
DATA
  REC = 165,382 172,297 168,250 151,212
  OVER = 14,000 FROM JAN
  BEGBAL = -57,460
  EXTRA = 7,000 * 12,000
RULES
  COSTS = REC * 60%
  GROSS = REC - COSTS
  NET = GROSS - OVER
  ENDBAL = NET + BEGBAL - EXTRA
  BEGBAL RIGHT 1 = ENDBAL
SPACING
  COSTS U
  OVER U B
  NET A
  ENDBAL O =
EDITING
  REC $
  ENDBAL $
END
```

ANY COMPANY  
SUMMARY OF CASH PROJECTIONS  
1981

	JANUARY	FEBUARY	MARCH	APRIL
RECEIPTS	\$165,382	\$172,297	\$168,250	\$151,212
COSTS	99,229	103,378	100,950	90,727
	-----	-----	-----	-----
GROSS PROFITS	66,153	68,919	67,300	60,485
OVERHEAD	14,000	14,000	14,000	14,000
	-----	-----	-----	-----
NET PROFIT	52,153	54,919	53,300	46,485
BEG CASH BALANCE	(57,460)	(12,307)	42,612	83,912
EXTRA. ITEMS	7,000	-	12,000	-
	-----	-----	-----	-----
END CASH BALANCE	\$(12,307)	\$ 42,612	\$ 83,912	\$130,397
	=====	=====	=====	=====

Footnotes

Footnotes can contain up to ten statement lines. Each line can contain up to sixty characters enclosed in apostrophes. Enter FOOTNOTES statements just before the END statement. For example:

```
FOOTNOTES
  '(1) - TAX RATE IS 52.8%'
  '(2) - ASSUME FIXED COST OF $500'
```

Repeat

AUTOTAB divides a report too large for one page into two or more pages. The title and footnotes will appear on the first page only. If the report is too wide for one page, row headings are printed on the first page only. If a report is too long for one page, column headings are printed on the first page only. The REPEAT function prints title, footnotes, row, and column headings on the second and following pages of large reports.

Place REPEAT statements after the SPACING or EDITING section of the model descriptions.

Examples of the REPEAT option are:

For a report too wide for one page, write:

```
REPEAT ROW HEADINGS
```

For a report too long for one page, write:

```
REPEAT COLUMN HEADINGS
```

For both, write:

```
REPEAT HEADINGS
```

For a title on every page, write:

```
REPEAT TITLE
```

To repeat a title when a report is too long for one page, write:

```
REPEAT TITLE VERTICAL
```

To repeat title, row and column headings, and footnotes, as defined, write:

```
REPEAT ALL
```



## Remarks

To help others understand your model description, you can include remarks to:

- Give author's name and title.
- Describe input data sources.
- Explain purpose of the table.
- Explain calculations.
- Give instructions for updates.
- Improve readability of model description.

Remarks do not affect reports produced by AUTOTAB; they will appear only in listings of the model description. Remarks can be put on any line of your model description; write an ampersand (&) followed by your message. For example:

```
&TABLE PREPARED BY JOHN JONES
&DATE WRITTEN: MM/DD/YY
NET = GROSS - OVER &TAXES NOT CONSIDERED
```

## Page Dimensions

AUTOTAB assumes your terminal or line printer dimensions are 132 print positions and 66 lines on each page.

To change the number of print positions write:

```
LINE number
```

For reports going to a terminal, the line size is between 72 and 250 positions. In order to prevent line wrapping on your terminal, use LINE 72. It will occur when your output is too wide for the screen and the output continues on the next line on your terminal. Now you will be able to view

your output on the screen without wrapping.

To change vertical page size down to a minimum of 15 lines, write:

PAGE number

Auxiliary Function: Graphing

### Introduction

AUTOTAB can produce three types of histograms. You can graph:

A single row or column.

Multiple rows or columns, each represented by a bar.

Multiple rows or columns on the same line, giving a cumulative picture.

AUTOTAB automatically scales the graph based on the values of the numbers being graphed. The headings for graph lines are the row or column headings in your model description.

### Single Row or Column

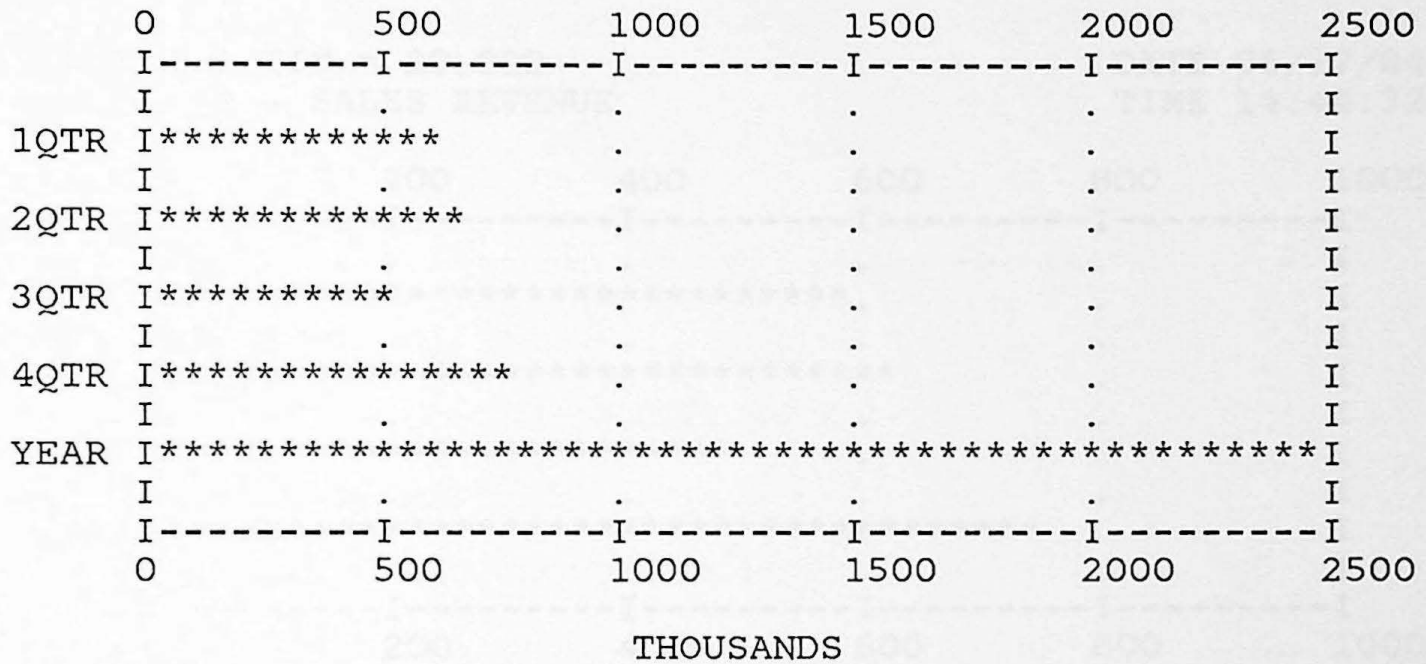
To graph a single row or column, write your GRAPH statement in your model description immediately before the END statement. For example, the statement:

GRAPH R1

will result in:

LEGEND: 1 TIC = 50,000  
 \* - SALES REVENUE

DATE 06/27/84  
 TIME 14:37:32



NOTE: The data for the graphs in this chapter are taken from the operating statement in Chapter III.

Excluding Rows and Columns

To exclude values of single rows or columns, or a group of rows or columns, use the EXCEPT feature. For example, the statement:





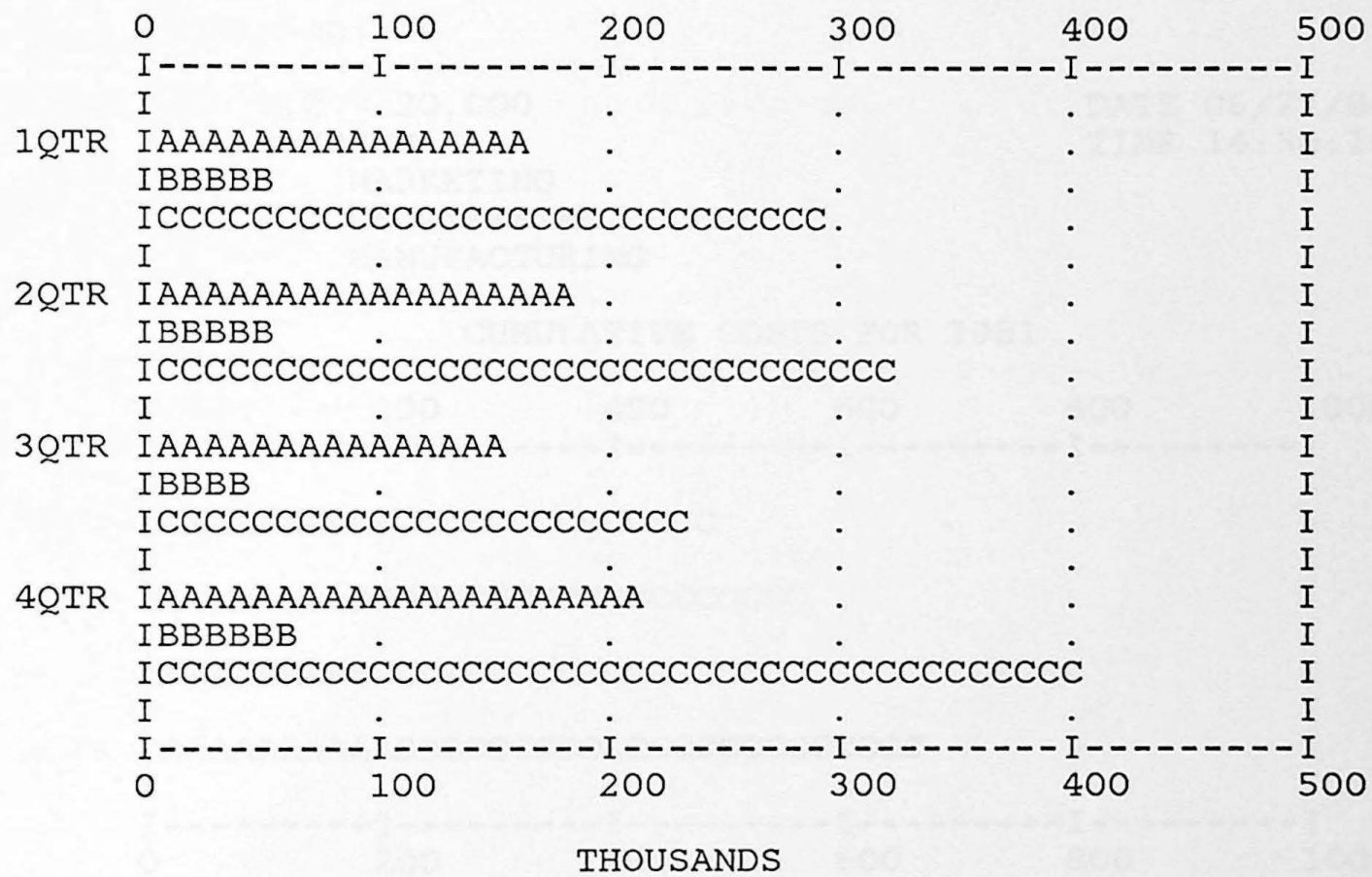
GRAPH R2 R3 R4  
 EXCEPT C5  
 'COSTS FOR YEAR'

will result in:

LEGEND: 1 TIC = 10,000  
 A - COSTS  
       MARKETING  
 B - ENGINEERING  
 C - MANUFACTURING

DATE 06/27/84  
 TIME 14:57:00

COSTS FOR 1981



AUTOTAB will graph up to 26 rows or columns, but for the best pictorial representation, graph five or less.

NOTE: Do not specify both rows and columns in the same graph statement.

Cumulative Graphs

To produce a cumulative graph, with multiple rows or columns shown on the same line, write CUM and your row or column names. For example:

```

GRAPH CUM R2 R3 R4
  EXCEPT C5
  'CUMULATIVE COSTS FOR YEAR'
  
```

will result in:

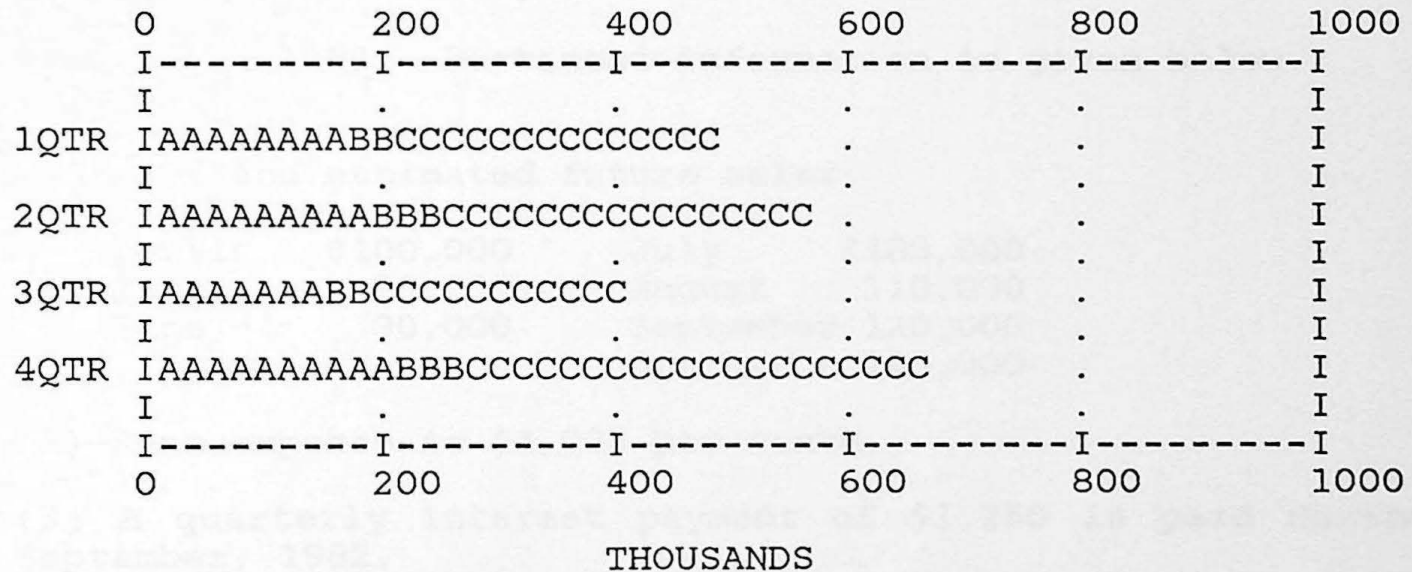
```

LEGEND: 1 TIC = 20,000
  A - COSTS
        MARKETING
  B - ENGINEERING
  C - MANUFACTURING
  
```

```

DATE 06/27/84
TIME 14:58:18
  
```

CUMULATIVE COSTS FOR 1981



NOTE: Cumulative graphs lose their pictorial value if more than three rows or columns are graphed together.



## Summary

After completing this chapter, you should have a fairly good working knowledge of AUTOTAB. If you feel that more work is necessary, go back and experiment with the features discussed in this chapter.

## Word Problem

TAM Manufacturing Company is attempting to estimate its needs for funds during each of the months covering the third quarter of 1982. Pertinent information is given below.

(1) Past and estimated future sales:

April	\$100,000	July	\$100,000
May	80,000	August	110,000
June	90,000	September	120,000
		October	100,000

(2) Rent expense is \$4,000 per month.

(3) A quarterly interest payment of \$1,250 is paid during September, 1982.

(4) Wages and salaries are estimated as follows:

July	\$10,000
August	11,000
September	12,000

Payments are made within the month in which the wages are earned.

(5) Fifty percent of sales are for cash, with the remaining 50% collected in the month following the sale.

(6) TAM pays 80% of the sales price for merchandise and purchases are made in the month prior to the anticipated sales and paid in the month of sale.

(7) TAM plans to pay \$10,000 in cash for a new forklift truck in July, 1982.

(8) Short-term loans can be obtained at 12% annual interest, with interest paid during each month for which the loan is outstanding.

(9) TAM's ending cash balance for June 30, 1982 is \$55,000. The minimum balance the firm wishes to have in any month is \$45,000.

(a) Prepare a cash budget for TAM for the quarter ended September 30, 1982.

```
TITLE
  'TAM MANUFACTURING COMPANY'
  'CASH BUDGET FOR THIRD QUARTER'
COLUMNS
  C2 'JULY'
  C3 'AUGUST'
  C4 'SEPTEMBER'
ROWS
  R1  'SALES'
  R2  'CASH SALES'
  R3  'COLLECTIONS'
      '(50% 1 MONTH LATER)'
  R4  'TOTAL CASH RECEIPTS'
  R5  'CASH DISBURSMENTS'
      'PAYMENTS ON PURCHASES'
  R6  'RENT'
  R7  'WAGES AND SALARIES'
  R8  'INTERST (5% * 100000 * 1/4)'
  R9  'PURCHASE OF FORKLIFT TRUCK'
  R10 'SHORT-TERM INT. 12%'
  R11 'TOTAL CASH DISBURSEMENT'
  R12 'NET'
  R13 'BEGINNING CASH BALANCE'
  R14 'BORROWING (REPAYMENT)'
  R15 'ENDING BALANCE'
DATA
  R1  = 100000 110000 120000
  R3  = 45000 * *
  R5  = 80000 88000 96000
  R6  = 4000 4000 4000
  R7  = 10000 11000 12000
  R8  = * * 1250
  R9  = 10000 * *
  R10 = * * *
  R13 = 55000 * *
```

```

R14 = * * *
RULES
R2 = R1 / 2
R3 RIGHT 1 = R2
R4 = R2 + R3
R11 = R5 + R6 + R7 + R8 + R9 + R10
R12 = R4 - R11
R15 = R12 + R13 + R14
R13 RIGHT 1 = R15
SPACING
R1 A =
R3 U
R4 A
R11 O A
R15 O =
EDITING
R1 $
R2 $
R4 $
R11 $
R15 $
END

```

(b) Prepare a pro forma income statement for TAM covering the quarter ending September 30, 1982. Assume that TAM's marginal tax rate is 17%. Also, TAM has \$110,000 in fixed assets, with an average expected useful life of 10 years. TAM uses straight-line depreciation.

```

LIFE OF
ITEM
THE MANUFACTURING COMPANY
PRO FORMA INCOME STATEMENT
FOR THE QUARTER ENDED
SEPTEMBER 30, 1982
DOLLARS
01 SALES
02 COST OF GOODS SOLD
03 GROSS PROFIT
04 OPERATING EXPENSES
05 DEPRECIATION
06 TOTAL OPERATING EXPENSES

```



TAM MANUFACTURING COMPANY  
CASH BUDGET FOR THIRD QUARTER

	JULY	AUGUST	SEPTEMBER
SALES	\$100,000	\$110,000	\$ 120,000
	=====	=====	=====
CASH SALES	\$ 50,000	\$ 55,000	\$ 60,000
COLLECTIONS (50% 1 MONTH LATER)	45,000	50,000	55,000
	-----	-----	-----
TOTAL CASH RECEIPTS	\$ 95,000	\$105,000	\$ 115,000
CASH DISBURSMENTS			
PAYMENTS ON PURCHASES	80,000	88,000	96,000
RENT	4,000	4,000	4,000
WAGES AND SALARIES	10,000	11,000	12,000
INTERST (5% * 100000 * 1/4)	-	-	1,250
PURCHASE OF FORKLIFT TRUCK	10,000	-	-
SHORT-TERM INT. 12%	-	-	-
	-----	-----	-----
TOTAL CASH DISBURSEMENT	\$104,000	\$103,000	\$ 113,250
NET	(9,000)	2,000	1,750
BEGINNING CASH BALANCE	55,000	46,000	48,000
BORROWING (REPAYMENT)	-	-	-
	-----	-----	-----
ENDING BALANCE	\$ 46,000	\$ 48,000	\$ 49,750
	=====	=====	=====

(b) Prepare a pro forma income statement for TAM covering the quarter ending September 30, 1982. Assume that TAM's marginal tax rate is 17%. Also, TAM has \$110,000 in fixed assets, with an average expected useful life of 10 years. TAM uses straight-line depreciation.

LINE 72

TITLE

'TAM MANUFACTURING COMPANY'  
'PRO FORMA INCOME STATEMENT'  
'FOR THE QUARTER ENDED'  
'SEPTEMBER 30, 1982'

COLUMNS

C1 'BUDGETED'

ROWS

R1 'SALES'  
R2 'COST OF GOODS SOLD'  
R3 'GROSS PROFIT'  
R4 'OPERATING EXPENSES'  
'WAGES AN SALARIES'  
R5 'RENT'  
R6 'DEPRECIATION'  
R7 ' TOTAL OPERATING EXPENSES'

R8 'EARNINGS BEFORE INTEREST AND TAXES'  
 R9 'INTEREST'  
 R10 'EARNINGS BEFORE TAXES'  
 R11 'TAXES'  
 R12 'NET INCOME'

DATA

R1 = 330000  
 R2 = 264000  
 R4 = 33000  
 R5 = 12000  
 R6 = 2750  
 R9 = 1250

RULES

R3 = R1 - R2  
 R7 = R4 + R5 + R6  
 R8 = R3 - R7  
 R10 = R8 - R9  
 R11 = R10 \* .17  
 R12 = R10 - R11

SPACING

R3 O U  
 R8 O  
 R12 O =

EDITING

R1 \$  
 R12 \$

END

TAM MANUFACTURING COMPANY  
 PRO FORMA INCOME STATEMENT  
 FOR THE QUARTER ENDED  
 SEPTEMBER 30, 1982

	BUDGETED
SALES	\$330,000
COST OF GOODS SOLD	264,000
	-----
GROSS PROFIT	66,000
	-----
OPERATING EXPENSES	
WAGES AN SALARIES	33,000
RENT	12,000
DEPRECIATION	2,750
TOTAL OPERATING EXPENSES	47,750
	-----
EARNINGS BEFORE INTEREST AND TAXES	18,250
INTEREST	1,250
EARNINGS BEFORE TAXES	17,000
TAXES	2,890
	-----
NET INCOME	\$ 14,110
	=====

(c) Given the following balance sheet for TAM dated June 30, 1982, and the results of parts (a) and (b), construct a pro forma balance sheet as of September 30, 1982.

TAM Mfg. Co.  
 Balance Sheet  
 June 30, 1982

---

CASH	\$55,000	ACCOUNTS PAYABLE	\$100,000
ACCOUNTS RECIEVABLE	45,000	ACCRUED TAXES	0
INENTORIES	100,000	NOTES PAYABLE	100,000
FIXED ASSETS, NET	100,000	COMMON EQUITY	100,000
	-----		-----
	\$300,000		\$300,000
	=====		=====

---



Listed below are some of the formulas needed to prepare the balance sheet.

Accounts receivable

$$\text{BEG. BALANCE} + \text{CREDIT SALES} - \text{COLLECTIONS} = \text{END. BALANCE}$$

Inventories

$$\text{BEG. BALANCE} + \text{PURCHASES} - \text{COST OF GOOD SOLD} = \text{END BALANCE}$$

Fixed assets

$$\text{BEG. BALANCE} + \text{PURCHASES} - \text{DEPRECIATION} = \text{END. BALANCE}$$

Accounts payable

$$\text{BEG. BALANCE} + \text{PURCHASES} - \text{PAYMENTS} = \text{END. BALANCE}$$

Common equity

$$\text{BEG. BALANCE} + \text{NET INCOME} - \text{CASH DIVIDENDS} = \text{END. BALANCE}$$

LINE 72

TITLE

'TAM MANUFACTURING COMPANY'

'PRO FORMA BALANCE SHEET'

'SEPTEMBER 30, 1982'

COLUMNS

C1 'BUDGETED'

ROWS

R1 'ASSETS'

'CASH'

R2 'ACCOUNTS RECEIVABLE'

R3 'INVENTORY'

R4 'FIXED ASSETS'

R5 'TOTAL ASSETS'

R6 'LIABILITIES'

'ACCOUNTS PAYABLE'

R7 'ACCRUED TAXES'

R8 'NOTES PAYABLE'

R9 'TOTAL LIABILITIES'

R10 'COMMON EQUITY'

R11 'TOTAL LIABILITIES AND EQUITY'

DATA

R1 = 49750

R2 = 60000

R3 = 100000

R4 = 107250

R6 = 100000

R7 = 2890

R8 = 100000

R10 = 114110

RULES

R5 = R1 + R2 + R3 + R4

R9 = R6 + R7 + R8

R11 = R9 + R10

SPACING

R5 O = A

R9 O

R11 O =

EDITING

R1 \$

R5 \$

R11 \$

END

TAM MANUFACTURING COMPANY  
 PRO FORMA BALANCE SHEET  
 SEPTEMBER 30, 1982

	BUDGETED
<b>ASSETS</b>	
CASH	\$ 49,750
ACCOUNTS RECEIVABLE	60,000
INVENTORY	100,000
FIXED ASSETS	107,250
	-----
<b>TOTAL ASSETS</b>	<b>\$317,000</b>
	=====
<b>LIABILITIES</b>	
ACCOUNTS PAYABLE	100,000
ACCRUED TAXES	2,890
NOTES PAYABLE	100,000
	-----
<b>TOTAL LIABILITIES</b>	<b>202,890</b>
COMMON EQUITY	114,110
	-----
<b>TOTAL LIABILITIES AND EQUITY</b>	<b>\$317,000</b>
	=====



## CHAPTER V

### ANALYZING AUTOTAB REPORTS

#### Introduction

Chapter V contains many of the options needed to analyze financial data. A brief introduction to financial analytical tools is included.

#### Introduction to Sensitivity Analysis

Sensitivity analysis provides you with the option of either increasing, decreasing, or holding constant some or all of your data values or rule options. It focuses on risk analysis, and you may explore the consequences of hypothetical outcomes.

AUTOTAB includes a WHAT IF function allowing you to vary your assumptions. In a single operation, AUTOTAB will produce a complete report for each set of assumptions. Each case may include:

- One or more DATA specifications.
- One or more RULES specifications.
- A unique title line to identify each case.

NOTE: WHAT IF can be used only within the RULES and DATA sections.

### General Format

Write WHAT IF followed by CASE and a case number (1,2,3,...40).

For example:

```
RULES
  WHAT IF CASE 1
    REV = SALES * 400
  WHAT IF CASE 2
    REV = SALES * 450
```

will result in 2 reports. CASE 1 is generated using the rule  $REV = SALES * 400$ . The second report is generated using the rule  $REV = SALES * 450$ . The rule  $REV = SALES * 400$  is applied only to CASE 1, and the rule  $REV = SALES * 450$  is applied only to CASE 2.

### Multiple Statements

AUTOTAB allows you to change more than one statement within a WHAT IF function. You could change any number of rows or columns, or all of the rules for a problem if you wanted to do so. To give more than one statement after a WHAT IF command, you must write AND before each statement except the first. For example:

DATA

```
-  
-  
-  
WHAT IF CASE 1  
  R1 = 10 20 20  
WHAT IF CASE 2  
  R1 = 15 20 25  
  AND R2 = 10 20 30  
  R3 = 100 FROM C1
```

NOTE: The final statement R3 = 100 FROM C1 is outside the WHAT IF structure. In order for it to be within CASE 2 it must be preceded by an AND command. The last statement will apply to all cases.

### Title Lines

To specify a subtitle line in order to identify assumptions applicable to each case, enclose the subtitle information in apostrophes on the WHAT IF line.

For example:

```
TITLE  
  'CASH FLOW PROJECCION'  
COLUMNS  
-  
-  
ROWS  
-  
-  
RULES  
-  
-  
  WHAT IF CASE 1 'OCCUPANCY RATE - 80 %'  
    AND REV = ROOM * .80  
  WHAT IF CASE 2 'OCCUPANCY RATE - 85 %'  
    AND REV = ROOM * .85  
-  
-  
END
```



results in a report with the title and subtitle:

CASH FLOW PROJECTION  
OCCUPANCY RATE - 80 %

followed by another report with the title and subtitle:

CASH FLOW PROJECTION  
OCCUPANCY RATE - 85 %

The WHAT IF subtitle line is aligned on the page according to the specification for the last line under TITLE.

All WHAT IF specifications with the same case number are applied to the same report, even if you specify a change further down the line. For example:

```
WHAT IF CASE 1
  REV = SALES * 300
WHAT IF CASE 2
  REV = SALES * 500
  AND SALES = RECEIPTS * 1.10
WHAT IF CASE 1
  SALES = RECEIPTS * .95
```

Even though CASE 1 has two separate WHAT IF statements, AUTOTAB will apply both to CASE 1.

### WHAT IF Example

The cash projection example used throughout Chapter IV is used here to give an example of the WHAT IF function.

Assume an expected cash projection as shown in the model description. You would like to consider the effects of a 'best case' and a 'worst case', and also generate a 'base case' report at the same time.

The 'best case' assumes:

revenues increase 10%  
costs decrease 5%

The 'worst case' assumes:

revenues decrease 10%  
costs increase 5%

Here is the RULES section of the model description with the  
WHAT IF statements added:

RULES

WHAT IF CASE 1 'BASE CASE'  
AND COSTS = REC \* 60%  
WHAT IF CASE 2 'BEST CASE'  
AND REC = REC \* 1.10  
AND COSTS = REC \* 60% \* .95  
WHAT IF CASE 3 'WORST CASE'  
AND REC = REC \* .90  
AND COSTS = REC \* 60% \* 1.05  
GROSS = REC - COSTS  
NET = GROSS - OVER  
ENDBAL = NET + BEGBAL - EXTRA  
BEGBAL RIGHT 1 = ENDBAL

From this model description AUTOTAB will produce these reports.

ANY COMPANY  
SUMMARY OF CASH PROJECTIONS  
1981  
BASE CASE

	JANUARY	FEBUARY	MARCH	APRIL
RECEIPTS	\$165,382	\$172,297	\$168,250	\$151,212
COSTS	99,229	103,378	100,950	90,727
	-----	-----	-----	-----
GROSS PROFITS	66,153	68,919	67,300	60,485
OVERHEAD	14,000	14,000	14,000	14,000
	-----	-----	-----	-----
NET PROFIT	52,153	54,919	53,300	46,485
BEG CASH BALANCE	(57,460)	(12,307)	42,612	83,912
EXTRAORDINARY ITEMS	7,000	-	12,000	-
	-----	-----	-----	-----
END CASH BALANCE	<u>\$ (12,307)</u>	<u>\$ 42,612</u>	<u>\$ 83,912</u>	<u>\$ 130,397</u>



ANY COMPANY  
SUMMARY OF CASH PROJECTIONS  
1981  
BEST CASE

	JANUARY	FEBUARY	MARCH	APRIL
RECEIPTS	\$181,920	\$189,527	\$185,075	\$166,333
COSTS	103,694	108,030	105,493	94,810
	-----	-----	-----	-----
GROSS PROFITS	78,226	81,497	79,582	71,523
OVERHEAD	14,000	14,000	14,000	14,000
	-----	-----	-----	-----
NET PROFIT	64,226	67,497	65,582	57,523
BEG CASH BALANCE	(57,460)	(234)	67,263	120,845
EXTRAORDINARY ITEMS	7,000	-	12,000	-
	-----	-----	-----	-----
END CASH BALANCE	\$ (234)	\$ 67,263	\$120,845	\$178,368
	=====	=====	=====	=====

ANY COMPANY  
SUMMARY OF CASH PROJECTIONS  
1981  
WORST CASE

	JANUARY	FEBUARY	MARCH	APRIL
RECEIPTS	\$148,844	\$155,067	\$151,425	\$136,091
COSTS	93,772	97,692	95,398	85,737
	-----	-----	-----	-----
GROSS PROFITS	55,072	57,375	56,027	50,354
OVERHEAD	14,000	14,000	14,000	14,000
	-----	-----	-----	-----
NET PROFIT	41,072	43,375	42,027	36,354
BEG CASH BALANCE	(57,460)	(23,388)	19,987	50,014
EXTRAORDINARY ITEMS	7,000	-	12,000	-
	-----	-----	-----	-----
END CASH BALANCE	\$(23,388)	\$ 19,987	\$ 50,014	\$ 86,368
	=====	=====	=====	=====



## WHAT IF and Graphing

WHAT IF statements cannot be used within a GRAPH statement. When GRAPH statements are included in a model description containing WHAT IF statements, a graph will be produced for each WHAT IF case. Each graph will include the WHAT IF title immediately after the GRAPH title.

## Number of Cases

You can include any number of RULES or DATA specifications for each case. AUTOTAB can process up to 40 cases in a single execution. Case numbers do not have to be in order. For example, if you have three cases numbered 15, 5, and 35 they will be executed in an ascending sequence, CASE 5, CASE 15, and finally CASE 35.

## Temporary Data

You may want AUTOTAB to calculate an intermediate answer to be used in a later rule, but which you do not want to be printed in your report. T1 and T2 are temporary storage areas of rows or columns reserved for this purpose. For example:

```
RULES
  T1 = C1
  T1 = DISCOUNT BY 12%
  C2 = T1
```

If you had values in a row or column that you wanted to keep, yet perform some calculation on them, then a temporary storage area might be used. You can place the row or column values into the temporary storage area, perform the calculation leaving the original row or column values intact. These new values can then be taken out of storage and placed in another row or column. Examples of how to use temporary storage values are shown later in this chapter.

## Conditional Calculations

You can tell AUTOTAB to perform conditional calculations. Write IF, the condition, THEN and the calculation rule. In the previous example, the END CASH BALANCE during JANUARY was negative. If the firm has a policy of maintaining a positive balance every month, then an IF statement could be used. For example:

```
RULES
  IF ENDBAL LS 0
    THEN ENDBAL = ENDBAL + LOAN
```

You can test for the following conditions:

```
= equal to.
EQ equal to.
GR greater than.
LS less than.
NEQ not equal to.
NGR not greater than.
NLS not less than.
```

The conditional functions can compare:

```
A row to another row.
A column to another column.
A row or column to a number, an element, T1 or T2.
An element to another element or a number.
```



## Sort

AUTOTAB prints rows and columns in the order in which they occur in the ROWS and COLUMNS sections. The SORT function can be used to print rows and columns in a different order. Rows are reordered using the values in a column, whereas columns are reordered using the values in a row.

To sort rows or columns in an ascending order, write:

```
SORT ROWS USING columnname
```

or

```
SORT COLUMNS USING rowname
```

For example, add the following statement after the RULES section to the sales report model description from Chapter III:

```
SORT ROWS USING RTOTAL
```

will result in:

```
SALES BY REGION AND PRODUCT
```

	PROD A	PROD B	PROD C	TOTAL
SOUTHERN	150	275	150	575
NORTHERN	225	250	400	875
WESTERN	300	300	300	900
EASTERN	250	475	200	925
PRODUCT TOTAL	925	1,300	1,050	3,275

NOTE: Entire rows, including the headings, are sorted.

## Suppress

To suppress the printing of one or more rows or columns in a table, write SUPPRESS, and the names of the rows or columns you wish to suppress. For example:

```
SUPPRESS REC THRU EXTRA
```

To suppress rows or columns of all zero values, use SUPPRESS. For example:

```
SUPPRESS ZERO COLUMNS
```

or

```
SUPPRESS ZERO ROWS COLUMNS
```

SUPPRESS and SUPPRESS ZERO statements can be qualified with the EXCEPT clause. For example:

```
SUPPRESS COL13 THRU COL35 EXCEPT COL19
```

SUPPRESS statements must follow the EDITING section. More than one SUPPRESS statement is allowed in a model. SUPPRESS statements affect the printed report only. Below is an example of how to write the SUPPRESS in a model description.

```
EDITING  
R1 $  
C5 .**  
SUPPRESS ZERO ROWS COLUMNS  
END
```

## Calculation Features

Rules for basic arithmetic calculations were given in Chapter IV. In addition, AUTOTAB gives you some powerful calculation and manipulation techniques.

### Accumulate

A row or column of cumulative totals can make a report more valuable, to illustrate:

	JAN	FEB	MAR	APR
MARKETING	4,528	9,288	15,743	20,913
CUM. MKTG.	4,528	13,816	29,559	50,472

The row CUM. MKTG. shows the total marketing costs for the year-to-date. The total for January is January's cost only, The cumulative for February is the total of January and February costs, and so on. The rule for this example is:

CUM. MKTG. = ACC MARKETING

ACC is the command for accumulation. It will take the values from MARKETING and accumulate them into the row named CUM. MKTG.

### Averages

To compute the arithmetic average for adjacent rows or



columns, write the rowname or columnname, followed by an equal sign. The AUTOTAB reserved word AVERAGE follows the equal sign. This built in function will compute the average of the entire row, or a partial row.

For an entire row or column write R1 = AVERAGE. For a partial row, write R1 = AVERAGE C2 THRU C5. THRU is a reserved word that must accompany the AVERAGE function when computing a partial row or column.

For example:

$$R1 = AVERAGE C2 THRU C6$$

is the same as writing:

$$R1 = C2 + C3 + C4 + C5 + C6$$
$$R1 = R1/5$$

### Compound Growth Rate

Financial planning often requires compounding an initial value by a fixed rate.

To calculate COSTS growing at the rate of 10% per month, with an initial value of 100, write:

$$COSTS = COMPOUND 100 BY 10\%$$

The resulting COSTS will be:

$$COSTS = 100 \ 110 \ 121 \ 133$$

COMPOUND is a reserved word in AUTOTAB.

### Discounted Value

To discount each value in a sequence of values, write:  
ROWNAME or COLUMNNAME = DISCOUNT BY rate

The rate can be a number such as 10%, 25% or 32%, or a variable which is defined earlier, i.e., VALUE = 10%, and finally the rate may be an element. An element is a position in a table at the intersection of a row and column. They are referenced by writing the row name and the column name which forms the intersection. For example:  
R1,C1 or C1,R1.

AMT = DISCOUNT BY 10%

If AMT contained 100 100 100 initially, the discounted results would be:

AMT = 91 83 75

DISCOUNT is a reserved word in AUTOTAB.

## Valuation

The valuation process involves calculating the present value of an asset's expected future cash flows using the investor's required rate of return. The investor's required rate of return is determined by the level of the risk free rate of interest and a series of risk premiums, which the investor feels is sufficient to compensate him for the risks assumed in owning the asset being valued.

### Bond Valuation

The valuation process for a bond requires that we know two essential elements: the amount and timing of the cash flows to be received by the investor and the investor's required rate of return. The amount of cash flows is determined by both the periodic interest to be received and the par value to be paid at maturity. Given these cash flows to the bondholder, and using the investor's required rate of return as the discount rate, you can compute the present value of the bond.

A particular bond matures 18 years from now, and it has a stated coupon rate of 6.5 percent. The bond has a par value of \$1000. If an investor has a required rate of return of 10%, what amount would he or she pay for this bond and still satisfy his or her return requirements?



```

TITLE
  'Bond Valuation'
COLUMNS
  C1  'Interest/yr'
  C2  'PV of Int.'
ROWS (18)
  RWX19 'Tot PV Int.'
  RWX20 'PV of Par'
  RWX21 'PV of Bond'
DATA
  C1 = 65 FROM RWX1 THRU RWX18
RULES
  T1 = C1
  T1 = DISCOUNT BY 10%
  C2 = T1
  RWX19 = SUM RWX1 THRU RWX18
  RWX19,C1 = 0
  RWX20,C2 = 1000/(1.10 ** 18)
  RWX21,C2 = RWX19,C2 + RWX20,C2
SPACING
  RWX19 0
  RWX21 0 =
EDITING
  RWX1 $
  RWX19 $
  RWX21 $
  C1 .** BL
  C2 .** BL
END

```

### Bond Valuation

	Interest/yr	PV of Int.
	\$ 65.00	\$ 59.09
	65.00	53.72
	65.00	48.84
	65.00	44.40
	65.00	40.36
	65.00	36.69
	65.00	33.36
	65.00	30.32
	65.00	27.57
	65.00	25.06
	65.00	22.78
	65.00	20.71
	65.00	18.83
	65.00	17.12
	65.00	15.56
	65.00	14.15
	65.00	12.86
	65.00	11.69
	-----	-----
Tot PV Int.		\$ 533.11
PV of Par		179.86
	-----	-----
PV of Bond		\$ 712.97
	=====	=====

Thus, if an investor considers ten percent to be an appropriate required rate of return in view of the risk level associated with these bonds, paying a price of \$712.97 would satisfy this return requirement.

The model description has a few new features. Using the ROWS (18), AUTOTAB will automatically give the rows names, RWX1 thru RWX18. In this example, the temporary storage value T1 is used. If you did not need the initial values of C1 printed in your report then you could have used C1 = DISCOUNT BY 10%. The use of element assignments is also used here, RWX19,C1 = 0. This allows special editing for report purposes, such as RWX19 = SUM RWX1 THRU RWX18 will give the value in both the columns, but if you wanted to blank out RWX19,C1 you could use RWX19,C1 = 0.

## Stock Valuation

### Preferred Stock

Like a bondholder, the owner of a preferred stock would normally receive a constant income from the investment in each period. The return from a preferred stock comes in the form of dividends rather than interest. In addition, while bonds generally have a specific maturity date, most preferred stocks are perpetuities.

To find the value of a preferred stock take the annual



dividend and divide it by the investors required rate of return.

$$V = \frac{\text{annual dividend}}{\text{divided by the required rate of return}}$$

### Common Stock

Like that of both bonds and preferred stock, common stock value is equal to the present value of all future cash inflows expected to be received by the investor owning the stock.

For an investor holding a common stock for only a single year, the value of the stock would equal the present value of both the expected dividend to be received in one year, and the anticipated market price of the share at year end.

$$V = \frac{\text{dividend divided by one plus the required rate of return, plus the market price of the stock}}{\text{divided by one plus the required rate of return}}$$

For an investor who typically holds the common stock for longer periods, the general common stock valuation model can be written:

$$V = \frac{\text{summation of: the dividend in year } t, \text{ where } t = 1 \text{ to infinity;}}{\text{divided by one plus cost of capital raised to the year } t.}$$

## Capital Budgeting Decisions

Capital budgeting involves valuation of cash-flows generated by investments in fixed assets. It requires measurement of the incremental cash flows associated with investment proposals and evaluation of the attractiveness of these cash flows, relative to the project's cash costs and opportunity cost of capital.

Within this section, we are going to look at three different methods in evaluating capital budgeting decisions: net present value (NPV), internal rate of return (IRR), and finally rate of growth (ROG).

### Net Present Value

The net present value (NPV) of an investment proposal is equal to the present value of its annual net cash inflows after tax, less the investment's initial outlay. The project's NPV gives a measure of an investment proposal's value in today's dollars. The difference between the present value of the annual cash inflows and the initial outlay determines the net value of accepting the investment proposal. Risk and timing differences have been eliminated using the discounting process. When NPV is greater than 0, accept the project, when NPV is less than 0, reject the project. If the project's NPV is zero, then we are

indifferent as to its acceptance or rejection.

The following example illustrates the use of the NPV capital-budgeting criterion.

A firm is considering a new machine, for which the after-tax positive cash flows for years one through five are: \$15000, \$14000, \$13000, \$12000, \$11000. If investors require a 12% return, the present value of the after-tax cash inflows is \$47,675. Furthermore, if the initial cost was \$40,000, the NPV of the new machine is \$7675. Since this value is greater than zero, the NPV criterion indicates that the project should be accepted.

Calculation of NPV  
Investment in a New Machine

Cash Inflows	After-tax Cash Inflow	PV of Cash Inflow
Year 1	15,000	13,271
Year 2	14,000	11,216
Year 3	13,000	9,375
Year 4	12,000	7,728
Year 5	11,000	6,283
PV of Cash Inflows		47,673
Initial Investment		(40,000)
Net Present Value		7,673



```

TITLE
  'Calculation of NPV'
  'Investment in a New Machine'
COLUMNS
  C1 'After-Tax Cash Inflow'
  C2 'PV of Cash Inflow'
ROWS
  'Cash Inflows'
  R1 ' Year 1'
  R2 ' Year 2'
  R3 ' Year 3'
  R4 ' Year 4'
  R5 ' Year 5'
  R6 'PV of Cash Inflows'
  R7 'Initial Investment'
  R8 'Net Present Value'
DATA
  C1 = 15000 14000 13000 12000 11000
RULES
  T1 = C1
  T1 = DISCOUNT BY 12%
  C2 = T1
  R6 = SUM R1 THRU R5
  R6,C1 = 0
  R7,C1 = 0
  R8,C1 = 0
  R7,C2 = 40000
  R8,C2 = R6,C2 - R7,C2
SPACING
  R6 O
  R8 O =
EDITING
  R1 $
  R6 $
  C1 BL
  R8 $
END

```

Calculation of NPV  
Investment in a New Machine

Cash Inflows	After-Tax Cash Inflow	PV of Cash Inflow
Year 1	\$ 15,000	\$ 13,393
Year 2	14,000	11,161
Year 3	13,000	9,253
Year 4	12,000	7,626
Year 5	11,000	6,242
	-----	-----
PV of Cash Inflows		\$ 47,675
Initial Investment		40,000
	-----	-----
Net Present Value		\$ 7,675
	=====	=====

## Internal Rate of Return

AUTOTAB can compute a rate of return percentage for a row or column representing end-of-period cash flows. The internal rate of return or IRR corresponds to the interest rate for an investment. For example, if a bank offers you a compound interest rate on a savings account which is the same as the IRR value from your investment, then you could make the same series of investments or deposits and cash receipts or withdrawals as your cash flows, closing the account at the end.

A major drawback with IRR is that it assumes you can reinvest your cash inflows at the IRR rather than the cost of capital. This is an inappropriate assumption, because it will normally overstate your cash flow productivity.

IRR allows you to compare the cash flows generated by various investment alternatives to see which has the highest IRR value, or to check managerial plans to see if management objectives are being met. For instance, assume a goal of 15% return on an investment had been set. Thus, if IRR were equal to or larger than 15%, than this objective would be achieved.

To compute the IRR, AUTOTAB has a built in function called return on investment, ROI, that will do this for you. When using the ROI function, the first cash flow, which represents the investment, must be negative, since it is

money paid out. Subsequent values may be either negative or positive, but the sum of all the cash flows must be positive.

ROI will be a single value, calculated from either a row or a column. For example; assume if the row CASH has values of -1000, 500, 400, 200 and 100. Then to compute the IRR of this particular cash flow, write:

ROI = CASH

or for a partial row:

ROI FROM COL3 THRU COL6 = CASH

The results will be printed at the end of your report

RETURN ON INVESTMENT = 12.4%

A negative result will be printed as

RETURN ON INVESTMENT IS NEGATIVE

An example of how to write and use the ROI function follows.

NOTE: ROI is not a function. It is a function of the data.  
You can use it only once in a row.



money paid out. Subsequent values may be either negative or positive, but the sum of all the cash flows must be positive.

ROI will be a single value, calculated from either a row or a column. For example; assume if the row CASH has values of -1000, 500, 400, 200 and 100. Then to compute the IRR of this particular cash flow, write:

ROI = CASH

or for a partial row:

ROI FROM COL3 THRU COL6 = CASH

The results will be printed at the end of your report

RETURN ON INVESTMENT = 12.4%

A negative result will be printed as

RETURN ON INVESTMENT IS NEGATIVE

An example of how to write and use the ROI function follows.

```

TITLE
  'Computing Internal Rate of Return'
COLUMNS
  C1 'Net Cash Flows'
ROWS
  R1 'Initial Outlay'
  R2 'Cash Inflows'
    '  Year 1'
  R3 '  Year 2'
  R4 '  Year 3'
  R5 '  Year 4'
DATA
  C1 = -10000 1000 3000 6000 7000
ROI = C1
SPACING
  R1 =
  R2 B
EDITING
  R1 $
  R2 $
END

```

Computing Internal Rate of Return

Net Cash Flows	
Initial Outlay	\$ (10,000) =====
Cash Inflows	
Year 1	\$ 1,000
Year 2	3,000
Year 3	6,000
Year 4	7,000

RETURN ON INVESTMENT = 19.040%

NOTE: ROI is not a rule, it is a built-in AUTOTAB function.  
You can use it only once in a model.

## Rate of Growth

The rate of growth (ROG) is calculated reinvesting cash inflows using cost of capital. The cost of capital represents the rate of return that the company must earn on its investments in order to satisfy the required rates of return of the firm's investors. It is made up of two components, the riskless rate of return and a series of risk premiums. When using the ROG, the assumed reinvestment rate is the cost of capital.

The procedure involves taking each cash inflow and multiplying it by  $(1 + k)$  raised to  $(n - i)$ , where  $n$  is the total number of years,  $i$  is the year of the specific cash flow, and  $k$  is the cost of capital. Once completed, sum up all the future values and divide by the initial cash outlay. Find the  $n$ th root of this value, where  $n$  in this case is the same as the total number of years. Finally, subtract one from this value leaves you with the rate of growth for this particular project. Note that ROG is not a built-in AUTOTAB function.



```

TITLE
  'Rate of Growth'
  'Capital Budgeting'
COLUMNS
  C1 'Dated Value'
  C2 'Future Value'
ROWS
  'Cash Flows'
  R1 'Initial Outlay'
  R2 'Yearly Inflows'
    '  Year 1'
  R3 '  Year 2'
  R4 '  Year 3'
  R5 'Total Future'
    '  Cash Value'
  R6 'Rate of Growth'
DATA
  C1 = 10000 5000 6000 7000
RULES
  R2,C2 = R2,C1 * (1.12 ** 2)
  R3,C2 = R3,C1 * (1.12 ** 1)
  R4,C2 = R4,C1 * (1.12 ** 0)
  R5,C2 = R2,C2 + R3,C2 + R4,C2
  R6,C2 = ((R5,C2/R1,C1) ** (1/3)) - 1
SPACING
  R1 A
  R5 O U
  R6 =
EDITING
  R1 $
  R5 $
  R6 .****
  C1 BL
  C2 BL
END

```

Rate of Growth  
Capital Budgeting

Cash Flows	Dated Value	Future Value
Initial Outlay	\$ 10,000	
Yearly Inflows		
Year 1	5,000	6,272
Year 2	6,000	6,720
Year 3	7,000	7,000
	-----	-----
Total Future Cash Value		\$ 19,992
	-----	-----
Rate of Growth		0.2598
	=====	=====

NOTE: The rate of growth using this model is 25.98 %.

## Ratio Analysis

Financial ratios are designed to show relationships among financial statement accounts. Ratios put numbers into perspective. Ratios may be categorized into five groups: (1) liquidity ratios, (2) asset management ratios, (3) debt management or risk ratios, (4) profitability ratios, and (5) market value ratios. Some of the most useful ratios in each category are discussed below.

### Liquidity Ratios

One of the first concerns of the financial analyst is liquidity. Will the firm be able to meet its maturing short-term obligations? Two commonly used liquidity ratios are presented below.

**Current Ratio:** The current ratio is computed by dividing total current assets by total current liabilities. Current assets normally include cash, marketable securities, accounts receivable, and inventories. Current liabilities consist of accounts payable, short term notes payable, current maturities of long term debt, accrued income taxes, and other accrued expenses.

$$\text{Current Ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities}}$$

Quick or Acid Test Ratio: The quick ratio is calculated by deducting inventories from current assets and dividing the remainder by total current liabilities.

$$\text{Quick Ratio} = \frac{\text{Current Assets} - \text{Inventories}}{\text{Current Liabilities}}$$

### Asset Management Ratios

How effectively is the firm managing its assets in view of current and projected operating levels? Does the total amount of each type of asset seem "reasonable", too high or too low? If the firm has too many assets, then the firm's "capital costs" will be too high, hence profits are too low. On the other hand, if assets are too low, then operations will not be as efficient as possible.

Inventory Turnover Ratio: This ratio is calculated by dividing sales by the average inventory during the same period.

$$\text{Inventory Turnover} = \frac{\text{Sales}}{\text{Average Inventory}}$$

Average Collection Period: This ratio represents the average length of time that the firm must wait after making a credit sale before receiving cash. It is computed by dividing average daily sales into average accounts receivable. The financial community generally uses 360



rather than 365 as the number of days in the year for this calculation.

$$\text{Average Collection Period} = \frac{\text{Average Accounts Recievable}}{\text{Annual Sales} / 360}$$

Fixed Asset Turnover: The ratio of sales to fixed assets measures the utilization of plant and equipment.

$$\text{Fixed Asset Turnover} = \frac{\text{Sales}}{\text{Net Fixed Assets}}$$

Total Asset Turnover: This ratio is used to explore if the firm is generating sufficient volume of business for the size of its asset investment. It is computed by dividing sales by total assets.

$$\text{Total Asset Turnover} = \frac{\text{Sales}}{\text{Net Fixed Assets}}$$

### Debt Management Ratios

The extent to which a firm uses debt financing has a major implication for the survival of the firm. Creditors look to equity capital for a margin of safety.

Debt Ratio: This ratio measures the percentage of total funds provided by creditors. Debt includes current liabilities and all bonds.

$$\text{Debt Ratio} = \frac{\text{Total Debt}}{\text{Total Assets}}$$

Times Interest Earned: The times-interest-earned ratio

(TIE) is determined by dividing earnings before interest and taxes (EBIT) by interest charges. The TIE ratio measures the extent to which earnings can decline and still be able to meet annual interest costs.

$$\text{TIE} = \frac{\text{EBIT}}{\text{Interest Expense}}$$

Debt to Equity Ratio: This ratio measures the amount of debt financing to the amount of equity or owner supplied funds utilized by the firm.

$$\text{Debt to Equity Ratio} = \frac{\text{Total Debt}}{\text{Total Equity}}$$

#### Profitability Ratios

These ratios show the effects of liquidity, asset management, and debt management on operating results.

Profit Margin on Sales: The profit margin is calculated by dividing net income by sales and gives the profit per dollar of sales.

$$\text{Profit Margin} = \frac{\text{Net Income}}{\text{Sales}}$$

Return on Total Assets: The ratio of EBIT to total assets measures the return on total assets.

$$\text{Return on Total Assets} = \frac{\text{EBIT}}{\text{Total Assets}}$$

Return on Common Equity, ROE: The ratio of net income to common equity measures the return on stockholders' investments.

$$\text{ROE} = \frac{\text{Net Income}}{\text{Common Equity}}$$

### Market Value Ratios

These ratios relate the firm's stock price to its earnings and book value per share, and also give management an indication of what investors think of past performance and future prospects.

Price/Earnings (P/E) Ratio: The P/E ratio shows how much investors are willing to pay per dollar of earnings.

$$\text{P/E Ratio} = \frac{\text{Price per share}}{\text{Earnings per share}}$$

Market/Book Ratio: The ratio of a stock's market price to its book value gives another indication of how investors regard the company.

$$\text{Book value per share} = \frac{\text{Stockholders' equity}}{\text{Shares outstanding}}$$

$$\text{Market/Book Ratio} = \frac{\text{Market price per share}}{\text{Book value per share}}$$

The following example uses Salco Furniture Company's annual financial statements to calculate its ratios.



LINE 80

TITLE

'SALCO FURNITURE CO., INC.'

'Balance Sheet'

COLUMNS

C1

ROWS

R1 'ASSETS'

R2 ' Current Assets'

R3 ' Cash'

R4 ' Accts. Rec.'

R5 ' Inventories'

R6 ' Total Current'

R7 ' Fixed Assets'

R8 ' Net Plant & Equip.'

R9 ' Total Assets'

R10 'LIABILITIES & EQUITY'

R11 ' Current Liabilites'

R12 ' Accts. Payable'

R13 ' Notes Payable'

R14 ' Accrued Interest'

R15 ' Taxes Payable'

R16 ' Total Current'

R17 ' Noncurrent Liabilities'

R18 ' Long-term debt'

R19 ' Stockholders Equity'

R20 ' Common Stock'

R21 ' Paid-in capital'

R22 ' Retained Earnings'

R23 ' Total Equity'

R24 ' Total Lia. & Equity'

R25 'Current Ratio'

R26 'Acid Test Ratio'

R27 'Avg. Collection Period'

R28 'Inventory Turnover'

R29 'Fixed Asset Turnover'

R30 'Total Asset Turnover'

R31 'Debt Ratio'

R32 'Times Int. Earned'

R33 'Net Profit Margin'

R34 'Return on Total Assets'

R35 'Return on Common Equity'

DATA

C1 = \* \* 10000 197000 116250 \* \* 185170 \* \* \* 56250  
79875 799 12302 \* \* 150000 \* 20000 50000 139194

VARIABLES

CGS

SALES

EBIT

GROSPROF

INTEXP

NETINC

RULES

CGS = 399750

```

SALES = 533000
EBIT = 55520
GROSPROF = 133250
INTEXP= 11764
NETINC = 26254
R6  = SUM R3 THRU R5
R9  = R6 + R8
R16 = SUM R12 THRU R15
R23 = SUM R20 THRU R22
R24 = R16 + R18 + R23
R25 = R6/R16
R26 = R3 + R4/R16
R28 = CGS/R5
R29 = SALES/R8
R30 = SALES/R9
R31 = R16 + R18/R9
R32 = EBIT/INTEXP
R33 = NETINC/SALES
R34 = NETINC/R9
R35 = NETINC/R23
SPACING
R5 U
R7 B
R9 O = A
R15 U
R17 B
R19 B
R23 O U
R24 = A
R25 B
EDITING
R3 $
R6 $
R9 $
R12 $
R16 $
R20 $
R23 $
R24 $
C1 .** BL
END

```

This particular model description includes a few more options. Rather than putting the DATA values row by row, you can insert them by the column using the asterisk to skip over positions where there are no data. In addition, the use of VARIABLES is included here. These variables will be given values in the rules section, and will be used to calculate

the ratios at the end of the report.

SALCO FURNITURE CO., INC.  
Balance Sheet

ASSETS

Current Assets

Cash	\$ 10,000.00
Accts. Rec.	197,000.00
Inventories	116,250.00

Total Current \$323,250.00

Fixed Assets

Net Plant & Equip.	185,170.00
--------------------	------------

Total Assets \$508,420.00  
=====

LIABILITIES & EQUITY

Current Liabilities

Accts. Payable	\$ 56,250.00
Notes Payable	79,875.00
Accrued Interest	799.00
Taxes Payable	12,302.00

Total Current \$149,226.00

Noncurrent Liabilities

Long-term debt	150,000.00
----------------	------------

Stockholders Equity

Common Stock	\$ 20,000.00
Paid-in capital	50,000.00
Retained Earnings	139,194.00

Total Equity \$209,194.00

Total Lia. & Equity \$508,420.00  
=====



## CHAPTER SIX

### ANALYSIS OF TESTS AND SUMMARY

#### Introduction

The final chapter describes the testing procedures used to determine if the initial drafts contained the material essential in writing AUTOTAB reports. APPENDIX C also contains a listing of the more common mistakes encountered by students while writing and using AUTOTAB.

#### Analysis of Tests

##### Exploratory Test

The purpose of the exploratory test that was given in Dr. Roger Bloomquist's BVED 350 class was to determine if the first draft contained the elements needed to use VSPC when writing AUTOTAB reports.

The characteristics of the forty member class varied from those who had never used a computer, to those who had already worked with AUTOTAB. The test consisted of giving all test subjects a copy of the first two chapters of the manual, plus two additional handouts pertaining to VSPC. A twenty-four hour study period was allowed. Of the forty

test subjects, only twenty-seven actually participated in the field test.

A short test was given to the subjects at the start of the actual hands-on session to determine if they had read and understood the material. It was felt that the test subjects must understand VSPC before they could even attempt to successfully write AUTOTAB reports. The results of the test follows. The test questions are included in APPENDIX B.

TABLE 3: EXPLORATORY TEST SCORES

Pretest Scores Number of Correct Scores	Number of Respondents Obtaining Scores
0	12
1	0
2	2
3	1
4	1
5	2
6	1
7	1
8	2
9	2
10	3

Twelve failed to get any of the questions correct, seven students said they had read the material but did not understand it, and five indicated they had not had time to read the handouts. From the information gathered it was felt that more time was required by the test subjects to read and analyze the material.

Additional quantitative information indicated that of the twenty-seven people tested: fourteen had never used a computer, ten had used VSPC, and three had used AUTOTAB.

A second field test was administered by Dr. Rolf Tedefalk in two finance classes; MGMT 303 Corporation Finance and MGMT 402 Financial Administration. All students had previous VSPC exposure in Acct. 217. This is a required business course which uses VSPC and BASIC. This knowledge of VSPC was expected to decrease the amount of time needed for introductory lectures during the classroom session.

#### Field Test

Table 4 summarizes the results of the field test. All students ran all sample problems during a one week period. Most problems were due to time lapse between the use of VSPC in Acct. 217 and its use in the Finance courses.



Clarification of problem areas listed in Table 4 have been included in the Guide, including a variety of editing and technical corrections. Error detection remains a difficult problem, but only through practice will students become proficient in this area.

TABLE 4: SUMMARY OF FIELD TEST RESULTS \*

RECOMMENDED CHANGES	PERCENTAGE OF RESPONDENTS
More explanation of ERROR messages	42 %
"DATASET NOT FOUND" - problem with the JCL	40 %
Use of statement line numbers	36 %
Jobcard spacing and creation	32 %
Letter O versus the number 0	24 %
Use of SAVE before submitting	20 %
Use of MERGE when submitting	18 %
Change of PASSWORD: included	16 %
General expansion of VSPC	10 %
Incomplete page references	8 %
Use of RUN instead of SUBMIT	8 %
Include a list of student problems	6 %
Suggest file-naming system	6 %
Job number identification	4 %
Relevancy of structural design	4 %
Reserved words and their use	2 %

\* Technical errors, spelling, and grammatical changes are not included in this summary. There was a total of fifty respondents who participated in this field test.

## Summary

Both the exploratory test and the field test showed that prior VSPC experience was necessary, or that a more detailed coverage of VSPC was needed in the guide itself. After analyzing the exploratory test results, it was decided that a more extensive section on VSPC commands and the various procedures to LOG-ON, LOAD, SUBMIT, and PRINT the AUTOTAB program should be included in the second chapter.

The overall reaction to AUTOTAB was favorable with many students suggesting that it be covered in their Junior year. It was felt that this model could be used in many other courses.

## APPENDICES

### COMPREHENSIVE MODEL ESTIMATION

THESE

The model is prepared using the following steps in order to identify the model parameters. The following steps are:

Step 1: The model is prepared using the following steps in order to identify the model parameters. The following steps are:

Step 2: The model is prepared using the following steps in order to identify the model parameters. The following steps are:

Step 3: The model is prepared using the following steps in order to identify the model parameters. The following steps are:

This problem was designed to illustrate the use of the model. The model is prepared using the following steps in order to identify the model parameters. The following steps are:



## APPENDIX A

### COMPREHENSIVE AUTOTAB ILLUSTRATION

#### INTRODUCTION

The methodology used in preparing model descriptions for a comprehensive problem can be confusing. In order to simplify this problem, use the following steps:

Step 1: Prepare a model description that incorporates all of the information needed to give you a detailed analysis of the investment proposal.

Step 2: Using given financial statements, prepare model descriptions that incorporate a WHAT IF statements without the contemplated investment.

Step 3: Using the information generated in the investment proposal, include a WHAT IF statement in the model description covering the contemplated investment.

This problem was designed to incorporate most of the commands in the Student Guide to AUTOTAB. Careful study of the model descriptions used in this problem will help provide insights into the numerous applications of AUTOTAB, besides being an excellent review.

## CASE PROBLEM

In January, 1975, Playboy Enterprises, Inc. (PEI), finds itself at a major crossroads in its history. PEI has been a conglomerate for over 10 years. In 1974, PEI was confronted with several major problems. Due to legal difficulties, in the fall of 1974 it was forced to withdraw ownership from its major profitable operation, its casino and betting shops in England. Another profitable operation, its flagship magazine PLAYBOY, experienced a substantial decline in sales volume. The company had recently divested or closed nearly all of its hotels, and its clubs were experiencing continued financial difficulties. The financial forecast for PEI was bleak, something had to be done.

NOTE: All financial statements and schedules were prepared using AUTOTAB. Model descriptions follow each financial statement or analysis.

## INVESTMENT PROPOSAL

After the success of its European gaming establishments, Playboy is now considering the purchase of a casino-hotel combination in Atlantic City, N.J.. At the present time there is a casino available that meets Playboy's needs. It can be purchased for \$18,600,000, but it would need

\$6,000,000 in remodeling to fit the "Playboy" image. Closing costs and legal fee's will run \$1,500,000, Miscellaneous costs will run approxamately 1% of total capitalization. This project will also require \$2,500,000 in working capital. There is a 10% investment tax credit associated with this venture. The building has an estimated useful life of forty years and is being depreciated using the straight line method. Below is a breakdown of the purchase price and depriciation schedule.

TOTAL CAPITALIZATION	\$26,100,000
LAND	5,000,000
BUILDING	21,100,000

DEPRECIATION SCHEDULE	
BUILDING	\$21,100,000
	*.95

DEPRECIABLE	
BASIS	\$20,045,000
LESS: SALVAGE	2,485,000

DEPRECIABLE	
COST	\$17,560,000
EST. LIFE (divide by)	40
DEP. EXPENSE	\$ 439,000

From reports given by Bally, Caesars, and Resorts International, the companies which opened the first three casinos on the boardwalk in 1974, the East coast apparently has a large and unsatisfied appetite for casino gambling. In September 1974, the average gross was \$600,000 per day, almost double that of the Las Vegas strip. These numbers will attract a large number of other casino establishments to enter the market; by 1985 there will be no more boardwalk



property available for construction. The research department has estimated that Playboy will be able to sell the casino in 1985 for \$75,000,000, at which time the building will have a book value of \$14,100,000. This sale will constitute a long term capital gain which is taxed at 28%.

Total revenues are estimated at \$23,374,000 along with \$13,198,000 operating expenses (not including depreciation or interest expense). The marginal tax rate for this project is 46%. Also, assume the after-tax profits plus depreciation is equal to annual cash flow. This cash flow stream is expected to remain constant over the ten year period.

In order to finance the acquisition of this casino, Playboy plans to issue bonds (\$30,000,000 par with a coupon rate of 10%). These bonds pay interest annually with the principal due at maturity. Bonds of this grade are currently trading at a 12% effective yield.

The research department has also attached a 14% cost of capital requirement to this project.

The following schedules are based on the preceding information, and other incidental costs associated with the proposed investment.

PLAYBOY ENTERPRISES, INC.  
 INVESTMENT WORKSHEET CASINO-ATLANTIC CITY, N.J.  
 THOUSANDS OF DOLLARS (000 OMITED)

	BUDGETED
ANTICIPATED INVESTMENT COSTS	
PURCHASE PRICE	\$ 18,600
REMODELING COSTS	6,000
CLOSING COSTS & LEGAL FEE	1,500
	-----
TOTAL CAPITALIZATION	\$ 26,100
LESS: INVESTMENT TAX CREDIT	(2,610)
INVESTMENT IN WORKING CAPITAL	2,500
MISC. CASINO COSTS	261
	-----
TOTAL INVESTMENT IN CASINO	\$ 26,251
	=====
EST. INCOME FROM HOTEL & CASINO	
REVENUE	
HOTEL REVENUE	\$ 7,424
CASINO REVENUE	15,950
	-----
TOTAL REVENUE	\$ 23,374
EXPENSES	
HOTEL EXPENSE	(5,818)
CASINO EXPENSE	(7,380)
DEP. EXPENSE	(439)
INTEREST EXPENSE	(3,000)
	-----
OPERATING PROFIT	\$ 6,737
TAXES (46%)	(3,099)
	-----
NET INCOME	\$ 3,638
	-----
ADD: DEP EXPENSE	439
INTEREST EXPENSE	3,000
	-----
PROJECT CASH FLOW	\$ 7,077
	=====
EST. PROCEEDS FROM SALE OF	
CASINO IN 1985	
SALES PRICE	\$ 75,000
LESS: BOOK VALUE	14,100
	-----
LONG TERM CAPITAL GAIN	60,900
L.T.C.G. TAX (28%)	17,052
	-----
PROCEEDS FROM SALE	57,948
RETURN OF WORKING CAPITAL	2,500
REDEMPTION OF BONDS	(30,000)
	-----

TOTAL PROCEEDS IN 1985 \$ 30,448  
=====

ESTIMATED PROCEEDS FROM BOND ISSUE  
TO FINANCE CASINO PURCHASE

TOTAL PRESENT VALUE OF INTEREST \$ 16,952  
PRESENT VALUE OF PAR VALUE 9,659

PRESENT VALUE OF BOND -----  
\$ 26,611  
=====

NPV OF FUTURE CASH FLOW  
ON CASINO INVESTMENT

PV OF CASH FLOW \$ 45,128  
INITIAL INVESTMENT 26,251

NET PRESENT VALUE -----  
\$ 18,877  
=====

RATE OF GROWTH ON PROPOSED  
CASINO PURCHASE

INITIAL INVESTMENT \$ 26,251  
TOTAL FUTURE CASH VALUE \$172,553  
=====

RATE OF GROWTH = 20.720%

RETURN ON INVESTMENT = 27.386%

MODEL DESCRIPTION  
INVESTMENT ANALYSIS

LINE 132  
TITLE

'PLAYBOY ENTERPRISES, INC.'  
'INVESTMENT WORKSHEET CASINO-ATLANTIC CITY,N.J.'  
'THOUSANDS OF DOLLARS (000 OMITED)'

COLUMNS

C1 'BUDGETED'  
C2  
C3  
C4  
C5  
C6  
C7  
C8  
C9  
C10  
C11

ROWS

PURP 'ANTICIPATED INVESTMENT COSTS'  
'PURCHASE PRICE'



REMOD ' REMODELING COSTS '  
 LEGAL ' CLOSING COSTS & LEGAL FEE '  
 TCAP ' TOTAL CAPITALIZATION '  
 CRDIT ' LESS: INVESTMENT TAX CREDIT '  
 WORK ' INVESTMENT IN WORKING CAPITAL '  
 MISC ' MISC. CASINO COSTS '  
 TINV ' TOTAL INVESTMENT IN CASINO '  
 HREV ' EST. INCOME FROM HOTEL & CASINO '  
 ' REVENUE '  
 ' HOTEL REVENUE '  
 CREV ' CASINO REVENUE '  
 TOTR ' TOTAL REVENUE '  
 HOTE ' EXPENSES '  
 ' HOTEL EXPENSE '  
 CSOE ' CASINO EXPENSE '  
 DEP ' DEP. EXPENSE '  
 INTEX ' INTEREST EXPENSE '  
 OPPROF ' OPERATING PROFIT '  
 TAX ' TAXES (46%) '  
 NETINC ' NET INCOME '  
 ADDDEP ' ADD: DEP EXPENSE '  
 ADDINT ' INTEREST EXPENSE '  
 FLOW ' PROJECT CASH FLOW '  
 SPRICE ' EST. PROCEEDS FROM SALE OF '  
 ' CASINO IN 1985 '  
 ' SALES PRICE '  
 CAP ' LESS: BOOK VALUE '  
 GAIN ' LONG TERM CAPITAL GAIN '  
 GAINTX ' L.T.C.G.TAX (28%) '  
 SPROC ' PROCEEDS FROM SALE '  
 RWORK ' RETURN OF WORKING CAPITAL '  
 REDDEM ' REDEMPTION OF BONDS '  
 TPROC ' TOTAL PROCEEDS IN 1985 '  
 R11  
 R12  
 R13  
 RWX18 ' ESTIMATED PROCEEDS FROM BOND ISSUE '  
 ' TO FINANCE CASINO PURCHASE '  
 RWX19 ' TOTAL PRESENT VALUE OF INTEREST '  
 RWX20 ' PRESENT VALUE OF PAR VALUE '  
 RWX21 ' PRESENT VALUE OF BOND '  
 R1  
 RDIS  
 R2  
 PVCF ' NPV OF FUTURE CASH FLOW '  
 ' ON CASINO INVESTMENT '  
 ' PV OF CASH FLOW '  
 ININ ' INITIAL INVESTMENT '  
 NPV ' NET PRESENT VALUE '  
 RG1 ' RATE OF GROWTH ON PROPOSED '  
 ' CASINO PURCHASE '  
 ' INITIAL INVESTMENT '  
 RG2  
 RG3

TEV ' TOTAL FUTURE CASH VALUE'  
 PROG ' RATE OF GROWHT ='

DATA

PURP = 18600  
 REMOD = 6000  
 LEGAL = 1500  
 WORK = 2500  
 HREV = 7424  
 CREV = 15950  
 HOTE = -5818  
 CSOE = -7380  
 DEP = -439  
 INTEX = -3000  
 SPRICE = 75000  
 REDDEM = -30000  
 R1 = 7077 ///////////////37525  
 R11 = 3000 FROM C1 THRU C10  
 R13 = -26251 7077///////////////37525

RULES

#####  
 ##### purchase price calculation rules #####  
 #####  
 TCAP = PURP + REMOD + LEGAL  
 CRDIT = -.1 \* TCAP  
 MISC = .01 \* TCAP  
 TINV = SUM TCAP THRU MISC  
 #####  
 ##### cash flow calculation rules #####  
 #####  
 TOTR = HREV + CREV  
 OPPROF = SUM TOTR THRU INTEX  
 TAX = -.46 \* OPPROF  
 NETINC = OPPROF + TAX  
 ADDDEP = -DEP  
 ADDINT = -INTEX  
 FLOW = NETINC + ADDDEP + ADDINT  
 #####  
 ##### casino sales price calculation rules &&  
 #####  
 GAIN = SPRICE - CAP  
 GAINTX = .28 \* GAIN  
 SPROC = SPRICE - GAINTX  
 RWORK = WORK  
 TPROC = SPROC + RWORK + REDDEM  
 #####  
 ##### bond value calculation rules #####  
 #####  
 R11 = DISCOUNT BY 12%  
 R12 = ACC R11  
 RWX19,C1 = R12,C10  
 RWX20 = 30000/(1.12 \*\*10)  
 RWX21 = RWX19 + RWX20

net present value calculation rules

RDIS = -R1
RDIS = DISCOUNT BY 14%
R2 = ACC RDIS
PVCF,C1 = R2,C10

ININ = TINV
NPV = PVCF - ININ

rate of growth calculation rules

RG1 = TINV
RG2,C1 = R1,C1 \* (1.14 \*\* 9)
RG2,C2 = R1,C2 \* (1.14 \*\* 8)
RG2,C3 = R1,C3 \* (1.14 \*\* 7)
RG2,C4 = R1,C4 \* (1.14 \*\* 6)
RG2,C5 = R1,C5 \* (1.14 \*\* 5)
RG2,C6 = R1,C6 \* (1.14 \*\* 4)
RG2,C7 = R1,C7 \* (1.14 \*\* 3)
RG2,C8 = R1,C8 \* (1.14 \*\* 2)
RG2,C9 = R1,C9 \* (1.14 \*\* 1)
RG2,C10 = R1,C10 \* (1.14 \*\* 0)

RG3 = ACC RG2
TFV,C1 = RG3,C10
PROG = ((TFV,C1 / RG1) \*\* (1/10)) - 1 \* 100

internal rate of return calculation rule

ROI = R13

SPACING

TCAP O
TINV O = A
TOTR O
OPPROF O
NETINC O U
FLOW O =
GAIN O
SPROC O
TPROC O = A
RWX21 O =
NPV O = A
TFV A
TFV =

EDITING

PURP \$
TCAP \$
TINV \$
HREV \$
TOTR \$
OPPROF \$
NETINC \$
FLOW \$
SPRICE \$



```

TPROC $
RWX19 $
RWX21 $
PVCF $
NPV $
RG1 $
TFV $
PROG .*** '%'
SUPPRESS C2 THRU C11
SUPPRESS RG2 THRU RG3
SUPPRESS R1 THRU R2
SUPPRESS R11 THRU R13
END

```

### COMMENTS

Even though only one column of information is printed, all eleven columns set up in the COLUMNS section are used in the bond valuation; net present value, internal rate of return, and rate of growth, subprograms. For example, row R11 is used to lay out the cash flows over the ten year period, discounted at 12%. Row R12 is used to accumulate this discounted cash flow. This is what they would look like if they were not SUPPRESSED. (Note: R13, R1, and R2 are used for similar operations).

	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10
R11	2679	2392	2135	1907	1702	1520	1357	1212	1082	966
R12	2679	5071	7206	9113	10815	12335	13692	14904	15986	16952

The value in R12,C10 is the present value of the interest payments on \$30,000,000 bond 10%, discounted by the 12% effective yield.

The prospects of for this project look encouraging after

preliminary evaluation. But management would now like to see how this project would impact on its projected financial statements.

PLAYBOY ENTERPRISES, INC. AND SUBSIDIARIES  
 CONSOLIDATED BALANCE SHEETS  
 JUNE 30, 1975, 1974, 1973  
 IN THOUSANDS OF DOLLARS (000 OMITED)  
 EXPECTED CURRENT OPERATIONS

	1975 BUDGETED	1974	1973
<b>ASSETS</b>			
<b>CURRENT ASSETS</b>			
CASH	\$ 10,307	\$ 8,045	\$ 7,654
ACCTS. REC.	16,482	23,249	20,874
OTHER ASSETS	7,844	7,751	6,516
INVENTORIES	18,155	16,098	14,605
	-----	-----	-----
<b>TOTAL CURRENT ASSETS</b>	<b>\$ 52,788</b>	<b>\$ 55,143</b>	<b>\$ 49,649</b>
	-----	-----	-----
<b>FIXED ASSETS</b>			
LAND	\$ 4,894	\$ 4,750	\$ 5,808
BUILDING	71,465	70,473	80,179
EQUIPMENT	27,697	25,881	25,221
LEASE IMPROVEMENTS	10,647	9,568	8,462
AIRCRAFT	5,959	5,908	5,864
CONSTRUCTION IN PROCESS	1,161	757	519
LESS: ACC. DEPRECIATION	(31,355)	(27,233)	(24,230)
OTHER FIXED ASSETS	15,448	9,305	9,128
	-----	-----	-----
<b>TOTAL FIXED ASSETS</b>	<b>\$105,916</b>	<b>\$ 99,409</b>	<b>\$110,951</b>
	-----	-----	-----
<b>TOTAL ASSETS</b>	<b>\$158,704</b>	<b>\$154,552</b>	<b>\$160,600</b>
	=====	=====	=====
<b>LIABILITIES</b>			
<b>CURRENT LIABILITIES</b>			
ACCTS. PAYABLE	\$ 11,699	\$ 14,169	\$ 13,190
CURR. MAT. LONG TERM DEBT	506	844	813
NOTES PAYABLE	3,350	1,500	-
ACCRUED EXPENSES	7,081	6,948	6,679
TAXES PAYABLE	9,413	9,600	10,764
	-----	-----	-----
<b>TOTAL CURRENT LIABILITIES</b>	<b>\$ 32,049</b>	<b>\$ 33,061</b>	<b>\$ 31,446</b>
	-----	-----	-----
<b>NON CURRENT LIABILITIES</b>			
LONG TERM DEBT	\$ 17,185	\$ 17,684	\$ 30,526
DEFERRED INCOME	14,882	11,023	11,081

DEFERRED TAXES	13,447	12,032	10,559
	-----	-----	-----
TOTAL NON CURRENT LIAB.	\$ 45,514	\$ 40,739	\$ 52,166
	-----	-----	-----
TOTAL LIABILITIES	\$ 77,563	\$ 73,800	\$ 83,612
	=====	=====	=====
EQUITY			
COMMON STOCK	\$ 9,411	\$ 9,411	\$ 9,411
PAID-IN CAPITAL	12,372	12,372	12,372
LESS: TREASURY STOCK	(1,338)	(1,338)	(262)
RETAINED EARNINGS	60,696	60,307	55,467
	-----	-----	-----
TOTAL EQUITY	\$ 81,141	\$ 80,752	\$ 76,988
	-----	-----	-----
TOTAL LIABILITIES AND EQUITY	\$158,704	\$154,552	\$160,600
	=====	=====	=====

SELECTED RATIOS

CURRENT RATIO	1.647	1.668	1.579
ACID TEST RATIO	1.081	1.181	1.114
INVENTORY TURNOVER	9.450	10.550	10.150
FIXED ASSET TURNOVER	1.867	2.055	1.713
TOTAL ASSET TURNOVER	1.246	1.322	1.183
DEBT RATIO	0.489	0.478	0.521
TIMES INT. EARNED	1.821	4.566	8.139
NET PROFIT MARGIN	0.006	0.029	0.059
RETURN ON TOTAL ASSETS	0.007	0.038	0.070

MODEL DESCRIPTION  
BUDGETED AND HISTORICAL BALANCE SHEETS

TITLE

'PLAYBOY ENTERPRISES, INC. AND SUBSIDIARIES'  
'CONSOLIDATED BALANCE SHEETS'  
'JUNE 30, 1975, 1974, 1973'  
'IN THOUSANDS OF DOLLARS (000 OMITED)'

COLUMNS

C1 '1975'  
'BUDGETED'  
C2 '1974'  
C3 '1973'  
C4 '1972'  
C5 '1971'

ROWS

CASH 'ASSETS'  
' CURRENT ASSETS'  
' CASH'  
ACR ' ACCTS. REC.'  
OTHRCA ' OTHER ASSETS'  
INV ' INVENTORIES'



MRK ' MRKT. SEC.'  
TCA ' TOTAL CURRENT ASSETS'  
LAND ' FIXED ASSETS'  
' LAND'  
BLDG ' BUILDING'  
EQUIP ' EQUIPMENT'  
LEHOLD ' LEASE IMPROVEMENTS'  
PLANE ' AIRCRAFT'  
CONST ' CONSTRUCTION IN PROCESS'  
ACDEP ' LESS: ACC. DEPRECIATION'  
OTHRFA ' OTHER FIXED ASSETS'  
TFA ' TOTAL FIXED ASSETS'  
TA ' TOTAL ASSETS'  
ACP ' LIABILITIES'  
' CURRENT LIABILITIES'  
' ACCTS. PAYABLE'  
CMLT ' CURR. MAT. LONG TERM DEBT'  
NOTES ' NOTES PAYABLE'  
ACEP ' ACCRUED EXPENSES'  
ACINT ' ACCRUED INTEREST'  
ACPAY ' ACCRUED PAYROLL'  
TAXPAY ' TAXES PAYABLE'  
TCL ' TOTAL CURRENT LIABILITIES'  
LTD ' NON CURRENT LIABILITIES'  
' LONG TERM DEBT'  
DEFINC ' DEFERRED INCOME'  
DEFTAX ' DEFERRED TAXES'  
BONDS ' BONDS PAYABLE'  
TNCL ' TOTAL NON CURRENT LIAB.'  
TL ' TOTAL LIABILITIES'  
COMMON ' EQUITY'  
' COMMON STOCK'  
PREF ' PREFERRED STOCK'  
PDIN ' PAID-IN CAPITAL'  
TREAS ' LESS: TREASURY STOCK'  
RETERN ' RETAINED EARNINGS'  
TEQUITY ' TOTAL EQUITY'  
TLEQ ' TOTAL LIABILITIES AND EQUITY'  
CGS  
SALES  
EBIT  
GROSPROF  
INTEXP  
NETINC  
R30 ' SELECTED RATIOS'  
' -----'  
' CURRENT RATIO'  
R31 ' ACID TEST RATIO'  
R32 ' AVG. COLLECTION PERIOD'  
R33 ' INVENTORY TURNOVER'  
R34 ' FIXED ASSET TURNOVER'  
R35 ' TOTAL ASSET TURNOVER'  
R36 ' DEBT RATIO'  
R37 ' TIMES INT. EARNED'

R38 'NET PROFIT MARGIN'  
 R39 'RETURN ON TOTAL ASSETS'  
 R40 'RETURN ON COMMON EQUITY'

DATA

WHAT IF CASE 1 'EXPECTED CURRENT OPERATIONS'

AND CASH	=	10307	8045	7654
AND INV	=	18155	16098	14605
AND LAND	=	4894	4750	5808
AND BLDG	=	71465	70473	80179
AND EQUIP	=	27697	25881	25221
AND LTD	=	17185	17684	30526
AND RETERN	=	60696	60307	55467
AND CGS	=	171562	169837	148241
AND SALES	=	197734	204268	190011
AND EBIT	=	4545	13827	23140
AND GROSPROF	=	26172	34431	41770
AND INTEXP	=	2496	3028	2843
AND NETINC	=	1096	5949	11258
AND ACDEP	=	-31355	-27233	-24230

WHAT IF CASE 2 'EXPECTED EXPANDED OPERATIONS'

AND CASH	=	11991	8045	7654
AND INV	=	20655	16098	14605
AND LAND	=	9894	4750	5808
AND BLDG	=	99106	70473	80179
AND EQUIP	=	27958	25881	25221
AND LTD	=	47185	17684	30526
AND RETERN	=	67344	60307	55467
AND CGS	=	178942	169837	148241
AND SALES	=	221108	204268	190011
AND EBIT	=	14282	13827	23140
AND GROSPROF	=	42166	34431	41770
AND INTEXP	=	5496	3028	2843
AND NETINC	=	7744	5949	11258
AND ACDEP	=	-31793	-27233	-24230

ACR	=	16482	23249	20874
OTHRCA	=	7844	7751	6516
LEHOLD	=	10647	9568	8462
PLANE	=	5959	5908	5864
CONST	=	1161	757	519
OTHRFA	=	15448	9305	9128
ACP	=	11699	14169	13190
CMLT	=	506	844	813
NOTES	=	3350	1500	0
ACEP	=	7081	6948	6679
TAXPAY	=	9413	9600	10764
DEFINC	=	14882	11023	11081
DEFTAX	=	13447	12032	10559
BONDS	=	0		
COMMON	=	9411	9411	9411
PREF	=	0	0	0
PDIN	=	12372	12372	12372
TREAS	=	-1338	-1338	-262

RULES

balance sheet calculation rules

TCA = SUM CASH THRU MRK  
 TFA = SUM LAND THRU OTHRFA  
 TA = TCA + TFA  
 TCL = SUM ACP THRU TAXPAY  
 TNCL =SUM LTD THRU BONDS  
 TL = TCL +TNCL  
 TEQUITY = SUM COMMON THRU RETERN  
 TLEQ = TL + TEQUITY

ratio calculation rules

R30 = TCA/TCL  
 R31 = TCA - INV/TCL  
 R33 = CGS/INV  
 R34 = SALES/TFA  
 R35 = SALES/TA  
 R36 = TL/TA  
 R37 = EBIT/INTEXP  
 R38 = NETINC/SALES  
 R39 = NETINC/TA  
 R40 = NETINC/TEQUITY

SPACING

TCA           O   U  
 TFA           O   U  
 TA            A   =  
 TCL           O   U  
 TNCL          O   U  
 TL            =      
 TEQUITY      O   U  
 TLEQ          =    

EDITING

CASH           \$  
 TCA            \$  
 LAND           \$  
 TFA            \$  
 TA             \$  
 ACP            \$  
 TCL            \$  
 LTD            \$  
 TNCL           \$  
 TL             \$  
 COMMON        \$  
 TEQUITY       \$  
 TLEQ           \$  
 R30            .\*\*\*  
 R31            .\*\*\*  
 R32            .\*\*\*  
 R33            .\*\*\*  
 R34            .\*\*\*  
 R35            .\*\*\*



```
R36      .***
R37      .***
R38      .***
R39      .***
SUPPRESS ZERO ROWS COLUMNS
SUPPRESS CGS THRU NETINC
END
```

#### COMMENTS

This model was prepared to accommodate up to five years of financial data. Only three years of data were presented and the SUPPRESS function was used to delete the last two columns in the printed output.

The rows of data used to prepare the ratios (sales,cgs, netinc, ect.) were also SUPPRESSED.

In the EDITING section, R30 through R39 contain decimal specifications (.\*\*\*), this allows for three decimal places of printed ratio output.

WHAT IF CASE 1 section was used to prepare the preceding financial statement. WHAT IF CASE 2 contains the data used to create a second financial statement showing the incorporation of the investment proposal shown later.

PLAYBOY ENTERPRISES, INC. AND SUBSIDIARIES  
 COMBINED STATEMENT OF INCOME AND RETAINED EARNINGS  
 FOR THE YEARS ENDING JUNE 30, 1975, 1974, 1973  
 IN THOUSANDS OF DOLLARS (000 OMITED)  
 EXPECTED CURRENT OPERATIONS

	1975 BUDGETED	1974	1973
NET SALES	\$197,734	\$204,268	\$190,011
COST OF GOODS SOLD	(171,562)	(169,837)	(148,241)
	-----	-----	-----
GROSS PROFIT	\$ 26,172	\$ 34,431	\$ 41,770
OPERATING EXPENSES			
SELLING EXPENSES	14,233	13,989	12,096
GEN. AND ADMIN. EXPENSE	7,664	7,532	6,513
	-----	-----	-----
TOTAL OPERATING EXPENSES	\$ 21,897	\$ 21,521	\$ 18,609
OTHER INCOME (EXPENSE)	270	917	(21)
	-----	-----	-----
EARN. BEFORE INT. AND TAXES	\$ 4,545	\$ 13,827	\$ 23,140
	-----	-----	-----
INTEREST EXPENSE	2,496	3,028	2,843
INCOME TAX EXPENSE	953	4,850	9,039
	-----	-----	-----
NET INCOME	\$ 1,096	\$ 5,949	\$ 11,258
	=====	=====	=====
RETAINED EARNINGS			
BEGINING OF YEAR	\$ 60,307	\$ 55,467	\$ 45,354
ADD: NET INCOME FOR YEAR	1,096	5,949	11,258
	-----	-----	-----
TOTAL EARNINGS AVAILABLE	\$ 61,403	\$ 61,416	\$ 56,612
DEDUCT DIVIDENDS DECLARED			
COMMON STOCK	707	1,109	1,145
	-----	-----	-----
RETAINED EARNINGS			
END OF YEAR	\$ 60,696	\$ 60,307	\$ 55,467
	=====	=====	=====

MODEL DESCRIPTION  
 BUDGETED AND HISTORICAL INCOME STATEMENTS

LINE 132

TITLE

'PLAYBOY ENTERPRISES, INC. AND SUBSIDIARIES'  
 'COMBINED STATEMENT OF INCOME AND RETAINED EARNINGS'  
 'FOR THE YEARS ENDING JUNE 30, 1975, 1974, 1973'  
 'IN THOUSANDS OF DOLLARS (000 OMITED)'

COLUMNS

C1 '1975       '  
     'BUDGETED'  
 C2 '1974       '

C3 '1973 '  
 C4 '1972 '  
 C5 '1971 '

ROWS

SALES 'NET SALES'  
 CGS ' COST OF GOODS SOLD'  
 GROSPROF 'GROSS PROFIT'  
 SELL 'OPERATING EXPENSES'  
 ' SELLING EXPENSES'  
 ADMIN ' GEN. AND ADMIN. EXPENSE'  
 MISCOP ' MISCELLANEOUS EXPENSE'  
 TOPEX 'TOTAL OPERATING EXPENSES'  
 OTHRINC ' OTHER INCOME (EXPENSE)'  
 EBIT 'EARN. BEFORE INTEREST AND TAXES'  
 INTEXP ' INTEREST EXPENSE'  
 INCTX ' INCOME TAX EXPENSE'  
 NETINC 'NET INCOME'  
 BEGRET 'RETAINED EARNINGS'  
 ' BEGINING OF YEAR'  
 ADDINC 'ADD: NET INCOME FOR YEAR'  
 RETSUB 'TOTAL EARNINGS AVAILABLE'  
 DEDDIVC 'DEDUCT DIVIDENDS DECLARED'  
 ' COMMON STOCK'  
 DEDDIVP ' PREFERRED STOCK'  
 RETERN 'RETAINED EARNINGS'  
 ' END OF YEAR'

DATA

WHAT IF CASE 1 'EXPECTED CURRENT OPERATIONS'  
 AND SALES = 197734 204268 190011  
 AND CGS = -171562 -169837 -148241  
 AND SELL = 14233 13989 12096  
 AND ADMIN = 7664 7532 6513  
 AND INTEXP = 2496 3028 2843  
 AND INCTX = 953 4850 9039  
 WHAT IF CASE 2 'EXPECTED EXPANDED OPERATIONS'  
 AND SALES = 221108 204268 190011  
 AND CGS = -178942 -169837 -148241  
 AND SELL = 17581 13989 12096  
 AND ADMIN = 10573 7532 6513  
 AND INTEXP = 5496 3028 2843  
 AND INCTX = 1042 4850 9039  
 MISCOP = 0  
 OTHRINC = 270 917 -21  
 BEGRET = 60307 55467 45354  
 DEDDIVC = 707 1109 1145  
 DEDDIVP = 0 0 0

RULES

GROSPROF = SUM SALES THRU CGS  
 TOPEX = SUM SELL THRU MISCOP  
 EBIT = GROSPROF - TOPEX + OTHRINC  
 NETINC = EBIT - INTEXP - INCTX  
 ADDINC = NETINC  
 RETSUB = BEGRET + ADDINC  
 RETERN RIGHT 1 = BEGRET



```

    RETERN,C1 = RETSUB,C1 - DEDDIVP,C1 - DEDDIVC,C1
SPACING
GROSPROF O
EBIT      U  O
TOPEX     O  A
NETINC    O  =  A
BEGRET    B
ADDINC    U
DEDDIVP   U  A
RETERN    =  O
EDITING
SALES     $
GROSPROF $
EBIT      $
TOPEX     $
NETINC    $
BEGRET    $
RETSUB    $
RETERN    $
SUPPRESS ZERO ROWS COLUMNS
SUPPRESS C4
END

```

#### COMMENTS

Standardized data names were used to make it easier to move data from one model description to the next, e.g., sales, cgs, netinc.

The model descriptions also have similar formats, which makes it easy to follow the logic of calculations.

The SUPPRESS C4 statement is required because of the shift statement in the RULES section. RIGHT 1 will cause data to be inserted into C4 which will not be eliminated by SUPPRESS ZERO ROWS COLUMNS.

WHAT IF CASE 2 showing the incorporation of the investment proposal into the budgeted financial statements is shown later.

MODEL DESCRIPTION  
STATEMENT OF BUDGETED AND HISTORICAL  
CHANGES IN FINANCIAL POSITION

LINE 132

TITLE

'PLAYBOY ENTERPRISES, INC. AND SUBSIDIARIES'  
'CONSOLIDATED STATEMENTS OF CHANGES IN FINANCIAL POSITION'  
'FOR THE YEARS ENDED JUNE 30, 1975 AND 1974'  
'IN THOUSANDS OF DOLLARS (000 OMITTED)'

COLUMNS

C1 '1975 '  
'BUDGETED'  
C2 '1974 '

ROWS

NETINC 'SOURCES OF FUNDS'  
' OPERATIONS'  
' NET INCOME'  
DEP ' DEPRECIATION'  
DEFTX ' DEFERRED INCOME TAXES'  
RECTX ' RECOVERABLE INCOME TAXES'  
DEFINC ' DEFERED INCOME TAXES'  
OTHER ' OTHER'  
FDPROV ' FUNDS PROVIDED FROM OPERATIONS'  
OTHRSR ' OTHER SOURCES'  
' SALE OF PLAYBOY PLAZA'  
FILM ' SALE OF FILM RIGHTS'  
BND ' PROCEEDS FROM BOND ISSUE'  
TFDSPROV 'TOTAL FUNDS PROVIDED'  
ADDPPE 'APPLICATION OF FUNDS'  
' ADD. TO PROP., PLANT & EQUIP.'  
REDLTD ' REDUCTION OF LONG TERM DEBT'  
DEDDIVC ' CASH DIVIDENDS'  
MISCINV ' MISCELLANEOUS INVESTMENTS'  
PURTRES ' PURCHASE OF TREASURY SHARES'  
NETOTH ' OTHER, NET'  
RW ' INCREASE (DEC.) IN WORKING CAPITAL'  
TOTAPL 'TOTAL APPLICATION OF FUNDS'  
CASH ' CHANGES IN WORKING CAPITAL COMPONENTS'  
' CASH'  
ACREC ' RECIEVABLES'  
INV ' INVENTORIES'  
OTHCA ' OTHER CURRENT ASSETS'  
CMLTD ' NOTES PAY. & CURR. MAT. OF LTD'  
ACPAY ' ACCOUNTS PAYABLE & ACCRED EXPENSES'  
INCTX ' INCOME TAXES'  
WORK ' INCREASE (DECREASE) IN WORKING CAPITAL'

DATA

WHAT IF CASE 1	'EXPECTED	CURRENT	OPERATIONS'
AND NETINC	=	1096	5949
AND DEP	=	6740	7032
AND BND	=	0	0
AND ADDPPE	=	6782	7955

AND REDLTD	=	499	801
AND CASH	=	2262	391
AND INV	=	2057	1493
WHAT IF CASE 2	'	EXPECTED	EXPANDED OPERATIONS'
AND NETINC	=	7744	5949
AND DEP	=	7179	7032
AND BND	=	26611	0
AND ADDPPE	=	36795	7955
AND REDLTD	=	0	801
AND CASH	=	3946	391
AND INV	=	4557	1493

DEFTX	=	1415	1473
RECTX	=	-5218	
DEFINC	=	3859	-58
OTHER	=	95	-369
OTHRSR	=	0	1696
FILM	=	931	684
DEDDIVC	=	707	1109
MISCINV	=	295	504
PURTRES	=	0	1077
NETOTH	=	1978	1084
WORK	=	-1343	3877
ACREC	=	-6767	2375
OTHCA	=	93	1235
CMLTD	=	-1512	-1531
ACPAY	=	2337	-1249
INCTX	=	187	1163

RULES

FDPROV	=	SUM NETINC THRU OTHER
TFDSPROV	=	FDPROV + OTHRSR + FILM + BND
WORK	=	SUM CASH THRU INCTX
RW	=	WORK
TOTAPL	=	SUM ADDPPE THRU RW

SPACING

FDPROV	O	A
TFDSPROV	O	= A
TOTAPL	O	= A
CASH	B	
WORK	O	=

EDITING

NETINC	\$
TFDSPROV	\$
TOTAPL	\$
CASH	\$
WORK	\$

SUPPRESS ZERO ROWS COLUMNS  
END



COMMENTS

Data elements not affected by the investment proposal are not within either CASE 1 or CASE 2, they remain unchanged. You are now ready to generate statements reflecting the impact of the proposed casino purchase - CASE 2 in the model description.

PLAYBOY ENTERPRISES, INC. AND SUBSIDIARIES  
SUMMARY OF CASH FLOW PROJECTIONS  
PER QUARTER ENDING JUNE 30, 1975  
THOUSANDS AND OF DOLLARS (000 OMITED)  
EXPECTED CURRENT OPERATIONS

	QRT1	QRT2	QRT3	QRT4
PROJECTED SALES	\$51,411	\$45,479	\$47,456	\$53,388
LESS: SALES ON ACC.	15,872	14,040	14,651	16,482
	-----	-----	-----	-----
CASH RECEIPTS				
CASH SALES	\$35,539	\$31,439	\$32,805	\$36,906
COLLECTION ON ACC.	23,249	15,872	14,040	14,651
OTHER INCOME	70	62	65	73
	-----	-----	-----	-----
TOTAL RECEIPTS	\$58,858	\$47,373	\$46,910	\$51,630
	-----	-----	-----	-----
CASH DISBURSEMENTS				
for MATER. & DIR. LABOR	\$44,606	\$39,459	\$41,175	\$46,322
for OTHER OP. COSTS	5,693	5,036	5,255	5,912
for INTEREST PAYMENTS	-	1,248	-	1,248
for TAX PAYMENTS	248	219	229	257
for INCR. WORKING CAP.	1,074	950	991	1,115
for OTHER DISB.	358	379	314	422
	-----	-----	-----	-----
TOTAL DISBURSEMENTS	\$51,979	\$47,291	\$47,964	\$55,276
	-----	-----	-----	-----
BEGINING CASH BALANCE	\$ 8,045	\$14,924	\$15,006	\$13,952
NET CASH REC. (DISB.)	6,879	82	(1,054)	(3,646)
	-----	-----	-----	-----
ENDING CASH BALANCE	\$14,924	\$15,006	\$13,952	\$10,306
	=====	=====	=====	=====

AND CSOOTH = 261  
R4 = 23249  
R13 = 358 379 314 422  
R15 = 8045

VARIABLES

SALES  
ACREC  
OTHINC  
CGS  
TOPEX  
INTEX  
TAXEX  
WORK

Q1 .\*\*  
Q2 .\*\*  
Q3 .\*\*  
Q4 .\*\*

RULES

WHAT IF CASE 1  
AND SALES = 197734  
AND CGS = 171562  
AND INTEX = 2496  
AND TAXEX = 953  
AND TOPEX = 21897

WHAT IF CASE 2  
AND SALES = 221108  
AND CGS = 178942  
AND INTEX = 5496  
AND TAXEX = 1042  
AND TOPEX = 27715

OTHINC = 270

ACREC = 16482

WORK = 4129

Q1 = .26

Q2 = .23

Q3 = .24

Q4 = .27

R1,C1 = Q1 \* SALES

R1,C2 = Q2 \* SALES

R1,C3 = Q3 \* SALES

R1,C4 = Q4 \* SALES

R2,C1 = Q1/Q4 \* ACREC

R2,C2 = Q2/Q4 \* ACREC

R2,C3 = Q3/Q4 \* ACREC

R2,C4 = ACREC

R3 = R1 - R2

R4 RIGHT 1 = R2

R5,C1 = Q1 \* OTHINC

R5,C2 = Q2 \* OTHINC

R5,C3 = Q3 \* OTHINC

R5,C4 = Q4 \* OTHINC

R7 = SUM R3 THRU CSOBD

R8,C1 = Q1 \* CGS

R8,C2 = Q2 \* CGS

```

R8,C3 = Q3 * CGS
R8,C4 = Q4 * CGS
R9,C1 = Q1 * TOPEX
R9,C2 = Q2 * TOPEX
R9,C3 = Q3 * TOPEX
R9,C4 = Q4 * TOPEX
R10,C2 = INTEX/2
R10,C4 = INTEX/2
R11,C1 = Q1 * TAXEX
R11,C2 = Q2 * TAXEX
R11,C3 = Q3 * TAXEX
R11,C4 = Q4 * TAXEX
R12,C1 = Q1 * WORK
R12,C2 = Q2 * WORK
R12,C3 = Q3 * WORK
R12,C4 = Q4 * WORK
R14 = SUM R8 THRU R13
R16 = R7 - R14
R17 = R15 + R16
R15 RIGHT 1 = R17
SPACING
R2 U A
R7 O U A
R14 O U A
R17 O =
EDITING
R1 $
R3 $
R7 $
R8 $
R14 $
R15 $
R17 $
SUPPRESS ZERO ROWS COLUMNS
END

```

#### COMMENTS

This model description utilizes variable names, to help break down the income accounts into quarterly totals. For example, in CASE 1 sales amounted to \$197,734,000 for the year. The variables (Q1,Q2,Q3,Q4) are used to calculate what percentage of the total yearly activity is applicable to each quarter. The same procedure is used for cost of goods sold (CGS), interest expense (INTEX), tax expense (TAXEX),



total operating expense (TOPEX), working capital (WORK), and other income (OTHINC).

Accounts receivable (ACREC) is not an income account, it does not measure the flow of funds through time, but rather represents the stock of funds at a particular moment. Because of that ACREC for each period is calculated in relation to the fourth quarter (Q4) ending balance, e.g., ACREC has an ending balance of \$16,482,000. Q4 has 27% of the yearly activity, so Q1 (26% activity) ACREC ending balance should contain Q1/Q4 or 96% of Q4's balance; \$15,872,000.

Also note that in the DATA section under WHAT IF CASE 1, all the data has a zero value, so this section is SUPPRESSED in the print out of CASE 1.

#### STATEMENTS AFTER INCORPORATION OF INVESTMENT PROPOSAL

Below are the CASE 2 'EXPECTED EXPANDED OPERATIONS' statements that were produced from the model descriptions previously presented.

There is an interrelationship among financial statements that makes it difficult to determine the affect the investment proposal has on each statement.

First, the investment proposal deals with cash flows and

income determination over the life of the investment proposal, whereas accounting statements must sometimes arbitrarily determine income over a specific period of time.

Second, the statement of changes in financial position utilizes balance sheet and income statement amounts and cannot be prepared until they are known.

Third, the balance sheet requires data produced from the cash flow projection (ending cash balance) and income statement (accrued expenses, depreciation expense, and retained earnings) the ratio analysis included with the balance sheet requires (sales, cgs, ebit, gross profit, interest expense, and net income).

Fourth, the cash flow projection cannot be prepared until income statement data are known (sales, cgs, interest expense, tax expense and total operating expenses).

Because of these interrelationships you must start with the income statement, from that prepare the cash flow projection, then prepare the balance sheet, and finally prepare the statement of changes in financial position.

PLAYBOY ENTERPRISES, INC. AND SUBSIDIARIES  
CONSOLIDATED BALANCE SHEETS  
JUNE 30, 1975, 1974, 1973  
IN THOUSANDS OF DOLLARS (000 OMITED)  
EXPECTED EXPANDED OPERATIONS

	1975 BUDGETED	1974	1973
<b>ASSETS</b>			
CURRENT ASSETS			
CASH	\$ 11,991	\$ 8,045	\$ 7,654
ACCTS. REC.	16,482	23,249	20,874
OTHER ASSETS	7,844	7,751	6,516
INVENTORIES	20,655	16,098	14,605
	-----	-----	-----
TOTAL CURRENT ASSETS	\$ 56,972	\$ 55,143	\$ 49,649
	-----	-----	-----
FIXED ASSETS			
LAND	\$ 9,894	\$ 4,750	\$ 5,808
BUILDING	99,106	70,473	80,179
EQUIPMENT	27,958	25,881	25,221
LEASE IMPROVEMENTS	10,647	9,568	8,462
AIRCRAFT	5,959	5,908	5,864
CONSTRUCTION IN PROCESS	1,161	757	519
LESS: ACC. DEPRECIATION	(31,793)	(27,233)	(24,230)
OTHER FIXED ASSETS	15,448	9,305	9,128
	-----	-----	-----
TOTAL FIXED ASSETS	\$138,380	\$ 99,409	\$110,951
	-----	-----	-----
TOTAL ASSETS	\$195,352	\$154,552	\$160,600
	=====	=====	=====
<b>LIABILITIES</b>			
CURRENT LIABILITIES			
ACCTS. PAYABLE	\$ 11,699	\$ 14,169	\$ 13,190
CURR. MAT. LONG TERM DEBT	506	844	813
NOTES PAYABLE	3,350	1,500	-
ACCRUED EXPENSES	7,081	6,948	6,679
TAXES PAYABLE	9,413	9,600	10,764
	-----	-----	-----
TOTAL CURRENT LIABILITIES	\$ 32,049	\$ 33,061	\$ 31,446
	-----	-----	-----
NON CURRENT LIABILITIES			
LONG TERM DEBT	\$ 47,185	\$ 17,684	\$ 30,526
DEFERRED INCOME	14,882	11,023	11,081
DEFERRED TAXES	13,447	12,032	10,559
	-----	-----	-----
TOTAL NON CURRENT LIAB.	\$ 75,514	\$ 40,739	\$ 52,166
	-----	-----	-----
TOTAL LIABILITIES	\$107,563	\$ 73,800	\$ 83,612
	=====	=====	=====



EQUITY			
COMMON STOCK	\$ 9,411	\$ 9,411	\$ 9,411
PAID-IN CAPITAL	12,372	12,372	12,372
LESS: TREASURY STOCK	(1,338)	(1,338)	(262)
RETAINED EARNINGS	67,344	60,307	55,467
	-----	-----	-----
TOTAL EQUITY	\$ 87,789	\$ 80,752	\$ 76,988
	-----	-----	-----
TOTAL LIABILITIES AND EQUITY	\$195,352	\$154,552	\$160,600
	=====	=====	=====

SELECTED RATIOS

	-----		
CURRENT RATIO	1.778	1.668	1.579
ACID TEST RATIO	1.133	1.181	1.114
INVENTORY TURNOVER	8.663	10.550	10.150
FIXED ASSET TURNOVER	1.598	2.055	1.713
TOTAL ASSET TURNOVER	1.132	1.322	1.183
DEBT RATIO	0.551	0.478	0.521
TIMES INT. EARNED	2.599	4.566	8.139
NET PROFIT MARGIN	0.035	0.029	0.059
RETURN ON TOTAL ASSETS	0.040	0.038	0.070

PLAYBOY ENTERPRISES, INC. AND SUBSIDIARIES  
 COMBINED STATEMENT OF INCOME AND RETAINED EARNINGS  
 FOR THE YEARS ENDING JUNE 30, 1975, 1974, 1973  
 IN THOUSANDS OF DOLLARS (000 OMITTED)  
 EXPECTED EXPANDED OPERATIONS

	1975 BUDGETED	1974	1973
NET SALES	\$221,108	\$204,268	\$190,011
COST OF GOODS SOLD	(178,942)	(169,837)	(148,241)
	-----	-----	-----
GROSS PROFIT	\$ 42,166	\$ 34,431	\$ 41,770
OPERATING EXPENSES			
SELLING EXPENSES	17,581	13,989	12,096
GEN. AND ADMIN. EXPENSE	10,573	7,532	6,513
	-----	-----	-----
TOTAL OPERATING EXPENSES	\$ 28,154	\$ 21,521	\$ 18,609
OTHER INCOME (EXPENSE)	270	917	(21)
	-----	-----	-----
EARN. BEFORE INT. AND TAXES	\$ 14,282	\$ 13,827	\$ 23,140
	-----	-----	-----
INTEREST EXPENSE	5,496	3,028	2,843
INCOME TAX EXPENSE	1,042	4,850	9,039
	-----	-----	-----
NET INCOME	\$ 7,744	\$ 5,949	\$ 11,258
	=====	=====	=====
RETAINED EARNINGS			
BEGINING OF YEAR	\$ 60,307	\$ 55,467	\$ 45,354
ADD: NET INCOME FOR YEAR	7,744	5,949	11,258
	-----	-----	-----
TOTAL EARNINGS AVAILABLE	\$ 68,051	\$ 61,416	\$ 56,612
DEDUCT DIVIDENDS DECLARED			
COMMON STOCK	707	1,109	1,145
RETAINED EARNINGS			
	-----	-----	-----
END OF YEAR	\$ 67,344	\$ 60,307	\$ 55,467
	=====	=====	=====

PLAYBOY ENTERPRISES, INC. AND SUBSIDIARIES  
CONSOLIDATED STATEMENTS OF CHANGES IN FINANCIAL POSITION  
FOR THE YEARS ENDED JUNE 30, 1975 AND 1974  
IN THOUSANDS OF DOLLARS (000 OMITTED  
EXPECTED EXPANDED OPERATIONS

	1975 BUDGETED	1974
<b>SOURCES OF FUNDS</b>		
OPERATIONS		
NET INCOME	\$ 7,744	\$ 5,949
DEPRECIATION	7,179	7,032
DEFERRED INCOME TAXES	1,415	1,473
RECOVERABLE INCOME TAXES	(5,218)	-
DEFERED INCOME TAXES	3,859	(58)
OTHER	95	(369)
	-----	-----
FUNDS PROVIDED FROM OPERATIONS	15,074	14,027
OTHER SOURCES		
SALE OF PLAYBOY PLAZA	-	1,696
SALE OF FILM RIGHTS	931	684
PROCEEDS FROM BOND ISSUE	26,611	-
	-----	-----
TOTAL FUNDS PROVIDED	\$ 42,616	\$16,407
	=====	=====
<b>APPLICATION OF FUNDS</b>		
ADD. TO PROP., PLANT & EQUIP.	36,795	7,955
REDUCTION OF LONG TERM DEBT	-	801
CASH DIVIDENDS	707	1,109
MISCELLANEOUS INVESTMENTS	295	504
PURCHASE OF TREASURY SHARES	-	1,077
OTHER, NET	1,978	1,084
INCREASE (DEC.) IN WORKING CAPITAL	2,841	3,877
	-----	-----
TOTAL APPLICATION OF FUNDS	\$ 42,616	\$16,407
	=====	=====
<b>CHANGES IN WORKING CAPITAL COMPONENTS</b>		
CASH	\$ 3,946	\$ 391
RECEIVABLES	(6,767)	2,375
INVENTORIES	4,557	1,493
OTHER CURRENT ASSETS	93	1,235
NOTES PAY. & CURR. MAT. OF LTD	(1,512)	(1,531)
ACCOUNTS PAYABLE & ACCRED EXPENSES	2,337	(1,249)
INCOME TAXES	187	1,163
	-----	-----
INCREASE (DECREASE) IN WORKING CAPITAL	\$ 2,841	\$ 3,877
	=====	=====



PLAYBOY ENTERPRISES, INC. AND SUBSIDIARIES  
SUMMARY OF CASH FLOW PROJECTIONS  
PER QUARTER ENDING JUNE 30, 1975  
THOUSANDS AND OF DOLLARS (000 OMITED)  
EXPECTED EXPANDED OPERATIONS

	QRT1	QRT2	QRT3	QRT4
PROJECTED SALES	\$57,488	\$50,855	\$53,066	\$59,699
LESS: SALES ON ACCOUNT	15,872	14,040	14,651	16,482
	-----	-----	-----	-----
CASH RECEIPTS				
CASH SALES	\$41,616	\$36,815	\$38,415	\$43,217
COLLECTION ON ACCOUNT	23,249	15,872	14,040	14,651
OTHER INCOME	70	62	65	73
PROC. FROM BOND ISSUE FOR PUR. OF CASINO	26,611	-	-	-
	-----	-----	-----	-----
TOTAL RECEIPTS	\$91,546	\$52,749	\$52,520	\$57,941
	-----	-----	-----	-----
CASH DISBURSEMENTS				
for MATER. & DIR. LABOR	\$46,525	\$41,157	\$42,946	\$48,314
for OTH. OPER. COSTS	7,206	6,374	6,652	7,483
for INTEREST PAYMENTS	-	2,748	-	2,748
for TAX PAYMENTS	271	240	250	281
for INCR. IN WORK. CAP.	1,074	950	991	1,115
for PURCHASE OF CASINO	26,251	-	-	-
for INVEST. OF WORKING CAPITAL IN CASINO	2,500	-	-	-
for INT. ON CASINO DEBT	-	-	-	3,000
for OTHER COSTS	261	-	-	-
for OTHER DISBURSEMENT	358	379	314	422
	-----	-----	-----	-----
TOTAL DISBURSEMENTS	\$84,446	\$51,848	\$51,153	\$63,363
	-----	-----	-----	-----
BEGINING CASH BALANCE	\$ 8,045	\$15,145	\$16,046	\$17,413
NET CASH REC. (DISB.)	7,100	901	1,367	(5,422)
	-----	-----	-----	-----
ENDING CASH BALANCE	\$15,145	\$16,046	\$17,413	\$11,991
	=====	=====	=====	=====

APPENDIX B

Exploratory Test Questions

VSPC and AUTOTAB Examination

Write the VSPC commands to do the following:

1. You want to obtain the AUTOTAB JCL from Account 907628 and save the JCL in your library; filename "autojcl".
  
2. You want to display on the screen lines 00730-00790 from a file in your library named "tryit".
  
3. You have just completed a program and saved it in your library. Input the following first two lines of a new program:  
  
First line:           TEST 1  
Second line:         TEST 2
  
4. You want to delete lines 00040-00070.
  
5. You want to start inputting on line 00110.
  
6. You want to retrieve file "garbage" from your library.

7. You want to make the following correction in line 00430:  
From: "Spellang" to: "Spelling:"
  
8. You want to submit an AUTOTAB program saved under filename "first". Your JCL is in a separate file under "autojcl".
  
9. Check to see if your job is completed.
  
10. You just found out that your job is completed and you want to print the output on the IBM matrix printer. The job is now stored in Fargo.



## APPENDIX C

### Complete Processing of AUTOTAB Programs (logging-on procedure not included)

```

you enter: CLEAR
computer:  READY
you enter:  INPUT
computer:  00010  you enter model description here.

```

```

00010 TITLE
00020   'Sales by Region and Product'
00030 COLUMNS
00040   PRODA 'PROD A'
00050   PRODB 'PROD B'
00060   PRODC 'PROD C'
00070   RTOTAL 'TOTAL'
00080 ROWS
00090   EAST   'EASTERN'
00100   WEST   'WESTERN'
00110   NORTH  'NORTHERN'
00120   SOUTH  'SOUTHERN'
00130   PTOTAL 'PRODUCT TOTAL'
00140 DATA
00150   EAST   = 250 475 200
00160   WEST   = 300 300 300
00170   NORTH  = 225 250 400
00180   SOUTH  = 150 275 150
00190 RULES
00200   RTOTAL = PRODA + PRODB + PRODC
00210   PTOTAL = EAST + WEST + NORTH + SOUTH
00220 END

```

You hit the return key twice to get out of the INPUT mode.

```

you enter: SAVE progl
computer:  READY
you enter: SUB autojcl progl
computer:  JOB SUBMITTED AS @#####nn ****
you enter: STATUS nn

```

computer: COMPLETED

you enter: LOAD OUTPUT nn DS 102

computer: READY

you enter: SAVE proglout

computer: READY

you enter: PRINT proglout NODE U23CC018 NOLINE

## APPENDIX D

### Common Student Problems

1. "DATA SET NOT FOUND", will occur when only "autojcl" is submitted. Error in merging "autojcl" with model description was the most common reason.
2. Model description not saved under separate filename when first written, or failure to SAVE after corrections.
3. Failure to CLEAR working space before INPUT process.
4. Incorrect use of MERGE, recommended use of automatic MERGE, for example: SUB autojcl progl.
5. Reserved words used in ROW or COLUMN definitions.
6. Incorrect linesize for display on screen, use LINE 72.
7. Distinction between the letter O and the number 0, especially in SPACING and EDITING segments.
8. All AUTOTAB statements must be in upper case, except for text enclosed in apostrophes and remarks.
9. Some students tried to use RUN instead of SUBMIT; the latter should be used when jobs are processed in Fargo.



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